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

101                JOB   FORTRAN COMPILER -- VARIABLES PHASE 4 -- 16
102                CTL   6611
103         *
104         * THE COMPILER FIRST SCANS INPUT-OUTPUT LISTS AND THE LEFT
105         * SIDE OF EQUAL SIGNS FOR SIMPLE VARIABLES.  EACH UNIQUE
106         * VARIABLE IS PLACED IN A TABLE WITH ITS OBJECT-TIME ADDRESS.
107         * IN THE SECOND SCAN OF THIS PHASE, ALL VARIABLES ARE MATCHED
108         * AGAINST THE TABLE.  WHEN AN ENTRY IS FOUND, THE OBJECT-TIME
109         * ADDRESS IS SUBSTITUTED IN THE STATEMENT FOR THE VARIABLE
110         * NAME.  VARIABLE NAMES NOT PRESENT IN THE TABLE ARE UNDEFINED.
111         *
112         * ON ENTRY, 83 IS TOPCOR-2, X1 IS THE PREFIX OF THE FIRST
113         * (TOPMOST) STATEMENT, X2 IS X1&1, TOPCD9 (840) IS TOP OF
114         * CODE & X00 - 1, DIFF (845) IS TOPCOR-1 - TOPCD9, AND
115         * BNDRY (848) IS TOPCD9 + 0.3 * DIFF
116         *
117         * ON EXIT, TOPCOR IS THE TOP OF THE SCALAR SYMBOLS TABLE,
118         * 83 IS THE BOTTOM, 86 IS THE CODE SIZE, AND X1 IS THE TOP OF
119         * THE TRANSFORMED CODE
120         *
121         * EACH ELEMENT OF THE SCALAR SYMBOLS TABLE CONSISTS OF THE
122         * THREE-CHARACTER RUN-TIME ADDRESS, WITH A WORD MARK UNDER
123         * THE FIRST CHARACTER, A GROUP MARK, WITH A WORD MARK UNDER
124         * IT IF THE VARIABLE IS NOT REFERENCED, AND THE VARIABLE, WITH
125         * CHARACTERS REVERSED.
126         *
127         X1     EQU   89                                                0089
128         X2     EQU   94                                                0094
129         X3     EQU   99                                                0099
130         *
131         * STUFF IN THE RESIDENT AREA
132         *
133         GLOBER EQU   184  GLOBAL ERROR FLAG -- WM MEANS ERROR          0184
134         IMOD   EQU   690  INTEGER MODULUS -- NUMBER OF DIGITS          0690
135         MANTIS EQU   692  FLOATING POINT MANTISSA DIGITS               0692
136         *
137                EXT00   SNAPSH, LOADNX, CDOVLY                                        MACRO
138         SNAPSH EQU   333                                               0333          GEN
139         PHASLD EQU   381                                               0381          GEN
140         SNAPEX EQU   564                                               0564          GEN
141         LOADNX EQU   700   CARD OVERLAY UNLESS NOP                    0700          GEN
142         CDOVLY EQU   700   1 IF LOADING FROM CARDS, N IF FROM TAPE     0700          GEN
143         TPREAD EQU   704   LOAD OVERLAY FROM TAPE                      0704          GEN
144         TPERR  EQU   728                                               0728          GEN
145         *
146                EXT14   STUFF IN PHASE 14                                              MACRO
147         TOPCD9 EQU   840   TOP OF CODE & X00 - 1 IS BOTTOM OF HASH     0840          GEN
148         DIFF   EQU   845   DIFF = TOPCOR-1 - TOPCD9 IS SIZE OF HASH    0845          GEN
149         BNDRY  EQU   848   TOP OF HASH TABLE                           0848          GEN
150         BEGN14 EQU   849                                               0849          GEN
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SEQ PG LIN  LABEL   OP    OPERANDS                                          SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR

151             EXT15   STUFF IN PHASE 15                                                 MACRO
152         CODSIZ EQU   853   CODE SIZE, 84-86, IN DECIMAL                    0853       GEN
153         TOPCOD EQU   856   TOP OF CODE & 1                                0856       GEN
154         BEGN15 EQU   857                                                  0857       GEN
155             EXT18   STUFF IN PHASE 18                                             MACRO
156         FREBOT EQU   2599                                                 2599       GEN
157         *
158         110    DCW   @VARBL QUAD@                                  10    0110                  1
159         *
160         PHAS16 LDPH  VARBL QUAD,LOADAD,BEGN16,,,16                                    MACRO
            * PHAZ   LDPH [PHASID],LOADAD,ENTAD[,SKIPFG,SKIP],[NUMBER][,HALT]          GEN
            *        XFR  PHASZ     PROHIBITED IN A MACRO                             GEN
            *                                                                         GEN
            * LOAD A BLOCK                                                           GEN
            *                                                                       GEN
161         )6J005 EQU   110  PHASE ID                                       0110       GEN
162         )6K005 EQU   700  LOAD NEXT PHASE                                0700       GEN
163         )6L005 EQU   704  TAPE READ INSTRUCTION                          0704       GEN
164         )6M005 EQU   728  TAPE ERROR HANDLER                             0728       GEN
            *                                                                       GEN
165             ORG   201                                                          0201
166         PHAS16 EQU   *&1                                                 0201       GEN
167             LCA   )9J005,)6J005                                   7    0201  L 253 110   GEN      2   253     110
168             BCE   )6K005,)6K005,1      Q: LOADING FROM CARDS?     8    0208  B 700 700 1 GEN      2   700     700
169             BCE   )6K005,)6L005&4,0    Q: LOADING FROM AUTOCODER TAPE? 8    0216  B 700 708 0 GEN      2   700     708
170             RTW   1,LOADAD             READ THE BLOCK             8    0224  L %U1 857 R GEN      2   %U1     857
171             BER   )6M005               Q: TAPE ERROR?             5    0232  B 728 L     GEN      2   728
172             CS    BEGN16,)9R005        ENTER THE BLOCK            7    0237  / 857 257   GEN      3   857     257
173         )9J005 DCW   @VARBL QUAD@          PHASE ID                 10    0253              GEN      3
174             DC    #1                                               1    0254              GEN      3
175             DC    @16@          PHASE NUMBER                       2    0256              GEN      3
176         )9R005 DCW   @}@                                            1    0257              GEN      3
177             XFR   PHAS16                                                    B 201               4   201
178         *
179             ORG   BEGN15  ABOVE THE TABLE IN PHASE 15                          0857
180         LOADAD EQU   *&1          LOAD ADDRESS                       0857
181    857  BEGN16 MCW   TOPCD9,GETTOP&3                                  7    0857  M 840 /89           5   840    1189
182    864         MZ    X1TAG,GETTOP&2  X1 ZONE TAG                     7    0864  Y K68 /88           5  2268    1188
183    871         SW    GM                                              4    0871  , M70               5  2470
184    875         CW    FLAG                                            4    0875  ) K96               5  2296
185    879  LOOP1  BCE   BOTTOM,0&X1,  BOTTOM (END) OF THE CODE?         8    0879  B !57 0|0           5  2057     000+1
186    887         MCW   0&X1,SEQCOD                                     7    0887  M 0|0 K72           5   000+1  2272
187    894         LCA   0&X1,PREFIX                                     7    0894  L 0|0 K82           6   000+1  2282
188    901         SAR   X1  X1 AND X3 ARE NOW ONE BELOW THE             4    0901  Q 089               6   089
189    905         SBR   X3    GM THAT SEPARATES PREFIX FROM BODY         4    0905  H 099               6   099
190    909         LCA   PREFIX,0&X2  MOVE UP PREFIX                     7    0909  L K82 0!0           6  2282     000+2
191    916         SBR   X2                                              4    0916  H 094               6   094
192    920         BCE   SKIPIT,SEQCOD-3,/  END STATEMENT?              8    0920  B J49 K69 /         6  2149    2269
193    928         BCE   SKIPIT,SEQCOD-3,F  FORMAT STATEMENT?           8    0928  B J49 K69 F         7  2149    2269
194    936         MCW   K01,W2                                          7    0936  M K84 K86           7  2284    2286
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SEQ PG LIN  LABEL   OP    OPERANDS                                  SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR

195    943  SWREAD B     TESTRD                                      4  0943  B W71              7  1671
196    947  FNDVAR BCE   GOTVAR,0&X1,_  VARIABLE NAME FOLLOWS?      8  0947  B 981 0|0 _        7   981     000+1
197    955         CHAIN 5                                                                MACRO
198                BCE                                              1  0955  B          GEN     7
199                BCE                                              1  0956  B          GEN     7
200                BCE                                              1  0957  B          GEN     7
201                BCE                                              1  0958  B          GEN     8
202                BCE                                              1  0959  B          GEN     8
203    960         BCE   SKIPIT,0&X1,}  BOTTOM OF STATEMENT (GM)?   8  0960  B J49 0|0 } GMARK   8  2149     000+1
204    968         CHAIN 5                                                                MACRO
205                BCE                                              1  0968  B          GEN     8
206                BCE                                              1  0969  B          GEN     8
207                BCE                                              1  0970  B          GEN     8
208                BCE                                              1  0971  B          GEN     8
209                BCE                                              1  0972  B          GEN     9
210    973         SBR   X1                                         4  0973  H 089              9   089
211    977         B     FNDVAR                                     4  0977  B 947              9   947
212         *
213         * X1 GOT TO WITHIN SIX OF A VARIABLE NAME.  GET DOWN TO
214         * IT EXACTLY.
215         *
216    981  GOTVAR BCE   GOTVR2,0&X1,_                              8  0981  B 997 0|0 _        9   997     000+1
217    989         SBR   X1                                         4  0989  H 089              9   089
218    993         B     GOTVAR                                     4  0993  B 981              9   981
219    997  GOTVR2 SW    1&X1         ONE ABOVE THE UNDERSCORE      4  0997  , 0|1              9   001+1
220  1 001         CW                                               1  1001  )                 10
221  1 002         CW                                               1  1002  )                 10
222  1 003         CW                                               1  1003  )                 10
223  1 004         SAR   X1                                         4  1004  Q 089             10   089
224  1 008         BCE   TOPASG,4&X1,}  AT TOP (LHS) OF ASG STMT IF GM 8  1008  B |31 0|4 } GMARK  10  1031     004+1
225  1 016         LCA   0&X3,0&X2    MOVE UP                      7  1016  L 0?0 0!0          10   000+3   000+2
226  1 023         SBR   X2                                         4  1023  H 094             10   094
227  1 027         CW    1&X2                                       4  1027  ) 0!1             11   001+2
228  1 031  TOPASG SBR   X3,2&X1      TOP OF VARIABLE               7  1031  H 099 0|2          11   099     002+1
229         *
230         * GET DOWN TO PUNCTUATION
231         *
232  1 038  PUNLP  MCW   0&X1,CH                                     7  1038  M 0|0 K87          11   000+1  2287
233  1 045         SAR   X1                                         4  1045  Q 089              11   089
234  1 049         MCW   CH,*&8                                     7  1049  M K87 |63          11  2287    1063
235  1 056         BCE   GOTPUN,PUNCT,0                            8  1056  B |75 K95 0        11  1075    2295
236  1 064         CHAIN 7                                                                MACRO
237                BCE                                              1  1064  B          GEN    11
238                BCE                                              1  1065  B          GEN    12
239                BCE                                              1  1066  B          GEN    12
240                BCE                                              1  1067  B          GEN    12
241                BCE                                              1  1068  B          GEN    12
242                BCE                                              1  1069  B          GEN    12
243                BCE                                              1  1070  B          GEN    12
244  1 071         B     PUNLP                                      4  1071  B |38             12  1038
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SEQ PG LIN  LABEL  OP    OPERANDS                                    SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR
245  1 075  GOTPUN BCE   ASGRHS,CH,#                                    8  1075  B Y06 K87 #         13  1806    2287
246  1 083         BCE   BRACK,2&X1,]                                   8  1083  B |95 0|2 ]         13  1095     002+1
247  1 091         B     NOBRAK                                        4  1091  B |99               13  1099
248  1 095  BRACK  SW    FLAG                                          4  1095  , K96               13  2296
249  1 099  NOBRAK NOP   NOTRD       BRANCH IF NOT DEFINITION         4  1099  N J79               13  2179
250  1 103  AFBRAK SW    2&X1                                          4  1103  , 0|2               13   002+1
251  1 107         ZA    0&X3,W4     HASHING?                          7  1107  ? 0?0 L00           13   000+3  2300
252  1 114         A     4&X1,W4                                       7  1114  A 0|4 L00           14   004+1  2300
253  1 121         MZ    KBNZ3,W4                                      7  1121  Y L04 L00           14  2304    2300
254  1 128         MZ                                                  1  1128  Y                   14
255  1 129         MZ                                                  1  1129  Y                   14
256  1 130         MCW                                                 1  1130  M                   14
257  1 131  POS    S     DIFF-1,W4   SUBTRACT DIFF/10                  7  1131  S 844 L00           14   844    2300
258  1 138         BWZ   POS,W4,B      UNTIL IT'S NEGATIVE            8  1138  V /31 L00 B         14  1131    2300
259  1 146         A     DIFF-1,W4   NOW ADD BACK DIFF/10              7  1146  A 844 L00           15   844    2300
260  1 153         MZ    KNZ,W4                                        7  1153  Y L05 L00           15  2305    2300
261  1 160         MCW   X2,SX1X2                                      7  1160  M 094 L13           15   094    2313
262  1 167         MCW                                                 1  1167  M                   15
263  1 168         MCW   W4,X1       TRIPLE                            7  1168  M L00 089           15  2300     089
264  1 175         A     X1            W4                            4  1175  A 089               15   089
265  1 179         A     W4,X1            TO X1                      7  1179  A L00 089           16  2300     089
266  1 186  GETTOP NOP   0-0         TOPCD9 WITH X1 ZONE TAG STORED HERE  4  1186  N 000           16   000
267  1 190         SAR   X1          TOPCD9 & 3 * W4 RO X1             4  1190  Q 089               16   089
268  1 194         MCW   NOP,SWBIG   TURN OFF ,BEEN AROUND HASH' FLAG   7  1194  M L14 Z73           16  2314    1973
269          *
270          * NOT IN HASH TABLE YET IF BLANK, ELSE CHECK SYMBOL
271          *
272  1 201  SWUN   BCE   ENTER,0&X1,   SWITCHES TO BCE UNDEF....        8  1201  B T02 0|0           16  1302     000+1
273  1 209         BCE   SWBIG,0&X1,<                                   8  1209  B Z73 0|0 <         16  1973     000+1
274  1 217         MCW   0&X1,X2    GET SYMBOL TABLE ENTRY ADDRESS      7  1217  M 0|0 094           17   000+1   094
275  1 224         SAR   X1                                            4  1224  Q 089               17   089
276  1 228         C     0&X3,0&X2  COMPARE SYMBOL TO TABLE             7  1228  C 0?0 0!0           17   000+3   000+2
277  1 235         BU    SWUN                                          5  1235  B S01 /             17  1201
278  1 240         C     0&X2,0&X3                                     7  1240  C 0!0 0?0           17   000+2   000+3
279  1 247         SAR   CWSW&3                                       4  1247  Q S59               17  1259
280  1 251         BU    SWUN                                          5  1251  B S01 /             17  1201
281          *
282          * FOUND SYMBOL IN SYMBOL TABLE
283          *
284  1 256  CWSW   MN    0           CW IN PASS 2 TO SAY *REFERENCED*    4  1256  D 000               18   000
285  1 260         SAR   GETADR&3                                      4  1260  Q S75               18  1275
286  1 264  REX1X2 MCW   SX1X2,X2    MEMORIZE X1 AND X2                7  1264  M L13 094           18  2313     094
287  1 271         MCW                                                 1  1271  M                   18
288  1 272  GETADR LCA   0,0&X2      ADDR FROM SYM TAB REPLACES SYM IN CODE  7  1272  L 000 0!0       18   000     000+2
289  1 279         SBR   X2                                            4  1279  H 094               18   094
290  1 283         CW    1&X2                                          4  1283  ) 0!1               18   001+2
291  1 287         SBR   X3,1&X1                                       7  1287  H 099 0|1           19   099     001+1
292  1 294         SBR   X1                                            4  1294  H 089               19   089
293  1 298  GETSW  B     GETPUN                                        4  1298  B X23               19  1723
294          *
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SEQ PG LIN  LABEL  OP    OPERANDS                                  SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR

295         * ENTER VARIABLE IN HASH TABLE AND SYMBOL TABLE
296         *
297  1 302  ENTER  MCW   83,X2     BOTTOM OF SYMBOL TABLE TO X2        7  1302  M 083 094           19   083     094
298  1 309         MCW   83,0&X1     AND HASH TABLE                   7  1309  M 083 0|0           19   083     000+1
299  1 316         MCW   0&X3,0&X2   SYMBOL TO SYMBOL TABLE           7  1316  M 0?0 0!0           19   000+3   000+2
300  1 323         SBR   X2                                          4  1323  H 094               20   094
301  1 327         BCE   TOOBIG,0&X2,<                               8  1327  B J97 0!0 <         20  2197     000+2
302  1 335         CHAIN 4                                                                 MACRO
303               BCE                                               1  1335  B           GEN     20
304               BCE                                               1  1336  B           GEN     20
305               BCE                                               1  1337  B           GEN     20
306               BCE                                               1  1338  B           GEN     20
307         *
308         * CHECK TYPE OF VARIABLE
309         *
310  1 339         SW    0&X3      AT FIRST CHARACTER OF VARIABLE      4  1339  , 0?0               20   000+3
311  1 343         MCW   0&X3,*&8                                     7  1343  M 0?0 T57           21   000+3  1357
312  1 350         BCE   INTVAR,IJKLMN,0                             8  1350  B !31 L20 0         21  2031    2320
313  1 358         CHAIN 5                                                                 MACRO
314               BCE                                               1  1358  B           GEN     21
315               BCE                                               1  1359  B           GEN     21
316               BCE                                               1  1360  B           GEN     21
317               BCE                                               1  1361  B           GEN     21
318               BCE                                               1  1362  B           GEN     21
319         *
320         * FLOATING-POINT VARIABLE
321         *
322  1 363         MZ    ABZONE,TYPTAG  FLOATING POINT TYPE TAG      7  1363  Y L21 L22           22  2321    2322
323  1 370         BW    SETBRK,FLAG                                 8  1370  V W49 K96 1         22  1649    2296
324  1 378         A     MANTIS,CODSIZ                               7  1378  A 692 853           22   692     853
325  1 385  VAR    C     CODSIZ,KP16K   COMPARE CODSIZ TO 16K        7  1385  C 853 L27           22   853    2327
326  1 392         BH    OKSIZE                                      5  1392  B U25 U             22  1425
327  1 397         BW    OKSIZE,SIZFLG  PRINTED MESSAGE ALREADY?     8  1397  V U25 K34 1         23  1425    2234
328  1 405         CS    332                                         4  1405  / 332               23   332
329  1 409         CS                                                1  1409  /                   23
330  1 410         MCW   ERR2A,270                                   7  1410  M L63 270           23  2363     270
331  1 417         W                                                 1  1417  2                   23
332  1 418         SW    GLOBER,SIZFLG     DONT PRINT MESSAGE TWICE  7  1418  , 184 K34           23   184    2234
333         *
334         * CONVERT CODSIZ TO MACHINE ADDRESS
335         *
336  1 425  OKSIZE MCW   CODSIZ,W5                                    7  1425  M 853 L68           23   853    2368
337  1 432         MCW   X3,SX2X3                                    7  1432  M 099 L76           24   099    2376
338  1 439         MCW                                               1  1439  M                   24
339  1 440         MN    W5,86                                       7  1440  D L68 086           24  2368     086
340  1 447         MN                                                1  1447  D                   24
341  1 448         MN                                                1  1448  D                   24
342  1 449         SAR   *&4            WHY NOT JUST W5-3 IN NEXT A FIELD?  4  1449  Q U56       24  1456
343  1 453         MCW   0,X2           THOUSANDS TO X2              7  1453  M 000 094           24   000     094
344  1 460         MCW   KZ1              AND A ZERO                 4  1460  M L77               25  2377
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SEQ PG LIN  LABEL   OP    OPERANDS                                SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR

345  1 464          A     X2             DOUBLE IT                 4  1464  A 094               25   094
346  1 468          MZ    ZONES&1&X2,86                            7  1468  Y KL7 086           25  2237+2   086
347  1 475          CW                                             1  1475  )                   25
348  1 476          SBR   *&7            WHY NOT JUST 84 IN NEXT B FIELD?  4  1476  H U86       25  1486
349  1 480          MZ    ZONES&X2,0                               7  1480  Y KL6 000           25  2236+2   000
350  1 487          MCW   86,W3                                    7  1487  M 086 L80           25   086    2380
351  1 494  BRKSET  CW    0&X3                                     4  1494  ) 0?0               26   000+3
352  1 498          CS    299                                      4  1498  / 299               26   299
353  1 502          MN    201                                      4  1502  D 201               26   201
354  1 506          MN                                             1  1506  D                   26
355  1 507          SAR   X2             WHY NOT JUST SBR X2,199?  4  1507  Q 094               26   094
356  1 511          SBR   X3,0&X3        WHY?                     7  1511  H 099 0?0           26   099     000+3
357  1 518  MVLP    MCW   0&X3,CH2       MOVE                     7  1518  M 0?0 L81           26   000+3  2381
358  1 525          SAR   X3               VARIABLE TO            4  1525  Q 099               27   099
359  1 529          MCW   CH2,2&X2           201... WHILE         7  1529  M L81 0!2           27  2381     002+2
360  1 536          SBR   X2                   REVERSING TO       4  1536  H 094               27   094
361  1 540          BW    *&5,1&X3               CORRECT ORDER    8  1540  V V52 0?1 1         27  1552     001+3
362  1 548          B     MVLP                                     4  1548  B V18               27  1518
363  1 552          MCW   SX2X3,X3                                 7  1552  M L76 099           27  2376     099
364  1 559          MCW                                            1  1559  M                   27
365  1 560          MCW   86,227                                   7  1560  M 086 227           28   086     227
366  1 567          MCS   CODSIZ,219                               7  1567  Z 853 219           28   853     219
367  1 574          BW    NOVFL1,FLAG                              8  1574  V V94 K96 1         28  1594    2296
368  1 582          W                                              1  1582  2                   28
369  1 583          BCV   *&5                                      5  1583  B V92 @             28  1592
370  1 588          B     *&3                                      4  1588  B V94               28  1594
371  1 592          CC    1                                        2  1592  F 1                 28
372  1 594  NOVFL1  SW    1&X2           WM BELOW VARIABLE IN SYMBOL TABLE  4  1594  , 0!1       29   001+2
373  1 598          LCA   GM               AND GMWM BELOW THAT    4  1598  L M70               29  2470
374  1 602          SBR   GETADR&3        STORE SYMBOL TABLE ADDRESS  4  1602  H S75            29  1275
375  1 606          LCA   W3             STORE VARIABLE ADDRESS IN SYM TAB  4  1606  L L80       29  2380
376  1 610          SBR   83             STORE BOTTOM OF SYMBOL TABLE  4  1610  H 083           29   083
377  1 614          SBR   X2               AND IN X2              4  1614  H 094               29   094
378  1 618          BCE   *&5,SEQCOD-3,D  DO STATEMENT?            8  1618  B W30 K69 D         29  1630    2269
379  1 626          B     *&5                                      4  1626  B W34               30  1634
380  1 630          CW    4&X2           MARK IT REFERENCED        4  1630  ) 0!4               30   004+2
381  1 634          MZ    TYPTAG,2&X2    MOVE TYPE TAG TO SYMBOL TABLE  7  1634  Y L22 0!2       30  2322     002+2
382  1 641          CW    FLAG                                     4  1641  ) K96               30  2296
383  1 645          B     REX1X2                                   4  1645  B S64               30  1264
384         *
385  1 649  SETBRK  MCW   W2,W3                                    7  1649  M K86 L80           30  2286    2380
386  1 656          MCW   KBRACK                                   4  1656  M L82               30  2382
387  1 660          A     KP1,W2                                   7  1660  A L83 K86           31  2383    2286
388  1 667          B     BRKSET                                   4  1667  B U94               31  1494
389         *
390         * TEST FOR A READ STATEMENT (WHICH DEFINES VARIABLES)
391         *
392  1 671  TESTRD  BCE   RDSTMT,SEQCOD-3,1  READ TAPE STATEMENT?  8  1671  B X63 K69 1         31  1763    2269
393  1 679          BCE   RDSTMT,SEQCOD-3,5  READ INPUT TAPE STATEMENT?  8  1679  B X63 K69 5  31  1763    2269
394  1 687          BCE   RDSTMT,SEQCOD-3,L  READ STATEMENT?       8  1687  B X63 K69 L         31  1763    2269
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SEQ PG LIN  LABEL  OP    OPERANDS                                          SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR

395  1 695         MCW   BRANCH,NOBRAK                                       7  1695  M L84 |99           32  2384    1099
396  1 702         MCW   NOP,SWPAR                                           7  1702  M L14 X31           32  2314    1731
397  1 709         MCW   NOP,ASGRHS                                          7  1709  M L14 Y06           32  2314    1806
398  1 716         MCW   NOP,SWDOLR                                          7  1716  M L14 X39           32  2314    1739
399         *
400         * GET X1 DOWN TO UNDERSCORE (VARIABLE) ), $ (SUBSCRIPT) OR GM
401         *
402  1 723  GETPUN BCE   GOTVR2,0&X1,_  VARIABLE?                            8  1723  B 997 0|0 _         32   997     000+1
403  1 731  SWPAR  NOP   UNBRAK,0&X1,)  NOP IF NOT DEFINITION               8  1731  N X95 0|0 )         33  1795     000+1
404  1 739  SWDOLR NOP   SUB,0&X1,$     SUBSCRIPT  NOP IF NOT DEFINITION    8  1739  N Z95 0|0 $         33  1995     000+1
405  1 747  GMTEST BCE   SKIPIT,0&X1,}                                       8  1747  B J49 0|0 } GMARK   33  2149     000+1
406  1 755         SBR   X1                                                  4  1755  H 089               33   089
407  1 759         B     GETPUN                                              4  1759  B X23               33  1723
408         *
409         * READ (INPUT) (TAPE) STATEMENT
410         *
411  1 763  RDSTMT MCW   NOP,NOBRAK                                          7  1763  M L14 |99           33  2314    1099
412  1 770         MCW   BRANCH,SWPAR                                        7  1770  M L84 X31           34  2384    1731
413  1 777         MCW   MOVE,ASGRHS                                         7  1777  M L85 Y06           34  2385    1806
414  1 784         MCW   BRANCH,SWDOLR                                       7  1784  M L84 X39           34  2384    1739
415  1 791         B     GETPUN                                              4  1791  B X23               34  1723
416         *
417  1 795  UNBRAK MCW   NOP,NOBRAK                                          7  1795  M L14 |99           34  2314    1099
418  1 802         B     GMTEST                                              4  1802  B X47               34  1747
419  1 806  ASGRHS NOP   BRANCH,SWPAR  NOP IF NOT DEFINITION                 7  1806  N L84 X31           35  2384    1731
420  1 813         MCW   BRANCH,NOBRAK                                       7  1813  M L84 |99           35  2384    1099
421  1 820         B     AFBRAK                                              4  1820  B /03               35  1103
422         *
423         * UNDEFINED VARIABLE
424         *
425  1 824  UNDEF  CS    299                                                 4  1824  / 299               35   299
426  1 828         SW    GLOBER                                              4  1828  , 184               35   184
427  1 832         MCW   ERR10,230                                           7  1832  M M15 230           35  2415     230
428  1 839         MN    231                                                 4  1839  D 231               35   231
429  1 843         MN                                                        1  1843  D                   36
430  1 844         SAR   X1                                                  4  1844  Q 089               36   089
431  1 848         SBR   X3,0&X3                                            7  1848  H 099 0?0           36   099     000+3
432         *
433         * MOVE THE VARIABLE TO THE PRINT LINE, REVERSING THE TEXT
434         * BACK TO THE CORRECT ORDER
435         *
436  1 855  VARLP  MCW   0&X3,CHVAR                                          7  1855  M 0?0 M16           36   000+3  2416
437  1 862         SAR   X3                                                  4  1862  Q 099               36   099
438  1 866         MCW   CHVAR,2&X1                                          7  1866  M M16 0|2           36  2416     002+1
439  1 873         SBR   X1                                                  4  1873  H 089               36   089
440  1 877         BW    VARLPX,1&X3                                         8  1877  V Y89 0?1 1         37  1889     001+3
441  1 885         B     VARLP                                               4  1885  B Y55               37  1855
442  1 889  VARLPX MN    SEQCOD,255                                          7  1889  D K72 255           37  2272     255
443  1 896         MN                                                        1  1896  D                   37
444  1 897         MN                                                        1  1897  D                   37
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SEQ PG LIN  LABEL   OP    OPERANDS                                        SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR

445  1 898          MCW   STMT  @STATEMENT @                                4  1898  M M26              37  2426
446  1 902          W                                                       1  1902  2                  37
447  1 903          BCV   OVFL2                                            5  1903  B Z12 @            38  1912
448  1 908          B     NOVFL2                                           4  1908  B Z14              38  1914
449  1 912  OVFL2   CC    1                                                2  1912  F 1                38
450  1 914  NOVFL2  SBR   GETADR&3,KZ3                                     7  1914  H S75 K33          38  1275    2233
451  1 921          BM    TOPQR,231                                        8  1921  V Z40 231 K        38  1940     231
452  1 929  ISOPQR  MZ    ABZONE,KZ3-1  SET X3 TAG                         7  1929  Y L21 K32          38  2321    2232
453  1 936          B     REX1X2                                           4  1936  B S64              38  1264
454          *
455  1 940  TOPQR   SW    231                                              4  1940  , 231              39   231
456  1 944          MCW   231,*&8                                          7  1944  M 231 Z58          39   231    1958
457  1 951          BCE   ISOPQR,OPQR,                                     8  1951  B Z29 M30          39  1929    2430
458  1 959          B                                                      1  1959  B                  39
459  1 960          B                                                      1  1960  B                  39
460  1 961          B                                                      1  1961  B                  39
461  1 962          MZ    X2TAG,KZ3-1  SET X2 TAG                          7  1962  Y M31 K32          39  2431    2232
462  1 969          B     REX1X2                                           4  1969  B S64              40  1264
463          *
464          * GOT TO BOTTOM OF HASH TABLE
465          *
466  1 973  SWBIG   NOP   TOOBIG        BRANCH IF ALREADY BEEN AROUND      4  1973  N J97              40  2197
467  1 977          MCW   BRANCH,SWBIG  NOTE WE'VE BEEN AROUND             7  1977  M L84 Z73          40  2384    1973
468  1 984          MCW   BNDRY,X1      BACK TO TOP OF HASH TABLE          7  1984  M 848 089          40   848     089
469  1 991          B     SWUN          GO LOOK SOME MORE                  4  1991  B S01              40  1201
470          *
471          * SUBSCRIPT
472          *
473  1 995  SUB     SBR   SWDOLR&3,SUB2                                    7  1995  H X42 !13          40  1742    2013
474  2 002          MCW   BRANCH,NOBRAK                                    7  2002  M L84 |99          41  2384    1099
475  2 009          B     GMTEST                                           4  2009  B X47              41  1747
476  2 013  SUB2    SBR   SWDOLR&3,SUB                                     7  2013  H X42 Z95          41  1742    1995
477  2 020          MCW   NOP,NOBRAK                                       7  2020  M L14 |99          41  2314    1099
478  2 027          B     GMTEST                                           4  2027  B X47              41  1747
479          *
480          * INTEGER VARIABLE
481          *
482  2 031  INTVAR  MZ    BZONE,TYPTAG  SET INTEGER VARIABLE ADDRESS TAG   7  2031  Y M32 L22          41  2432    2322
483  2 038          BW    SETBRK,FLAG                                      8  2038  V W49 K96 1        42  1649    2296
484  2 046          A     IMOD,CODSIZ   INCREASE CODSIZ BY INT VAR SIZE    7  2046  A 690 853          42   690     853
485  2 053          B     VAR                                              4  2053  B T85              42  1385
486          *
487          * HIT THE BOTTOM OF THE CODE.  EITHER SET UP FOR PASS 2
488          * OR QUIT.
489          *
490  2 057  BOTTOM  MCW   TOPCOD,X1                                         7  2057  M 856 089          42   856     089
491  2 064          CS    0&X2                                             4  2064  / 0!0              42   000+2
492  2 068          CS                                                     1  2068  /                  42
493  2 069  *           SBR  CLEARL&3,GMWM
494  2 076  SWDONE  NOP   DONE                                            4  2069  N J40              42  2140
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SEQ PG LIN  LABEL   OP    OPERANDS                                        SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR

495  2 080          SW    GM                                                4  2073  , M70              43  2470
496  2 084          MCW   BRANCH,SWDONE  EXIT NEXT TIME AROUND              7  2077  M L84 !69          43  2384    2069
497  2 091          MCW   CW,CWSW                                           7  2084  M M33 S56          43  2433    1256
498  2 098          MCW   NOP,SWREAD                                        7  2091  M L14 943          43  2314     943
499  2 105          MCW   NOP,NOBRAK                                        7  2098  M L14 |99          43  2314    1099
500  2 112          SBR   SWUN&3,UNDEF                                      7  2105  H S04 Y24          43  1204    1824
501  2 119          SBR   GETSW&3,FNDVAR                                    7  2112  H T01 947          44  1301     947
502  2 126          CS    0&X2                                              4  2119  / 0!0              44   000+2
503  2 130          SBR   X2,1&X1                                           7  2123  H 094 0|1          44   094     001+1
504  2 137          SBR   TOPCOD                                            4  2130  H 856              44   856
505  2 141          CC    J                                                 2  2134  F J                44
506  2 143          B     LOOP1  GO DO PASS 2                               4  2136  B 879              44   879
507           *
508           * DONE
509           *
510  2 147  DONE    BSS   SNAPSH,C                                         5  2140  B 333 C            44   333
511  2 159          B     LOADNX  LOAD NEXT PHASE WITHOUT CLEARING CORE     4  2145  B 700              45   700
512           *
513           * STATEMENT HAS NO (MORE) VARIABLES -- SKIP IT
514           *
515  2 163  SKIPIT LCA   0&X3,0&X2                                          7  2149  L 0?0 0!0          45   000+3   000+2
516  2 170          SAR   X3                                                4  2156  Q 099              45   099
517  2 174          C     0&X2  DOWN TO                                     4  2160  C 0!0              45   000+2
518  2 178          SAR   X2      NEXT WM IN TARGET                         4  2164  Q 094              45   094
519  2 182          MCW   X3,X1                                           7  2168  M 099 089          45   099     089
520  2 189          B     LOOP1                                             4  2175  B 879              45   879
521           *
522  2 193  NOTRD   SBR   X1,1&X1                                          7  2179  H 089 0|1          46   089     001+1
523  2 200          SBR   X3,1&X3                                          7  2186  H 099 0?1          46   099     001+3
524  2 207          B     GETPUN                                            4  2193  B X23              46  1723
525           *
526           * PROGRAM IS TOO BIG
527           *
528  2 211  TOOBIG  CS    332                                               4  2197  / 332              46   332
529  2 215          CS                                                      1  2201  /                  46
530  2 216          CC    1                                                 2  2202  F 1                46
531  2 218          MCW   ERROR2,270                                        7  2204  M M69 270          46  2469     270
532  2 225          W                                                       1  2211  2                  47
533  2 226          CC    1                                                 2  2212  F 1                47
534  2 228          BCE   HALT,CDOVLY,1                                    8  2214  B K27 700 1        47  2227     700
535  2 236          RWD   1                                                 5  2222  U %U1 R            47   %U1
536  2 241  HALT    H     HALT                                              4  2227  . K27              47  2227
537           *
538           * DATA
539           *
540  2 247  KZ3     DCW   000                                               3  2233                     47
541  2 248  SIZFLG  DC    #1  SET WHEN SIZE MESSAGE PRINTED                 1  2234                     47
542  2 250  ZONES   DCW   @ 9@                                             2  2236                     47
543  2 281          DCW   @9Z9R9I99ZZZRZIZ9RZRRRIR9IZIRIII@                31  2267                     48
544  2 282  X1TAG   DCW   @S@                                               1  2268                     48
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SEQ PG LIN  LABEL  OP    OPERANDS                                          SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR

545  2 286  SEQCOD DCW   #4        SEQUENCE NUMBER AND STATEMENT CODE          4  2272                      48
546  2 296  PREFIX DCW   #10       STATEMENT PREFIX                           10  2282                      49
547  2 298  K01    DCW   01                                                    2  2284                      49
548  2 300  W2     DCW   #2                                                    2  2286                      49
549  2 301  CH     DCW   #1                                                    1  2287                      49
550  2 309  PUNCT  DCW   @@}#*-&),@                                           8  2295                      49
551  2 310  FLAG   DCW   #1                                                    1  2296                      49
552  2 314  W4     DCW   #4                                                    4  2300                      49
553  2 318  KBNZ3  DCW   #4        USED TO GET A BLANK AND THREE "NO ZONE"     4  2304                      50
554  2 319  KNZ    DCW   #1        USED TO GET "NO ZONE"                       1  2305                      50
555  2 327  SX1X2  DCW   #8        SAVE X1 AND X2                              8  2313                      50
556  2 328  NOP    NOP                                                       1  2314  N                   50
557  2 334  IJKLMN DCW   @IJKLMN@                                            6  2320                      50
558  2 335  ABZONE DCW   @A@       X3 TAG, FLOATING POINT TYPE TAG            1  2321                      50
559  2 336  TYPTAG DCW   #1        VARIABLE TYPE TAG                          1  2322                      50
560  2 341  KP16K  DCW   &16000                                              5  2327                      51
561  2 377  ERR2A  DCW   @MESSAGE 2 - OBJECT PROGRAM TOO LARGE@             36  2363                      52
562  2 382  W5     DCW   #5                                                   5  2368                      53
563  2 390  SX2X3  DCW   #8                                                   8  2376                      53
564  2 391  KZ1    DCW   0                                                    1  2377                      53
565  2 394  W3     DCW   #3                                                   3  2380                      53
566  2 395  CH2    DCW   #1                                                   1  2381                      53
567  2 396  KBRACK DCW   @]@                                                 1  2382                      53
568  2 397  KP1    DCW   &1                                                   1  2383                      53
569  2 398  BRANCH B                                                         1  2384  B                   54
570  2 399  MOVE   MCW                                                      1  2385  M                   54
571  2 429  ERR10  DCW   @ERROR 10 - UNDEFINED VARIABLE @                   30  2415                      54
572  2 430  CHVAR  DCW   #1  USED FOR REVERSING VARIABLE TEXT                1  2416                      54
573  2 440  STMT   DCW   @STATEMENT @                                       10  2426                      55
574  2 444  OPQR   DCW   @OPQR@                                              4  2430                      55
575  2 445  X2TAG  DCW   @K@                                                 1  2431                      55
576  2 446  BZONE  DCW   @J@       INTEGER VARIABLE ADDRESS TAG               1  2432                      55
577  2 447  CW     CW                                                        1  2433  )                   55
578  2 492  ERROR2 DCW   @MESSAGE 2 - OBJECT PROGRAM TOO LARGE@             36  2469                      56
579  2 493  GM     DC    @}@                                                 1  2470            GMARK     56
580  2 498         DC    #5                                                  5  2475            GMARK     57
581  2 499  GMWM   DCW   @}@                                                 1  2476            GMARK     57
582                XFR   BEGN16                                                    B 857                   58   857
583         CLRME  CLRA  BEGN16,FREBOT                                                MACRO
            *      CLRA  CLRBOT,CLRTOP[,ORG,GMWMAD]                                   GEN
            *                                                                        GEN
            * CLEAR CORE AFTER A PHASE USING THE CLRTOP ADDRESS                      GEN
            *                                                                        GEN
584                ORG   201                                                        0201
            *                                                                        GEN
            * CLEAR DOWN TO CLRBOT & X00 THE EASY WAY                                GEN
            *                                                                        GEN
585         CLRME  EQU   *&1                                                  0201  GEN
586         )0J006 CS    FREBOT         CLEAR FROM CLRTOP                   4  0201  / N99       GEN     59  2599
587                SBR   )0J006&3                                            4  0205  H 204       GEN     59   204
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SEQ PG LIN  LABEL   OP    OPERANDS                                        SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR

588                 SBR   )0L006&6                                          4  0209  H 250       GEN     59   250
589                 C     )0J006&3,)0M006   DOWN TO CLRBOT & X00?          7  0213  C 204 261   GEN     59   204     261
590                 BU    )0J006                                           5  0220  B 201 /     GEN     59   201
            *                                                                                    GEN
            * NOW CLEAR DOWN TO CLRBOT THE HARD WAY                                              GEN
            *                                                                                    GEN
591         )0K006  C     )0L006&6,)0N006                                  7  0225  C 250 264   GEN     59   250     264
592                 BU    )0L006                                           5  0232  B 244 /     GEN     59   244
593                 CS    LOADNX,)0Q006  LOAD THE NEXT BLOCK AT 1          7  0237  / 700 271   GEN     60   700     271
594         )0L006  LCA   )0P006,0-0     CLEAR WITH BLANK AND WORD MARK   7  0244  L 265 000   GEN     60   265     000
595                 SBR   )0L006&6                                          4  0251  H 250       GEN     60   250
596                 B     )0K006                                           4  0255  B 225       GEN     60   225
597         )0M006  DSA   )0R006         CLRBOT & X00 - 1                 3  0261  899         GEN     60   899
598         )0N006  DSA   BEGN16         CLRBOT                           3  0264  857         GEN     60   857
599         )0P006  DCW   #1                                              1  0265              GEN     60
600                 DC    @CLRA @     IDENTIFY IN A DECK, TAPE, OR DUMP    5  0270              GEN     60
601         )0Q006  DCW   @}@                                             1  0271              GEN     61
602                 ORG   BEGN16&X00                                                 0900
603         )0R006  EQU   *           CLRBOT & X00 - 1                       0899              GEN
604                 XFR   CLRME                                                      B 201               62   201
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| SYMBOL | ADDRESS | SYMBOL | ADDRESS | SYMBOL | ADDRESS | SYMBOL | ADDRESS | SYMBOL | ADDRESS | SYMBOL | ADDRESS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| )0J006 | 0201: 0 | )0K006 | 0225: 0 | )0L006 | 0244: 0 | )0M006 | 0261: 0 | )0N006 | 0264: 0 | )0P006 | 0265: 0 |
| )0Q006 | 0271: 0 | )0R006 | 0899: 0 | )6J005 | 0110: 0 | )6K005 | 0700: 0 | )6L005 | 0704: 0 | )6M005 | 0728: 0 |
| )9J005 | 0253: 0 | )9R005 | 0257: 0 | ABZONE | 2321: 0 | AFBRAK | 1103: 0 | ASGRHS | 1806: 0 | BEGN14 | 0849: 0 |
| BEGN15 | 0857: 0 | BEGN16 | 0857: 0 | BNDRY | 0848: 0 | BOTTOM | 2057: 0 | BRACK | 1095: 0 | BRANCH | 2384: 0 |
| BRKSET | 1494: 0 | BZONE | 2432: 0 | CDOVLY | 0700: 0 | CH | 2287: 0 | CH2 | 2381: 0 | CHVAR | 2416: 0 |
| CLRME | 0201: 0 | CODSIZ | 0853: 0 | CW | 2433: 0 | CWSW | 1256: 0 | DIFF | 0845: 0 | DONE | 2140: 0 |
| ENTER | 1302: 0 | ERR10 | 2415: 0 | ERR2A | 2363: 0 | ERROR2 | 2469: 0 | FLAG | 2296: 0 | FNDVAR | 0947: 0 |
| FREBOT | 2599: 0 | GETADR | 1272: 0 | GETPUN | 1723: 0 | GETSW | 1298: 0 | GETTOP | 1186: 0 | GLOBER | 0184: 0 |
| GM | 2470: 0 | GMTEST | 1747: 0 | GMWM | 2476: 0 | GOTPUN | 1075: 0 | GOTVAR | 0981: 0 | GOTVR2 | 0997: 0 |
| HALT | 2227: 0 | IJKLMN | 2320: 0 | IMOD | 0690: 0 | INTVAR | 2031: 0 | ISOPQR | 1929: 0 | K01 | 2284: 0 |
| KBNZ3 | 2304: 0 | KBRACK | 2382: 0 | KNZ | 2305: 0 | KP1 | 2383: 0 | KP16K | 2327: 0 | KZ1 | 2377: 0 |
| KZ3 | 2233: 0 | LOADAD | 0857: 0 | LOADNX | 0700: 0 | LOOP1 | 0879: 0 | MANTIS | 0692: 0 | MOVE | 2385: 0 |
| MVLP | 1518: 0 | NOBRAK | 1099: 0 | NOP | 2314: 0 | NOTRD | 2179: 0 | NOVFL1 | 1594: 0 | NOVFL2 | 1914: 0 |
| OKSIZE | 1425: 0 | OPQR | 2430: 0 | OVFL2 | 1912: 0 | PHAS16 | 0201: 0 | PHASLD | 0381: 0 | POS | 1131: 0 |
| PREFIX | 2282: 0 | PUNCT | 2295: 0 | PUNLP | 1038: 0 | RDSTMT | 1763: 0 | REX1X2 | 1264: 0 | SEQCOD | 2272: 0 |
| SETBRK | 1649: 0 | SIZFLG | 2234: 0 | SKIPIT | 2149: 0 | SNAPEX | 0564: 0 | SNAPSH | 0333: 0 | STMT | 2426: 0 |
| SUB | 1995: 0 | SUB2 | 2013: 0 | SWBIG | 1973: 0 | SWDOLR | 1739: 0 | SWDONE | 2069: 0 | SWPAR | 1731: 0 |
| SWREAD | 0943: 0 | SWUN | 1201: 0 | SX1X2 | 2313: 0 | SX2X3 | 2376: 0 | TESTRD | 1671: 0 | TOOBIG | 2197: 0 |
| TOPASG | 1031: 0 | TOPCD9 | 0840: 0 | TOPCOD | 0856: 0 | TOPQR | 1940: 0 | TPERR | 0728: 0 | TPREAD | 0704: 0 |
| TYPTAG | 2322: 0 | UNBRAK | 1795: 0 | UNDEF | 1824: 0 | VAR | 1385: 0 | VARLP | 1855: 0 | VARLPX | 1889: 0 |
| W2 | 2286: 0 | W3 | 2380: 0 | W4 | 2300: 0 | W5 | 2368: 0 | X1 | 0089: 0 | X1TAG | 2268: 0 |
| X2 | 0094: 0 | X2TAG | 2431: 0 | X3 | 0099: 0 | ZONES | 2236: 0 | | | | |

UNREFERENCED SYMBOLS

BEGN14 GMWM PHASLD SNAPEX TPERR TPREAD