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

101                JOB   FORTRAN COMPILER -- ARITH PHASE FOUR -- PHASE 36
102                CTL   6611
103         *
104         * STRINGS GENERATED BY ARITH PHASE TWO ARE OPTIMIZED TO REDUCE
105         * THE NUMBER OF TEMPORARY STORAGE AREAS FOR EACH STATEMENT.
106         *
107         * ON ENTRY, X1 IS THE TOP OF THE TOPMOST STATEMENT IN LOW CORE
108         * THAT IS NEITHER AN ASSIGNMENT NOR IF STATEMENT, X2 IS THE TOP
109         * OF THE TOPMOST STATEMENT IN HIGH CORE THAT IS NEITHER AN
110         * ASSIGNMENT NOR IF STATEMENT, X3 IS THE TOP OF THE PREFIX OF
111         * THE TOPMOST STATEMENT IN HIGH COORE THAT IS EITHER AN
112         * ASSIGNMENT OR IF STATEMENT, AND 81-83 IS THE GMWM ABOVE THE
113         * TOPMOST STATEMENT IN HIGH CORE.
114         *
115         * EXCEPT FOR THE LOAD AND CLEAR MACROS, AND GENERATING AN
116         * INSTRUCTION TO BRANCH TO ARITF INSTEAD OF @B700@, THIS IS GARY
117         * MOKOTOFF'S ORIGINAL V3M0 CODE.
118         *
119         X1     EQU   89                                                      0089
120         X2     EQU   94                                                      0094
121         X3     EQU   99                                                      0099
122         *
123         * STUFF IN THE RESIDENT AREA
124         *
125         SAWNEG EQU   123  SAW NEGATION OPERATOR (UNARY MINUS) IF NO WM       0123
126         XNEGTF EQU   SAWNEG                                                 0123
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         *
141         110    DCW   @ARITH FOR@                                        9  0110                  1
142         *
143         * LOAD THIS BLOCK AND THE NEXT ONE
144         *
145         PHAS36 LDPH  ARITH FOR,LOADAD,LOADNX,,,36.1     WVS                     MACRO
            * PHAZ   LDPH [PHASID],LOADAD,ENTAD[,SKIPFG,SKIP],[NUMBER][,HALT]        GEN
            *        XFR  PHASZ     PROHIBITED IN A MACRO                           GEN
            *                                                                       GEN
            * LOAD A BLOCK                                                         GEN
            *                                                                       GEN
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SEQ PG LIN  LABEL   OP    OPERANDS                                          SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR

146         )6J003  EQU   110  PHASE ID                                          0110            GEN
147         )6K003  EQU   700  LOAD NEXT PHASE                                  0700            GEN
148         )6L003  EQU   704  TAPE READ INSTRUCTION                           0704            GEN
149         )6M003  EQU   728  TAPE ERROR HANDLER                              0728            GEN
            *                                                                                  GEN
150                 ORG   201                                                        0201
151         PHAS36  EQU   *&1                                                      0201            GEN
152                 LCA   )9J003,)6J003                                        7   0201  L 252 110 GEN      2   252     110
153                 BCE   )6K003,)6K003,1      Q: LOADING FROM CARDS?          8   0208  B 700 700 1 GEN      2   700     700
154                 BCE   )6K003,)6L003&4,0    Q: LOADING FROM AUTOCODER TAPE? 8   0216  B 700 708 0 GEN      2   700     708
155                 RTW   1,LOADAD             READ THE BLOCK                  8   0224  L %U1 838 R GEN      2   %U1     838
156                 BER   )6M003               Q: TAPE ERROR?                  5   0232  B 728 L     GEN      2   728
157                 CS    LOADNX,)9R003        ENTER THE BLOCK                 7   0237  / 700 258   GEN      3   700     258
158         )9J003  DCW   @ARITH FOR@          PHASE ID                        9   0252            GEN      3
159                 DC    #1                                                   1   0253            GEN      3
160                 DC    @36.1@          PHASE NUMBER                         4   0257            GEN      3
161         )9R003  DCW   @}@                                                  1   0258            GEN      3
162                 XFR   PHAS36                              WVS                  B 201             4   201
163         *
164                 ORG   BEGIN3                                                  0838
165         LOADAD  EQU   *&1                                                      0838
166   4 934 *  START - INITIALIZATION
167   4 935 BEGN36  BCE   FENDX,X2,.                                           8   0838  B R37 094 .         5  2937     094
168   4 936         SW    GM1                                                  4   0846  , K40               5  2240
169   4 937         SBR   SAVX3#3,0&X3                                         7   0850  H R48 0?0           5  2948     000+3
170   4 938         SBR   X1,1&X1                                            7   0857  H 089 0|1           5   089     001+1
171   4 939         SBR   X2,1&X2                                            7   0864  H 094 0!1           5   094     001+2
172   4 940 *  START OF EVERY STATEMENT
173   4 941 NUSTM   S     TBLR                                                 4   0871  S N72               5  2572
174   4 942         C     X2, SAVX3                                            7   0875  C 094 R48           6   094    2948
175   4 943         BE    FENDX                                                5   0882  B R37 S             6  2937
176   4 944         MCW   BLK4,MAXDL                                           7   0887  M ?27 ?07           6  3027    3007
177   4 945         SBR   HEX1#3,0&X1                                         7   0894  H R51 0|0           6  2951     000+1
178   4 946 *  START OF EVERY DELTA STRING
179   4 947 BLKOP   MCW   BLK4, HLDOP#1                                        7   0901  M ?27 R52           6  3027    2952
180   4 948 CWPRT   CW    PRTSW                                                4   0908  ) R36               6  2936
181   4 949         B     FIX          X2 AT HIGH ORDER MINUS ONE              4   0912  B N73               7  2573
182   4 950         BCE   DELT1,LEFT-2,<    12-6-8    X2 AT UNITS POS        8   0916  B 974 ?43 <         7   974    3043
183   4 951 CKDL2   BCE   DELT2,RIGHT-2,<   12-6-8                            8   0924  B /66 ?68 <         7  1166    3068
184   4 952         BCE   OUTPT,1&X2,}      GM                               8   0932  B X33 0!1 } GMARK   7  1733     001+2
185   4 953         BW    BIG,PRTSW                                          8   0940  V T02 R36 1         7  1302    2936
186   4 954 ADD3    A     @I99@,CURDL#3                                      7   0948  A R55 R58           8  2955    2958
187   4 955         MCW   CURDL,X3                                           7   0955  M R58 099           8  2958     099
188   4 956         BCE   ADD3,TABLE&X3,1                                    8   0962  B 948 KD1 1         8   948    2241+3
189   4 957         B     BLKOP                                              4   0970  B 901               8   901
190   4 958 *   DELTA IS LEFT OPERAND
191   4 959 DELT1   BCE   CKDL2,OP,#                                          8   0974  B 924 ?46 #         8   924    3046
192   4 960         BCE   TUF,OP,.                                           8   0982  B T28 ?46 .         9  1328    3046
193   4 961         B     CVTDL                                              4   0990  B P58               9  2758
194   4 962         DCW   LEFT                                               3   0996  ?45                 9  3045
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SEQ PG LIN  LABEL  OP    OPERANDS                                    SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR

195  4 963  D2     B     GETDL            CVT3 HAS DELTA NO OF SOUGHT TEMP    4  0997  B Q37               9  2837
196  4 964         MN    &1,TABLE&X1      MARK DELTA DELETED                  7  1001  D R59 KU1           9  2959    2241+1
197  4 965         LCA   0&X3,HLD35#35                                        7  1008  L 0?0 R94           9   000+3  2994
198  4 966         SAR   X1                                                  4  1015  Q 089               9   089
199  4 967  *   DELETE TEMP
200  4 968  CMP3   C     X1,X2                                               7  1019  C 089 094          10   089     094
201  4 969         BE    HLFT                                                5  1026  B |54 S            10  1054
202  4 970         MVDWN X1,X3                                                                 MACRO
203                LCA   0&X1,0&X3                                           7  1031  L 0|0 0?0   GEN    10   000+1   000+3
204                SAR   X1                                                  4  1038  Q 089       GEN    10   089
205                C     0&X3                                                4  1042  C 0?0       GEN    10   000+3
206                SAR   X3                                                  4  1046  Q 099       GEN    10   099
207  4 971         B     CMP3                                                4  1050  B |19              10  1019
208  4 972  *  X1 # X2 UNITS POSN OF TEMP TO BE OPTIMIZED
209  4 973  * X3 # UNITS OF INSERTION OF OPTIMIZED TEMP
210  4 974  *  INSERT TEMP IN STRING
211  4 975  HLFT   C     0&X2                                                4  1054  C 0!0              11   000+2
212  4 976         SAR   X1               X1 AT HI ORD OF OLD TEMP           4  1058  Q 089              11   089
213  4 977         BW    CW2,PRTSW                                           8  1062  V R28 R36 1        11  2928    2936
214  4 978  CKRT   BCE   NORT,RIGHT,*                                       8  1070  B /01 ?70 *        11  1101    3070
215  4 979         BCE   FST1,OP,#                                          8  1078  B W95 ?46 #        11  1695    3046
216  4 980         LCA   RIGHT,0&X3                                        7  1086  L ?70 0?0          11  3070     000+3
217  4 981         SBR   X3                                                 4  1093  H 099              12   099
218  4 982         CW    1&X3                                              4  1097  ) 0?1              12   001+3
219  4 983  NORT   LCA   OP,0&X3                                           7  1101  L ?46 0?0          12  3046     000+3
220  4 984         SBR   X3                                                 4  1108  H 099              12   099
221  4 985         CW    1&X3                                              4  1112  ) 0?1              12   001+3
222  4 986         LCA   HLD35,0&X3                                        7  1116  L R94 0?0          12  2994     000+3
223  4 987         SBR   X3                                                 4  1123  H 099              12   099
224  4 988         SBR   X2               X2 NOA AT NEW LOC OF TEMP          4  1127  H 094              13   094
225  4 989  *   SHIFT REST OF STATEMENT
226  4 990  LOAD2  LCA   0&X1,0&X3                                           7  1131  L 0|0 0?0          13   000+1   000+3
227  4 991         SAR   X1                                                  4  1138  Q 089              13   089
228  4 992         C     0&X3                                                4  1142  C 0?0              13   000+3
229  4 993         SAR   X3                                                  4  1146  Q 099              13   099
230  4 994         BCE   *&5,1&X1,}    GM                                  8  1150  B /62 0|1 } GMARK  13  1162     001+1
231  4 995         B     LOAD2                                               4  1158  B /31              13  1131
232  4 996         B     BLKOP                                               4  1162  B 901              14   901
233  4 997  *   DELTA IS RIGHT OPERAND
234  4 998  DELT2  BCE   *&5,HLDOP,       BLANK                             8  1166  B /78 R52          14  1178    2952
235  4 999         B     CANU                                                4  1174  B U96              14  1496
236  5 000         BCE   FIRST,OP,#                                          8  1178  B W63 ?46 #        14  1663    3046
237  5 001         FBCEQ COMUT,OP,&,*                                                          MACRO
238                BCE   COMUT, OP, &                                       8  1186  B S14 ?46 & GEN    14  1214    3046
239                BCE   COMUT, OP, *                                       8  1194  B S14 ?46 * GEN    15  1214    3046
240  5 002         BCE   NEGAT,OP,-                                         8  1202  B S39 ?46 -        15  1239    3046
241  5 003         B     CKND                                                4  1210  B V27              15  1527
242  5 004  COMUT  LCA   LEFT,HLD35                                         7  1214  L ?45 R94          15  3045    2994
243  5 005         LCA   RIGHT,LEFT                                        7  1221  L ?70 ?45          15  3070    3045
244  5 006         LCA   HLD35,RIGHT                                       7  1228  L R94 ?70          16  2994    3070
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SEQ PG LIN  LABEL  OP    OPERANDS                                  SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR

245  5 007         B     DELT1                                      4  1235  B 974              16   974
246  5 008  NEGAT  BW    KWM,PRTSW                                  8  1239  V T79 R36 1        16  1379    2936
247  5 009         LCA   LEFT,0&X2                                  7  1247  L ?45 0!0          16  3045     000+2
248  5 010         LCA   @&@                                        4  1254  L R95              16  2995
249  5 011         SBR   X2                                         4  1258  H 094              16   094
250  5 012         CW    2&X2,XNEGTF                                7  1262  ) 0!2 123          17   002+2   123
251  5 013  NEG3   LCA   RIGHT,LEFT                                 7  1269  L ?70 ?45          17  3070    3045
252  5 014         LCA   @***@,RIGHT                               7  1276  L R98 ?70          17  2998    3070
253  5 015         MCW   @N@,OP                                     7  1283  M R99 ?46          17  2999    3046
254  5 016         CW    XNEGTF                                     4  1290  ) 123              17   123
255  5 017         SW    PRTSW                                      4  1294  , R36              17  2936
256  5 018         B     DELT1                                      4  1298  B 974              18   974
257  5 019  *   IN THE MIDDLE OF PARTIALLY OPTIMIZED TEMP
258  5 020  BIG    BCE   TUF,RIGHT,*                                8  1302  B T28 ?70 *        18  1328    3070
259  5 021         MCW   OP,BCE1&7                                  7  1310  M ?46 T24          18  3046    1324
260  5 022  BCE1   BCE   MAYBE,@&-*@@, 0                           8  1317  B T91 ?03 0        18  1391    3003
261  5 023         CHAIN 3                                                                    MACRO
262                BCE                                            1  1325  B                  GEN     18
263                BCE                                            1  1326  B                  GEN     18
264                BCE                                            1  1327  B                  GEN     18
265  5 024  TUF    BW    *&5,PRTSW                                  8  1328  V T40 R36 1        19  1340    2936
266  5 025         B     ADD3                                       4  1336  B 948              19   948
267  5 026         B     KWM                                        4  1340  B T79              19  1379
268  5 027  TUF2   BW    ADJST,2&X2                                 8  1344  V T60 0!2 1        19  1360     002+2
269  5 028         SBR   X2                                         4  1352  H 094              19   094
270  5 029         B     TUF2                                       4  1356  B T44              19  1344
271  5 030  ADJST  SBR   X2,1&X2                                   7  1360  H 094 0!1          19   094     001+2
272  5 031         BCE   OUTPT,1&X2,}          GM                  8  1367  B X33 0!1 } GMARK  20  1733     001+2
273  5 032         B     ADD3                                       4  1375  B 948              20   948
274  5 033  KWM    SBR   KWMXT&3                                   4  1379  H T90              20  1390
275  5 034         CW    1&X2                                       4  1383  ) 0!1              20   001+2
276  5 035  KWMXT  B     0                                          4  1387  B 000              20   000
277  5 036  MAYBE  BCE   *&5,HLDOP,            BLANK               8  1391  B U03 R52          20  1403    2952
278  5 037         B     ADNL                                       4  1399  B U40              20  1440
279  5 038         MCW   OP,HLDOP                                  7  1403  M ?46 R52          21  3046    2952
280  5 039  MESUR  CW    1&X2                                       4  1410  ) 0!1              21   001+2
281  5 040         LCA   RIGHT,0&X2                                 7  1414  L ?70 0!0          21  3070     000+2
282  5 041         SBR   X2                                         4  1421  H 094              21   094
283  5 042         CW    MIDSW#1                                    4  1425  ) ?04              21  3004
284  5 043         SBR   CW5&3,1&X2                                7  1429  H O17 0!1          21  2617     001+2
285  5 044         B     CWPRT                                      4  1436  B 908              21   908
286  5 045  ADNL   FBCEQ HOPE,HLDOP,&,-                                                       MACRO
287         ADNL   BCE   HOPE, HLDOP, &                            8  1440  B U76 R52 &        GEN     22  1476    2952
288                BCE   HOPE, HLDOP, -                            8  1448  B U76 R52 -        GEN     22  1476    2952
289  5 046         FBCEQ MESUR,OP,*,/                                                         MACRO
290                BCE   MESUR, OP, *                             8  1456  B U10 ?46 *        GEN     22  1410    3046
291                BCE   MESUR, OP, /                             8  1464  B U10 ?46 /        GEN     22  1410    3046
292  5 047         B     TUF                                        4  1472  B T28                      22  1328
293  5 048  HOPE   FBCEQ MESUR,OP,&,-                                                         MACRO
294         HOPE   BCE   MESUR, OP, &                            8  1476  B U10 ?46 &        GEN     23  1410    3046
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SEQ PG LIN  LABEL  OP    OPERANDS                                        SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR

295            BCE   MESUR, OP, -                                        8  1484  B U10 ?46 - GEN     23  1410    3046
296  5 049     B     TUF                                                 4  1492  B T28               23  1328
297  5 050  *  DELTA FOUND IN MIDDLE OF LARGE STRING
298  5 051  CANU   MCW   OP,*&8                                          7  1496  M ?46 V10           23  3046    1510
299  5 052        BCE   SWAP,HLDOP,0                                     8  1503  B V75 R52 0         23  1575    2952
300  5 053        FBCEQ HOPE2,HLDOP,&,-                                                MACRO
301            BCE   HOPE2, HLDOP, &                                     8  1511  B V55 R52 & GEN     24  1555    2952
302            BCE   HOPE2, HLDOP, -                                     8  1519  B V55 R52 - GEN     24  1555    2952
303  5 054  CKND   BCE   OUTPT,1&X2,}          GM                       8  1527  B X33 0!1 } GMARK   24  1733     001+2
304  5 055        BW    TUF,PRTSW                                       8  1535  V T28 R36 1         24  1328    2936
305  5 056        BW    ADD3,1&X2                                       8  1543  V 948 0!1 1         25   948     001+2
306  5 057        B     TUF                                             4  1551  B T28               25  1328
307  5 058  HOPE2  FBCEQ SWAP,OP,&,-                                                MACRO
308         HOPE2  BCE   SWAP, OP, &                                     8  1555  B V75 ?46 & GEN     25  1575    3046
309            BCE   SWAP, OP, -                                         8  1563  B V75 ?46 - GEN     25  1575    3046
310  5 059        B     CKND                                            4  1571  B V27               25  1527
311  5 060  *  SHIFT MIDDLE DELTA TO FRONT OF STRING
312  5 061  SWAP   BCE   TUF,OP,@                                        8  1575  B T28 ?46 @         26  1328    3046
313  5 062        BW    KWM,PRTSW                                       8  1583  V T79 R36 1         26  1379    2936
314  5 063        C     0&X2,BLK4                                       7  1591  C 0!0 ?27           26   000+2  3027
315  5 064        SAR   X3                                              4  1598  Q 099               26   099
316  5 065        MCW   0&X3,0&X2                                       7  1602  M 0?0 0!0           26   000+3   000+2
317  5 066        SBR   X2                                              4  1609  H 094               26   094
318  5 067        BCE   NEG2,OP,-                                       8  1613  B W44 ?46 -         27  1644    3046
319  5 068        MCW   OP,0&X2                                         7  1621  M ?46 0!0           27  3046     000+2
320  5 069        MCW   RIGHT                                           4  1628  M ?70               27  3070
321  5 070        C     0&X2                                            4  1632  C 0!0               27   000+2
322  5 071        SBR   X2                  ??? SAR ???                 4  1636  H 094               27   094
323  5 072        B     BLKOP                                           4  1640  B 901               27   901
324  5 073  NEG2   LCA   @&@,0&X2                                       7  1644  L R95 0!0           27  2995     000+2
325  5 074        SBR   X2                                              4  1651  H 094               28   094
326  5 075        SW    PRTSW                                           4  1655  , R36               28  2936
327  5 076        B     NEG3                                            4  1659  B S69               28  1269
328  5 077  FIRST  B     CVTDL                                           4  1663  B P58               28  2758
329  5 078        DCW   RIGHT                                           3  1669  ?70                 28  3070
330  5 079        MCW   RIGHT,MAXDL#3                                   7  1670  M ?70 ?07           28  3070    3007
331  5 080        MCW   CVT3,CURDL                                      7  1677  M ?73 R58           28  3073    2958
332  5 081        A     &1,CURDL                                        7  1684  A R59 R58           29  2959    2958
333  5 082        B     D2                                              4  1691  B 997               29   997
334  5 083  FST1   LCA   HLD35,0&X3                                     7  1695  L R94 0?0           29  2994     000+3
335  5 084        SBR   X2                                              4  1702  H 094               29   094
336  5 085        LCA   OP                                              4  1706  L ?46               29  3046
337  5 086        SBR   X3                                              4  1710  H 099               29   099
338  5 087        CW    1&X3                                            4  1714  ) 0?1               29   001+3
339  5 088        LCA   LEFT,0&X3                                       7  1718  L ?45 0?0           30  3045     000+3
340  5 089        LCA   GM1                                             4  1725  L K40               30  2240
341  5 090        B     BLKOP                                           4  1729  B 901               30   901
342  5 091  *  ALL OPTIMIZATION HAS TAKEN PLACE - OUTPUT STATEMENT
343         *
344         * TAPE BLOCK IS TOO BIG FOR CHM TAU EMULATOR
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SEQ PG LIN  LABEL  OP    OPERANDS                                        SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR

345         *
346         END1   DCW   @}@                                               1  1733            GMARK   30
347                XFR   LOADNX         LOAD THIS                                 B 700             31   700
348         PART2  LDPH  ,OUTPT,BEGN36,,,36.2  LOAD PART2 AND START IN PART 1                      MACRO
            * PHAZ   LDPH [PHASID],LOADAD,ENTAD[,SKIPFG,SKIP],[NUMBER][,HALT]                     GEN
            *        XFR  PHASZ     PROHIBITED IN A MACRO                                         GEN
            *                                                                                     GEN
            * LOAD A BLOCK                                                                       GEN
            *                                                                                     GEN
349         )6K011 EQU   700  LOAD NEXT PHASE                                  0700             GEN
350         )6L011 EQU   704  TAPE READ INSTRUCTION                            0704             GEN
351         )6M011 EQU   728  TAPE ERROR HANDLER                               0728             GEN
            *                                                                                     GEN
352                ORG   201                                                        0201
353         PART2  EQU   *&1                                                   0201             GEN
354                BCE   )6K011,)6K011,1      Q: LOADING FROM CARDS?          8  0201  B 700 700 1 GEN     32   700     700
355                BCE   )6K011,)6L011&4,0    Q: LOADING FROM AUTOCODER TAPE? 8  0209  B 700 708 0 GEN     32   700     708
356                RTW   1,OUTPT             READ THE BLOCK                  8  0217  L %U1 X33 R GEN     32   %U1    1733
357                BER   )6M011               Q: TAPE ERROR?                  5  0225  B 728 L     GEN     32   728
358                CS    BEGN36,)9R011        ENTER THE BLOCK                 7  0230  / 838 242   GEN     32   838     242
359                DC    #1                                                  1  0237            GEN     32
360                DC    @36.2@          PHASE NUMBER                       4  0241            GEN     33
361         )9R011 DCW   @}@                                                 1  0242            GEN     33
362                XFR   PART2                                                     B 201             34   201
363                ORG   END1                                                       1733
364         *
365  5 092  OUTPT  MCW   HEX1,X1                                             7  1733  M R51 089         35  2951     089
366  5 093         SBR   HEX2#3,0&X2                                        7  1740  H ?10 0!0         35  3010     000+2
367  5 094         BCE   NOPTM,2&X2,,       IF STATEMENT                    8  1747  B Y87 0!2 ,       35  1887     002+2
368  5 095         BCE   NOPTM,MAXDL-2,<    12-6-8                          8  1755  B Y87 ?05 <       35  1887    3005
369  5 096         BCE   NOPTM,0&X2,$                                       8  1763  B Y87 0!0 $       35  1887     000+2
370  5 097         BCE   NOPTM,BOP,$                                        8  1771  B Y87 ?45 $       36  1887    3045
371  5 098         BWZ   CKFIX,BOP-1,K                                      8  1779  V Y07 ?44 K       36  1807    3044
372  5 099         BWZ   NOPTM,AOP-1,K                                      8  1787  V Y87 ?69 K       36  1887    3069
373  5 100         BWZ   NOPTM,AOP-1,S                                      8  1795  V Y87 ?69 S       36  1887    3069
374  5 101         B     OPTM                                               4  1803  B Y23             36  1823
375  5 102  CKFIX  BWZ   NOPTM,AOP-1,2                                      8  1807  V Y87 ?69 2       37  1887    3069
376  5 103         BWZ   NOPTM,AOP-1,B                                      8  1815  V Y87 ?69 B       37  1887    3069
377  5 104  *  GENERATE INLINE CODING
378  5 105  OPTM   B     NOPTM                                              4  1823  B Y87             37  1887
379  5 106         LCA   BOP                                                4  1827  L ?45             37  3045
380  5 107         LCA   AOP                                                4  1831  L ?70             37  3070
381  5 108         LCA   @L@                                                4  1835  L ?11             37  3011
382  5 109         SBR   X3                                                 4  1839  H 099             37   099
383  5 110         CW    2&X3,5&X3                                          7  1843  ) 0?2 0?5         38   002+3   005+3
384  5 111         MZ    *-4,3&X3                                           7  1850  Y Y52 0?3         38  1852     003+3
385  5 112         MZ    *-4,6&X3                                           7  1857  Y Y59 0?6         38  1859     006+3
386  5 113         SBR   X1,6&X1                                           7  1864  H 089 0|6         38   089     006+1
387  5 114         LCA   6&X2                                              4  1871  L 0!6             38   006+2
388  5 115         LCA                                                      1  1875  L                 38
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SEQ PG LIN  LABEL  OP    OPERANDS                                  SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR

389  5 116         SBR   X2,6&X2                                     7  1876  H 094 0!6           39   094     006+2
390  5 117         B     NUSTM                                       4  1883  B 871               39   871
391  5 118  *  CANNOT GENERATE INLINE CODING
392  5 119  NOPTM  MCW   @01@,MAXDL                                  7  1887  M ?13 ?07           39  3013    3007
393  5 120         MCW   @001@,X3                                    7  1894  M ?16 099           39  3016     099
394  5 121         MCW   @01@,DL2#2                                 7  1901  M ?13 ?18           39  3013    3018
395  5 122         SBR   X1,4&X1                                    7  1908  H 089 0|4           39   089     004+1
396  5 123         LCA   BARITH              WVS                    4  1915  L ?81               40  3081
397  5 124  CKZRO  BCE   PRODL,TABLE&X3,0                           8  1919  B Z63 KD1 0         40  1963    2241+3
398  5 125  DECR   A     &1,DL2                                      7  1927  A R59 ?18           40  2959    3018
399  5 126         MCW   DL2,MAXDL                                  7  1934  M ?18 ?07           40  3018    3007
400  5 127         MZ    DL2-1,MAXDL                                7  1941  Y ?17 ?07           40  3017    3007
401  5 128         A     &1,X3                                       7  1948  A R59 099           41  2959     099
402  5 129         SW    PRTSW                                       4  1955  , R36               41  2936
403  5 130         B     CKZRO                                       4  1959  B Z19               41  1919
404  5 131  PRODL  LCA   @#@,4&X1                                   7  1963  L ?19 0|4           41  3019     004+1
405  5 132         LCA   MAXDL                                       4  1970  L ?07               41  3007
406  5 133         CW    4&X1                                        4  1974  ) 0|4               41   004+1
407  5 134         C     0&X1,BARITH         WVS                     7  1978  C 0|0 ?81           41   000+1  3081
408  5 135         BE    *&5                                         5  1985  B Z94 S             42  1994
409  5 136         CW    1&X1                                        4  1990  ) 0|1               42   001+1
410  5 137         LCA   GM1,1&X2                                   7  1994  L K40 0!1           42  2240     001+2
411  5 138  CX2    C     0&X2                                        4  2001  C 0!0               42   000+2
412  5 139         SAR   X2                                        4  2005  Q 094               42   094
413  5 140         BCE   KWM2,0&X2,#                                8  2009  B J39 0!0 #         42  2139     000+2
414  5 141         BCE   SUB3,1&X2,$                                8  2017  B J47 0!1 $         43  2147     001+2
415  5 142         MZ    2&X2,2&X1                                   7  2025  Y 0!2 0|2           43   002+2   002+1
416  5 143  BMPX1  SBR   X1,4&X1                                    7  2032  H 089 0|4           43   089     004+1
417  5 144  *  STRING TO OUTPUT AREA
418  5 145  PMOV   MCM   1&X2,1&X1                                   7  2039  P 0!1 0|1           43   001+2   001+1
419  5 146         MN                                                1  2046  D                   43
420  5 147         SBR   X1                                        4  2047  H 089               43   089
421  5 148         MCM   1&X2                                       4  2051  P 0!1               43   001+2
422  5 149         MN                                                1  2055  D                   44
423  5 150         SAR   X2                                        4  2056  Q 094               44   094
424  5 151         BCE   PMOV,0&X2,|                                8  2060  B !39 0!0 |         44  2039     000+2
425  5 152         C     0&X2                                        4  2068  C 0!0               44   000+2
426  5 153         SAR   X2                                        4  2072  Q 094               44   094
427  5 154         MCW   X3,HEX3#3                                 7  2076  M 099 ?22           44   099    3022
428  5 155         MCW   @|@,0&X1                                  7  2083  M ?23 0|0           44  3023     000+1
429  5 156         LCA   0&X2                                       4  2090  L 0!0               45   000+2
430  5 157         SBR   X3                                        4  2094  H 099               45   099
431  5 158         CW    0&X1,1&X3                                   7  2098  ) 0|0 0?1           45   000+1   001+3
432  5 159         C     0&X2                                        4  2105  C 0!0               45   000+2
433  5 160         SAR   X3                                        4  2109  Q 099               45   099
434  5 161         BCE   EOSTR,0&X3,}          GM                   8  2113  B J58 0?0 } GMARK   45  2158     000+3
435  5 162         SBR   X2,0&X3                                    7  2121  H 094 0?0           45   094     000+3
436  5 163         MCW   HEX3,X3                                    7  2128  M ?22 099           46  3022     099
437  5 164         B     DECR                                        4  2135  B Z27               46  1927
438  5 165  KWM2   CW    1&X2                                        4  2139  ) 0!1               46   001+2
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SEQ PG LIN  LABEL  OP    OPERANDS                                  SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR

439  5 166         B     CX2                                         4  2143  B !01               46  2001
440  5 167  SUB3   MZ    3&X2,2&X1                                   7  2147  Y 0!3 0|2           46   003+2   002+1
441  5 168         B     BMPX1                                       4  2154  B !32               46  2032
442  5 169  *  ALL OF STATEMENT TO OUTPUT AREA
443  5 170  EOSTR  C     0&X1,BLK4#4                                 7  2158  C 0|0 ?27           46   000+1  3027
444  5 171         SAR   X1                                          4  2165  Q 089               47   089
445  5 172         LCA   @|@,0&X1                                    7  2169  L ?23 0|0           47  3023     000+1
446  5 173         MCW   0&X2                                        4  2176  M 0!0               47   000+2
447  5 174         MCW   HEX2,X2                                     7  2180  M ?10 094           47  3010     094
448  5 175         BW    DOCOD,6&X2                                  8  2187  V K17 0!6 1         47  2217     006+2
449  5 176         SW    3&X2                                        4  2195  , 0!3               47   003+2
450  5 177         SBR   X1,9&X1                                     7  2199  H 089 0|9           48   089     009+1
451  5 178         LCA   11&X2                                       4  2206  L 0J1               48   011+2
452  5 179         SBR   X2,11&X2                                    7  2210  H 094 0J1           48   094     011+2
453  5 180  DOCOD  SBR   X1,6&X1                                     7  2217  H 089 0|6           48   089     006+1
454  5 181         LCA   6&X2                                       4  2224  L 0!6               48   006+2
455  5 182         LCA                                             1  2228  L                   48
456  5 183         SBR   X2,6&X2                                    7  2229  H 094 0!6           48   094     006+2
457  5 184         B     NUSTM                                       4  2236  B 871               49   871
458  5 185  GM1    DC    @}@          G-M                            1  2240              GMARK  49
459  5 186  TABLE  DA    1X332,C                                        2241   2572              49
460  5 187  TBLR   EQU   *                                              2572
461  5 188  *  GETS OPERAND LEFT, OPERATOR, OPERAND RIGHT
462  5 189  FIX    SBR   FIXT&3                                       4  2573  H P27               57  2727
463  5 190         BCE   SUB1,1&X2,$                                  8  2577  B P28 0!1 $         58  2728     001+2
464  5 191         LCA   3&X2,LEFT#18                                 7  2585  L 0!3 ?45           58   003+2  3045
465  5 192         MCW   4&X2,OP#1                                   7  2592  M 0!4 ?46           58   004+2  3046
466  5 193         SBR   X2,4&X2                                     7  2599  H 094 0!4           58   094     004+2
467  5 194         BW    *&5,MIDSW                                   8  2606  V O18 ?04 1         58  2618    3004
468  5 195  CW5    CW    0                                           4  2614  ) 000               59   000
469  5 196         SW    MIDSW                                       4  2618  , ?04               59  3004
470  5 197         BW    UNARY,1&X2                                  8  2622  V O72 0!1 1         59  2672     001+2
471  5 198         SW    1&X2                                        4  2630  , 0!1               59   001+2
472  5 199         SBR   CW&3,1&X2                                   7  2634  H P23 0!1           59  2723     001+2
473  5 200         MN    0&X2,BCE3&7                                 7  2641  D 0!0 O62           59   000+2  2662
474  5 201         MZ    0&X2,BCE3&7                                 7  2648  Y 0!0 O62           60   000+2  2662
475  5 202  BCE3   BCE   ISTWO,@&-*@.#@,0                           8  2655  B O83 ?52 0         60  2683    3052
476  5 203         CHAIN 5                                                                 MACRO
477               BCE                                               1  2663  B           GEN     60
478               BCE                                               1  2664  B           GEN     60
479               BCE                                               1  2665  B           GEN     60
480               BCE                                               1  2666  B           GEN     60
481               BCE                                               1  2667  B           GEN     60
482  5 204         SW    PRTSW                                       4  2668  , R36               61  2936
483  5 205  UNARY  LCA   @***@,RIGHT                                 7  2672  L R98 ?70           61  2998    3070
484  5 206         B     FIXT                                        4  2679  B P24               61  2724
485  5 207  ISTWO  BCE   SUB1,1&X2,$                                 8  2683  B P28 0!1 $         61  2728     001+2
486  5 208         LCA   3&X2,RIGHT#18                               7  2691  L 0!3 ?70           61   003+2  3070
487  5 209         SBR   X2,3&X2                                     7  2698  H 094 0!3           61   094     003+2
488  5 210         BW    CW,1&X2                                     8  2705  V P20 0!1 1         62  2720     001+2
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SEQ PG LIN  LABEL  OP    OPERANDS                                        SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR

489  5 211         SW    1&X2,PRTSW                                        7  2713  , 0!1 R36          62   001+2  2936
490  5 212  CW     CW    0                                                 4  2720  ) 000              62   000
491  5 213  FIXT   B     0                                                 4  2724  B 000              62   000
492  5 214  SUB1   SBR   SUBXT&3                                          4  2728  H P57              62  2757
493  5 215         SBR   X2,8&X2                                           7  2732  H 094 0!8          62   094     008+2
494  5 216         BCE   SUBXT,3&X2,$                                      8  2739  B P54 0!3 $        63  2754     003+2
495  5 217         SBR   X2,6&X2                                           7  2747  H 094 0!6          63   094     006+2
496  5 218  SUBXT  B     0                                                 4  2754  B 000              63   000
497  5 219  *  CONVERTS ANY DELTA NUMBER TO THREE CHARACTERS
498  5 220  CVTDL  SBR   X1                                                4  2758  H 089              63   089
499  5 221         SBR   CVTXT&3,3&X1                                      7  2762  H Q36 0|3          63  2836     003+1
500  5 222         MCW   2&X1,X1                                           7  2769  M 0|2 089          63   002+1   089
501  5 223         MN    0&X1,CVT3#3                                       7  2776  D 0|0 ?73          64   000+1  3073
502  5 224         MN                                                      1  2783  D                  64
503  5 225         MCW   @0@                                              4  2784  M ?74              64  3074
504  5 226         BWZ   CVTXT,0&X1,2                                      8  2788  V Q33 0|0 2        64  2833     000+1
505  5 227         A     &100,CVT3                                         7  2796  A ?77 ?73          64  3077    3073
506  5 228         BWZ   CVTXT,0&X1,S                                      8  2803  V Q33 0|0 S        64  2833     000+1
507  5 229         A     &100,CVT3                                         7  2811  A ?77 ?73          65  3077    3073
508  5 230         BWZ   CVTXT,0&X1,K                                      8  2818  V Q33 0|0 K        65  2833     000+1
509  5 231         A     &100,CVT3                                         7  2826  A ?77 ?73          65  3077    3073
510  5 232  CVTXT  B     0                                                 4  2833  B 000              65   000
511  5 233  *  FINDS TEMP TO BE OPTIMIZED
512  5 234  GETDL  SBR   GDLXT&3                                          4  2837  H Q73              65  2873
513  5 235         SBR   X3,0&X2                                          7  2841  H 099 0!0          65   099     000+2
514  5 236         MCW   CURDL,X1          X1 HAS CURRENT DELTA            7  2848  M R58 089          66  2958     089
515  5 237         BW    GETWM,PRTSW                                       8  2855  V Q90 R36 1        66  2890    2936
516  5 238  CMP2   C     X1,CVT3                                           7  2863  C 089 ?73          66   089    3073
517  5 239  GDLXT  BE    0                                                 5  2870  B 000 S            66   000
518  5 240         BCE   ADD1,TABLE&X1,1                                   8  2875  B R17 KU1 1        66  2917    2241+1
519  5 241         A     @I99@,X1                                          7  2883  A R55 089          67  2955     089
520  5 242  GETWM  BW    GOTWM,2&X3                                        8  2890  V R06 0?2 1        67  2906     002+3
521  5 243         SBR   X3                                              4  2898  H 099              67   099
522  5 244         B     GETWM                                             4  2902  B Q90              67  2890
523  5 245  GOTWM  SBR   X3,1&X3                                          7  2906  H 099 0?1          67   099     001+3
524  5 246         B     CMP2                                              4  2913  B Q63              67  2863
525  5 247  ADD1   A     @I99@,X1                                          7  2917  A R55 089          68  2955     089
526  5 248         B     CMP2                                              4  2924  B Q63              68  2863
527  5 249  CW2    CW    1&X3                                              4  2928  ) 0?1              68   001+3
528  5 250         B     CKRT                                              4  2932  B |70              68  1070
529  5 251  PRTSW  DC    #1                                                1  2936                     68
530  5 252  FENDX  BSS   SNAPSH,C                                         5  2937  B 333 C            68   333
531                B     LOADNX                                            4  2942  B 700              68   700
532  5 253         LTORG *                                                       2946
            SAVX3  DCW   #03                                               3  2948           AREA    68
            HEX1   DCW   #03                                               3  2951           AREA    69
            HLDOP  DCW   #01                                               1  2952           AREA    69
                   DCW   @I99@                                             3  2955           LIT     69
            CURDL  DCW   #03                                               3  2958           AREA    69
                   DCW   &1                                                1  2959           LIT     69
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SEQ PG LIN  LABEL  OP    OPERANDS                                        SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR
            HLD35  DCW   #35                                              35  2994        AREA    70
                   DCW   @&@                                               1  2995        LIT     70
                   DCW   @***@                                             3  2998        LIT     70
                   DCW   @N@                                               1  2999        LIT     71
                   DCW   @&-*@@                                            4  3003        LIT     71
            MIDSW  DCW   #01                                               1  3004        AREA    71
            MAXDL  DCW   #03                                               3  3007        AREA    71
            HEX2   DCW   #03                                               3  3010        AREA    71
                   DCW   @L@                                               1  3011        LIT     71
                   DCW   @01@                                              2  3013        LIT     71
                   DCW   @001@                                             3  3016        LIT     72
            DL2    DCW   #02                                               2  3018        AREA    72
                   DCW   @#@                                               1  3019        LIT     72
            HEX3   DCW   #03                                               3  3022        AREA    72
                   DCW   @|@                                               1  3023        LIT     72
            BLK4   DCW   #04                                               4  3027        AREA    72
            LEFT   DCW   #18                                              18  3045        AREA    72
            OP     DCW   #01                                               1  3046        AREA    73
                   DCW   @&-*@.#@                                          6  3052        LIT     73
            RIGHT  DCW   #18                                              18  3070        AREA    73
            CVT3   DCW   #03                                               3  3073        AREA    73
                   DCW   @0@                                               1  3074        LIT     73
                   DCW   &100                                              3  3077        LIT     73
533         *                                WVS
534         * RUNTIME ADDRESS                WVS
535         *                                WVS
536         ARITF  EQU   700                 WVS                            0700
537                B                         WVS                         1  3078  B                 73
538         BARITH DC    ARITF               WVS                         3  3081  700               73   700
539  5 254  AOP    EQU   RIGHT                                              3070
540  5 255  BOP    EQU   LEFT                                               3045
541  5 256  SYSGM  DCW   @}@          SYSTEM GROUP MARK                   1  3082              GMARK   74
542  5 257         ORG   *&50                                                    3133
543 *5 258  NDRITH EQU   *                                                  3132
544  5 259         XFR   BEGN36              WVS                                  B 838               75   838
545         CLRME  CLRA  BEGN36,SYSGM        WVS                                                MACRO
            *      CLRA  CLRBOT,CLRTOP[,ORG,GMWMAD]                                             GEN
            *                                                                                   GEN
            * CLEAR CORE AFTER A PHASE USING THE CLRTOP ADDRESS                                 GEN
            *                                                                                   GEN
546                ORG   201                                                      0201
            *                                                                                   GEN
            * CLEAR DOWN TO CLRBOT & X00 THE EASY WAY                           GEN
            *                                                                   GEN
547         CLRME  EQU   *&1                                                 0201               GEN
548         )0J012 CS    SYSGM          CLEAR FROM CLRTOP                   4  0201  / ?82       GEN     76  3082
549                SBR   )0J012&3                                           4  0205  H 204       GEN     76   204
550                SBR   )0L012&6                                           4  0209  H 250       GEN     76   250
551                C     )0J012&3,)0M012   DOWN TO CLRBOT & X00?           7  0213  C 204 261   GEN     76   204     261
552                BU    )0J012                                             5  0220  B 201 /     GEN     76   201
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SEQ PG LIN  LABEL  OP    OPERANDS                                        SFX CT  LOCN  INSTRUCTION TYPE  CARD A-ADDR  B-ADDR

            *                                                                         GEN
            * NOW CLEAR DOWN TO CLRBOT THE HARD WAY                                  GEN
            *                                                                       GEN
553         )0K012 C     )0L012&6,)0N012                                   7  0225  C 250 264  GEN     76   250     264
554                BU    )0L012                                            5  0232  B 244 /     GEN     76   244
555                CS    LOADNX,)0Q012  LOAD THE NEXT BLOCK AT 1           7  0237  / 700 271   GEN     77   700     271
556         )0L012 LCA   )0P012,0-0     CLEAR WITH BLANK AND WORD MARK    7  0244  L 265 000   GEN     77   265     000
557                SBR   )0L012&6                                          4  0251  H 250       GEN     77   250
558                B     )0K012                                            4  0255  B 225       GEN     77   225
559         )0M012 DSA   )0R012         CLRBOT & X00 - 1                  3  0261  899         GEN     77   899
560         )0N012 DSA   BEGN36         CLRBOT                            3  0264  838         GEN     77   838
561         )0P012 DCW   #1                                                1  0265              GEN     77
562                DC    @CLRA @     IDENTIFY IN A DECK, TAPE, OR DUMP     5  0270              GEN     77
563         )0Q012 DCW   @}@                                               1  0271              GEN     78
564                ORG   BEGN36&X00                                                 0900
565         )0R012 EQU   *           CLRBOT & X00 - 1                        0899              GEN
566                XFR   CLRME               WVS                                B 201               79   201
```

SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS
)0J012	0201: 0	)0K012	0225: 0	)0L012	0244: 0	)0M012	0261: 0	)0N012	0264: 0	)0P012	0265: 0
)0Q012	0271: 0	)0R012	0899: 0	)6J003	0110: 0	)6K003	0700: 0	)6K011	0700: 0	)6L003	0704: 0
)6L011	0704: 0	)6M003	0728: 0	)6M011	0728: 0	)9J003	0252: 0	)9R003	0258: 0	)9R011	0242: 0
ADD1	2917: 0	ADD3	0948: 0	ADJST	1360: 0	ADNL	1440: 0	AOP	3070: 0	ARITF	0700: 0
BARITH	3081: 0	BCE1	1317: 0	BCE3	2655: 0	BEGIN3	0838: 0	BEGN36	0838: 0	BIG	1302: 0
BLK4	3027: 0	BLKOP	0901: 0	BMPX1	2032: 0	BOP	3045: 0	CANU	1496: 0	CDOVLY	0700: 0
CKDL2	0924: 0	CKFIX	1807: 0	CKND	1527: 0	CKRT	1070: 0	CKZRO	1919: 0	CLRME	0201: 0
CMP2	2863: 0	CMP3	1019: 0	COMUT	1214: 0	CURDL	2958: 0	CVT3	3073: 0	CVTDL	2758: 0
CVTXT	2833: 0	CW	2720: 0	CW2	2928: 0	CW5	2614: 0	CWPRT	0908: 0	CX2	2001: 0
D2	0997: 0	DECR	1927: 0	DELT1	0974: 0	DELT2	1166: 0	DL2	3018: 0	DOCOD	2217: 0
END1	1733: 0	EOSTR	2158: 0	FENDX	2937: 0	FIRST	1663: 0	FIX	2573: 0	FIXT	2724: 0
FST1	1695: 0	GDLXT	2870: 0	GETDL	2837: 0	GETWM	2890: 0	GM1	2240: 0	GOTWM	2906: 0
HEX1	2951: 0	HEX2	3010: 0	HEX3	3022: 0	HLD35	2994: 0	HLDOP	2952: 0	HLFT	1054: 0
HOPE	1476: 0	HOPE2	1555: 0	ISTWO	2683: 0	KWM	1379: 0	KWM2	2139: 0	KWMXT	1387: 0
LEFT	3045: 0	LOAD2	1131: 0	LOADAD	0838: 0	LOADNX	0700: 0	MAXDL	3007: 0	MAYBE	1391: 0
MESUR	1410: 0	MIDSW	3004: 0	NDRITH	3132: 0	NEG2	1644: 0	NEG3	1269: 0	NEGAT	1239: 0
NOPTM	1887: 0	NORT	1101: 0	NUSTM	0871: 0	OP	3046: 0	OPTM	1823: 0	OUTPT	1733: 0
PART2	0201: 0	PHAS36	0201: 0	PHASLD	0381: 0	PMOV	2039: 0	PRODL	1963: 0	PRTSW	2936: 0
RIGHT	3070: 0	SAVX3	2948: 0	SAWNEG	0123: 0	SNAPEX	0564: 0	SNAPSH	0333: 0	SUB1	2728: 0
SUB3	2147: 0	SUBXT	2754: 0	SWAP	1575: 0	SYSGM	3082: 0	TABLE	2241: 0	TBLR	2572: 0
TOP3	2600: 0	TPERR	0728: 0	TPREAD	0704: 0	TUF	1328: 0	TUF2	1344: 0	UNARY	2672: 0
X1	0089: 0	X2	0094: 0	X3	0099: 0	XNEGTF	0123: 0				

UNREFERENCED SYMBOLS

CDOVLY NDRITH PHASLD SNAPEX TOP3 TPERR TPREAD