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

                          FORTRAN COMPILER -- VARIABLE PHASE TWO -- 14                          PAGE    1

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

 101               JOB   FORTRAN COMPILER -- VARIABLE PHASE TWO -- 14
 102               CTL   6611
 103         *
 104         * THE ENTIRE PROGRAM IS SHIFTED TO THE TOP (LEFTMOST PART) OF
 105         * AVAILABLE STORAGE, LEAVING ROOM FOR SUBSEQUENT COMPILER PHASES.
 106         * THE REMAINING STORAGE IS CLEARED FOR TABLES INCLUDING THE
 107         * ARRAY TABLE GENERATED BY DIMENSION PHASE TWO.
 108         *
 109         * ON ENTRY, 83 IS ONE BELOW THE GM BELOW THE BOTTOM OF
 110         * THE ARRAY TABLE, X1 IS BELOW THE BOTTOM OF THE LAST
 111         * STATEMENT IN SORTED ORDER AT THE BOTTOM OF FREE CORE,
 112         * AND X2 IS ONE BELOW THE BOTTOM OF THE LAST TRANSFORMED
 113         * STATEMENT AT THE TOP OF FREE CORE, IN SORTED ORDER.
 114         *
 115         * ON EXIT, 83 IS TOPCOR-2, X1 IS THE PREFIX OF THE FIRST
 116         * (TOPMOST) STATEMENT, X2 IS X1&1, TOPCD9 (840) IS TOP OF
 117         * CODE & X00 - 1, DIFF (845) IS TOPCOR-1 - TOPCD9, AND
 118         * BNDRY (848) IS TOPCD9 + 0.3 * DIFF
 119         *
 120         X1     EQU   89                                                    0089
 121         X2     EQU   94                                                    0094
 122         X3     EQU   99                                                    0099
 123         *
 124         * STUFF IN THE RESIDENT AREA
 125         *
 126         PHASID EQU   110  PHASE ID, FOR SNAPSHOT DUMPS                     0110
 127         SNAPSH EQU   333  CORE DUMP SNAPSHOT                               0333
 128         TOPCOR EQU   688  TOP CORE ADDRESS FROM PARAM CARD                 0688
 129         LOADNX EQU   700  LOAD NEXT OVERLAY                                0700
 130         CLEARL EQU   707  CS AT START OF OVERLAY LOADER                     0707
 131         CDOVLY EQU   769  1 IF RUNNING FROM CARDS, N IF FROM TAPE          0769
 132         TPREAD EQU   780  TAPE READ INSTRUCTION IN OVERLAY LOADER          0780
 133         LOADXX EQU   793  EXIT FROM OVERLAY LOADER                         0793
 134         CLRBOT EQU   833  BOTTOM OF CORE TO CLEAR IN OVERLAY LOADER        0833
 135         *
 136         FREBOT EQU   2699                                                  2699
 137         *
 138               ORG   838                                                          0838
 139         LOADDD EQU   *&1          LOAD ADDRESS                             0838
 140    840  TOPCD9 DCW   #3  TOP OF CODE & X00 - 1 IS BOTTOM OF HASH        3  0840                      4
 141    845  DIFF   DCW   #5  DIFF = TOPCOR-1 - TOPCD9 IS SIZE OF HASH       5  0845                      4
 142    848  BNDRY  DCW   #3  TOP OF HASH TABLE                              3  0848                      4
 143    849  BEGINN MCW   83,X3                                              7  0849  M 083 099           4
 144    856         BCE   TOOBIG,X1,$                                        8  0856  B /97 089 $         4
 145    864         SBR   TBLBOT,2&X3                                        7  0864  H T42 0?2           4
 146    871         MCW   X2,X3                                              7  0871  M 094 099           5
 147         *
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SEQ PG LIN  LABEL   OP    OPERANDS                                    SFX CT  LOCN  INSTRUCTION TYPE  CARD
148         * CLEAR FROM BELOW THE BOTTOM TRANSFORMED STATEMENT DOWN
149         * TO FREBOT.
150         *
151    878  CLRLP   CS    0&X3                                          4  0878  / 0?0               5
152    882          SBR   X3                                            4  0882  H 099               5
153    886          C     X3,KFREE                                      7  0886  C 099 T45           5
154    893          BU    CLRLP                                         5  0893  B 878 /             5
155         *
156         * MOVE TRANSFORMED STATEMENTS DOWN TO FREBOT
157         *
158    898          SBR   X1,FREBOT                                     7  0898  H 089 O99           5
159    905          MN    0&X1                                          4  0905  D 0|0               5
160    909          SAR   X1                                            4  0909  Q 089               6
161    913  MORE    MCM   0&X2                                          4  0913  P 0!0               6
162    917          SAR   NEXTX2&6                                     4  0917  Q 939               6
163    921          MCM   0&X2,1&X1  MOVE ONE STATEMENT DOWN           7  0921  P 0!0 0|1           6
164    928          MN                                                  1  0928  D                   6
165    929          SBR   X1                                            4  0929  H 089               6
166    933  NEXTX2  SBR   X2,0                                          7  0933  H 094 000           6
167    940          BCE   MORE,0&X1,|  MORE TO DO IF RM                8  0940  B 913 0|0 |         7
168    948          MN    0&X2                                          4  0948  D 0!0               7
169    952          CW                                                  1  0952  )                   7
170    953          SW    0&X1                                          4  0953  , 0|0               7
171    957          C     X2,TBLBOT  DONE MOVING STATEMENTS?            7  0957  C 094 T42           7
172    964          BU    MORE       NO                                 5  0964  B 913 /             7
173         *
174         * X2 IS NOW AT THE BOTTOM OF THE ARRAY TABLE AND
175         * X1 IS AT THE TOP OF THE MOVED-DOWN TRANSFORMED CODE
176         *
177    969          CW    0&X2       WHY CLEAR THIS WM?                 4  0969  ) 0!0               7
178    973          CW                                                  1  0973  )                   8
179    974          SBR   TOPCD9,2&X1                                   7  0974  H 840 0|2           8
180    981          MN    ZONES-32,TOPCD9  99                           7  0981  D T07 840           8
181    988          MN                                                  1  0988  D                   8
182    989          MCW   TOPCOR,X3                                     7  0989  M 688 099           8
183    996          MN    0&X3                                          4  0996  D 0?0               8
184  1 000          SW                                                  1  1000  ,                   8
185  1 001          SAR   83  TOPCOR-2                                 4  1001  Q 083               9
186  1 005          SBR   X3                                            4  1005  H 099               9
187  1 009  CLRLP2  CS    0&X3       CLEAR THE ARRAY TABLE AND          4  1009  / 0?0               9
188  1 013          SBR   X3           TRANSFORMED CODE AT TOP OF CORE  4  1013  H 099               9
189  1 017          C     X3,TOPCD9  DOWN TO TOP OF CODE & X00 ?        7  1017  C 099 840           9
190  1 024          BU    CLRLP2     NO, MORE TO DO                     5  1024  B |09 /             9
191         *
192         * COMPUTE TOPCD9 (HASH TABLE BASE), DIFF (10 * SIZE OF HASH
193         * TABLE) AND BNDRY (TOP OF HASH TABLE)
194         *
195  1 029          MCW   KLESS,0&X3                                    7  1029  M T46 0?0           9
196  1 036          MCW   83,TOCONV                                     7  1036  M 083 T05          10
197  1 043          B     CONV5     CONVERT TOPCOR-1 TO DECIMAL         4  1043  B S31              10
```

```
SEQ PG LIN  LABEL   OP    OPERANDS                                          SFX CT  LOCN  INSTRUCTION TYPE  CARD
198  1 047          MCW   W5,DIFF                                             7  1047  M T51 845           10
199  1 054          MCW   TOPCD9,TOCONV  CONVERT TOPCD9 TO DECIMAL           7  1054  M 840 T05           10
200  1 061          B     CONV5                                              4  1061  B S31               10
201  1 065          S     W5,DIFF   DIFF = TOPCOR-1 - TOPCD9                 7  1065  S T51 845           10
202  1 072          A     DIFF-1,W6   DIFF / 10                              7  1072  A 844 T57           11
203  1 079          A     W6          DIFF / 5                               4  1079  A T57               11
204  1 083          A     DIFF-1,W6   DIFF / 5 + DIFF / 10 = 3 * DIFF / 10   7  1083  A 844 T57           11
205  1 090          A     W5,W6       TOPCD9 + DIFF * 0.3                    7  1090  A T51 T57           11
206  1 097          MCW   W6-3,X3     (TOPCD9 + DIFF * 0.3) / 1000           7  1097  M T54 099           11
207  1 104          A     X3          2 * (TOPCD9 + DIFF * 0.3) / 1000       4  1104  A 099               11
208  1 108          MZ    ZONES-31&X3,W6-2                                   7  1108  Y T?8 T55           12
209  1 115          MZ    ZONES-30&X3,W6  TO MACHINE ADDRESS                 7  1115  Y T?9 T57           12
210  1 122          MCW   W6,X3                                             7  1122  M T57 099           12
211  1 129          SW    2&X3                                               4  1129  , 0?2               12
212  1 133          MCW   KLESS                                              4  1133  M T46               12
213  1 137          SBR   BNDRY                                              4  1137  H 848               12
214  1 141          MCW   X1,X2                                              7  1141  M 089 094           13
215  1 148          MN    0&X2                                               4  1148  D 0!0               13
216  1 152          SAR   X1                                                 4  1152  Q 089               13
217          *
218          * DONE
219          *
220  1 156          BSS   SNAPSH,C                                           5  1156  B 333 C             13
221  1 161          SBR   TPREAD&6,BEGINN                                    7  1161  H 786 849           13
222  1 168          SBR   CLRBOT                                             4  1168  H 833               13
223  1 172          SBR   LOADXX&3,857                                       7  1172  H 796 857           13
224  1 179          SBR   CLEARL&3,GMWM                                      7  1179  H 710 U05           14
225  1 186          LCA   VARBL3,PHASID                                      7  1186  L T66 110           14
226  1 193          B     LOADNX                                             4  1193  B 700               14
227          *
228          * PROGRAM IS TOO BIG
229          *
230  1 197  TOOBIG CS    332                                                4  1197  / 332               14
231  1 201          CS                                                       1  1201  /                   14
232  1 202          CC    1                                                  2  1202  F 1                 14
233  1 204          MCW   ERROR2,270                                         7  1204  M U02 270           14
234  1 211          W                                                        1  1211  2                   15
235  1 212          CC    1                                                  2  1212  F 1                 15
236  1 214          BCE   HALT,CDOVLY,1                                     8  1214  B S27 769 1         15
237  1 222          RWD   1                                                  5  1222  U %U1 R             15
238  1 227  HALT    H     HALT                                               4  1227  . S27               15
239          *
240          * CONVERT TOCONV FROM MACHINE TO DECIMAL
241          *
242  1 231  CONV5   SBR   CONVX&3                                           4  1231  H T00               15
243  1 235          MN    TOCONV,W5                                          7  1235  D T05 T51           15
244  1 242          MN                                                       1  1242  D                   16
245  1 243          MN                                                       1  1243  D                   16
246  1 244          MCW                                                      1  1244  M                   16
247  1 245          MZ    TOCONV,ZONES-32                                    7  1245  Y T05 T07           16
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FORTRAN COMPILER -- VARIABLE PHASE TWO -- 14 PAGE 4

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SEQ PG LIN  LABEL   OP    OPERANDS                                        SFX CT  LOCN  INSTRUCTION TYPE  CARD
248  1 252          MZ    TOCONV-2,ZONES-33                                7  1252  Y T03 T06          16
249  1 259          NOP   ZONES-34                                         4  1259  N T05              16
250  1 263          SAR   X3                                              4  1263  Q 099              16
251  1 267  CONVL   C     4&X3,ZONES-32  LOOK FOR CORRECT ZONES            7  1267  C 0?4 T07          17
252  1 274          SAR   X3                                              4  1274  Q 099              17
253  1 278          A     KP1,W5-3   ADD ONE TO THOUSANDS                 7  1278  A U03 T48          17
254  1 285          BU    CONVL                                           5  1285  B S67 /            17
255  1 290          MZ    KB1,W5-3                                        7  1290  Y U04 T48          17
256  1 297  CONVX   B     0                                               4  1297  B 000              17
257          *
258          * DATA
259          *
260  1 305  TOCONV  DCW   @0J   @                                         5  1305                     17
261  1 339  ZONES   DCW   @9999Z9R9I99ZZZRZIZ9RZRRRIR9IZIRIII@           34  1339                     18
262  1 342  TBLBOT  DCW   #3                                              3  1342                     18
263  1 345  KFREE   DSA   FREBOT                                          3  1345  O99                19
264  1 346  KLESS   DCW   @<@                                            1  1346                     19
265  1 351  W5      DCW   #5                                              5  1351                     19
266  1 357  W6      DCW   #6                                              6  1357                     19
267  1 366  VARBL3  DCW   @VARBL TRI@                                     9  1366                     19
268  1 402  ERROR2  DCW   @MESSAGE 2 - OBJECT PROGRAM TOO LARGE@         36  1402                     20
269  1 403  KP1     DCW   &1                                              1  1403                     20
270  1 404  KB1     DCW   #1                                              1  1404                     20
271  1 405  GMWM    DCW   @}@                                             1  1405             GMARK   20
272                 ORG   201                                                      0201
273    203          DSA   LOADDD    LOAD ADDRESS FOR CARD-TO-TAPE PROGRAM  3  0203  838                21
274                 EX    BEGINN                                                   B 849              22
275                 END                                                            / 000 080
```

SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS
BEGINN	849	BNDRY	848	CDOVLY	769	CLEARL	707	CLRBOT	833	CLRLP	878	CLRLP2	1009
CONV5	1231	CONVL	1267	CONVX	1297	DIFF	845	ERROR2	1402	FREBOT	2699	GMWM	1405
HALT	1227	KB1	1404	KFREE	1345	KLESS	1346	KP1	1403	LOADDD	838	LOADNX	700
LOADXX	793	MORE	913	NEXTX2	933	PHASID	110	SNAPSH	333	TBLBOT	1342	TOCONV	1305
TOOBIG	1197	TOPCD9	840	TOPCOR	688	TPREAD	780	VARBL3	1366	W5	1351	W6	1357
X1	89	X2	94	X3	99	ZONES	1339						