```
SEQ PG LIN  LABEL  OP    OPERANDS                                          SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR

101               JOB   FORTRAN COMPILER -- CONSTANTS PHASE THREE -- 20
102               CTL   6611
103         *
104         * CONSTANTS ARE PLACED IN THEIR OBJECT-TIME LOCATIONS AT THE
105         * LOWER END OF STORAGE.  THE OBJECT-TIME ADDRESSES REPLACE
106         * THE CONSTANTS WHEREVER THEY APPEAR.
107         *
108         * ON ENTRY, X1 AND TOPCOD ARE THE TOP OF THE PREFIX OF THE TOP
109         * STATEMENT, AND 81-83 IS THE NEXT AVAILABLE PLACE IN THE
110         * NUMBER TABLE.
111         *
112         * ON EXIT, X1 IS THE TOP OF THE PREFIX OF THE TOP STATEMENT
113         * AND 81-83 IS THE BOTTOM OF THE NUMBER TABLE.
114         *
115         X1     EQU   89                                                      0089
116         X2     EQU   94                                                      0094
117         X3     EQU   99                                                      0099
118         *
119         * STUFF IN THE RESIDENT AREA
120         *
121         NEGAR2 EQU   142  LOOKS LIKE NEGARY -- SEE PHASE 20                 0142
122         NEGAR3 EQU   157  LOOKS LIKE NEGARY -- SEE PHASE 20                 0157
123         ARYSIZ EQU   160  TOTAL ARRAY SIZE & 2                              0160
124         NEGARY EQU   163  16000 - ARYSIZ                                    0163
125         ARYTOP EQU   194  TOP OF ARRAYS IN OBJECT CODE                      0194
126         TOPCOR EQU   688  TOP CORE ADDRESS FROM PARAM CARD                  0688
127         *
128               EXT00   SNAPSH, LOADNX, CDOVLY                                          MACRO
129         SNAPSH EQU   333                                                    0333        GEN
130         PHASLD EQU   381                                                    0381        GEN
131         SNAPEX EQU   564                                                    0564        GEN
132         LOADNX EQU   700   CARD OVERLAY UNLESS NOP                         0700        GEN
133         CDOVLY EQU   700   1 IF LOADING FROM CARDS, N IF FROM TAPE         0700        GEN
134         TPREAD EQU   704   LOAD OVERLAY FROM TAPE                          0704        GEN
135         TPERR  EQU   728                                                    0728        GEN
136         *
137               EXT03   START, TOP OF PHASE 3                                           MACRO
138         BEGIN3 EQU   838                                                    0838        GEN
139         TOP3   EQU   2600                                                   2600        GEN
140               EXT19   STUFF IN PHASE 19                                               MACRO
141         TOPCOD EQU   840   TOP OF CODE & X00 - 1                           0840        GEN
142         DIFF   EQU   845   TOP OF CORE - TOPCOD AS FIVE DIGITS            0845        GEN
143         BNDRY  EQU   848                                                    0848        GEN
144         BEGN19 EQU   849                                                    0849        GEN
145         *
146         110    DCW   @CONST TRI@                                      9  0110                  1
147         *
148         PHAS20 LDPH  CONST TRI,LOADAD,BEGN20,,,20                                    MACRO
            * PHAZ   LDPH [PHASID],LOADAD,ENTAD[,SKIPFG,SKIP],[NUMBER][,HALT]         GEN
            *        XFR  PHASZ     PROHIBITED IN A MACRO                            GEN
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SEQ PG LIN  LABEL   OP    OPERANDS                                          SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR
            *                                                                           GEN
            * LOAD A BLOCK                                                             GEN
            *                                                                         GEN
149         )6J004  EQU   110  PHASE ID                                        0110          GEN
150         )6K004  EQU   700  LOAD NEXT PHASE                                 0700          GEN
151         )6L004  EQU   704  TAPE READ INSTRUCTION                           0704          GEN
152         )6M004  EQU   728  TAPE ERROR HANDLER                             0728          GEN
            *                                                                         GEN
153                 ORG   201                                                       0201
154         PHAS20  EQU   *&1                                                   0201          GEN
155                 LCA   )9J004,)6J004                                       7 0201  L 252 110   GEN      2   252     110
156                 BCE   )6K004,)6K004,1      Q: LOADING FROM CARDS?         8 0208  B 700 700 1 GEN      2   700     700
157                 BCE   )6K004,)6L004&4,0    Q: LOADING FROM AUTOCODER TAPE? 8 0216  B 700 708 0 GEN      2   700     708
158                 RTW   1,LOADAD             READ THE BLOCK                 8 0224  L %U1 849 R GEN      2   %U1     849
159                 BER   )6M004               Q: TAPE ERROR?                 5 0232  B 728 L     GEN      2   728
160                 CS    BEGN20,)9R004        ENTER THE BLOCK                7 0237  / 849 256   GEN      3   849     256
161         )9J004  DCW   @CONST TRI@          PHASE ID                       9 0252              GEN      3
162                 DC    #1                                                 1 0253              GEN      3
163                 DC    @20@          PHASE NUMBER                         2 0255              GEN      3
164         )9R004  DCW   @}@                                                1 0256              GEN      3
165                 XFR   PHAS20                                                  B 201                 4   201
166         *
167                 ORG   BEGN19  ABOVE THE TABLES IN PHASE 19                     0849
168         *
169         * CONVERT TOPCOR TO DECIMAL
170         *
171         LOADAD  EQU   *&1          LOAD ADDRESS                           0849
172     849 BEGN20  S     W2H                                                4 0849  S !16               5  2016
173     853         S     W2L                                                4 0853  S !18               5  2018
174     857         MZ    TOPCOR,W2H-1                                       7 0857  Y 688 !15           5   688    2015
175     864         MZ    TOPCOR-2,W2L-1                                     7 0864  Y 686 !17           5   686    2017
176     871         BWZ   *&12,W2L-1,2                                       8 0871  V 890 !17 2         5   890    2017
177     879         A     KA0,W2L                                            7 0879  A !20 !18           5  2020    2018
178     886         B     *-18                                               4 0886  B 871               6   871
179     890         BWZ   *&12,W2H-1,2                                       8 0890  V 909 !15 2         6   909    2015
180     898         A     KQ4,W2H                                            7 0898  A !22 !16           6  2022    2016
181     905         B     *-18                                               4 0905  B 890               6   890
182     909         A     W2L-1,W2H                                          7 0909  A !17 !16           6  2017    2016
183     916         MCW   TOPCOR,ARYSZW                                      7 0916  M 688 !39           6   688    2039
184     923         MCW   W2H                                                4 0923  M !16               7  2016
185     927         ZA    ARYSZW                                             4 0927  ? !39               7  2039
186     931         MZ    *-4,ARYSZW                                         7 0931  Y 933 !39           7   933    2039
187     938         MCW   X2,SX2                                            7 0938  M 094 !25           7   094    2025
188     945         S     W2H2                                               4 0945  S !27               7  2027
189     949         S     W2L2                                               4 0949  S !29               7  2029
190         *
191         * CONVERT ARYTOP TO DECIMAL
192         *
193     953         MZ    ARYTOP,W2H2-1                                      7 0953  Y 194 !26           7   194    2026
194     960         MZ    ARYTOP-2,W2L2-1                                    7 0960  Y 192 !28           8   192    2028
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SEQ PG LIN  LABEL   OP    OPERANDS                                          SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR

195    967          BWZ   *&12,W2L2-1,2                                       8  0967  V 986 !28 2          8   986    2028
196    975          A     KA0,W2L2                                            7  0975  A !20 !29            8  2020    2029
197    982          B     *-18                                                4  0982  B 967                8   967
198    986          BWZ   *&12,W2H2-1,2                                       8  0986  V |05 !26 2          8  1005    2026
199    994          A     KQ4,W2H2                                            7  0994  A !22 !27            9  2022    2027
200  1 001          B     *-18                                                4  1001  B 986                9   986
201  1 005          A     W2L2-1,W2H2                                         7  1005  A !28 !27            9  2028    2027
202  1 012          MCW   ARYTOP,W5                                           7  1012  M 194 !34            9   194    2034
203  1 019          MCW   W2H2                                              4  1019  M !27                9  2027
204  1 023          ZA    W5                                                  4  1023  ? !34                9  2034
205  1 027          MZ    *-4,W5                                              7  1027  Y |29 !34           10  1029    2034
206          *
207          * CONVERT W5-ARYSZW, WHIICH IS ARRAY SIZES & 2,  TO MACHINE
208          * ADDRESS
209          *
210  1 034          S     W5,ARYSZW                                           7  1034  S !34 !39           10  2034    2039
211  1 041          C     KP0,ARYSZW                                          7  1041  C !44 !39           10  2044    2039
212  1 048          BE    NOARYS                                              5  1048  B /61 S             10  1161
213  1 053          MN    ARYSZW,ARYSIZ                                       7  1053  D !39 160           10  2039     160
214  1 060          MN                                                        1  1060  D                   10
215  1 061          MN                                                        1  1061  D                   10
216  1 062          SAR   *&4                                                 4  1062  Q |69                10  1069
217  1 066          MCW   0,X2  WHY NOT JUST MCW  ARYSZW-3,X2 ?               7  1066  M 000 094           11   000     094
218  1 073          MCW   K0                                                  4  1073  M !45               11  2045
219  1 077          A     X2                                                  4  1077  A 094               11   094
220  1 081          MZ    ZONES&X2,ARYSIZ                                     7  1081  Y ZQ4 160           11  1984+2   160
221  1 088          CW                                                        1  1088  )                   11
222  1 089          SBR   *&7                                                 4  1089  H |99                11  1099
223  1 093          MZ    ZONES-1&X2,0  WHY NOT MZ   ZONES-1&X2,ARYSIZ-2 ?   7  1093  Y ZQ3 000           11  1983+2   000
224  1 100          MCW   K16K,W5B                                           7  1100  M !50 !55           12  2050    2055
225  1 107          S     ARYSZW,W5B                                          7  1107  S !39 !55           12  2039    2055
226  1 114          MN    W5B,NEGARY                                          7  1114  D !55 163           12  2055     163
227  1 121          MN                                                        1  1121  D                   12
228  1 122          MN                                                        1  1122  D                   12
229  1 123          SAR   *&4                                                 4  1123  Q /30                12  1130
230  1 127          MCW   0,X2  WHY NOT MCW  W5B-3,X2 ?                       7  1127  M 000 094           12   000     094
231  1 134          MCW   K0                                                  4  1134  M !45               12  2045
232  1 138          A     X2                                                  4  1138  A 094               13   094
233  1 142          MZ    ZONES&X2,NEGARY                                     7  1142  Y ZQ4 163           13  1984+2   163
234  1 149          CW                                                        1  1149  )                   13
235  1 150          SBR   *&7                                                 4  1150  H /60               13  1160
236  1 154          MZ    ZONES-1&X2,0  WHY NOT MZ   ZONES-1&X2,NEGARY-2 ?   7  1154  Y ZQ3 000           13  1983+2   000
237  1 161  NOARYS  MCW   SX2,X2                                             7  1161  M !25 094           13  2025     094
238  1 168          MA    NEGARY,NEGAR2                                       7  1168  # 163 142           13   163     142
239  1 175          MA    NEGARY,NEGAR3                                       7  1175  # 163 157           14   163     157
240  1 182          MCW   TOPCOD,SAVTOP&3                                     7  1182  M 840 U82           14   840    1482
241  1 189          MZ    S,SAVTOP&2  X2 ZONE                                 7  1189  Y !56 U81           14  2056    1481
242  1 196          MCW   X2,SX2B                                             7  1196  M 094 !59           14   094    2059
243  1 203          MCW   KB1,TOP3-1                                          7  1203  M !60 N99           14  2060    2599
244  1 210  LOOP    BCE   BOTTOM,0&X1,                                        8  1210  B X76 0|0           15  1776     000+1
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SEQ PG LIN  LABEL  OP    OPERANDS                                          SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR

245  1 218         MCW   0&X1,SEQCOD                                        7  1218  M 0|0 !64          15   000+1  2064
246  1 225         LCA   0&X1,PREFIX                                        7  1225  L 0|0 !74          15   000+1  2074
247  1 232         SAR   X1                                                 4  1232  Q 089              15   089
248  1 236         SBR   X3                                                 4  1236  H 099              15   099
249  1 240         LCA   PREFIX,0&X2                                        7  1240  L !74 0!0          15  2074     000+2
250  1 247         SBR   X2                                                 4  1247  H 094              16   094
251  1 251         BCE   ENDSTM,SEQCOD-3,/  END STATEMENT?                  8  1251  B X46 !61 /        16  1746    2061
252  1 259  SCHUND BCE   GOTUN6,0&X1,_                                      8  1259  B S93 0|0 _        16  1293     000+1
253  1 267         CHAIN 5                                                                 MACRO
254               BCE                                                      1  1267  B           GEN    16
255               BCE                                                      1  1268  B           GEN    16
256               BCE                                                      1  1269  B           GEN    16
257               BCE                                                      1  1270  B           GEN    16
258               BCE                                                      1  1271  B           GEN    16
259  1 272         BCE   ENDSTM,0&X1,}                                      8  1272  B X46 0|0 } GMARK  16  1746     000+1
260  1 280         CHAIN 5                                                                 MACRO
261               BCE                                                      1  1280  B           GEN    16
262               BCE                                                      1  1281  B           GEN    16
263               BCE                                                      1  1282  B           GEN    16
264               BCE                                                      1  1283  B           GEN    16
265               BCE                                                      1  1284  B           GEN    16
266  1 285         SBR   X1                                                 4  1285  H 089              17   089
267  1 289         B     SCHUND                                             4  1289  B S59              17  1259
268        *
269        * GOT X1 TO WITHIN SIX OF UNDERSCORE.  GET TO IT EXACTLY.
270        *
271  1 293  GOTUN6 BCE   GOTUND,0&X1,_                                      8  1293  B T09 0|0 _        17  1309     000+1
272  1 301         SBR   X1                                                 4  1301  H 089              17   089
273  1 305         B     GOTUN6                                             4  1305  B S93              17  1293
274        *
275        * GOT X1 TO THE UNDERSCORE ABOVE A NUMBER
276        *
277  1 309  GOTUND SW    1&X1                                               4  1309  , 0|1              17   001+1
278  1 313         CW                                                       1  1313  )                  17
279  1 314         CW                                                       1  1314  )                  17
280  1 315         CW                                                       1  1315  )                  17
281  1 316         SAR   X1                                                 4  1316  Q 089              17   089
282  1 320         BCE   GOTGM,4&X1,}  CAN THIS HAPPEN?                     8  1320  B T43 0|4 } GMARK  18  1343     004+1
283  1 328         LCA   0&X3,0&X2  MOVE UP EVERYTHING ABOVE NUMBER.         7  1328  L 0?0 0!0          18   000+3   000+2
284  1 335         SBR   X2                                                 4  1335  H 094              18   094
285  1 339         CW    1&X2                                               4  1339  ) 0!1              18   001+2
286  1 343  GOTGM  SBR   X3,2&X1                                            7  1343  H 099 0|2          18   099     002+1
287        *
288        * GET X1 DOWN TO A PUNCTUATION MARK BELOW THE NUMBER
289        *
290  1 350  SCHPUN MCW   0&X1,W1                                            7  1350  M 0|0 !75          18   000+1  2075
291  1 357         SAR   X1                                                 4  1357  Q 089              19   089
292  1 361         MCW   W1,*&8                                             7  1361  M !75 T75          19  2075    1375
293  1 368         BCE   GOTPUN,PUNCT,0                                     8  1368  B T88 !84 0        19  1388    2084
294  1 376         CHAIN 8                                                                 MACRO
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SEQ PG LIN  LABEL   OP    OPERANDS                                        SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR

295                 BCE                                                     1  1376  B           GEN     19
296                 BCE                                                     1  1377  B           GEN     19
297                 BCE                                                     1  1378  B           GEN     19
298                 BCE                                                     1  1379  B           GEN     19
299                 BCE                                                     1  1380  B           GEN     19
300                 BCE                                                     1  1381  B           GEN     19
301                 BCE                                                     1  1382  B           GEN     19
302                 BCE                                                     1  1383  B           GEN     19
303  1 384          B     SCHPUN                                            4  1384  B T50               19  1350
304  1 388  GOTPUN  SW    2&X1  AT THE BOTTOM OF THE NUMBER                   4  1388  , 0|2               19   002+1
305  1 392          ZA    0&X3,HASH                                         7  1392  ? 0?0 !88           20   000+3  2088
306  1 399          A     4&X1,HASH                                         7  1399  A 0|4 !88           20   004+1  2088
307  1 406          BCE   BLANK,2&X1,                                      8  1406  B X04 0|2           20  1704     002+1
308  1 414  BBACK   MZ    KB4,HASH                                          7  1414  Y !92 !88           20  2092    2088
309  1 421          MZ                                                      1  1421  Y                   20
310  1 422          MZ                                                      1  1422  Y                   20
311  1 423          MCW                                                     1  1423  M                   20
312  1 424          S     DIFF-1,HASH  COMPUTE                              7  1424  S 844 !88           20   844    2088
313  1 431          BWZ   *-14,HASH,B    MOD                              8  1431  V U24 !88 B         21  1424    2088
314  1 439          A     DIFF-1,HASH      (DIFF-1,HASH)                    7  1439  A 844 !88           21   844    2088
315  1 446          MZ    KB1,HASH                                          7  1446  Y !60 !88           21  2060    2088
316  1 453          MCW   X2,SX2C                                          7  1453  M 094 J00           21   094    2100
317  1 460          MCW                                                     1  1460  M                   21
318  1 461          MCW   HASH,X1                                         7  1461  M !88 089           21  2088     089
319  1 468          A     X1                                              4  1468  A 089               22   089
320  1 472          A     HASH,X1                                         7  1472  A !88 089           22  2088     089
321  1 479  SAVTOP  NOP   0                                               4  1479  N 000               22   000
322  1 483          SAR   X1                                              4  1483  Q 089               22   089
323  1 487          MCW   NOP,BOTHSH                                      7  1487  M J01 W71           22  2101    1671
324  1 494  HLOOP   BCE   NOTFND,0&X1,  NOT FOUND IF HASH ENTRY BLANK      8  1494  B W26 0|0           22  1626     000+1
325  1 502          BCE   BOTHSH,0&X1,<                                   8  1502  B W71 0|0 <         23  1671     000+1
326  1 510          MCW   0&X1,X2                                         7  1510  M 0|0 094           23   000+1   094
327  1 517          SAR   X1                                              4  1517  Q 089               23   089
328  1 521          C     0&X3,0&X2                                       7  1521  C 0?0 0!0           23   000+3   000+2
329  1 528          BU    HLOOP                                           5  1528  B U94 /             23  1494
330  1 533          C     0&X2,0&X3                                       7  1533  C 0!0 0?0           23   000+2   000+3
331  1 540          BU    HLOOP                                           5  1540  B U94 /             24  1494
332          *
333          * FOUND IN THE HASH TABLE
334          *
335  1 545  FOUND   MCW   X2,SX2D                                         7  1545  M 094 J04           24   094    2104
336  1 552          MCW   SX2D,SX2E                                       7  1552  M J04 J07           24  2104    2107
337  1 559          MA    NEGARY,SX2D                                     7  1559  # 163 J04           24   163    2104
338  1 566          MCW   SX2C,X2                                         7  1566  M J00 094           24  2100     094
339  1 573          MCW                                                     1  1573  M                   24
340  1 574          LCA   SX2D,0&X2                                       7  1574  L J04 0!0           25  2104     000+2
341  1 581          SBR   X2                                              4  1581  H 094               25   094
342  1 585          CW    1&X2                                            4  1585  ) 0!1               25   001+2
343  1 589          MCW   SX2E,*&7                                        7  1589  M J07 W02           25  2107    1602
344  1 596          BWZ   FPNUM,0-0,2                                     8  1596  V W93 000 2         25  1693     000
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SEQ PG LIN  LABEL  OP    OPERANDS                                        SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR

345  1 604         MZ    KB1,2&X2  SET INTEGER ZONE                        7  1604  Y !60 0!2          25  2060     002+2
346  1 611  NUMFIN SBR   X1,1&X1                                           7  1611  H 089 0|1          26   089     001+1
347  1 618         SBR   X3                                               4  1618  H 099              26   099
348  1 622         B     SCHUND                                           4  1622  B S59              26  1259
349         *
350         * NOT FOUND, ENTER IT
351         *
352  1 626  NOTFND MCW   83,X2                                            7  1626  M 083 094          26   083     094
353  1 633         MCW   83,0&X1                                          7  1633  M 083 0|0          26   083     000+1
354  1 640         MCW   0&X3,0&X2                                        7  1640  M 0?0 0!0          26   000+3   000+2
355  1 647         SBR   X1                                               4  1647  H 089              27   089
356  1 651         SBR   83                                               4  1651  H 083              27   083
357  1 655         BCE   TOOBIG,0&X1,<                                    8  1655  B X12 0|0 <        27  1712     000+1
358  1 663         SW    1&X1                                             4  1663  , 0|1              27   001+1
359  1 667         B     FOUND                                            4  1667  B V45              27  1545
360         *
361         * BOTTOM OF HASH TABLE
362         *
363  1 671  BOTHSH NOP   TOOBIG                                           4  1671  N X12              27  1712
364  1 675         MCW   S,BOTHSH  SHOULD THIS BE B INSTEAD OF S?         7  1675  M !56 W71          27  2056    1671
365  1 682         MCW   BNDRY,X1                                         7  1682  M 848 089          28   848     089
366  1 689         B     HLOOP                                            4  1689  B U94              28  1494
367         *
368         * FOUND FLOATING-POINT NUMBER
369         *
370  1 693  FPNUM  MZ    *-6,2&X2  SET FLOATING POINT ZONE                7  1693  Y W93 0!2          28  1693     002+2
371  1 700         B     NUMFIN                                           4  1700  B W11              28  1611
372         *
373         * A BLANK IN THE NUMBER
374         *
375  1 704  BLANK  SW    3&X1                                             4  1704  , 0|3              28   003+1
376  1 708         B     BBACK                                            4  1708  B U14              28  1414
377         *
378         * TOO BIG
379         *
380  1 712  TOOBIG CS    332                                              4  1712  / 332              28   332
381  1 716         CS                                                     1  1716  /                  28
382  1 717         CC    1                                                2  1717  F 1                28
383  1 719         MCW   ERROR2,270                                       7  1719  M J43 270          29  2143     270
384  1 726         W                                                      1  1726  2                  29
385  1 727         CC    1                                                2  1727  F 1                29
386  1 729         BCE   HALT,CDOVLY,1                                   8  1729  B X42 700 1        29  1742     700
387  1 737         RWD   1                                                5  1737  U %U1 R            29   %U1
388  1 742  HALT   H     HALT                                             4  1742  . X42              29  1742
389         *
390         * GOT TO WITHIN SIX OF A GM WITHOUT SEEING UNDERSCORE.
391         * MOVE THE REMAINDER OF THE STATEMENT UP.
392         *
393  1 746  ENDSTM LCA   0&X3,0&X2                                        7  1746  L 0?0 0!0          29   000+3   000+2
394  1 753         SAR   X3                                               4  1753  Q 099              29   099
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SEQ PG LIN  LABEL  OP    OPERANDS                                SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR

395  1 757         C     0&X2                                      4  1757  C 0!0               30   000+2
396  1 761         SAR   X2                                        4  1761  Q 094               30   094
397  1 765         MCW   X3,X1                                     7  1765  M 099 089           30   099     089
398  1 772         B     LOOP                                      4  1772  B S10               30  1210
399         *
400         * REACHED THE BOTTOM OF STATEMENTS
401         *
402  1 776  BOTTOM MCW   SX2B,X1                                   7  1776  M !59 089           30  2059     089
403  1 783         CS    332                                       4  1783  / 332               30   332
404  1 787         CS                                              1  1787  /                   30
405  1 788         MCW   CONSTS,223                                7  1788  M J66 223           30  2166     223
406         *
407         * CONVERT 81-83 TO DECIMAL
408         *
409  1 795         S     W2H3                                      4  1795  S J68               31  2168
410  1 799         S     W2L3                                      4  1799  S J70               31  2170
411  1 803         MZ    83,W2H3-1                                 7  1803  Y 083 J67           31   083    2167
412  1 810         MZ    81,W2L3-1                                 7  1810  Y 081 J69           31   081    2169
413  1 817         BWZ   *&12,W2L3-1,2                            8  1817  V Y36 J69 2         31  1836    2169
414  1 825         A     KA0,W2L3                                  7  1825  A !20 J70           31  2020    2170
415  1 832         B     *-18                                      4  1832  B Y17               32  1817
416  1 836         BWZ   *&12,W2H3-1,2                            8  1836  V Y55 J67 2         32  1855    2167
417  1 844         A     KQ4,W2H3                                  7  1844  A !22 J68           32  2022    2168
418  1 851         B     *-18                                      4  1851  B Y36               32  1836
419  1 855         A     W2L3-1,W2H3                               7  1855  A J69 J68           32  2169    2168
420  1 862         MCW   83,W5C                                    7  1862  M 083 J76           32   083    2176
421  1 869         MCW   W2H3                                      4  1869  M J68               33  2168
422  1 873         ZA    W5C                                       4  1873  ? J76               33  2176
423  1 877         MZ    *-4,W5C                                   7  1877  Y Y79 J76           33  1879    2176
424  1 884         S     ARYSZW,W5C                                7  1884  S !39 J76           33  2039    2176
425  1 891         MZ    KB1,W5C                                   7  1891  Y !60 J76           33  2060    2176
426  1 898         A     KP1,W5C                                   7  1898  A J71 J76           33  2171    2176
427  1 905         MCW   83,X3                                     7  1905  M 083 099           34   083     099
428  1 912         MA    NEGARY,X3                                 7  1912  # 163 099           34   163     099
429  1 919         SBR   X3,1&X3                                  7  1919  H 099 0?1           34   099     001+3
430  1 926         MCW   ARYTOP,247                                7  1926  M 194 247           34   194     247
431  1 933         MCW   HYPHEN                                    4  1933  M J77               34  2177
432  1 937         MCW   X3                                        4  1937  M 099               34   099
433  1 941         MCW   KB3                                       4  1941  M J80               35  2180
434  1 945         MCW   W5                                        4  1945  M !34               35  2034
435  1 949         MCW   TO                                        4  1949  M J84               35  2184
436  1 953         MCW   W5C                                       4  1953  M J76               35  2176
437  1 957         CC    J                                         2  1957  F J                 35
438  1 959         W                                               1  1959  2                   35
439  1 960         CC    J                                         2  1960  F J                 35
440  1 962         BCV   *&5                                       5  1962  B Z71 @             35  1971
441  1 967         B     *&3                                       4  1967  B Z73               35  1973
442  1 971         CC    1                                         2  1971  F 1                 35
443         *
444         * LOAD NEXT OVERLAY
```

```
SEQ PG LIN  LABEL  OP    OPERANDS                                          SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR

445         *
446  1 973         BSS   SNAPSH,D                                          5  1973  B 333 D            35   333
447  2 010         B     LOADNX                                            4  1978  B 700              36   700
448         *
449         * DATA
450         *
451  2 015         DCW   @ 9@                                              2  1983                     36
452         ZONES  EQU   *&1                                                1984
453  2 046         DCW   @9Z9R9I99ZZZRZIZ9RZRRRIR9IZIRIII@                31  2014                     36
454  2 048  W2H    DCW   #2  HIGH-ORDER ZONES FROM TOPCOR                   2  2016                     36
455  2 050  W2L    DCW   #2  LOW-ORDER ZONES FROM TOPCOR                    2  2018                     37
456  2 052  KA0    DCW   @A0@  USED TO CONVERT MACHINE ADDRESS TO DECIMAL   2  2020                     37
457  2 054  KQ4    DCW   @?4@  USED TO CONVERT MACHINE ADDRESS TO DECIMAL   2  2022                     37
458  2 057  SX2    DCW   #3                                                3  2025                     37
459  2 059  W2H2   DCW   #2                                                2  2027                     37
460  2 061  W2L2   DCW   #2                                                2  2029                     37
461  2 066  W5     DCW   #5                                                5  2034                     37
462  2 071  ARYSZW DCW   #5  ARRAY SIZE & 2                                5  2039                     37
463  2 076  KP0    DCW   @0000?@                                          5  2044                     37
464  2 077  K0     DCW   @0@                                              1  2045                     37
465  2 082  K16K   DCW   @16000@                                          5  2050                     37
466  2 087  W5B    DCW   #5                                                5  2055                     37
467  2 088  S      DCW   @S@                                              1  2056                     38
468  2 091  SX2B   DCW   #3                                                3  2059                     38
469  2 092  KB1    DCW   #1                                                1  2060                     38
470  2 096  SEQCOD DCW   #4  STATEMENT CODE AND SEQUENCE NUMBER            4  2064                     38
471  2 106  PREFIX DCW   #10  ENTIRE STATEMENT PREFIX                     10  2074                     38
472  2 107  W1     DCW   #1                                                1  2075                     38
473  2 116  PUNCT  DCW   @#}@*-&)$,@                                       9  2084                     38
474  2 120  HASH   DCW   #4                                                4  2088                     38
475  2 124  KB4    DCW   #4                                                4  2092                     38
476  2 132  SX2C   DCW   #8                                                8  2100                     39
477  2 133  NOP    NOP                                                     1  2101  N                  39
478  2 136  SX2D   DCW   #3                                                3  2104                     39
479  2 139  SX2E   DCW   #3                                                3  2107                     39
480  2 175  ERROR2 DCW   @MESSAGE 2 - OBJECT PROGRAM TOO LARGE@           36  2143                     40
481  2 198  CONSTS DCW   @CONSTANTS LOCATED FROM @                        23  2166                     41
482  2 200  W2H3   DCW   #2                                                2  2168                     41
483  2 202  W2L3   DCW   #2                                                2  2170                     41
484  2 203  KP1    DCW   &1                                                1  2171                     41
485  2 208  W5C    DCW   #5                                                5  2176                     41
486  2 209  HYPHEN DCW   @-@                                              1  2177                     41
487  2 212  KB3    DCW   #3                                                3  2180                     41
488  2 216  TO     DCW   @ TO @                                            4  2184                     42
489  2 223  GMWM   DCW   @}@                                              1  2185           GMARK     42
490                XFR   BEGN20                                                  B 849                44   849
491         CLRME  CLRA  BEGN20,TOP3-2                                                  MACRO
            *      CLRA  CLRBOT,CLRTOP[,ORG,GMWMAD]                                     GEN
            *                                                                           GEN
            * CLEAR CORE AFTER A PHASE USING THE CLRTOP ADDRESS                         GEN
```

```
SEQ PG LIN  LABEL   OP    OPERANDS                                    SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR
            *                                                                                 GEN
492                 ORG   201                                                    0201
            *                                                                                 GEN
            * CLEAR DOWN TO CLRBOT & X00 THE EASY WAY                                         GEN
            *                                                                                 GEN
493         CLRME   EQU   *&1                                                  0201           GEN
494         )0J005  CS    TOP3-2         CLEAR FROM CLRTOP                 4  0201  / N98       GEN     45  2598
495                 SBR   )0J005&3                                          4  0205  H 204       GEN     45   204
496                 SBR   )0L005&6                                          4  0209  H 250       GEN     45   250
497                 C     )0J005&3,)0M005   DOWN TO CLRBOT & X00?          7  0213  C 204 261   GEN     45   204     261
498                 BU    )0J005                                            5  0220  B 201 /     GEN     45   201
            *                                                                                 GEN
            * NOW CLEAR DOWN TO CLRBOT THE HARD WAY                                          GEN
            *                                                                                 GEN
499         )0K005  C     )0L005&6,)0N005                                   7  0225  C 250 264   GEN     45   250     264
500                 BU    )0L005                                            5  0232  B 244 /     GEN     45   244
501                 CS    LOADNX,)0Q005  LOAD THE NEXT BLOCK AT 1           7  0237  / 700 271   GEN     46   700     271
502         )0L005  LCA   )0P005,0-0     CLEAR WITH BLANK AND WORD MARK    7  0244  L 265 000   GEN     46   265     000
503                 SBR   )0L005&6                                          4  0251  H 250       GEN     46   250
504                 B     )0K005                                            4  0255  B 225       GEN     46   225
505         )0M005  DSA   )0R005         CLRBOT & X00 - 1                  3  0261  899         GEN     46   899
506         )0N005  DSA   BEGN20         CLRBOT                            3  0264  849         GEN     46   849
507         )0P005  DCW   #1                                               1  0265              GEN     46
508                 DC    @CLRA @     IDENTIFY IN A DECK, TAPE, OR DUMP     5  0270              GEN     46
509         )0Q005  DCW   @}@                                              1  0271              GEN     46
510                 ORG   BEGN20&X00                                                0900
511         )0R005  EQU   *           CLRBOT & X00 - 1                        0899              GEN
512                 XFR   CLRME                                                     B 201                48   201
```

SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS
)0J005	0201: 0	)0K005	0225: 0	)0L005	0244: 0	)0M005	0261: 0	)0N005	0264: 0	)0P005	0265: 0
)0Q005	0271: 0	)0R005	0899: 0	)6J004	0110: 0	)6K004	0700: 0	)6L004	0704: 0	)6M004	0728: 0
)9J004	0252: 0	)9R004	0256: 0	ARYSIZ	0160: 0	ARYSZW	2039: 0	ARYTOP	0194: 0	BBACK	1414: 0
BEGIN3	0838: 0	BEGN19	0849: 0	BEGN20	0849: 0	BLANK	1704: 0	BNDRY	0848: 0	BOTHSH	1671: 0
BOTTOM	1776: 0	CDOVLY	0700: 0	CLRME	0201: 0	CONSTS	2166: 0	DIFF	0845: 0	ENDSTM	1746: 0
ERROR2	2143: 0	FOUND	1545: 0	FPNUM	1693: 0	GMWM	2185: 0	GOTGM	1343: 0	GOTPUN	1388: 0
GOTUN6	1293: 0	GOTUND	1309: 0	HALT	1742: 0	HASH	2088: 0	HLOOP	1494: 0	HYPHEN	2177: 0
K0	2045: 0	K16K	2050: 0	KA0	2020: 0	KB1	2060: 0	KB3	2180: 0	KB4	2092: 0
KP0	2044: 0	KP1	2171: 0	KQ4	2022: 0	LOADAD	0849: 0	LOADNX	0700: 0	LOOP	1210: 0
NEGAR2	0142: 0	NEGAR3	0157: 0	NEGARY	0163: 0	NOARYS	1161: 0	NOP	2101: 0	NOTFND	1626: 0
NUMFIN	1611: 0	PHAS20	0201: 0	PHASLD	0381: 0	PREFIX	2074: 0	PUNCT	2084: 0	S	2056: 0
SAVTOP	1479: 0	SCHPUN	1350: 0	SCHUND	1259: 0	SEQCOD	2064: 0	SNAPEX	0564: 0	SNAPSH	0333: 0
SX2	2025: 0	SX2B	2059: 0	SX2C	2100: 0	SX2D	2104: 0	SX2E	2107: 0	TO	2184: 0
TOOBIG	1712: 0	TOP3	2600: 0	TOPCOD	0840: 0	TOPCOR	0688: 0	TPERR	0728: 0	TPREAD	0704: 0
W1	2075: 0	W2H	2016: 0	W2H2	2027: 0	W2H3	2168: 0	W2L	2018: 0	W2L2	2029: 0
W2L3	2170: 0	W5	2034: 0	W5B	2055: 0	W5C	2176: 0	X1	0089: 0	X2	0094: 0
X3	0099: 0	ZONES	1984: 0								

UNREFERENCED SYMBOLS

BEGIN3 GMWM PHASLD SNAPEX TPERR TPREAD