BAC - 220
SYSTEM

Automatic Programing, Burroughs Corp., 460 Sierra Madre Villa, Pasadena, Calif.

March 1962

```
 1                                          LOAD    0000
 2                                          ON      TAPE,1/4999
 3
 4
 5                                                  THE COMPILER GENERATOR
 6
 7                                                  DEFINITIONS FOR THE COMPILER
 8
 9                                  CHAR    IS      179
10                                  SCNCT   IS      225
11                                  VARB    IS      251
12                                  CCCNT   IS      1587
13                                  CCBEG   IS      1618
14                                  IMAGE   IS      1632
15                                  NUTBL   IS      3129
16                                  XONE    IS      4097+2
17                                  SCRTB   IS      4114+2
18                                  SSC     IS      4214+2
19                                  LOCN    IS      4215+2
20                                  MAMAX   IS      4225+2
21                                  HDNG    IS      4517
22
23                                                  DEFINITIONS FOR THE OVERLAY
24
25                                  B       IS      5200+13
26                                  ZERO    IS      5200+27
27                                  LODOX   IS      5200+74
28                                  LIBRARYTABLE
29                                          IS      1857
30                                  NUMB    IS      4800+1335
31                                  LOD2    IS      4800+3127
32                                  POSCT   IS      4800+3384
33                                  HALT    IS      4800+3450
34
35                                                  DEFINITIONS FOR OBJECT PROGRAM CARD LOADER
36
37                                  FIX     IS      4240
38
39
40
41      0000  0 0000 30 0002                BUN     LOAD
42      0001  0 0000 30 0023                BUN     STORE
43      0002  0 0018 50 0000        LOAD    MRW     010
44      0003  0 0004 45 0000                CLB
```

```
45      0004  1 0001 52 0000          1          -MNC     0,0,0
46      0005  0 0000 42 0006                      LDB      $+1
47      0006  0 0001 45 0999                      CLA      999
48      0007  1 0000 12 0000          2          -ADD     0
49      0008  0 0001 21 0007                      DBB      2B,1
50      0009  0 0000 36 0015                      BZA      3F
51      0010  0 0040 09 2355                      SPO      R-CHECK SUM ERROR-
52      0011  0 0001 58 0000                      MPB      0,0
53      0012  0 0272 00 2720                      HLT      2720,0272(44)
54      0013  0 0000 42 0007                      LDB      2B
55      0014  0 0000 30 0004                      BUN      1B
56      0015  0 1101 27 0016          3           DFL      $+1/11,1
57      0016  0 4000 42 0007                      LDB      2B,4(11)
58      0017  0 0999 20 0018                      IBB      $+1,999
59      0018  0 0412 40 0007                      STB      2B/04
60      0019  0 0000 32 0004                      BRP      1B
61      0020  0 1105 27 0016                      DFL      3B+1/11,5
62      0021  0 0410 40 0007                      STA      2B/04
63      0022  0 0000 31 0046                      BOF      THEBEGINNING
64
65
66      0023  0 0018 50 0000          STORE       MRW      010
67      0024  0 0000 42 0025          1           LDB      $+1
68      0025  0 4001 45 0998                      CLA      998,4(11)
69      0026  1 0000 12 0000          2          -ADD      0
70      0027  0 0001 21 0026                      DBB      $-1,1
71      0028  0 0000 42 0026                      LDB      2B
72      0029  1 0000 41 0999                     -LDR      999
73      0030  1 0000 40 0999                     -STA      999
74      0031  1 0000 11 0999                     -CSU      999
75      0032  1 0000 40 0999                     -STA      999
76      0033  1 0000 56 0000                     -MOW      0,0,0
77      0034  1 0001 40 0999                     -STR      999
78      0035  0 0999 20 0036                      IBB      $+1,999
79      0036  0 0412 40 0026                      STB      2B/04
80      0037  0 1101 27 0025                      DFL      1B+1/11,1
81      0038  0 0000 32 0024                      BRP      1B
82      0039  0 0000 31 0040                      BOF      $+1
83      0040  0 0018 50 0000                      MRW      010
84      0041  0 1248 00 8421                      HLT      8421,1248(44)
85      0042  0 0007 45 0000                      CLT
86      0043  0 0410 40 0026                      STA      2B/04
87      0044  0 1106 27 0025                      DFL      1B+1/11,6
88      0045  0 0000 30 0002                      BUN      LOAD
```

```
 89
 90
 91                                          THEBEGINNING
 92        0046   0 0060 09 2349                        SPO     LRT-THE COMPILER GENERATOR-R
 93        0047   0 1101 26 0051                        IFL     20F/11,1
 94        0048   0 1101 26 0049                        IFL     $+1/11,1
 95        0049   0 0000 64 0051                        CRI     20F,0
 96        0050   0 0000 30 0049                        BUN     THEBEGINNING+3
 97        0051   0 0002 62 1517              20        CRF     ALFORMAT,0,2
 98        0052   0 0008 50 0000                        MRW     0
 99        0053   0 0000 44 0115              21        DO      SCAN
             54   0 0000 30 0107
100        0055   0 0010 18 2337                        CFA     -COMME-/00
101        0056   0 0000 35 0134                        BCE     COMMENT
102        0057   0 0010 18 2411                        CFA     -COPYC-/00
103        0058   0 0000 35 0139                        BCE     COMPILERTAPEUNIT
104        0059   0 0010 18 2394                        CFA     -COMPI-/00
105        0060   0 0000 35 0268                        BCE     SETLOCN
106        0061   0 0010 18 2416                        CFA     -GENER-/00
107        0062   0 0000 35 0290                        BCE     VERSION
108        0063   0 0010 18 2302                        CFA     -SETSC-/00
109        0064   0 0000 35 0144                        BCE     SETSCAN
110        0065   0 0010 18 2414                        CFA     -PRINT-/00
111        0066   0 0000 35 0161                        BCE     SETPRINTER
112        0067   0 0010 18 2293                        CFA     -VARIA-/00
113        0068   0 0000 35 0240                        BCE     VARIABLES
114        0069   0 0010 18 2340                        CFA     -CARDP-/00
115        0070   0 0000 35 0167                        BCE     SETPUNCH
116        0071   0 0010 18 2341                        CFA     -CARDR-/00
117        0072   0 0000 35 0172                        BCE     SETREADER
118        0073   0 0010 18 2410                        CFA     -MACHI-/00
119        0074   0 0000 35 0178                        BCE     SETSCRATCH
120        0075   0 0010 18 2420                        CFA     -CORRE-/00
121        0076   0 0000 35 0192                        BCE     SETCORRECTIONS
122        0077   0 0010 18 2393                        CFA     -MEMOR-/00
123        0078   0 0000 35 0225                        BCE     SETSIZE
124        0079   0 0010 18 2397                        CFA     -PROCE-/00
125        0080   0 0000 35 0245                        BCE     SETPROCESSBIT
126        0081   0 0010 18 2335                        CFA     -POSIT-/00
127        0082   0 0000 35 0248                        BCE     SETUPFORPOSITIONFORWARD
128        0083   0 0010 18 2396                        CFA     -PUNCH-/00
129        0084   0 0000 35 0260                        BCE     SETTHEPUNCHLIBRARYBIT
130        0085   0 0010 18 2381                        CFA     -SUPPR-/00
131        0086   0 0000 35 0266                        BCE     THEREGOESTHEHALT
```

```
132     0087  0 0010 18 2365                    CFA     -DELET-/00
133     0088  0 0000 35 0100                    BCE     WHATGOES
134     0089  0 0010 18 2440                    CFA     -INPUT-/00
135     0090  0 0000 35 0603                    BCE     INPUTMEDIA
136     0091  0 0010 18 2291                    CFA     -OUTPU-/00
137     0092  0 0000 35 0767                    BCE     OUTPUTMEDIA
138     0093  0 0010 18 2310                    CFA     -FINIS-/00
139     0094  0 0000 35 0387                    BCE     FINIS
140                                 STATEMENTERROR
141     0095  0 0050 09 2382                    SPO     R-INCORRECT STATEMENT-RRIII
142     0096  0 0160 09 1778                    SPO     INPUT,16
143     0097  0 0010 09 2342                    SPO     RRRRR--
144     0098  0 1370 00 7310                    HLT     7310,1370(44)
145     0099  0 0000 30 0098                    BUN     $-1
146
147
148     0100  0 0000 44 0115     WHATGOES       DO      SCAN
        0101  0 0000 30 0107
149     0102  0 0010 18 2374                    CFA     -EOUTP-/00
150     0103  0 0000 35 0364                    BCE     OUTPUTFORMATS
151     0104  0 0010 18 2418                    CFA     -EINPU-/00
152     0105  0 0000 35 0360                    BCE     INPUTFORMATS
153     0106  0 0000 30 0095                    BUN     STATEMENTERROR
154
155
156     0107  0 0000 46 0116     SCAN.1         CLL     IMAGE.1
157     0108  0 0000 44 0125     3              DO      CHARACTER
        0109  0 0000 30 0117
158     0110  0 0000 49 0008     1              SLA     8
159     0111  0 0000 19 0116                    ADL     IMAGE.1
160     0112  0 0102 27 0110                    DFL     1B/01,2
161     0113  0 0000 32 0108                    BRP     3B
162     0114  0 0000 10 0116                    CAD     IMAGE.1
163     0115  0 0000 30 0115     SCAN           BUN     SCAN
164     0116  0 0000 00 0000     IMAGE.1        (0)
165
166
167                                 CHARACTER.1
168                                             IS      $+1
169     0117  0 0502 26 0133     3              IFL     SCNCT.1/05,2
170     0118  0 9400 28 0133                    DLB     SCNCT.1/94
171     0119  1 0000 10 1778                   -CAD     INPUT
172     0120  0 0000 42 0133                    LDB     SCNCT.1
173     0121  0 0160 21 0126                    DBB     40F,160
```

```
174     0122  1 0000 49 0002                  -SLA     2
175     0123  0 0000 17 2270                   EXT     =11=
176     0124  0 0000 36 0117                   BZA     3B
177     0125  0 0000 30 0125   CHARACTER       BUN     CHARACTER
178     0126  0 0000 41 0051   40              LDR     20B
179     0127  0 1111 40 0128                   STR     $+1/11
180     0128  0 0010 60 1793                   CNC     INPUT+15,0
181     0129  0 0000 10 1793                   CAD     INPUT+15
182     0130  0 0000 46 0133                   CLL     SCNCT.1
183     0131  0 0002 33 0117                   BSA     3B,2
184     0132  0 0000 30 0095                   BUN     STATEMENTERROR
185     0133  0 0000 00 0158   SCNCT.1         (158)
186
187
188     0134  0 0502 27 0133   COMMENT         DFL     SCNCT.1/05,2
189     0135  0 0000 44 0125                   DO      CHARACTER
        0136  0 0000 30 0117
190     0137  0 0213 36 0053                   BFA     21B/02,13
191     0138  0 0000 30 0117                   BUN     CHARACTER.1
192
193
194                           COMPILERTAPEUNIT
195     0139  0 0000 44 0359                   DO      TAPENUMSCAN
        0140  0 0000 30 0352
196     0141  0 0000 49 0007                   SLA     7
197     0142  0 3310 40 1520                   STA     COMPILER/33
198     0143  0 0000 30 0134                   BUN     COMMENT
199
200
201     0144  0 0000 44 0350   SETSCAN         DO      BASICNUMSCAN
        0145  0 0000 30 0337
202     0146  0 0000 40 1676                   STA     HOLD0
203     0147  0 0000 12 1676                   ADD     HOLD0
204     0148  0 0000 49 0006                   SLA     6
205     0149  0 4210 40 2451                   STA     TBL+3/42
206     0150  0 0000 44 0350                   DO      BASICNUMSCAN
        0151  0 0000 30 0337
207     0152  0 0000 40 1676                   STA     HOLD0
208     0153  0 0000 12 1676                   ADD     HOLD0
209     0154  0 0000 49 0006                   SLA     6
210     0155  0 4410 40 2449                   STA     TBL+1/44
211     0156  0 4204 27 2451                   DFL     TBL+3/42,4
212     0157  0 0000 30 0134                   BUN     COMMENT
213     0158  0 0000 10 2449   SETSCAN.1       CAD     TBL+1
```

```
214     0159  1 4410 40 1677                  -STA    1A/44
215     0160  0 0000 30 0514                   BUN    RETURN
216
217
218     0161  0 0000 44 0350    SETPRINTER     DO     BASICNUMSCAN
        0162  0 0000 30 0337
219     0163  0 0000 49 0009                   SLA    9
220     0164  0 1110 40 1801                   STA    PRINTER/11
221     0165  0 1110 40 0792                   STA    UNIT2/11
222     0166  0 0000 30 0134                   BUN    COMMENT
223
224
225     0167  0 0000 44 0350    SETPUNCH       DO     BASICNUMSCAN
        0168  0 0000 30 0337
226     0169  0 0000 49 0009                   SLA    9
227     0170  0 1110 40 1803                   STA    PUNCH/11
228     0171  0 0000 30 0134                   BUN    COMMENT
229
230
231     0172  0 0000 44 0350    SETREADER      DO     BASICNUMSCAN
        0173  0 0000 30 0337
232     0174  0 0000 49 0009                   SLA    9
233     0175  0 1110 40 1823                   STA    READER/11
234     0176  0 1110 40 0621                   STA    UNIT1/11
235     0177  0 0000 30 0134                   BUN    COMMENT
236
237
238     0178  0 0000 44 0359    SETSCRATCH     DO     TAPENUMSCAN
        0179  0 0000 30 0352
239     0180  0 0000 49 0007                   SLA    7
240     0181  0 3310 40 1827                   STA    SCRATCHML/33
241     0182  0 0002 49 0003                   SLS    3
242     0183  0 0000 16 0000                   RND
243     0184  0 0002 48 0010                   SRS    10
244     0185  0 0001 48 0010                   SRT    10
245     0186  0 0000 10 1827                   CAD    SCRATCHML
246     0187  0 0000 12 2441                   ADD    =1(31)=
247     0188  0 0000 37 0190                   BZR    1F
248     0189  0 0000 13 2272                   SUB    =2(31)=
249     0190  0 3310 40 1828    1              STA    SCRATCHDUMP/33
250     0191  0 0000 30 0134                   BUN    COMMENT
251
252
253                            SETCORRECTIONS
```

```
254     0192  0 0000 41 0051                LDR     20B
255     0193  0 1111 40 0195                STR     1F/11
256     0194  0 1111 40 0219                STR     2F/11
257     0195  0 0011 60 1539          1     CNCL    CDR+12,0
258     0196  0 0000 10 1527                CAD     CDR
259     0197  0 0002 33 0134                BSA     COMMENT,2
260     0198  0 0001 45 0000                CLA             CREATE SUM CHECK TOTAL
261     0199  0 0000 42 2442                LDB     =6=
262     0200  1 0000 12 1533         12     -ADD    CDR+6
263     0201  0 0001 21 0200                DBB     12B,1
264     0202  0 0000 36 0206                BZA     $+4
265     0203  0 0060 09 2434                SPO     R-ERRONEOUS CORRECTION CARD-
266     0204  0 9669 00 9669                HLT     9669,9669(44)
267     0205  0 0000 30 0204                BUN     $-1
268
269     0206  0 0000 10 1536                CAD     CDR+9
270     0207  0 0000 42 0223                LDB     K
271     0208  0 0402 26 0386                IFL     KP/04,2
272     0209  1 0000 40 2449                -STA    TBL+1
273     0210  0 0000 10 1535                CAD     CDR+8
274     0211  0 0000 12 1534                ADD     CDR+7
275     0212  0 0000 41 1532                LDR     CDR+5
276     0213  0 0100 37 0217                BFR     3F/01,0
277     0214  0 0102 37 0221                BFR     4F/01,2
278     0215  0 0103 37 1533                BFR     CDR+6/01,3
279     0216  0 0001 43 0000                LSA     1
280     0217  1 0000 40 2448          3     -STA    TBL
281     0218  0 0002 26 0223                IFL     K/00,2
282     0219  0 0010 60 1539          2     CNC     CDR+12,0
283     0220  0 0000 30 0195                BUN     1B
284     0221  0 0003 43 0000          4     LSA     3
285     0222  0 0000 30 0217                BUN     3B
286     0223  0 0000 00 0014          K     (14)
287     0224  0 0000 00 0000    .     MAMAXP  (0)
288
289
290     0225  0 0000 44 0350          SETSIZE DO      BASICNUMSCAN
        0226  0 0000 30 0337
291     0227  0 0200 36 0231                BFA     1F/02,00
292                                        SPO     R-MEMORY SIZE MUST BE GIVEN AS A MULTIPLE- ...
293     0228  0 0120 09 2422                        - OF ONE HUNDRED-RRRI
294     0229  0 1370 00 7310                HLT     7310,1370(44)
295     0230  0 0000 30 0229                BUN     $-1
296     0231  0 0000 12 2443          1     ADD     =9999=
```

```
297     0232  0 8210 40 0239                    STA     RELOCATION/82
298     0233  0 0000 01 0134  OSWITCH          NOP     COMMENT
299     0234  0 0410 40 2459  3                 STA     TBL+11/04
300     0235  0 0000 12 2445                    ADD     =1=
301     0236  0 0410 40 2457                    STA     TBL+9/04
302     0237  0 0410 40 4240                    STA     FIX/04
303     0238  0 0000 30 0134                    BUN     COMMENT
304     0239  0 0000 00 4900  RELOCATION       (4900)
305
306
307     0240  0 0000 44 0350  VARIABLES        DO      BASICNUMSCAN
        0241  0 0000 30 0337
308     0242  0 0000 12 2443                    ADD     =9999=
309     0243  0 6229 26 0233                    IFL     OSWITCH/62,29
310     0244  0 0000 30 0234                    BUN     3B
311
312
313                             SETPROCESSBIT
314     0245  0 0501 26 0247                    IFL     PROCESSBIT/05,1
315     0246  0 0000 30 0134                    BUN     COMMENT
316     0247  0 0000 00 0000  PROCESSBIT       (0)
317
318
319                             SETUPFORPOSITIONFORWARD
320     0248  0 0000 44 0350                    DO      BASICNUMSCAN
        0249  0 0000 30 0337
321     0250  0 0000 40 0256                    STA     COUNT
322     0251  0 0410 40 0259                    STA     2F/04
323     0252  0 0000 42 2279                    LDB     =1F=
324     0253  0 0000 44 0385                    DO      EXTENDTABLE
        0254  0 0000 30 0376
325     0255  0 0000 30 0134                    BUN     COMMENT
326     0256  0 0000 00 0000  COUNT            (0)
327     0257  0 0000 00 0002  1                 (2(04))
328     0258  0 0000 84 0081                   ((POSCT/100)(04)+(POSCT//100)(64))
329     0259  0 0000 01 0000  2                 NOP
330
331
332                             SETTHEPUNCHLIBRARYBIT
333     0260  0 0001 26 0265                    IFL     THEPUNCHLIBRARYBIT/00,1
334     0261  0 0000 44 0350                    DO      BASICNUMSCAN
        0262  0 0000 30 0337
335     0263  0 0000 40 3505                    STA     3500+(NUMBERWORDS//100)(02)
336     0264  0 0000 30 0134                    BUN     COMMENT
```

```
337                                          THEPUNCHLIBRARYBIT
338     0265  0 0000 00 0000                           (0)
339
340
341                                          THEREGOESTHEHALT
342     0266  0 4201 26 2461                           IFL     TBL+13/42,1
343     0267  0 0000 30 0134                           BUN     COMMENT
344
345
346     0268  0 0000 44 0350   SETLOCN       DO      BASICNUMSCAN
        0269  0 0000 30 0337
347     0270  0 0410 40 0283                           STA     2F/04
348     0271  0 0410 40 4241                           STA     FIX+1/04
349     0272  0 0410 40 0285                           STA     4F/04
350     0273  0 0401 27 0285                           DFL     4F/04,1
351     0274  0 0000 49 0004                           SLA     4
352     0275  0 6410 40 0287                           STA     6F/64
353     0276  0 6410 40 0289                           STA     8F/64
354     0277  0 0000 42 2282                           LDB     =1F=
355     0278  0 0000 44 0385                           DO      EXTENDTABLE
        0279  0 0000 30 0376
356     0280  0 0000 30 0134                           BUN     COMMENT
357     0281  0 0000 00 0008   1                       (8)
358     0282  0 0000 74 0052                          ((LODOX/100)(04)+(LODOX//100)(64))
359     0283  0 0000 30 0000   2                       BUN     0
360     0284  0 0000 27 0052                          ((ZERO/100)(04)+(ZERO//100)(64))
361     0285  0 0000 29 0000   4                       RTF     0,00
362     0286  0 0000 21 0042                          (((LOCN+4)/100)(04)+((LOCN+4)//100)(64))
363     0287  0 0000 00 0000   6                       (0)
364     0288  0 0000 32 0016                          ((IMAGE)/100)(04)+((IMAGE)//100)(64)
365     0289  2 0000 00 0000   8                      (20000000000)
366
367
368     0290  0 0000 44 0115   VERSION      DO      SCAN
        0291  0 0000 30 0107
369     0292  0 0010 18 2419                           CFA     -ATEST-/00
370     0293  0 0000 35 0134                           BCE     COMMENT
371     0294  0 0010 18 2338                           CFA     -ATEPA-/00
372     0295  0 0000 35 0308                           BCE     PTVER
373     0296  0 0010 18 2360                           CFA     -ATEHS-/00
374     0297  0 0000 35 0299                           BCE     HSPVER
375     0298  0 0000 30 0095                           BUN     STATEMENTERROR
376
377     0299  0 0000 42 2287   HSPVER       LDB     =1F=
```

```
378     0300  0 0000 44 0385                    DO       EXTENDTABLE
        0301  0 0000 30 0376
379     0302  0 0000 30 0134                    BUN      COMMENT
380     0303  0 0000 00 0004          1         (4)
381     0304  0 0000 17 0045                   ((HDNG/100)(04)+(HDNG//100)(64))
382     0305  0 0000 67 4517                    HPI      HDNG
383     0306  0 0000 22 0045                   (((HDNG+5)/100)(04)+((HDNG+5)//100)(64))
384     0307  4 4523 30 9898                   4BUN      9898,(HDNG+6)(44)
385
386
387     0308  0 0000 42 2288          PTVER     LDB      =1F=
388     0309  0 0000 44 0385                    DO       EXTENDTABLE
        0310  0 0000 30 0376
389     0311  0 0000 30 0134                    BUN      COMMENT
390
391                                             DJ       00
392     0312  0 0000 00 0024          1         (24)
393     0313  3 0000 35 0061                   3J        (NUMB/100)(04)+(NUMB//100)(64)
394     0314  1 0408 27 1677                   -DFL      IA/04,8
395     0315  3 0000 36 0061                   3J        ((NUMB+1)/100)(04)+((NUMB+1)//100)(64)
396     0316  1 0414 26 1677                   -IFL      IA/04,14
397     0317  3 0000 37 0061                   3J        ((NUMB+2)/100)(04)+((NUMB+2)//100)(64)
398     0318  1 0409 27 1677                   -DFL      IA/04,9
399     0319  3 0000 42 0061                   3J        ((NUMB+7)/100)(04)+((NUMB+7)//100)(64)
400     0320  1 0414 26 1677                   -IFL      IA/04,14
401     0321  3 0000 43 0061                   3J        ((NUMB+8)/100)(04)+((NUMB+8)//100)(64)
402     0322  1 0408 27 1677                   -DFL      IA/04,8
403     0323  3 0000 47 0061                   3J        ((NUMB+12)/100)(04)+((NUMB+12)//100)(64)
404     0324  1 0414 26 1677                   -IFL      IA/04,14
405     0325  3 0000 67 0079                   3J        ((LOD2+40)/100)(04)+((LOD2+40)//100)(64)
406     0326  1 4209 27 1677                   -DFL      IA/42,09
407     0327  3 0000 94 0079                   3J        ((LOD2+67)/100)(04)+((LOD2+67)//100)(64)
408     0328  1 0409 27 1677                   -DFL      IA/04,9
409     0329  3 0000 96 0079                   3J        ((LOD2+69)/100)(04)+((LOD2+69)//100)(64)
410     0330  1 0409 27 1677                   -DFL      IA/04,9
411     0331  3 0000 98 0079                   3J        ((LOD2+71)/100)(04)+((LOD2+71)//100)(64)
412     0332  1 0409 27 1677                   -DFL      IA/04,9
413     0333  3 0000 00 0080                   3J        ((LOD2+73)/100)(04)+((LOD2+73)//100)(64)
414     0334  1 0409 27 1677                   -DFL      IA/04,9
415     0335  3 0000 24 0080                   3J        ((LOD2+97)/100)(04)+((LOD2+97)//100)(64)
416     0336  1 4209 27 1677                   -DFL      IA/42,9
417
418
419                                   BASICNUMSCAN.1
```

```
420     0337  0 0000 44 0125                DO      CHARACTER
        0338  0 0000 30 0117
421     0339  0 9108 36 0341                BFA     1F/91,8
422     0340  0 0000 30 0117                BUN     CHARACTER.1
423     0341  0 0000 46 0351  1             CLL     NUMBER
424     0342  0 0001 48 0001  2             SRT     1
425     0343  0 0000 10 0351                CAD     NUMBER
426     0344  0 0001 49 0001                SLT     1
427     0345  0 0000 40 0351                STA     NUMBER
428     0346  0 0000 44 0125                DO      CHARACTER
        0347  0 0000 30 0117
429     0348  0 9108 36 0342                BFA     2B/91,8
430     0349  0 0000 10 0351                CAD     NUMBER
431                                BASICNUMSCAN
432     0350  0 0000 30 0350                BUN     BASICNUMSCAN
433     0351  0 0000 00 0000  NUMBER        (0)
434
435
436                                TAPENUMSCAN.1
437     0352  0 0000 44 0350                DO      BASICNUMSCAN
        0353  0 0000 30 0337
438     0354  0 0000 49 0002                SLA     2
439     0355  0 0000 40 1676                STA     HOLDO
440     0356  0 0000 44 0350                DO      BASICNUMSCAN
        0357  0 0000 30 0337
441     0358  0 0000 12 1676                ADD     HOLDO
442                                TAPENUMSCAN
443     0359  0 0000 30 0359                BUN     TAPENUMSCAN
444
445
446                                INPUTFORMATS
447     0360  0 0000 44 0350                DO      BASICNUMSCAN
        0361  0 0000 30 0337
448     0362  0 0000 12 2444                ADD     =2=
449     0363  0 0000 30 0366                BUN     1F
450
451
452                                OUTPUTFORMATS
453     0364  0 0000 44 0350                DO      BASICNUMSCAN
        0365  0 0000 30 0337
454     0366  0 0000 40 1675  1             STA     HOLD
455     0367  0 0000 42 1675                LDB     HOLD
456     0368  1 0000 42 0372               -LDB     2F
457     0369  0 0000 44 0385                DO      EXTENDTABLE
```

```
        0370  0 0000 30 0376
458     0371  0 0000 30 0134                    BUN     COMMENT
459     0372  0 0000 00 1645          2         F1,F2,F3,F4
        0373  0 0000 00 1658
        0374  0 0000 00 1667
        0375  0 0000 00 1672
460
461
462                                    EXTENDTABLE.1
463     0376  1 0000 10 0000                    -CAD    0
464     0377  0 0412 40 0384                     STB    1F/04
465     0378  0 0401 26 0384                     IFL    1F/04,1
466     0379  0 0000 42 0386                     LDB    KP
467     0380  0 0000 19 0386                     ADL    KP
468     0381  0 0000 19 0223                     ADL    K
469     0382  0 0000 49 0007                     SLA    7
470     0383  0 3210 40 0384                     STA    1F/32
471     0384  0 0000 29 0000          1          RTF    0,0
472                                    EXTENDTABLE
473     0385  0 0000 30 0385                     BUN    EXTENDTABLE
474     0386  0 0000 00 2462          KP         (TBL+14)
475
476
477     0387  0 0000 41 1520          FINIS      LDR    COMPILER
478     0388  0 3211 40 0389                     STR    $+1/32
479     0389  0 2008 50 0000                     MRW    2
480     0390  0 1000 38 0392                     BCS    $+2,1
481     0391  0 6202 26 1424                     IFL    W.1/62,02
482     0392  0 0004 45 0000                     CLB
483     0393  1 0000 41 2448          2         -LDR    TBL
484     0394  0 0811 18 2454                     CFR    TBL+6/08
485     0395  0 0099 37 0403                     BFR    1F/00,99
486     0396  0 0001 35 0402                     BCU    2F
487     0397  1 0000 10 2449                    -CAD    TBL+1
488     0398  0 1200 37 0401                     BFR    $+3/12,00
489     0399  0 0000 12 0239                     ADD    RELOCATION
490     0400  0 0000 13 2421                     SUB    =4900=
491     0401  0 0000 40 0224                     STA    MAMAXP
492     0402  0 0002 20 0393          2          IBB    2B,2
493
494     0403  0 0000 10 0224          1          CAD    MAMAXP
495     0404  0 0000 13 0616                     SUB    IK
496     0405  0 0000 40 0224                     STA    MAMAXP
497     0406  0 0000 12 2445                     ADD    =1=
```

```
498     0407  0 0000 40 0602                  STA     REL
499     0408  0 0000 40 0991                  STA     IREL
500     0409  0 0000 13 0239                  SUB     RELOCATION
501     0410  0 0000 12 2299                  ADD     =5100=
502     0411  0 0000 49 0008                  SLA     8
503     0412  0 0001 48 0002                  SRT     2
504     0413  0 0000 48 0004                  SRA     4
505     0414  0 0001 48 0008                  SRT     8
506     0415  0 0000 10 0616                  CAD     IK
507     0416  0 0000 12 2300                  ADD     =((ITBL**10000)-1)=
508     0417  0 0000 44 0601                  DO      PUTINTABLE
        0418  0 0000 30 0573
509
510     0419  0 0000 10 0224        1         CAD     MAMAXP
511     0420  0 0000 13 0780                  SUB     OK
512     0421  0 0000 40 0224                  STA     MAMAXP
513     0422  0 0000 12 2445                  ADD     =1=
514     0423  0 0000 40 0602                  STA     REL
515     0424  0 0000 40 0992                  STA     OREL
516     0425  0 0000 13 0239                  SUB     RELOCATION
517     0426  0 0000 12 2299                  ADD     =5100=
518     0427  0 0000 49 0008                  SLA     8
519     0428  0 0001 48 0002                  SRT     2
520     0429  0 0000 48 0004                  SRA     4
521     0430  0 0001 48 0008                  SRT     8
522     0431  0 0000 10 0780                  CAD     OK
523     0432  0 0000 12 2294                  ADD     =((OTBL**10000)-1)=
524     0433  0 0000 44 0601                  DO      PUTINTABLE
        0434  0 0000 30 0573
525     0435  0 0000 41 0224                  LDR     MAMAXP
526     0436  0 0001 40 0443                  STR     2F
527     0437  0 0000 42 2290                  LDB     =1F=
528     0438  0 0000 44 0385                  DO      EXTENDTABLE
        0439  0 0000 30 0376
529     0440  0 0000 30 0444                  BUN     0F
530     0441  0 0000 00 0002        1         (2)
531     0442  0 0000 31 0042                (((MAMAX+4)/100)(04)+((MAMAX+4)//100)(64))
532     0443  0 0000 00 0000        2         (0)
533
534     0444  0 0000 42 0256        0         LDB     COUNT
535     0445  0 9999 20 0448        1         IBB     MRD,-1
536     0446  0 2100 58 0000                  MPF     2,1
537     0447  0 0000 30 0445                  BUN     1B
538
```

```
539     0448  0 0101 52 1677        MRD       MNC     IA,0,1
540     0449  0 0001 42 2412                  LBC     =798=
541     0450  0 0000 10 1519        1         CAD     BLCT
542     0451  1 0410 18 3246                  -CFA    TBL+798/04
543     0452  0 0000 35 0496                  BCE     3F
544     0453  0 0002 20 0450        25        IBB     1B,2
545
546     0454  0 0000 42 2297                  LDB     =99=
547     0455  1 0001 10 1677        97        -CAA    IA
548     0456  0 0000 44 0931                  STP     IO.1
549     0457  0 0004 33 0932                  BSA     IO,4
550     0458  0 0001 21 0455        98        DBB     97B,1
551
552     0459  0 0000 42 1519                  LDB     BLCT
553     0460  1 0000 10 2157                  -CAD    SUMTBL
554     0461  0 0410 40 0471                  STA     2F/04
555     0462  0 0002 48 0004                  SRS     4
556     0463  0 0410 40 0467                  STA     4F/04
557     0464  0 0000 40 1676                  STA     HOLD0
558     0465  0 6400 28 1676                  DLB     HOLD0/64
559     0466  0 0001 45 0000                  CLA
560     0467  1 0000 13 0000        4         -SUB    0
561     0468  0 0001 21 0467                  DBB     4B,1
562     0469  0 0000 12 1777                  ADD     IA+100
563     0470  0 0000 46 1777                  CLL     IA+100
564     0471  0 0000 40 0000        2         STA     0
565     0472  0 0000 31 0473                  BOF     $+1
566
567     0473  0 0000 42 2323        MOW       LDB     =IA=
568     0474  0 0000 44 1448                  DO      W
        0475  0 0000 30 1424
569     0476  0 0401 26 1519                  IFL     BLCT/04,1
570     0477  0 0000 10 1519                  CAD     BLCT
571     0478  0 0410 18 2289                  CFA     =52=/04
572     0479  0 0000 35 0483                  BCE     5F
573     0480  0 0410 18 2295                  CFA     =83=/04
574     0481  0 0000 34 0516                  BCH     6F
575     0482  0 0000 30 0448                  BUN     MRD
576
577     0483  0 2201 58 0000        5         MPB     2,2
578     0484  0 2200 52 4800                  MRD     4800,2,2
579     0485  0 0000 46 1777                  CLL     IA+100
580     0486  0 0000 46 4800                  CLL     4800
581     0487  0 0000 42 2317                  LDB     =199=
```

```
582     0488  0 0001 45 0000                    CLA
583     0489  1 0000 13 4800                   -SUB     4800
584     0490  0 0001 21 0489                    DBB     $-1,1
585     0491  0 0000 40 4800                    STA     4800
586     0492  0 2201 58 0000                    MPB     2,2
587     0493  0 2200 56 4800                    MOW     4800,2,2
588     0494  0 0300 58 0000                    MPF     0,3
589     0495  0 0000 30 0448                    BUN     MRD
590
591     0496  1 0000 10 3247          3        -CAD     TBL+799
592     0497  1 0000 41 3246                   -LDR     TBL+798
593     0498  0 0002 40 1676                    STB     HOLD0
594     0499  1 6400 28 3246                   -DLB     TBL+798/64
595     0500  0 1230 37 0512                    BFR     33F/12,30
596     0501  1 0000 40 1677                   -STA     IA
597     0502  0 1220 37 0510                    BFR     30F/12,20
598     0503  0 1200 37 0508                    BFR     $+5/12,00
599     0504  0 0000 43 0000                    LSA     0
600     0505  0 0000 12 0239                    ADD     RELOCATION
601     0506  0 0000 13 2421                    SUB     =4900=
602     0507  1 0410 40 1677                   -STA     IA/04
603     0508  0 0000 42 1676                    LDB     HOLD0
604     0509  0 0000 30 0453                    BUN     25B
605     0510  0 1001 03 1677          30        PRD     IA,1,100
606     0511  0 0000 30 0508                    BUN     $-3
607     0512  0 0000 40 0513          33        STA     $+1
608     0513  0 0000 00 0000                    HLT
609     0514  0 0000 42 1676          RETURN    LDB     HOLD0
610     0515  0 0000 30 0453                    BUN     25B
611
612     0516  0 4400 28 0519          6         DLB     5F/44,0
613     0517  1 0000 29 9500          1        -RTF     9500
614     0518  0 1101 27 0520                    DFL     $+2/11,1
615     0519  0 4500 32 0517          5         BRP     1B,4500(44)
616     0520  0 3000 42 0247                    LDB     PROCESSBIT,3(11)
617     0521  0 0001 21 0993                    DBB     THELIBRARYPROCESSOR,1
618
619     0522  0 0100 52 1677          1         MRD     IA,0,1
620     0523  0 0000 42 2323                    LDB     =IA=
621     0524  0 0000 44 1448                    DO      W
        0525  0 0000 30 1424
622     0526  0 0000 10 1677                    CAD     IA
623     0527  0 0000 18 2277                    CFA     =99999999999=
624     0528  0 0001 35 0522                    BCU     1B
```

```
625
626
627      0529  0 1000 38 0531          CRDUMP.1     BCS      $+2,1
628      0530  0 6202 26 0540                       IFL      15F/62,02
629      0531  0 3000 42 2323          3            LDB      =IA=,3(11)
630      0532  0 0000 29 4500          2            RTF      4500,00
631      0533  0 0000 42 2297                       LDB      =99=
632      0534  1 0001 10 1677          9           -CAA      IA
633      0535  0 0000 44 0931                       STP      IO.1
634      0536  0 0004 33 0932                       BSA      IO,4
635      0537  0 0005 33 0932                       BSA      IO,5
636      0538  0 0001 21 0534                       DBB      9B,1
637      0539  0 0000 42 2323                       LDB      =IA=
638      0540  1 2100 54 0000          15          -MIW      0,2,1
639      0541  0 0001 26 1449                       IFL      THECOUNT/00,1
640      0542  0 8101 26 0532                       IFL      2B/81,1
641      0543  0 1101 27 0531                       DFL      3B/11,1
642      0544  0 0000 32 0531                       BRP      3B
643      0545  0 0000 30 0546          CRDUMP       BUN      $+1
644
645
646                                    ENDOFGENERATION
647      0546  0 0070 09 2324                       SPO      R-END OF GENERATION OF THE COMPILER-R
648      0547  0 0008 50 0000                       MRW      0
649      0548  0 0000 10 1449                       CAD      THECOUNT
650      0549  0 0001 48 0004                       SRT      4
651      0550  0 0001 45 0000                       CLA
652      0551  0 3000 49 0001          1            SLA      1,3(11)
653      0552  0 1109 26 0551                       IFL      $-1/11,9
654      0553  0 0000 12 2269                       ADD      =8=
655      0554  0 0001 49 0001                       SLT      1
656      0555  0 0000 31 0551                       BOF      1B
657      0556  0 0002 43 0000                       LSA      2
658      0557  0 0000 40 1675                       STA      HOLD
659      0558  0 0010 09 1675                       SPO      HOLD,1
660      0559  0 0040 09 2345                       SPO      - BLOCKS ON UNIT 2 -RR
661      0560  0 0000 41 1520                       LDR      COMPILER
662      0561  0 3211 40 0562                       STR      $+1/32
663      0562  0 2008 50 0000                       MRW      2
664      0563  0 0000 42 0265                       LDB      THEPUNCHLIBRARYBIT
665      0564  0 9999 20 0571                       IBB      1F,-1
666      0565  0 0000 42 2446          RELOCATE     LDB      =1000=
667      0566  0 8101 26 0567          5            IFL      $+1/81,1
668      0567  0 0000 29 3400                       RTF      3400,00
```

```
669   0568  0 1101 27 0570                    DFL     6F/11,1
670   0569  0 0000 32 0566                    BRP     5B
671   0570  0 4000 30 1028          6         BUN     READY,4(11)
672   0571  0 0757 00 7250          1         HLT     7250,757(44)
673   0572  0 0000 30 0571                    BUN     $-1
674
675
676                                 PUTINTABLE.1
677   0573  0 0000 40 3249                    STA     TEMP1
678   0574  0 0001 40 3250                    STR     TEMP2
679   0575  0 0000 42 0386          1         LDB     KP
680   0576  0 0000 41 3250                    LDR     TEMP2
681   0577  1 0001 40 0000                   -STR     0
682   0578  0 6400 28 3249                    DLB     TEMP1/64,0
683   0579  1 0001 10 0000                   -CAA
684   0580  0 0008 33 0587                    BSA     $+7,8
685   0581  0 0006 33 0584                    BSA     $+3,6
686   0582  1 0000 10 0000                   -CAD     0
687   0583  0 0000 30 0591                    BUN     $+8
688   0584  0 0001 48 0006                    SRT     6
689   0585  0 0000 12 0602                    ADD     REL
690   0586  0 0001 49 0006                    SLT     6
691   0587  0 0000 12 0602                    ADD     REL
692   0588  1 0010 40 0000                   -STA     0/00
693   0589  0 0001 45 0000                    CLA
694   0590  1 0000 12 0000                   -ADD     0
695   0591  0 0000 42 0386                    LDB     KP
696   0592  1 0000 40 0001                   -STA     1
697   0593  0 6401 26 3249                    IFL     TEMP1/64,1
698   0594  0 6201 26 3250                    IFL     TEMP2/62,1
699   0595  0 0402 26 0386                    IFL     KP/04,2
700   0596  0 0401 27 3249                    DFL     TEMP1/04,1
701   0597  0 0000 31 0599                    BOF     $+2
702   0598  0 0000 30 0600                    BUN     $+2
703   0599  0 0401 26 3250                    IFL     TEMP2/04,1
704   0600  0 0000 32 0575                    BRP     1B
705   0601  0 0000 30 0601    PUTINTABLE    BUN     PUTINTABLE
706   0602  0 0000 00 0000    REL           (0)
707
708
709   0603  0 0000 41 0051    INPUTMEDIA    LDR     20B
710   0604  0 1111 40 0607                    STR     1F/11
711   0605  0 1111 40 0614                    STR     2F/11
712   0606  0 0000 46 0616                    CLL     IK
```

```
713     0607  0 0011 60 1539          1           CNCL    CDR+12,0
714     0608  0 0000 10 1527                      CAD     CDR
715     0609  0 0002 33 0134                      BSA     COMMENT,2
716     0610  0 0000 10 1536                      CAD     CDR+9
717     0611  0 0001 26 0616                      IFL     IK/00,1
718     0612  0 0000 42 0616                      LDB     IK
719     0613  1 0000 40 0616                     -STA     ITBL-1
720     0614  0 0010 60 1539          2           CNC     CDR+12,0
721     0615  0 0000 30 0607                      BUN     1B
722     0616  0 0000 00 0006          IK          (6)
723     0617  0 0000 01 0000          ITBL        NOP
724     0618  8 0000 42 0000                     8LDB     ($-1)-ITBL
725     0619  8 0412 40 0005                     8STB     (1F)-ITBL/04
726     0620  1 4400 28 9999                     -DLB     -1/44
727     0621  1 1010 60 0015          UNIT1      -CNC     15,1
728     0622  0 0000 30 0622          1           BUN     $
729                                               ORIGIN  ITBL+150
730
731
732                                   OUTPUTMEDIA
733     0767  0 0000 41 0051                      LDR     20B
734     0768  0 1111 40 0771                      STR     1F/11
735     0769  0 1111 40 0778                      STR     2F/11
736     0770  0 0000 46 0780                      CLL     OK
737     0771  0 0011 60 1539          1           CNCL    CDR+12,0
738     0772  0 0000 10 1527                      CAD     CDR
739     0773  0 0002 33 0134                      BSA     COMMENT,2
740     0774  0 0000 10 1536                      CAD     CDR+9
741     0775  0 0001 26 0780                      IFL     OK/00,1
742     0776  0 0000 42 0780                      LDB     OK
743     0777  1 0000 40 0780                     -STA     OTBL-1
744     0778  0 0010 60 1539          2           CNC     CDR+12,0
745     0779  0 0000 30 0771                      BUN     1B
746     0780  0 0000 00 0013          OK          (13)
747     0781  0 0000 01 0000          OTBL        NOP
748     0782  8 0000 42 0000                     8LDB     ($-1)-OTBL
749     0783  8 0412 40 0012                     8STB     (1F)-OTBL/04
750     0784  1 0000 10 9999                     -CAD     -1
751     0785  0 0000 48 0006                      SRA     6
752     0786  8 0410 40 0011                     8STA     (2F)-OTBL/04
753     0787  1 0000 10 9998                     -CAD     -2
754     0788  8 4210 40 0011                     8STA     (2F)-OTBL/42
755     0789  0 0000 48 0008                      SRA     8
756     0790  0 0000 13 4100                      SUB     XONE+1
```

```
757     0791  8 0000 19 0011                  8ADL    (2F)-OTBL
758                                   UNIT2     IS      $+1
759     0792  0 2009 61 0000           2         CWR     0,2,0
760     0793  0 0000 30 0793           1         BUN     $
761                                             ORIGIN  OTBL+150
762
763
764
765                                   98        IS      IO.1
766     0931  0 0000 30 0931           IO.1      BUN     IO.1
767     0932  0 6260 36 0947           IO        BFA     CRD/62,60
768     0933  0 6262 36 0947                     BFA     CRD/62,62
769     0934  0 6264 36 0947                     BFA     CRD/62,64
770     0935  0 6261 36 0952                     BFA     CWR/62,61
771     0936  0 6263 36 0952                     BFA     CWR/62,63
772     0937  0 6265 36 0952                     BFA     CWR/62,65
773     0938  0 6250 36 0961                     BFA     UNITLANE/62,50
774     0939  0 5105 36 0974                     BFA     TAPE/51,5
775     0940  0 6244 36 0983                     BFA     STPBUN/62,44
776     0941  0 6230 36 0983                     BFA     STPBUN/62,30
777     0942  0 0000 30 0931                     BUN     98B
778
779
780     0943  0 0001 45 0000           99        CLA
781     0944  1 0000 12 1677                    -ADD     IA
782     0945  1 0000 40 1677                    -STA     IA
783     0946  0 0000 30 0931                     BUN     98B
784
785
786     0947  0 1101 36 0949           CRD       BFA     $+2/11,1
787     0948  0 0000 30 0931                     BUN     98B
788     0949  0 0000 10 1823                     CAD     READER
789     0950  1 1110 40 1677                    -STA     IA/11
790     0951  0 0000 30 0943                     BUN     99B
791
792     0952  0 1101 36 0958           CWR       BFA     1F/11,1
793     0953  0 1102 36 0955                     BFA     $+2/11,2
794     0954  0 0000 30 0931                     BUN     98B
795     0955  0 0000 10 1801                     CAD     PRINTER
796     0956  1 1110 40 1677                    -STA     IA/11
797     0957  0 0000 30 0943                     BUN     99B
798     0958  0 0000 10 1803           1         CAD     PUNCH
799     0959  1 1110 40 1677                    -STA     IA/11
800     0960  0 0000 30 0943                     BUN     99B
```

```
801
802
803      0961  0 1101 36 0964          UNITLANE     BFA      1F/11,1
804      0962  0 1102 36 0970                       BFA      2F/11,2
805      0963  0 0000 30 0931                       BUN      98B
806      0964  0 0000 41 1827          1            LDR      SCRATCHML
807      0965  0 3100 36 0967                       BFA      $+2/31,0
808      0966  0 0000 41 1828                       LDR      SCRATCHDUMP
809      0967  1 3311 40 1677                      -STR      IA/33
810      0968  0 4100 36 0931                       BFA      98B/41,0
811      0969  0 0000 30 0943                       BUN      99B
812      0970  0 0000 41 1520          2            LDR      COMPILER
813      0971  1 3311 40 1677                      -STR      IA/33
814      0972  0 4100 36 0931                       BFA      98B/41,0
815      0973  0 0000 30 0943                       BUN      99B
816
817
818      0974  0 1101 36 0977          TAPE         BFA      1F/11,1
819      0975  0 1102 36 0980                       BFA      2F/11,2
820      0976  0 0000 30 0931                       BUN      98B
821      0977  0 0000 41 1827          1            LDR      SCRATCHML
822      0978  1 1111 40 1677                      -STR      IA/11
823      0979  0 0000 30 0943                       BUN      99B
824      0980  0 0000 41 1520          2            LDR      COMPILER
825      0981  1 1111 40 1677                      -STR      IA/11
826      0982  0 0000 30 0943                       BUN      99B
827
828
829      0983  0 0498 36 0986          STPBUN       BFA      1F/04,98
830      0984  0 0499 36 0988                       BFA      2F/04,99
831      0985  0 0000 30 0931                       BUN      98B
832      0986  0 0000 41 0992          1            LDR      OREL
833      0987  0 0000 30 0989                       BUN      $+2
834      0988  0 0000 41 0991          2            LDR      IREL
835      0989  1 0411 40 1677                      -STR      IA/04
836      0990  0 0000 30 0943                       BUN      99B
837      0991  0 0000 00 0000          IREL         (0)
838      0992  0 0000 00 0000          OREL         (0)
839
840
841                                    THELIBRARYPROCESSOR
842      0993  0 0080 09 2366                       SPO      R-THE LIBRARY PROCESSOR-RRR-ROUTINE NAME-R
843      0994  0 0001 58 0000                       MPB      0,10
844      0995  0 0001 58 0000                       MPB      0,10
```

```
845     0996  0 0001 58 0000          MPB     0,10
846     0997  0 0501 58 0000          MPB     0,5
847     0998  0 0300 52 3996          MRD     3996,0,3
848     0999  0 0000 42 1001          LDB     $+2
849     1000  0 0010 29 2265          RTF     =0=,1
850     1001  0 0990 29 1857          RTF     LIBRARYTABLE,99
851     1002  0 0000 29 1857          RTF     LIBRARYTABLE,100
852     1003  0 3000 29 1857          RTF     LIBRARYTABLE,100,3(11)
853     1004  0 1101 27 1003          DFL     $-1/11,1
854     1005  0 0000 42 2417          LDB     =LIBRARYTABLE=
855     1006  0 0000 44 1448          DO      W
        1007  0 0000 30 1424
856     1008  0 0000 32 1004          BRP     $-4
857     1009  0 0000 44 1192  RD      STP     RDEX
858     1010  0 0000 30 1184          BUN     RDE
859     1011  0 0002 33 1015          BSA     RDP,2
860     1012  0 0040 09 2331          SPO     R-MISSING NAME CARD-II
861     1013  0 1370 00 7310          HLT     7310,1370(44)
862     1014  0 0000 30 1013          BUN     $-1
863     1015  0 0000 44 1211  RDP     STP     SCANX
864     1016  0 0000 30 1193          BUN     SCAN1
865     1017  0 0000 10 1829          CAD     SYMBOL
866     1018  0 0010 18 2310          CFA     -FINIS-/00
867     1019  0 0001 35 1023          BCU     $+4
868     1020  0 0000 10 1830          CAD     SYMBOL+1
869     1021  0 0010 18 2413          CFA     -H-/00
870     1022  0 0000 35 1340          BCE     DONE
871     1023  0 0000 44 1289          STP     SYMBOLINSERTX
872     1024  0 0000 30 1275          BUN     SYMBOLINSERT
873     1025  0 0010 09 2415          SPO     --RIIII
874     1026  0 0020 09 1829          SPO     SYMBOL,2
875     1027  0 0401 26 1797          IFL     LIBRARYINDEX/04,1
876     1028  0 0000 10 1797          CAD     LIBRARYINDEX
877     1029  0 0000 49 0006          SLA     6
878     1030  0 0000 40 3251          STA     WRITEBUFFER
879     1031  0 0000 42 1797          LDB     LIBRARYINDEX
880     1032  0 0000 10 1795          CAD     L
881     1033  1 6410 40 1857         -STA     LIBRARYTABLE/64
882     1034  0 0000 44 1211          STP     SCANX
883     1035  0 0000 30 1193          BUN     SCAN1
884     1036  0 6512 40 1825          STB     RR2/65
885     1037  0 0000 46 1826          CLL     RR3
886     1038  0 0103 26 1826          IFL     RR3/01,3
887     1039  0 0000 10 1829          CAD     SYMBOL
```

```
888     1040  0 2223 36 1045                    BFA     NAME/22,23
889     1041  0 0000 36 1074                    BZA     NAME2
890                                   PUNCTUATIONERROR
891     1042  0 0050 09 2376                    SPO     R-INCORRECT PUNCTUATION-III
892     1043  0 1370 00 7310                    HLT     7310,1370(44)
893     1044  0 0000 30 1043                    BUN     $-1
894
895
896     1045  0 0000 44 1211           NAME     STP     SCANX
897     1046  0 0000 30 1193                    BUN     SCAN1
898     1047  0 0000 10 1829                    CAD     SYMBOL
899     1048  0 0010 18 2309                    CFA     -INTEG-/00
900     1049  0 0000 35 1052                    BCE     1F
901     1050  0 0010 18 2311                    CFA     -BOOLE-/00
902     1051  0 0001 35 1054                    BCU     2F
903     1052  0 2101 26 1825           1        IFL     RR2/21,1
904     1053  0 0000 30 1059                    BUN     3F
905     1054  0 0010 18 2395           2        CFA     -REAL-/00
906     1055  0 0000 35 1059                    BCE     3F
907     1056  0 0010 18 2339                    CFA     -FLOAT-/00
908     1057  0 0000 35 1059                    BCE     3F
909     1058  0 2103 26 1825                    IFL     RR2/21,3
910     1059  0 0000 44 1211           3        STP     SCANX
911     1060  0 0000 30 1193                    BUN     SCAN1
912     1061  0 0000 10 1829                    CAD     SYMBOL
913     1062  0 0000 36 1074                    BZA     NAME2
914     1063  0 2224 36 1065                    BFA     1F/22,24
915     1064  0 0000 30 1042                    BUN     PUNCTUATIONERROR
916     1065  0 0000 44 1211           1        STP     SCANX
917     1066  0 0000 30 1193                    BUN     SCAN1
918     1067  0 0000 10 1829                    CAD     SYMBOL
919     1068  0 0010 18 2309                    CFA     -INTEG-/00
920     1069  0 0000 35 1072                    BCE     1F
921     1070  0 0010 18 2311                    CFA     -BOOLE-/00
922     1071  0 0001 35 1073                    BCU     2F
923     1072  0 0101 26 1826           1        IFL     RR3/01,1
924     1073  0 0103 27 1826           2        DFL     RR3/01,3
925
926
927     1074  0 6400 28 1795           NAME2    DLB     L/64
928     1075  1 0000 46 0000                   -CLL     0
929     1076  0 0000 10 1825                    CAD     RR2
930     1077  1 2110 40 0000                   -STA     0/21
931     1078  0 0000 10 1826                    CAD     RR3
```

```
932     1079   1 0110 40 0000                  -STA    0/01
933     1080   1 1103 26 0000                  -IFL    0/11,3
934     1081   0 0000 46 1796                   CLL    LENGTH
935     1082   0 0000 46 1545                   CLL    EQUIVALENCETABLE
936     1083   0 0000 42 2359                   LDB    =EQUIVALENCETABLE+1=
937     1084   0 0990 29 1545                   RTF    EQUIVALENCETABLE,99
938
939
940     1085   0 0000 44 1192          EQP      STP    RDEX
941     1086   0 0000 30 1184                   BUN    RDE
942     1087   0 0000 33 1121                   BSA    NUMERIC,0
943     1088   0 0000 44 1211                   STP    SCANX
944     1089   0 0000 30 1193                   BUN    SCAN1
945     1090   0 0000 44 1289                   STP    SYMBOLINSERTX
946     1091   0 0000 30 1275                   BUN    SYMBOLINSERT
947     1092   0 0000 44 1211                   STP    SCANX
948     1093   0 0000 30 1193                   BUN    SCAN1
949     1094   0 2233 36 1096                   BFA    EQIV/22,33
950     1095   0 0000 30 1042                   BUN    PUNCTUATIONERROR
951
952     1096   0 0000 44 1211          EQIV     STP    SCANX
953     1097   0 0000 30 1193                   BUN    SCAN1
954     1098   0 0000 18 2298          EQIP     CFA    =100=
955     1099   0 0210 40 1544                   STA    EQUIVALENCEINDEX/02
956     1100   0 0001 34 1104                   BCL    1F
957     1101   0 0060 09 2303                   SPO    R-EQUIVALENCE NUMBER TOO LARGE-I
958     1102   0 1370 00 7310                   HLT    7310,1370(44)
959     1103   0 0000 30 1102                   BUN    $-1
960     1104   0 0000 10 1799          1        CAD    LMAX
961     1105   0 0000 42 1797                   LDB    LIBRARYINDEX
962     1106   1 0000 41 1857                  -LDR    LIBRARYTABLE
963     1107   1 0410 40 1857                  -STA    LIBRARYTABLE/04
964     1108   0 0401 28 1799                   DLB    LMAX/04,1
965     1109   1 0411 40 0001                  -STR    1/04
966     1110   0 0000 10 1795                   CAD    L
967     1111   1 6410 40 0001                  -STA    1/64
968     1112   0 0000 42 1544                   LDB    EQUIVALENCEINDEX
969     1113   1 6410 40 1545                  -STA    EQUIVALENCETABLE/64
970     1114   0 0000 49 0002                   SLA    2
971     1115   0 0000 12 1544                   ADD    EQUIVALENCEINDEX
972     1116   0 0004 43 0000                   LSA    4
973     1117   0 0000 40 1794                   STA    INSTRUCTION
974     1118   0 0000 44 1258                   STP    WRITX
975     1119   0 0000 30 1251                   BUN    WRIT
```

```
 976      1120   0 0000 30 1085                    BUN     EQP
 977
 978
 979      1121   0 0000 46 1800          NUMERIC   CLL     NI
 980      1122   0 0000 46 1488                    CLL     ADDRESS
 981      1123   0 0001 45 0000          2         CLA
 982      1124   0 9910 40 1815                    STA     READ+8/99
 983      1125   0 0101 27 1815          8         DFL     READ+8/01,1
 984      1126   0 4401 26 1815                    IFL     READ+8/44,1
 985      1127   0 0000 32 1134                    BRP     1F
 986      1128   0 1010 60 1822                    CNC     READ+15,1
 987      1129   0 0000 10 1807                    CAD     READ
 988      1130   0 0000 33 1123                    BSA     2B,0
 989      1131   0 0040 09 2283                    SPO     R-MISPLACED NAME CARD-
 990      1132   0 1370 00 7310                    HLT     7310,1370(44)
 991      1133   0 0000 30 1132                    BUN     $-1
 992      1134   0 0000 10 1816          1         CAD     READ+9
 993      1135   0 0410 18 1488                    CFA     ADDRESS/04
 994      1136   0 0410 40 1488                    STA     ADDRESS/04
 995      1137   0 0000 35 1142                    BCE     4F
 996      1138   0 0000 34 1142                    BCH     4F
 997      1139   0 0030 09 2319                    SPO     R-SEQUENCE ERROR-
 998      1140   0 1370 00 7310                    HLT     7310,1370(44)
 999      1141   0 0000 30 1140                    BUN     $-1
1000      1142   0 4400 28 1815          4         DLB     READ+8/44
1001      1143   1 0000 10 1816                   -CAD     READ+9
1002      1144   0 0000 40 1794                    STA     INSTRUCTION
1003      1145   0 0004 33 1163                    BSA     6F,4
1004      1146   0 0005 33 1152                    BSA     7F,5
1005      1147   0 0006 33 1152                    BSA     7F,6
1006      1148   0 6401 26 1796          3         IFL     LENGTH/64,1
1007      1149   0 0000 44 1258          0         STP     WRITX
1008      1150   0 0000 30 1251                    BUN     WRIT
1009      1151   0 0000 30 1125                    BUN     8B
1010
1011      1152   0 6290 36 1148          7         BFA     3B/62,90
1012      1153   0 6291 36 1148                    BFA     3B/62,91
1013      1154   0 8210 40 3248                    STA     TEMP/82
1014      1155   0 6212 40 3248                    STB     TEMP/62
1015      1156   0 8400 28 3248                    DLB     TEMP/84
1016      1157   1 0000 41 1545                   -LDR     EQUIVALENCETABLE
1017      1158   0 0000 37 1160                    BZR     $+2
1018      1159   0 0000 30 1148                    BUN     3B
1019      1160   0 0050 09 2312                    SPO     R-MISSING EQUIVALENT-II
```

```
1020    1161  0 1370 00 7310                HLT     7310,1370(44)
1021    1162  0 0000 30 1161                BUN     $-1
1022
1023    1163  0 6200 36 1174          6     BFA     4F/62,0
1024    1164  0 6299 36 1177                BFA     5F/62,99
1025    1165  0 6290 36 1152                BFA     7B/62,90
1026    1166  0 6291 36 1152                BFA     7B/62,91
1027    1167  0 6201 36 1149                BFA     0B/62,01
1028    1168  0 6202 36 1149                BFA     0B/62,02
1029    1169  0 6203 36 1149                BFA     0B/62,03
1030    1170  0 6204 36 1149                BFA     0B/62,04
1031    1171  0 0040 09 2361                SPO     R-IMPROPER PSEUDO-OP-I
1032    1172  0 1370 00 7310                HLT     7310,1370(44)
1033    1173  0 0000 30 1172                BUN     $-1
1034
1035    1174  0 0000 49 0004          4     SLA     4
1036    1175  0 0000 19 1796                ADL     LENGTH
1037    1176  0 0000 30 1149                BUN     0B
1038
1039    1177  0 0000 44 1258          5     STP     WRITX
1040    1178  0 0000 30 1259                BUN     WRITF
1041    1179  0 0000 42 1797                LDB     LIBRARYINDEX
1042    1180  1 6400 28 1857                -DLB    LIBRARYTABLE/64
1043    1181  0 0000 10 1796                CAD     LENGTH
1044    1182  1 6410 40 0000                -STA    0/64
1045    1183  0 0000 30 1009                BUN     RD
1046
1047
1048    1184  0 0000 42 1186          RDE   LDB     $+2
1049    1185  0 0010 29 2265                RTF     =0=,1
1050    1186  0 0150 29 1807                RTF     READ,15
1051    1187  0 0000 41 0051                LDR     20B
1052    1188  0 1111 40 1189                STR     $+1/11
1053    1189  0 1010 60 1822                CNC     READ+15,1
1054    1190  0 0000 10 1807                CAD     READ
1055    1191  0 0000 46 1824                CLL     RDI
1056    1192  0 0000 30 1192          RDEX  BUN     $
1057
1058
1059    1193  0 0502 26 1824          SCAN1 IFL     RDI/05,2
1060    1194  0 0000 46 1829                CLL     SYMBOL
1061    1195  0 0000 42 2318                LDB     =SYMBOL+1=
1062    1196  0 0090 29 1829                RTF     SYMBOL,9
1063    1197  0 9400 28 1824                DLB     RDI/94
```

```
1064    1198  1 0000 10 1807                -CAD    READ
1065    1199  0 9984 20 1202                 IBB    1F,9984
1066    1200  0 0007 45 0000                 CLT
1067    1201  0 0000 30 1211                 BUN    SCANX
1068    1202  0 0000 42 1824          1      LDB    RDI
1069    1203  1 0000 49 0000                -SLA    0
1070    1204  0 2210 40 0125                 STA    CHARACTER/22
1071    1205  0 2200 36 1193                 BFA    SCAN1/22,0
1072    1206  0 1108 36 1212                 BFA    SCNN/11,8
1073    1207  0 1104 36 1226                 BFA    SCNA/11,4
1074    1208  0 1105 36 1226                 BFA    SCNA/11,5
1075    1209  0 1106 36 1226                 BFA    SCNA/11,6
1076    1210  0 2210 40 1829                 STA    SYMBOL/22
1077    1211  0 0000 30 1211          SCANX  BUN    SCANX
1078
1079
1080    1212  0 0000 46 1829          SCNN   CLL    SYMBOL
1081    1213  0 0001 48 0009          1      SRT    9
1082    1214  0 0000 10 1829                 CAD    SYMBOL
1083    1215  0 0001 49 0001                 SLT    1
1084    1216  0 0000 40 1829                 STA    SYMBOL
1085    1217  0 0502 26 1824                 IFL    RDI/05,2
1086    1218  0 9400 28 1824                 DLB    RDI/94
1087    1219  1 0000 10 1807                -CAD    READ
1088    1220  0 0000 42 1824                 LDB    RDI
1089    1221  1 0000 49 0000                -SLA    0
1090    1222  0 1108 36 1213                 BFA    1B/11,8
1091    1223  0 0502 27 1824                 DFL    RDI/05,2
1092    1224  0 0000 10 1829                 CAD    SYMBOL
1093    1225  0 0000 30 1211                 BUN    SCANX
1094
1095
1096    1226  0 0000 46 1829          SCNA   CLL    SYMBOL
1097    1227  0 0000 42 2318                 LDB    =SYMBOL+1=
1098    1228  0 0090 29 1829                 RTF    SYMBOL,9
1099    1229  0 0000 46 1543                 CLL    DD
1100    1230  0 0000 48 0008          1      SRA    8
1101    1231  0 0001 42 1543                 LBC    DD
1102    1232  1 0000 49 0008                -SLA    8
1103    1233  0 9400 28 1543                 DLB    DD/94
1104    1234  0 0402 26 1543                 IFL    DD/04,2
1105    1235  1 0000 19 1829                -ADL    SYMBOL
1106    1236  0 0402 26 1824                 IFL    RDI/04,2
1107    1237  0 9400 28 1824                 DLB    RDI/94
```

```
1108    1238  1 0000 10 1807                  -CAD    READ
1109    1239  0 0000 42 1824                   LDB    RDI
1110    1240  1 0000 49 0000                  -SLA    0
1111    1241  0 1104 36 1230                   BFA    1B/11,4
1112    1242  0 1105 36 1230                   BFA    1B/11,5
1113    1243  0 1106 36 1230                   BFA    1B/11,6
1114    1244  0 1108 36 1230                   BFA    1B/11,8
1115    1245  0 2214 36 1230                   BFA    1B/22,14
1116    1246  0 0502 27 1824                   DFL    RDI/05,2
1117    1247  0 1220 26 1829                   IFL    SYMBOL/12,20
1118    1248  0 1220 26 1830                   IFL    SYMBOL+1/12,20
1119    1249  0 0000 10 1829                   CAD    SYMBOL
1120    1250  0 0000 30 1211                   BUN    SCANX
1121
1122
1123    1251  0 0000 10 1794  WRIT             CAD    INSTRUCTION
1124    1252  0 0000 42 1518                   LDB    BC
1125    1253  1 0000 40 3250                  -STA    WRITEBUFFER-1
1126    1254  0 0000 19 3350                   ADL    WRITEBUFFER+99
1127    1255  0 0000 31 1256                   BOF    $+1
1128    1256  0 0201 26 1518                   IFL    BC/02,1
1129    1257  0 0000 31 1263                   BOF    1F
1130    1258  0 0000 30 1258  WRITX            BUN    WRITX
1131    1259  0 0000 42 1518  WRITF            LDB    BC
1132    1260  0 0000 10 1794                   CAD    INSTRUCTION
1133    1261  1 0000 40 3250                  -STA    WRITEBUFFER-1
1134    1262  0 0000 19 3350                   ADL    WRITEBUFFER+99
1135    1263  0 0000 11 3350  1                CSU    WRITEBUFFER+99
1136    1264  0 0000 40 3350                   STA    WRITEBUFFER+99
1137    1265  0 0000 42 2343                   LDB    =WRITEBUFFER=
1138    1266  0 0000 44 1448                   DO     W
        1267  0 0000 30 1424
1139    1268  0 0000 46 1518  WRITE            CLL    BC
1140    1269  0 0002 26 1518                   IFL    BC/00,2
1141    1270  0 0001 26 3251                   IFL    WRITEBUFFER/00,1
1142    1271  0 0000 42 1273                   LDB    $+2
1143    1272  0 0010 29 2265                   RTF    =0=,1
1144    1273  0 0980 29 3252                   RTF    WRITEBUFFER+1,98
1145    1274  0 0000 30 1258                   BUN    WRITX
1146
1147
1148                          SYMBOLINSERT
1149    1275  0 0000 41 1543                   LDR    DD
1150    1276  0 0001 18 2266                   CFR    =10=
```

```
1151    1277  0 0001 49 0006                SLT     6
1152    1278  0 4411 40 1337                STR     RTF/44
1153    1279  0 4309 26 1337                IFL     RTF/43,9
1154    1280  0 0001 49 0002                SLT     2
1155    1281  0 2211 40 1543                STR     DD/22
1156    1282  0 0000 34 1291                BCH     1F
1157    1283  0 0000 41 1829                LDR     SYMBOL
1158    1284  0 0000 42 1802                LDB     PRMAX
1159    1285  1 0011 18 2241  3             -CFR    PRTABLE/00
1160    1286  0 0001 35 1290                BCU     2F
1161    1287  1 0000 10 2242                -CAD    PRTABLE+1
1162    1288  0 6410 40 1795                STA     L/64
1163                           SYMBOLINSERTX
1164    1289  0 0000 30 1289                BUN     SYMBOLINSERTX
1165    1290  0 0002 21 1285  2             DBB     3B,2
1166    1291  0 0001 10 1829  1             CAA     SYMBOL
1167    1292  0 0001 48 0010                SRT     10
1168    1293  0 0000 15 2297                DIV     =99=
1169    1294  0 0001 49 0010                SLT     10
1170    1295  0 0000 12 2301                ADD     =SCRTB=
1171    1296  0 0000 40 1798                STA     LL0
1172    1297  0 0000 40 0223                STA     K
1173    1298  0 0000 42 0223                LDB     K
1174    1299  0 0000 10 1543                CAD     DD
1175    1300  1 2210 18 0000  3             -CFA    0/22
1176    1301  0 0001 35 1316                BCU     1F
1177    1302  1 6400 28 0000                -DLB    0/64
1178    1303  0 0412 40 1307                STB     COMPARE/04
1179    1304  0 0401 26 1307                IFL     COMPARE/04,1
1180    1305  0 3400 28 1337                DLB     RTF/34
1181    1306  0 9999 20 1307                IBB     $+1,9999
1182    1307  1 0000 41 0000  COMPARE       -LDR    0
1183    1308  1 0011 18 1829                -CFR    SYMBOL/00
1184    1309  0 0001 35 1315                BCU     2F
1185    1310  0 0001 21 1307                DBB     COMPARE,1
1186    1311  0 0000 42 0223                LDB     K
1187    1312  1 0000 10 0000                -CAD    0
1188    1313  0 6410 40 1795                STA     L/64
1189    1314  0 0000 30 1289                BUN     SYMBOLINSERTX
1190
1191    1315  0 0000 42 0223  2             LDB     K
1192    1316  1 0000 42 0000  1             -LDB    0
1193    1317  0 0002 40 0223                STB     K
1194    1318  0 8000 20 1320                IBB     INSERT,8000
```

```
1195    1319  0 2000 20 1300                    IBB     3B,2000
1196    1320  0 0000 42 1798    INSERT          LDB     LL0
1197    1321  1 0000 41 0000                   -LDR     0
1198    1322  0 0000 37 1327                    BZR     1F
1199    1323  0 0000 10 4216                    CAD     SSC
1200    1324  1 0410 40 0000                   -STA     0/04
1201    1325  0 0000 42 4216                    LDB     SSC
1202    1326  0 0401 26 4216                    IFL     SSC/04,1
1203    1327  1 0411 40 0000    1               -STR     0/04
1204    1328  0 0000 10 4216                    CAD     SSC
1205    1329  0 0000 49 0004                    SLA     4
1206    1330  1 6710 40 0000                   -STA     0/67
1207    1331  0 0000 10 1543                    CAD     DD
1208    1332  1 2210 40 0000                   -STA     0/22
1209    1333  1 0000 10 0000                   -CAD     0
1210    1334  0 6410 40 1795                    STA     L/64
1211    1335  0 0000 42 4216                    LDB     SSC
1212    1336  0 0010 29 2265                    RTF     =0=,1
1213    1337  0 0010 29 1829    RTF             RTF     SYMBOL,1
1214    1338  0 0002 40 4216                    STB     SSC
1215    1339  0 0000 30 1289                    BUN     SYMBOLINSERTX
1216
1217
1218    1340  0 0000 10 2277    DONE            CAD     =99999999999=
1219    1341  0 0000 40 3251                    STA     WRITEBUFFER
1220    1342  0 0000 42 2343                    LDB     =WRITEBUFFER=
1221    1343  0 0000 44 1448                    DO      W
        1344  0 0000 30 1424
1222    1345  0 0000 44 0545                    DO      CRDUMP.1
        1346  0 0000 30 0529
1223    1347  0 2001 58 0000                    MPB     2,10
1224    1348  0 0000 41 1520                    LDR     COMPILER
1225    1349  0 3211 40 1350                    STR     $+1/32
1226    1350  0 2000 50 2265                    MTS     =0=,2
1227    1351  0 2301 58 0000                    MPB     2,3
1228    1352  0 2300 56 1857                    MOW     LIBRARYTABLE,2,3
1229    1353  0 0000 46 0223                    CLL     K
1230    1354  0 0001 26 0223    1               IFL     K/00,1
1231    1355  0 0000 42 0223                    LDB     K
1232    1356  1 0000 10 1857                   -CAD     LIBRARYTABLE
1233    1357  0 0000 36 1373                    BZA     VALMIS
1234    1358  0 0000 40 1795                    STA     L
1235    1359  0 0000 42 1795    4               LDB     L
1236    1360  0 9999 20 1354                    IBB     1B,-1
```

```
1237    1361  1 0000 10 0001                -CAD    1
1238    1362  0 0000 40 1795                 STA    L
1239    1363  0 6400 28 1795                 DLB    L/64
1240    1364  1 0000 10 0000                -CAD    0
1241    1365  0 6400 36 1367                 BFA    3F/64,0
1242    1366  0 0000 30 1359                 BUN    4B
1243                                3        SPO    R-REFERENCE WAS MADE TO THE UNDEFINED- ...
1244    1367  0 0120 09 2398                        - LIBRARY PROCEDURE(S)-RII
1245    1368  0 6212 40 1367                 STB    3B/62
1246    1369  0 6201 26 1367                 IFL    3B/62,1
1247    1370  0 0010 09 2415                 SPO    --RIIII
1248    1371  1 0010 09 0001                -SPO    1,1
1249    1372  0 0000 30 1359                 BUN    4B
1250
1251    1373  0 2001 58 0000          VALMIS MPB    2,10
1252    1374  0 2001 58 0000                 MPB    2,10
1253    1375  0 2001 58 0000                 MPB    2,10
1254    1376  0 2001 58 0000                 MPB    2,10
1255    1377  0 2701 58 0000                 MPB    2,7
1256
1257    1378  0 0004 45 0000                 CLB
1258    1379  1 0001 10 2448                4-CAA    TBL
1259    1380  0 0099 36 1405                 BFA    6F/00,99
1260    1381  0 0002 40 1675                 STB    HOLD
1261    1382  0 0410 18 2280                 CFA    =40=/04
1262    1383  0 0001 34 1403                 BCL    7F
1263    1384  0 0410 18 2281                 CFA    =43=/04
1264    1385  0 0000 34 1403                 BCH    7F
1265    1386  0 0000 49 0002                 SLA    2
1266    1387  0 0000 40 1676                 STA    HOLD0
1267    1388  0 0000 48 0006                 SRA    6
1268    1389  0 0000 12 1676                 ADD    HOLD0
1269    1390  0 0000 13 2322                 SUB    =IA+4=
1270    1391  0 0000 40 1676                 STA    HOLD0
1271    1392  0 0000 42 1675                 LDB    HOLD
1272    1393  1 0000 10 2449                -CAD    TBL+1
1273    1394  1 1210 27 2448                -DFL    TBL/12,10
1274    1395  0 0000 42 1676                 LDB    HOLD0
1275    1396  1 0000 40 1677                -STA    IA
1276    1397  0 0000 32 1399                 BRP    $+2
1277    1398  0 0000 30 1403                 BUN    7F
1278    1399  0 0000 43 0000                 LSA    0
1279    1400  0 0000 12 0239                 ADD    RELOCATION
1280    1401  0 0000 13 2421                 SUB    =4900=
```

```
1281    1402  1 0410 40 1677                -STA    IA/04
1282    1403  0 0000 42 1675          7      LDB    HOLD
1283    1404  0 0002 20 1379                 IBB    4B,2
1284    1405  0 0000 42 2336          6      LDB    =3996-IA=
1285    1406  1 0001 10 1677          7     -CAA    IA
1286    1407  0 0000 44 0931          1      STP    IO.1
1287    1408  0 0004 33 0932                 BSA    IO,4
1288    1409  0 4302 26 1407                 IFL    1B/43,2
1289    1410  0 0000 31 1412                 BOF    6F
1290    1411  0 0001 20 1406                 IBB    7B,1
1291
1292    1412  0 2500 56 3996          6      MOW    3996,2,5
1293    1413  0 2500 52 4496                 MRD    4496,2,5
1294    1414  0 0000 46 4995                 CLL    4995
1295    1415  0 0001 45 0000                 CLA
1296    1416  0 0000 42 2447                 LDB    =999=
1297    1417  1 0000 13 3996          1     -SUB    3996
1298    1418  0 0001 21 1417                 DBB    1B,1
1299    1419  0 0000 40 4995                 STA    4995
1300    1420  0 2001 58 0000                 MPB    2,10
1301    1421  0 2000 56 3996                 MOW    3996,2,0
1302    1422  0 0060 09 2387                 SPO    R-LIBRARY PROCESSING COMPLETE-II
1303    1423  0 0000 30 0546                 BUN    ENDOFGENERATION
1304
1305
1306    1424  1 2100 54 0000          W.1   -MIW    0,2,1
1307    1425  0 2000 38 1427                 BCS    $+2,2
1308    1426  0 0000 30 1447                 BUN    W-1
1309    1427  0 0000 41 1449                 LDR    THECOUNT
1310    1428  0 0001 49 0004                 SLT    4
1311    1429  0 6411 40 1487                 STR    7F/64
1312    1430  0 0000 67 1432                 HPI    $+2
1313    1431  0 0000 30 1430                 BUN    $-1
1314    1432  0 0020 66 1486                 HPW    7F-1,2
1315    1433  0 1112 40 1486                 STB    7F-1/11
1316    1434  0 0412 40 1436          3      STB    1F/04
1317    1435  0 0000 42 2292                 LDB    =2F=
1318    1436  0 0100 29 0000          1      RTF    0,10
1319    1437  0 0000 67 1439                 HPI    $+2
1320    1438  0 0000 30 1437                 BUN    $-1
1321    1439  0 0110 66 1450                 HPW    2F-1,11
1322    1440  0 9000 42 1436                 LDB    1B,9(11)
1323    1441  0 1109 26 1440                 IFL    $-1/11,9
1324    1442  0 9990 21 0000                 DBB    0,-10
```

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1325    1443  0 0000 31 1434                    BOF     3B
1326    1444  0 0000 67 1446                    HPI     $+2
1327    1445  0 0000 30 1444                    BUN     $-1
1328    1446  0 0250 66 1461                    HPW     3F-1,25
1329    1447  0 0001 26 1449                    IFL     THECOUNT/00,1
1330    1448  0 0000 30 1448    W               BUN     $
1331    1449  0 0000 00 0000    THECOUNT        (0)
1332    1450  1 0000 00 0000                   10000000000
1333    1451  0 0000 00 0000    2               FILL    0,10
1334    1461  0 0000 00 0000                    (0)
1335    1462  2 0000 00 0000    3               FILL    20000000000,24
1336    1486  0 3000 00 0000                   03000000000
1337    1487  0 4000 00 9000    7               4000009000
1338
1339
1340
1341
1342
1343
1344    1488  0 0000 00 0000    ADDRESS         (0)
1345                            ALFORMAT-28
1346    1489  3 3333 33 3333                    FORMAT  INPUT,16(T5A)
1347    1518  0 0000 00 0002    BC              (2)
1348    1519  0 0000 00 0000    BLCT            (0)
1349
1350    1520  0 2000 00 0000    COMPILER        (2)(11)
1351    1521  0 0000 00 0000    CDR-6           FILL    0,22
1352    1543  0 0000 00 0000    DD              (0)
1353                            EQUIVALENCEINDEX
1354    1544  0 0000 12 0000                    (12)(62)
1355                            EQUIVALENCETABLE
1356    1545  0 0000 00 0000                    FILL    0,100
1357                                              DJ      046422
1358    1645  0 0000 00 0012    F1              (12)
1359    1646  3 0000 10 0045                   3J      0,10,45
1360    1647  1 6262 27 1677                   -DFL     IA/62,62
1361    1648  3 0000 11 0045                   3J      0,11,45
1362    1649  1 6262 27 1677                   -DFL     IA/62,62
1363    1650  3 0000 12 0045                   3J      0,12,45
1364    1651  1 6262 27 1677                   -DFL     IA/62,62
1365    1652  3 0000 13 0045                   3J      0,13,45
1366    1653  1 6262 27 1677                   -DFL     IA/62,62
1367    1654  3 0000 14 0045                   3J      0,14,45
1368    1655  1 6262 27 1677                   -DFL     IA/62,62
```

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1369    1656  3 0000 32 0055                    3J        0,32,55
1370    1657  1 6262 27 1677                    -DFL      IA/62,62
1371
1372    1658  0 0000 00 0006    F2               (6)
1373    1659  3 0000 36 0054                    3J        0,36,54
1374    1660  1 6264 27 1677                    -DFL      IA/62,64
1375    1661  3 0000 37 0054                    3J        0,37,54
1376    1662  1 6229 27 1677                    -DFL      IA/62,29
1377    1663  3 0000 38 0054                    3J        0,38,54
1378    1664  1 6264 27 1677                    -DFL      IA/62,64
1379    1665  3 0000 43 0054                    3J        0,43,54
1380    1666  1 6264 27 1677                    -DFL      IA/62,64
1381
1382    1667  0 0000 00 0004    F3               (4)
1383    1668  3 0000 04 0045                    3J        0,04,45
1384    1669  1 6261 27 1677                    -DFL      IA/62,61
1385    1670  3 0000 09 0045                    3J        0,09,45
1386    1671  1 6261 27 1677                    -DFL      IA/62,61
1387
1388    1672  0 0000 00 0002    F4               (2)
1389    1673  3 0000 30 0054                    3J        0,30,54
1390    1674  1 6263 27 1677                    -DFL      IA/62,63
1391
1392    1675  0 0000 00 0000    HOLD             HLT       0
1393    1676  0 0000 00 0000    HOLDO            HLT       0
1394    1677  0 0000 00 0000    IA               FILL      0,101
1395    1778  0 0000 00 0000    INPUT            FILL      0,16
1396                            INSTRUCTION
1397    1794  0 0000 00 0000                     (0)
1398    1795  0 0000 00 0000    L                (0)
1399    1796  0 0000 00 0000    LENGTH           (0)
1400                            LIBRARYINDEX
1401    1797  0 0000 00 0000                     (0)
1402    1798  0 0000 00 0000    LLO              (0)
1403    1799  0 0000 00 2156    LMAX             (LIBRARYTABLE+299)
1404    1800  0 0000 00 0000    NI               (0)
1405    1801  0 2000 00 0000    PRINTER          (2)(11)
1406    1802  0 0000 00 0022    PRMAX            (22)
1407    1803  0 1000 00 0000    PUNCH            (1)(11)
1408    1804  0 0000 00 0000    READ-3           FILL      0,19
1409    1823  0 1000 00 0000    READER           (1)(11)
1410    1824  0 0000 00 0000    RDI              (0)
1411    1825  0 0000 00 0000    RR2              (0)
1412    1826  0 0000 00 0000    RR3              (0)
```

```
1413      1827  0 1000 00 0000          SCRATCHML    (1)(11)
1414                                    SCRATCHDUMP
1415      1828  0 1010 00 0000                       (101)(33)
1416
1417
1418      1829  0 0000 00 0000          SYMBOL       FILL     0,10
1419                                    LIBRARYTABLE
1420      1857  0 0000 00 0000    HMM..               FILL     0,300
1421                                    SUMTBL       IS       LIBRARYTABLE+300
1422      2157  0 9916 77 1777                       FILL     99(23)+IA(64)+(IA+100)(04),9
1423      2166  0 9816 77 1776                       FILL     98(23)+IA(64)+(IA+99)(04),1
1424      2167  0 9916 77 1777                       FILL     99(23)+IA(64)+(IA+100)(04),9
1425      2176  0 9816 77 1776                       FILL     98(23)+IA(64)+(IA+99)(04),1
1426      2177  0 9916 77 1777                       FILL     99(23)+IA(64)+(IA+100)(04),9
1427      2186  0 9816 77 1776                       FILL     98(23)+IA(64)+(IA+99)(04),1
1428      2187  0 9916 77 1777                       FILL     99(23)+IA(64)+(IA+100)(04),9
1429      2196  0 9816 77 1776                       FILL     98(23)+IA(64)+(IA+99)(04),1
1430      2197  0 9916 77 1777                       FILL     99(23)+IA(64)+(IA+100)(04),9
1431      2206  0 9816 77 1776                       FILL     98(23)+IA(64)+(IA+99)(04),1
1432      2207  0 9816 77 1777                       FILL     98(23)+IA(64)+(IA+100)(04),2
1433      2209  0 9916 77 1777                       FILL     99(23)+IA(64)+(IA+100)(04),31
1434      2240  0 9816 77 1776                       FILL     98(23)+IA(64)+(IA+99)(04),1
1435
1436      2241  2 4649 67 0000          PRTABLE     -FIX-
1437      2242  0 0042 22 0000                      (SCRTB+106)(64)
1438      2243  2 4653 56 4163                      -FLOAT-
1439      2244  0 0042 24 0000                      (SCRTB+108)(64)
1440      2245  2 4667 14 4667                      -FX*FX-
1441      2246  0 0042 18 0000                      (SCRTB+102)(64)
1442      2247  2 4667 14 4653                      -FX*FL-
1443      2248  0 0042 19 0000                      (SCRTB+103)(64)
1444      2249  2 4653 14 4667                      -FL*FX-
1445      2250  0 0042 20 0000                      (SCRTB+104)(64)
1446      2251  2 4653 14 4653                      -FL*FL-
1447      2252  0 0042 21 0000                      (SCRTB+105)(64)
1448      2253  2 5341 42 4553                      -LABEL-
1449      2254  0 0041 07 0000                      (SCRTB-9)(64)
1450      2255  2 5456 55 4963                      -MONIT-
1451      2256  0 0042 26 0000                      (SCRTB+110)(64)
1452      2257  2 4559 59 5659                      -ERROR-
1453      2258  0 0042 29 0000                      (SCRTB+113)(64)
1454      2259  2 6359 41 4345                      -TRACE-
1455      2260  0 0042 30 0000                      (SCRTB+114)(64)
1456      2261  2 5949 63 4500                      -RITE-
```

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1457      2262   0 0042 33 0000                    (SCRTB+117)(64)
1458      2263   2 5945 45 4400                    -REED-
1459      2264   0 0042 32 0000                    (SCRTB+116)(64)
1460
1461      2265   0 0000 00 0000                     POOL
          2266   0 0000 00 0010
          2267   0 0000 00 0004
          2268   0 0000 00 9997
          2269   0 0000 00 0008
          2270   0 0000 00 0011
          2271   0 0000 00 1011
          2272   0 0020 00 0000
          2273   0 0000 00 0023
          2274   0 0000 00 0022
          2275   0 0000 00 0024
          2276   0 0000 00 0028
          2277   9 9999 99 9999
          2278   0 0000 00 0033
          2279   0 0000 00 0257
          2280   0 0000 00 0040
          2281   0 0000 00 0043
          2282   0 0000 00 0281
          2283   2 1654 49 6257    $MISP
          2284   2 5341 43 4544    LACED
          2285   2 0055 41 5445     NAME
          2286   2 0043 41 5944     CARD
          2287   0 0000 00 0303
          2288   0 0000 00 0312
          2289   0 0000 00 0052
          2290   0 0000 00 0441
          2291   2 5664 63 5764    OUTPU
          2292   0 0000 00 1451
          2293   2 6541 59 4941    VARIA
          2294   0 0007 80 9999
          2295   0 0000 00 0083
          2296   0 0000 00 0082
          2297   0 0000 00 0099
          2298   0 0000 00 0100
          2299   0 0000 00 5100
          2300   0 0006 16 9999
          2301   0 0000 00 4116
          2302   2 6245 63 6243    SETSC
          2303   2 1645 58 6449    $EQUI
          2304   2 6541 53 4555    VALEN
```

```
2305   2 4345 00 5564     CE NU
2306   2 5442 45 5900     MBER
2307   2 6356 56 0053     TOO L
2308   2 4159 47 4502     ARGE9
2309   2 4955 63 4547     INTEG
2310   2 4649 55 4962     FINIS
2311   2 4256 56 5345     BOOLE
2312   2 1654 49 6262     $MISS
2313   2 4955 47 0045     ING E
2314   2 5864 49 6541     QUIVA
2315   2 5345 55 6302     LENT9
2316   2 0200 00 0000     9
2317   0 0000 00 0199
2318   0 0000 00 1830
2319   2 1662 45 5864     $SEQU
2320   2 4555 43 4500     ENCE
2321   2 4559 59 5659     ERROR
2322   0 0000 00 1681
2323   0 0000 00 1677
2324   2 1645 55 4400     $END
2325   2 5646 00 4745     OF GE
2326   2 5545 59 4163     NERAT
2327   2 4956 55 0056     ION O
2328   2 4600 63 4845     F THE
2329   2 0043 56 5457      COMP
2330   2 4953 45 5916     ILER$
2331   2 1654 49 6262     $MISS
2332   2 4955 47 0055     ING N
2333   2 4154 45 0043     AME C
2334   2 4159 44 0202     ARD99
2335   2 5756 62 4963     POSIT
2336   0 0000 00 2319
2337   2 4356 54 5445     COMME
2338   2 4163 45 5741     ATEPA
2339   2 4653 56 4163     FLOAT
2340   2 4341 59 4457     CARDP
2341   2 4341 59 4459     CARDR
2342   2 1616 16 1616     $$$$$
2343   0 0000 00 3251
2344   0 8600 80 0000
2345   2 0042 53 5643      BLOC
2346   2 5262 00 5655     KS ON
2347   2 0064 55 4963      UNIT
2348   2 0082 00 1616      2 $$
```

```
2349   2 1516 26 6348     *$,TH
2350   2 4500 43 5654     E COM
2351   2 5749 53 4559     PILER
2352   2 0047 45 5545      GENE
2353   2 5941 63 5659     RATOR
2354   2 1600 00 0000     $
2355   2 1643 48 4543     $CHEC
2356   2 5200 62 6454     K SUM
2357   2 0045 59 5956      ERRO
2358   2 5900 00 0000     R
2359   0 0000 00 1546
2360   2 4163 45 4862     ATEHS
2361   2 1649 54 5759     $IMPR
2362   2 5657 45 5900     OPER
2363   2 5762 45 6444     PSEUD
2364   2 5620 56 5702     O-OP9
2365   2 4445 53 4563     DELET
2366   2 1663 48 4500     $THE
2367   2 5349 42 5941     LIBRA
2368   2 5968 00 5759     RY PR
2369   2 5643 45 6262     OCESS
2370   2 5659 16 1616     OR$$$
2371   2 5956 64 6349     ROUTI
2372   2 5545 00 5541     NE NA
2373   2 5445 16 0000     ME$
2374   2 4556 64 6357     EOUTP
2375   2 4559 00 0000     ER
2376   2 1649 55 4356     $INCO
2377   2 5959 45 4363     RRECT
2378   2 0057 64 5543      PUNC
2379   2 6364 41 6349     TUATI
2380   2 5655 02 0202     ON999
2381   2 6264 57 5759     SUPPR
2382   2 1649 55 4356     $INCO
2383   2 5959 45 4363     RRECT
2384   2 0062 63 4163      STAT
2385   2 4554 45 5563     EMENT
2386   2 1616 02 0202     $$999
2387   2 1653 49 4259     $LIBR
2388   2 4159 68 0057     ARY P
2389   2 5956 43 4562     ROCES
2390   2 6249 55 4700     SING
2391   2 4356 54 5753     COMPL
2392   2 4563 45 0202     ETE99
```

```
2393  2 5445 54 5659    MEMOR
2394  2 4356 54 5749    COMPI
2395  2 5945 41 5300    REAL
2396  2 5764 55 4348    PUNCH
2397  2 5759 56 4345    PROCE
2398  2 1659 45 4645    $REFE
2399  2 5945 55 4345    RENCE
2400  2 0066 41 6200     WAS
2401  2 5441 44 4500    MADE
2402  2 6356 00 6348    TO TH
2403  2 4500 64 5544    E UND
2404  2 4546 49 5545    EFINE
2405  2 4400 53 4942    D LIB
2406  2 5941 59 6800    RARY
2407  2 5759 56 4345    PROCE
2408  2 4464 59 4524    DURE(
2409  2 6204 16 0202    S)$99
2410  2 5441 43 4849    MACHI
2411  2 4356 57 6843    COPYC
2412  0 0000 00 0798
2413  2 4800 00 0000    H
2414  2 5759 49 5563    PRINT
2415  2 1602 02 0202    $9999
2416  2 4745 55 4559    GENER
2417  0 0000 00 1857
2418  2 4549 55 5764    EINPU
2419  2 4163 45 6263    ATEST
2420  2 4356 59 5945    CORRE
2421  0 0000 00 4900
2422  2 1654 45 5456    $MEMO
2423  2 5968 00 6249    RY SI
2424  2 6945 00 5464    ZE MU
2425  2 6263 00 4245    ST BE
2426  2 0047 49 6545     GIVE
2427  2 5500 41 6200    N AS
2428  2 4100 54 6453    A MUL
2429  2 6349 57 5345    TIPLE
2430  2 0056 46 0056     OF O
2431  2 5545 00 4864    NE HU
2432  2 5544 59 4544    NDRED
2433  2 1616 16 0200    $$$9
2434  2 1645 59 5956    $ERRO
2435  2 5545 56 6462    NEOUS
2436  2 0043 56 5959     CORR
```

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                2437  2 4543 63 4956     ECTIO
                2438  2 5500 43 4159     N CAR
                2439  2 4400 00 0000     D
                2440  2 4955 57 6463     INPUT
                2441  0 0010 00 0000
                2442  0 0000 00 0006
                2443  0 0000 00 9999
                2444  0 0000 00 0002
                2445  0 0000 00 0001
                2446  0 0000 00 1000
                2447  0 0000 00 0999
1462            2448  3 0000 88 0015          TBL         30(12)+((CCCNT+1)/100)(04)+((CCCNT+1)//100)(64)
1463            2449  0 0144 30 0158                       BUN      SETSCAN.1,144(44)
1464            2450  3 0000 19 0016                      30(12)+((CCBEG+1)/100)(04)+((CCBEG+1)//100)(64)
1465            2451  1 4200 26 1677                      -IFL     IA/42,0
1466            2452  1 0000 50 0000                      -((0050/100)(04)+(0050//100)(64))
1467            2453  1 0000 12 4800                      -ADD     4800
1468            2454  1 0000 31 0042                      -(((MAMAX+4)/100)(04)+((MAMAX+4)//100)(64))
1469            2455  0 0000 00 4999                       HLT     4999
1470            2456  0 0000 13 0052                      (B/100)(04)+(B//100)(64)
1471            2457  0 0000 00 5000                       HLT     5000
1472            2458  0 0000 51 0002                      (VARB/100)(04)+(VARB//100)(64)
1473            2459  0 0000 00 4999                       HLT     4999
1474            2460  3 0000 50 0082                      30(12)+(HALT/100)(04)+(HALT//100)(64)
1475            2461  1 6200 26 1677                      -IFL     IA/62,00
1476            2462  9 9999 99 9999                       FILL    99999999999,786
                2463  9 9999 99 9999
                2464  9 9999 99 9999
                2465  9 9999 99 9999
                        ETC.
1477
1478            3248  0 0000 00 0000          TEMP        (0)
1479            3249  0 0000 00 0000          TEMP1       (0)
1480            3250  0 0000 00 0000          TEMP2       (0)
1481                                          WRITEBUFFER
1482            3251  0 0000 00 0000                      FILL     0,100
                3252  0 0000 00 0000
                3253  0 0000 00 0000
                3254  0 0000 00 0000
                        ETC.
1483
1484
1485
1486                                                      ORIGIN   1000
```

```
1487                                                    PLACE   3500
1488 1000 3500  0 0000 00 0000          TEMP3           (0)
1489 1001 3501  0 0000 00 0000          LIC             (0)
1490 1002 3502  0 0000 00 0000          SRFC            (0)
1491 1003 3503  0 0001 00 0000          SEQNBR        ((1)(41))
1492 1004 3504  0 0000 00 0000          WC              (0)
1493                                    NUMBERWORDS
1494 1005 3505  0 0000 00 0006                          (6)
1495 1006 3506  0 0000 00 0000          LL              (0)
1496 1007 3507  0 0000 00 0000          RLOC            (0)
1497 1008 3508  0 0000 00 0000          LLC             (0)
1498 1009 3509  0 0000 00 0000          EQUIV           (0)
1499 1010 3510  0 0000 00 0000          BUFAREA         FILL    0,16
1500 1026 3526  0 0000 00 0008          EIGHT           (8)
1501 1027 3527  0 0725 00 7570          HLT           (725007570)
1502
1503
1504 1028 3528  0 0000 42 0256          READY           LDB     COUNT
1505 1029 3529  0 9999 20 1032                          IBB     $+3,-1
1506 1030 3530  0 2100 58 0000                          MPF     2,1
1507 1031 3531  0 0000 30 1029                          BUN     $-2
1508 1032 3532  0 2000 52 0000                          MRD     0000,2,0
1509 1033 3533  0 0000 42 2268                          LDB     =9997=
1510 1034 3534  0 2000 58 0000                          MPF     2,10
1511 1035 3535  0 0001 20 1034                          IBB     $-1,1
1512 1036 3536  0 2400 52 3996                          MRD     3996,2,4
1513 1037 3537  0 2000 58 0000                          MPF     2,10
1514 1038 3538  0 2000 58 0000                          MPF     2,10
1515 1039 3539  0 2000 58 0000                          MPF     2,10
1516 1040 3540  0 2000 58 0000                          MPF     2,10
1517 1041 3541  0 2300 52 1857                          MRD     LIBRARYTABLE,2,3
1518 1042 3542  0 2600 58 0000                          MPF     2,6
1519 1043 3543  0 0000 41 1520                          LDR     COMPILER
1520 1044 3544  0 3211 40 1045                          STR     $+1/32
1521 1045 3545  0 2000 50 1003                          MTS     SEQNBR,002
1522 1046 3546  0 2100 52 1677                          MRD     IA,2,1
1523 1047 3547  0 1000 63 1311                          CWF     LIBRARYFORMAT,1,1
1524 1048 3548  0 2000 63 1311                          CWF     LIBRARYFORMAT,2,1
1525
1526
1527 1049 3549  0 0000 42 2417                          LDB     =LIBRARYTABLE=
1528 1050 3550  0 0002 40 3249                          STB     TEMP1
1529 1051 3551  0 0000 42 3249          HEADERCARD      LDB     TEMP1
1530 1052 3552  0 0001 20 1053                          IBB     $+1,1
```

```
1531 1053 3553   0 0002 40 3249                    STB     TEMP1
1532 1054 3554   1 0000 41 0000                   -LDR     0
1533 1055 3555   0 0000 37 1027                    BZR     HLT
1534 1056 3556   1 6400 28 0000                   -DLB     0/64,0
1535 1057 3557   0 0002 40 3250                    STB     TEMP2
1536 1058 3558   0 0000 44 1223                    DO      MATCHSRF.1
     1059 3559   0 0000 30 1177
1537                                  EXAMINEOPERAND
1538 1060 3560   0 0000 42 3250                    LDB     TEMP2
1539 1061 3561   1 0000 10 0000                   -CAD     0
1540 1062 3562   0 2103 36 1087                    BFA     55F/21,3
1541 1063 3563   0 0000 10 2273                    CAD     =23=
1542 1064 3564   0 0000 44 1237                    DO      BUFFERFILL.2
     1065 3565   0 0000 30 1230
1543 1066 3566   0 0000 42 3250                    LDB     TEMP2
1544 1067 3567   1 0000 10 0000                   -CAD     0
1545 1068 3568   0 2100 36 1261                    BFA     BP1/21,0
1546 1069 3569   0 0000 44 1260                    DO      INTEGER
     1070 3570   0 0000 30 1248
1547 1071 3571   0 6229 27 1256                    DFL     25F/62,29
1548 1072 3572   0 0000 42 3250  99                LDB     TEMP2
1549 1073 3573   1 0000 10 0000                   -CAD     0
1550 1074 3574   0 0103 36 1087                    BFA     55F/01,3
1551 1075 3575   0 0000 10 2275                    CAD     =24=
1552 1076 3576   0 0000 44 1237                    DO      BUFFERFILL.2
     1077 3577   0 0000 30 1230
1553 1078 3578   0 0000 42 3250                    LDB     TEMP2
1554 1079 3579   1 0000 10 0000                   -CAD     0
1555 1080 3580   0 0100 36 1264                    BFA     BP2/01,0
1556 1081 3581   0 0000 44 1260                    DO      INTEGER
     1082 3582   0 0000 30 1248
1557 1083 3583   0 6229 27 1256                    DFL     25F/62,29
1558 1084 3584   0 0000 10 2267  88                CAD     =04=
1559 1085 3585   0 0000 44 1237                    DO      BUFFERFILL.2
     1086 3586   0 0000 30 1230
1560 1087 3587   0 0000 44 1282  55                DO      PUNCHING.2
     1088 3588   0 0000 30 1275
1561
1562 1089 3589   0 0000 44 1131  WORDS             DO      GET.1
     1090 3590   0 0000 30 1128
1563 1091 3591   0 0004 33 1136                    BSA     EQUIVALENCE,4
1564 1092 3592   0 0000 41 2276                    LDR     =28=
1565 1093 3593   0 0001 40 1008                    STR     LLC
1566 1094 3594   0 0000 40 1000                    STA     TEMP3
```

```
1567 1095 3595   0 0001 48 0010                    SRT     10
1568 1096 3596   0 9010 40 1026                    STA     EIGHT/90
1569 1097 3597   0 0000 10 1026                    CAD     EIGHT
1570 1098 3598   0 0002 49 0001                    SLS     1
1571 1099 3599   0 0000 44 1237                    DO      BUFFERFILL.2
     1100 3600   0 0000 30 1230
1572 1101 3601   0 9000 10 2269    2               CAD     =8=,9(11)
1573 1102 3602   0 0001 49 0001                    SLT     1
1574 1103 3603   0 0000 44 1237                    DO      BUFFERFILL.2
     1104 3604   0 0000 30 1230
1575 1105 3605   0 1101 27 1101                    DFL     2B/11,1
1576 1106 3606   0 0000 32 1101                    BRP     2B
1577
1578
1579 1107 3607   0 0101 26 1004    TST             IFL     WC/01,1
1580 1108 3608   0 0000 10 1000                    CAD     TEMP3
1581 1109 3609   0 0004 33 1120                    BSA     PSDO,4
1582 1110 3610   0 0000 46 1127                    CLL     CNST
1583 1111 3611   0 0000 41 1004                    LDR     WC
1584 1112 3612   0 0111 18 1005                    CFR     NUMBERWORDS/01
1585 1113 3613   0 0000 35 1117                    BCE     9F
1586 1114 3614   0 0000 44 1131                    DO      GET.1
     1115 3615   0 0000 30 1128
1587 1116 3616   0 0000 30 1094                    BUN     WORDS+5
1588
1589 1117 3617   0 0000 44 1176    9               DO      FIXCNT.1
     1118 3618   0 0000 30 1157
1590 1119 3619   0 0000 30 1089                    BUN     WORDS
1591
1592 1120 3620   0 0000 42 1127    PSDO            LDB     CNST
1593 1121 3621   0 0001 21 1110                    DBB     TST+3,1
1594 1122 3622   0 6201 36 1125                    BFA     1F/62,01
1595 1123 3623   0 6299 36 1238                    BFA     ENDSUBR/62,99
1596 1124 3624   0 0000 30 1110                    BUN     TST+3
1597 1125 3625   0 0101 26 1127    1               IFL     CNST/01,1
1598 1126 3626   0 0000 30 1111                    BUN     TST+4
1599 1127 3627   0 0000 00 0000    CNST            (0)
1600
1601 1128 3628   0 9800 10 1678    GET.1           CAD     IA+1,98(22)
1602 1129 3629   0 2299 26 1128                    IFL     $-1/22,99
1603 1130 3630   0 0401 26 1128                    IFL     GET.1/04,1
1604 1131 3631   0 0000 31 1131    GET             BOF     $
1605 1132 3632   0 2100 52 1677                    MRD     IA,2,1
1606 1133 3633   0 2202 27 1128                    DFL     GET.1/22,2
```

```
1607 1134 3634   0 0499 27 1128                    DFL     GET.1/04,99
1608 1135 3635   0 0000 30 1128                    BUN     GET.1
1609
1610
1611                                    EQUIVALENCE
1612 1136 3636   0 6212 36 1138                    BFA     $+2/62,12
1613 1137 3637   0 0000 30 1092                    BUN     WORDS+3
1614 1138 3638   0 0000 40 1009                    STA     EQUIV
1615 1139 3639   0 0001 48 0012                    SRT     12
1616 1140 3640   0 0000 44 1223                    DO      MATCHSRF.1
     1141 3641   0 0000 30 1177
1617 1142 3642   0 0000 10 2278                    CAD     =33=
1618 1143 3643   0 0000 44 1237                    DO      BUFFERFILL.2
     1144 3644   0 0000 30 1230
1619 1145 3645   0 0000 10 1009                    CAD     EQUIV
1620 1146 3646   0 0002 45 0000                    CLR
1621 1147 3647   0 0001 48 0002                    SRT     2
1622 1148 3648   0 0000 10 2269          3         CAD     =8=
1623 1149 3649   0 0001 49 0001                    SLT     1
1624 1150 3650   0 0000 44 1237                    DO      BUFFERFILL.2
     1151 3651   0 0000 30 1230
1625 1152 3652   0 0000 37 1154                    BZR     $+2
1626 1153 3653   0 0000 30 1148                    BUN     3B
1627 1154 3654   0 0000 44 1282                    DO      PUNCHING.2
     1155 3655   0 0000 30 1275
1628 1156 3656   0 0000 30 1089                    BUN     WORDS
1629
1630
1631 1157 3657   0 0000 10 1004          FIXCNT.1  CAD     WC
1632 1158 3658   0 0000 49 0004                    SLA     4
1633 1159 3659   0 0000 12 2344                    ADD     =86008(55)=
1634 1160 3660   0 0000 40 1010                    STA     BUFAREA
1635 1161 3661   0 0000 46 1004                    CLL     WC
1636 1162 3662   0 0001 45 0000                    CLA
1637 1163 3663   0 0000 41 1007                    LDR     RLOC
1638 1164 3664   0 0000 49 0001          1         SLA     1
1639 1165 3665   0 0000 12 2269                    ADD     =8=
1640 1166 3666   0 0001 49 0001                    SLT     1
1641 1167 3667   0 3100 36 1164                    BFA     1B/31,0
1642 1168 3668   0 0000 49 0002                    SLA     2
1643 1169 3669   0 8810 40 1012                    STA     BUFAREA+2/88
1644 1170 3670   0 0000 10 1005                    CAD     NUMBERWORDS
1645 1171 3671   0 0000 49 0006                    SLA     6
1646 1172 3672   0 4210 40 1173                    STA     1F/42
```

```
1647 1173 3673   0 4400 26 1007          1             IFL     RLOC/44,0
1648 1174 3674   0 0000 44 1282                        DO      PUNCHING.1
     1175 3675   0 0000 30 1276
1649 1176 3676   0 0000 30 1176          FIXCNT        BUN     $
1650
1651
1652 1177 3677   0 0000 10 2296          MATCHSRF.1    CAD     =82=
1653 1178 3678   0 0000 44 1237                        DO      BUFFERFILL.2
     1179 3679   0 0000 30 1230
1654 1180 3680   0 0000 42 2274                        LDB     =22=
1655 1181 3681   1 6411 18 2242          1             -CFR    PRTABLE+1/64
1656 1182 3682   0 0000 35 1185                        BCE     5F
1657 1183 3683   0 0002 21 1181                        DBB     1B,2
1658 1184 3684   0 0000 30 1192                        BUN     10F
1659
1660 1185 3685   1 0000 41 2241          5             -LDR    PRTABLE
1661 1186 3686   0 0001 45 0000                        CLA
1662 1187 3687   0 0001 49 0002                        SLT     2
1663 1188 3688   0 0000 44 1237                        DO      BUFFERFILL.2
     1189 3689   0 0000 30 1230
1664 1190 3690   0 0000 37 1223                        BZR     MATCHSRF
1665 1191 3691   0 0000 30 1186                        BUN     5B+1
1666
1667 1192 3692   0 0001 48 0004          10            SRT     4
1668 1193 3693   0 0001 40 3250                        STR     TEMP2
1669 1194 3694   0 0000 42 3250                        LDB     TEMP2
1670 1195 3695   1 0000 41 0001                        -LDR    1
1671 1196 3696   0 0001 45 0000                        CLA
1672 1197 3697   0 0000 15 2297                        DIV     =99=
1673 1198 3698   0 0001 49 0010                        SLT     10
1674 1199 3699   0 0000 12 2301                        ADD     =SCRTB=
1675 1200 3700   0 0000 40 1795                        STA     L
1676 1201 3701   0 0000 10 3250                        CAD     TEMP2
1677 1202 3702   0 0000 49 0004                        SLA     4
1678 1203 3703   0 0000 40 1002                        STA     SRFC
1679 1204 3704   0 0000 44 1229                        DO      FINDSRF
     1205 3705   0 0000 30 1224
1680 1206 3706   0 0000 48 0008                        SRA     8
1681 1207 3707   0 0000 40 1006          5             STA     LL
1682
1683 1208 3708   0 0000 10 1001          3             CAD     LIC
1684 1209 3709   0 0000 48 0001                        SRA     1
1685 1210 3710   0 0000 12 3250                        ADD     TEMP2
1686 1211 3711   0 0000 40 1000                        STA     TEMP3
```

```
1687 1212 3712   0 0000 42 1000                    LDB     TEMP3
1688 1213 3713   1 0000 10 0001                   -CAD     1
1689 1214 3714   0 0000 42 1001                    LDB     LIC
1690 1215 3715   1 0000 49 0002                   -SLA     2
1691 1216 3716   0 0000 44 1237                    DO      BUFFERFILL.2
     1217 3717   0 0000 30 1230
1692 1218 3718   0 0502 26 1001                    IFL     LIC/05,2
1693 1219 3719   0 0000 10 1001                    CAD     LIC
1694 1220 3720   0 0410 18 1006                    CFA     LL/04
1695 1221 3721   0 0000 35 1223                    BCE     $+2
1696 1222 3722   0 0000 30 1208                    BUN     3B
1697 1223 3723   0 0000 30 1223        MATCHSRF    BUN     $
1698
1699
1700 1224 3724   0 0000 42 1795        FINDSRF.1   LDB     L
1701 1225 3725   1 0000 10 0000                   -CAD     0
1702 1226 3726   0 0000 40 1795                    STA     L
1703 1227 3727   0 6410 18 1002                    CFA     SRFC/64
1704 1228 3728   0 0001 35 1224                    BCU     FINDSRF.1
1705 1229 3729   0 0000 30 1229        FINDSRF     BUN     $
1706
1707
1708                                   BUFFERFILL.2
1709 1230 3730   0 0000 17 2270                    EXT     =11=
1710 1231 3731   0 0001 42 1008                    LBC     LLC
1711 1232 3732   1 0000 49 0008                   -SLA     8
1712 1233 3733   0 9400 28 1008                    DLB     LLC/94,0
1713 1234 3734   1 0000 12 1010                   -ADD     BUFAREA
1714 1235 3735   1 0010 40 1010                   -STA     BUFAREA/00
1715 1236 3736   0 0502 26 1008                    IFL     LLC/05,2
1716 1237 3737   0 0000 30 1237        BUFFERFILL  BUN     $
1717
1718
1719 1238 3738   0 0000 44 1176        ENDSUBR     DO      FIXCNT.1
     1239 3739   0 0000 30 1157
1720 1240 3740   0 0000 46 1007                    CLL     RLOC
1721 1241 3741   0 0000 41 1247                    LDR     $+6
1722 1242 3742   0 0001 40 1128                    STR     GET.1
1723 1243 3743   0 2100 52 1677                    MRD     IA,2,1
1724 1244 3744   0 0000 41 1677                    LDR     IA
1725 1245 3745   0 0099 37 1027                    BFR     HLT/00,99
1726 1246 3746   0 0000 30 1051                    BUN     HEADERCARD
1727 1247 3747   0 9800 10 1678                   (980010)(66)+(IA+1)(04)
1728
```

```
1729
1730 1248 3748   0 0007 45 0000          INTEGER.1    CLT
1731 1249 3749   0 0000 41 2309                       LDR      -INTEG-
1732 1250 3750   0 0001 49 0002          5            SLT      2
1733 1251 3751   0 0000 44 1237                       DO       BUFFERFILL.2
     1252 3752   0 0000 30 1230
1734 1253 3753   0 0001 45 0000                       CLA
1735 1254 3754   0 0000 37 1256                       BZR      25F
1736 1255 3755   0 0000 30 1250                       BUN      5B
1737
1738 1256 3756   0 0000 01 1260          25           NOP      INTEGER
1739 1257 3757   0 6229 26 1256                       IFL      $-1/62,29
1740 1258 3758   0 0000 41 2375                       LDR      -ER-
1741 1259 3759   0 0000 30 1250                       BUN      5B
1742 1260 3760   0 0000 30 1260          INTEGER      BUN      $
1743
1744 1261 3761   0 0000 44 1273          BP1          DO       REAL
     1262 3762   0 0000 30 1267
1745 1263 3763   0 0000 30 1072                       BUN      99B
1746
1747 1264 3764   0 0000 44 1273          BP2          DO       REAL
     1265 3765   0 0000 30 1267
1748 1266 3766   0 0000 30 1084                       BUN      88B
1749 1267 3767   0 0007 45 0000          REAL.1       CLT
1750 1268 3768   0 0000 41 2395                       LDR      -REAL-
1751 1269 3769   0 0001 49 0002          4            SLT      2
1752 1270 3770   0 0000 44 1237                       DO       BUFFERFILL.2
     1271 3771   0 0000 30 1230
1753 1272 3772   0 0001 45 0000                       CLA
1754 1273 3773   0 0000 37 1273          REAL         BZR      $
1755 1274 3774   0 0000 30 1269                       BUN      4B
1756
1757
1758 1275 3775   0 0000 46 1001          PUNCHING.2   CLL      LIC
1759 1276 3776   0 2001 61 1025          PUNCHING.1   CWR      BUFAREA+15,2,1
1760 1277 3777   0 1001 61 1025                       CWR      BUFAREA+15,1,1
1761 1278 3778   0 0000 46 1008                       CLL      LLC
1762 1279 3779   0 0000 46 1010                       CLL      BUFAREA
1763 1280 3780   0 0000 42 2271                       LDB      =BUFAREA+1=
1764 1281 3781   0 0150 29 1010                       RTF      BUFAREA,15
1765 1282 3782   0 0000 30 1282          PUNCHING     BUN      $
1766
1767                                     LIBRARYFORMAT-28
1768 1283 3783   3 3333 33 3333                       FORMAT   PUNCH,16(T5A)
```

```
1769                                                    PLACED
1770
1771
1772                                                    FORGET  NAMES
1773                                                    ORIGIN  0000
1774                                                    PLACE   4000
1775
1776                                                            OBJECT PROGRAM CARD LOADER
1777
1778
1779 0000 4000   4 1000 64 0002          LOADL       4CRI    $+2,1
1780 0001 4001   0 0000 30 0000                       BUN     $-1
1781 0002 4002   4 1001 62 0115                      4CRFL   PFMT,1,1
1782 0003 4003   4 1008 62 0144          LOADB       4CRF    FMT1,1,5
1783 0004 4004   0 5401 26 0080          1           IFL     B/54,1
1784 0005 4005   0 0000 31 0008                       BOF     2F
1785 0006 4006   4 2000 65 0008                      4CWI    2F,2
1786 0007 4007   0 0000 30 0004                       BUN     1B
1787 0008 4008   4 2000 65 0010          2           4CWI    $+2,2
1788 0009 4009   0 0000 30 0013                       BUN     $+4
1789 0010 4010   4 2004 63 0231                      4CWF    FMT3,2,3        MONIT
1790 0011 4011   4 2006 63 0202                      4CWF    FMT4,2,4         ERR
1791 0012 4012   4 2008 63 0173                      4CWF    FMT5,2,5      PRINTER
1792 0013 4013   4 1000 65 0015                      4CWI    $+2,1
1793 0014 4014   0 0000 30 0016                       BUN     $+2
1794 0015 4015   4 1008 63 0173                      4CWF    FMT5,1,5       PUNCH
1795
1796                                    LOADC       IS      $+1
1797 0016 4016   0 0000 41 0240                       LDR     FIX
1798 0017 4017   0 0001 40 0080                       STR     B
1799 0018 4018   0 0000 41 0241                       LDR     FIX+1
1800 0019 4019   0 0411 40 0077                       STR     LODOX/04
1801 0020 4020   0 0411 40 0025                       STR     ZERO/04
1802 0021 4021   0 0401 27 0025                       DFL     ZERO/04,1
1803 0022 4022   0 0000 41 0080                       LDR     B
1804 0023 4023   0 0000 42 0025                       LDB     $+2
1805 0024 4024   0 0010 29 0079                       RTF     A,1
1806 0025 4025   0 0000 29 0199          ZERO        RTF     199,00
1807 0026 4026   0 0002 40 0079                       STB     A
1808 0027 4027   0 0411 18 0079                       CFR     A/04
1809 0028 4028   0 0001 35 0025                       BCU     ZERO
1810
1811 0029 4029   0 0000 41 0072          LOADP       LDR     X
```

```
1812 0030 4030   0 0001 40 0051                STR     M
1813 0031 4031   0 3000 38 0049                BCS     INP,3
1814 0032 4032   0 0000 42 0086                LDB     =9899=
1815 0033 4033   0 0005 20 0034                IBB     $+1,5
1816 0034 4034   5 1010 60 0200        3       5CNC    200,1
1817 0035 4035   0 0005 20 0034                IBB     3B,5
1818 0036 4036   0 0001 42 0037        CHK     LBC     $+1
1819 0037 4037   0 0001 45 0100                CLA     100
1820 0038 4038   1 0000 12 0200        4       -ADD    200
1821 0039 4039   1 0000 12 0201                -ADD    201
1822 0040 4040   1 0000 12 0202                -ADD    202
1823 0041 4041   1 0000 12 0203                -ADD    203
1824 0042 4042   1 0000 12 0204                -ADD    204
1825 0043 4043   0 0005 20 0038                IBB     4B,5
1826 0044 4044   0 0000 31 0045                BOF     $+1
1827 0045 4045   0 0000 36 0051                BZA     M
1828 0046 4046   0 0040 09 0082                SPO     R-CHECK SUM ERROR-
1829 0047 4047   0 9669 00 9669                HLT     9669,9669(44)
1830 0048 4048   0 0000 30 0047                BUN     $-1
1831 0049 4049   0 1000 03 0100        INP     PNC     0100,1,100
1832 0050 4050   0 0000 30 0036                BUN     CHK
1833
1834 0051 4051   0 0000 10 0101        M       CAD     101
1835 0052 4052   0 0000 42 0051                LDB     M
1836 0053 4053   0 0004 33 0063                BSA     C,4
1837
1838 0054 4054   0 0000 46 0074                CLL     Z
1839 0055 4055   0 0299 26 0074                IFL     Z/02,99
1840 0056 4056   0 0401 28 0074        5       DLB     Z/04,1
1841 0057 4057   1 0000 41 0100                -LDR    100
1842 0058 4058   0 1280 37 0075                BFR     END/12,80
1843 0059 4059   0 0000 37 0029                BZR     LOADP
1844 0060 4060   1 6400 28 0100                -DLB    100/64,0
1845 0061 4061   1 0411 40 0000                -STR    0/04
1846 0062 4062   0 0000 30 0056                BUN     5B
1847
1848 0063 4063   0 6610 40 0067        C       STA     R/66
1849 0064 4064   0 9999 21 0000                DBB     0,-1
1850 0065 4065   0 0412 40 0067                STB     R/04
1851 0066 4066   1 0000 42 9999                -LDB    -1
1852 0067 4067   0 0000 29 0000        R       RTF     0,00
1853 0068 4068   0 0001 48 0007                SRT     7
1854 0069 4069   0 0000 12 0073                ADD     0
1855 0070 4070   0 0000 19 0051                ADL     M
```

```
1856 0071 4071   0 0000 30 0051                    BUN     M
1857 0072 4072   0 0000 10 0101          X         CAD     101
1858 0073 4073   0 0000 00 0001          O         HLT     1
1859 0074 4074   0 0000 00 0099          Z         HLT     99
1860
1861 0075 4075   0 6711 18 0078          END       CFR     SECT/67
1862 0076 4076   0 0001 35 0056                    BCU     5B
1863 0077 4077   0 0000 30 0200          LODOX     BUN     200
1864
1865
1866 0078 4078   8 0000 00 0000          SECT      (80(12))
1867 0079 4079   0 0000 00 0000          A         (0)
1868 0080 4080   0 0000 00 5000          B         (5000)
1869 0081 4081   0 0000 00 0348                    POOL
     0082 4082   2 1643 48 4543    $CHEC
     0083 4083   2 5200 62 6454    K SUM
     0084 4084   2 0045 59 5956     ERRO
     0085 4085   2 5900 00 0000    R
     0086 4086   0 0000 00 9899
1870 0087 4087   3 3333 33 3333          PFMT-28   FORMAT  INPUT,25B,5(S10N)
1871 0116 4116   3 3333 33 3333          FMT1-28   FORMAT  INPUT,16(P5A),P10Z
1872 0145 4145   3 3333 33 3333          FMT5-28   FORMAT  PRINT,24(T5A)
1873 0174 4174   3 3333 33 3333          FMT4-28   FORMAT  PRINT,32B,11(T5A),33B
1874 0203 4203   3 3333 33 3333          FMT3-28   FORMAT  PRINT,49B,T5A,T1A1B2A4Z,T10N,T8Z1A,XB6Z2A,48B
1875
1876                                               ORIGIN  240
1877 0240 4240   0 0000 00 5000          FIX       (5000)
1878 0241 4241   0 0000 00 0200                    (200)
1879
1880
1881
1882                                                       OBJECT DUMP
1883
1884                                               ORIGIN  300
1885                                    IA         IS      100
1886                                    OT         IS      1
1887
1888 0300 4300   0 3000 38 0303          DUMP.1     BCS     $+3,3
1889 0301 4301   4 1000 63 0388                    4CWF    OUTFMT,1,1
1890 0302 4302   0 0000 30 0304                     BUN     $+2
1891 0303 4303   0 1070 06 0353                     PWR     CALL,1,7
1892 0304 4304   4 1008 50 0000                    4MRW    OT
1893 0305 4305   4 1300 58 0000                    4MPF    OT,3
1894 0306 4306   0 4000 38 0319                     BCS     DUMPL,4
```

```
1895 0307 4307   4 1000 59 0333                    4MIB     MRD,OT
1896 0308 4308   0 0000 30 0307                     BUN     $-1
1897
1898 0309 4309   0 3000 38 0317          DUMP.2     BCS     DUMP.3,3          PT OUT
1899 0310 4310   0 0000 42 0081                     LDB     =BUF+1=
1900 0311 4311   0 0050 29 0100          1          RTF     IA,5
1901 0312 4312   4 1001 61 0352                    4CWR     BUF+5,1,1
1902 0313 4313   0 0401 26 0347                     IFL     BUF/04,1
1903 0314 4314   0 0205 26 0311                     IFL     1B/02,5
1904 0315 4315   0 0000 31 0333                     BOF     MRD
1905 0316 4316   0 0000 30 0310                     BUN     DUMP.2+1
1906
1907 0317 4317   0 1000 06 0100          DUMP.3     PWR     IA,1,100
1908 0318 4318   0 0000 30 0333                     BUN     MRD
1909
1910 0319 4319   0 3000 38 0330          DUMPL      BCS     DUMP.4,3
1911 0320 4320   0 6105 26 0347                     IFL     BUF/61,5
1912 0321 4321   0 0000 42 0081                     LDB     =BUF+1=
1913 0322 4322   0 0050 29 0250          1          RTF     250,5
1914 0323 4323   4 1001 61 0352                    4CWR     BUF+5,1,1
1915 0324 4324   0 0405 27 0322                     DFL     1B/04,5
1916 0325 4325   0 0401 26 0347                     IFL     BUF/04,1
1917 0326 4326   0 0000 32 0321                     BRP     DUMPL+2
1918 0327 4327   0 0000 46 0347                     CLL     BUF
1919 0328 4328   0 6101 26 0347                     IFL     BUF/61,1
1920 0329 4329   0 0000 30 0333                     BUN     MRD
1921
1922 0330 4330   0 1000 06 0000          DUMP.4     PWR     0000,1,100
1923 0331 4331   0 1000 06 0100                     PWR     100,1,100
1924 0332 4332   0 1000 06 0200                     PWR     200,1,100
1925
1926 0333 4333   4 1101 52 0100          MRD       4MNC     IA,OT,1
1927 0334 4334   0 0000 10 0100                     CAD     IA
1928 0335 4335   0 0099 36 0346                     BFA     HLT/00,99
1929 0336 4336   0 0001 45 0100                     CLA     100
1930 0337 4337   0 0001 42 0336                     LBC     $-1
1931 0338 4338   1 0000 12 0200          1         -ADD     200
1932 0339 4339   0 0001 20 0338                     IBB     1B,1
1933 0340 4340   0 0000 31 0341                     BOF     $+1
1934 0341 4341   0 0000 36 0309                     BZA     DUMP.2
1935 0342 4342   0 0040 09 0082                     SPO     R-CHECK SUM ERROR-
1936 0343 4343   0 9669 00 9669                     HLT     9669,9669(44)
1937 0344 4344   4 1101 58 0000                    4MPB     OT,1
1938 0345 4345   0 0000 30 0333                     BUN     MRD
```

```
1939 0346 4346   0 0757 00 7250          HLT          HLT      7250,0757(44)
1940
1941 0347 4347   0 0000 01 0000          BUF          (10000)
1942 0348 4348   0 0000 00 0000                       FILL     0,5
1943 0353 4353   0 4000 38 0302          CALL         BCS      302,4
1944 0354 4354   0 0000 30 0003                       BUN      LOADB
1945 0355 4355   0 1000 03 0000                       PNC      0000,1,100
1946 0356 4356   0 1000 03 0100                       PNC      0100,1,100
1947 0357 4357   0 1000 03 0200                       PNC      0200,1,100
1948 0358 4358   0 0000 30 0003                       BUN      LOADB
1949 0359 4359   6 0000 30 0300                      6BUN      300
1950
1951 0360 4360   3 3333 33 3333          OUTFMT-28    FORMAT   PUNCH,P5ZN9B4N,11B,5(S10N)
1952
1953                                                 PLACED
1954       0001                                      END      4800                          P. 51
```

```
                ASMBL 1
                REORD 1.00

                                    THE BURROUGHS ALGEBRAIC COMPILER
                                  ERDWINN, MERNER, CROWDER, SPERONI, KNUTH
                                  DAHM, OLIPHINT, LOGEMANN, SCHUMAN
                                              FEBRUARY 1,1962
15 0    0000    OT      DEFN    1               OUTPUT TAPE UNIT
16 0    0000    T       DEFN    2               PROGRAM TAPE UNIT
17 0    0000    PNTR    DEFN    2               PRINTER UNIT
18 0    0000    LODOX   DEFN    74
19 0    0000    LODOV   DEFN    76
20 0    0000    MSIZE   DEFN    4999            SIZE OF MEMORY
21 0    0000            LOCN    0
22 0    0000    BUF     DEFN    0002
23 0    0000            BUN     LOD
24 0    0001            BUN     STORE

26 0    0002    LOD     MRW 4 T             TAPE LOADING ROUTINE
27 0    0003            CLB                     FOR FIRST PHASE
28 0    0004    *A      MNC 5 0,T,10
29 0    0005            LDB     *+1
30 0    0006            CLA     999
31 0    0007    *B      ADD - 0
32 0    0008            DBB     B-,1
33 0    0009            BZA     C+
34 0    0010            SPO     E+,4            SUM CHECK NONZERO
35 0    0011            MPB 4 T,10               CAUSES TYPEOUT AND HALT
36 0    0012            F424    9669,0,9669
37 0    0013            LDB     B-              PRESS START TO TRY AGAIN
38 0    0014            BUN     A-
39 0    0015    *C      DFL     *+1,11,1        FIVE TIMES
40 0    0016    *G      F424    4000,42,B-      TEN BLOCKS
41 0    0017            IBB     *+1,999         999 LOCATIONS PER BLOCK
42 0    0018            STB     B-,04
43 0    0019            BRP     A-
44 0    0020            BUN     46
45 0    0021    *E      CNST    $$CHECK SUM ERROR$$
46 0    0025            LOCN    46
47 0    0046    *D      LDB     Z+              READ LAST BLOCK INTO THE
48 0    0047            MNC 5 0,T,2                END OF MEMORY
49 0    0048            LDB     *+1             (THIS HOLDS PATCHES AND
50 0    0049            CLA     199
51 0    0050    *Z      ADD - MSIZE-199
```

```
52 0      0051           DBB   *-1,1       SUM CHECK IT, TOO
53 0      0052           BZA   D+
54 0      0053           SPO   E-,4
55 0      0054           MPB 4 T,2
56 0      0055           F424  9669,00,9669
57 0      0056           BUN   D-
58 0      0057   *D      DFL   G-,11,5
59 0      0058           STA   B-,04
60 0      0059           BOF   STACK

                                 TAPE STORING ROUTINE.
63 0      0060   STORE   MRW 4 T
64 0      0061   *B      LDB   *+1           REWRITES COMPILER FROM CORE
00 65 0   0062           CLA   998            IN THE FORM REQUIRED BY LOADING ROUTINE.
66 0      0063   *A      ADD - 0
67 0      0064           DBB   *-1,1
68 0      0065           LDB   A-
69 0      0066           LDR - 999
70 0      0067           STA - 999
71 0      0068           CSU - 999           COMPUTE CHECK SUM
72 0      0069           STA - 999
73 0      0070           MOW 5 0,T,10
74 0      0071           STR - 999
75 0      0072           IBB   *+1,999
76 0      0073           STB   A-,04
77 0      0074           DFL   G-,11,1
78 0      0075           BRP   B-
79 0      0076           DFL   G-,11,5
80 0      0077   *C      CLA   199
81 0      0078           STA   A-,04
82 0      0079           LDB   Z-
83 0      0080           CLL - 0
84 0      0081           STB   *+2,04
85 0      0082           LDB   C-
86 0      0083   *D      ADD - 0
87 0      0084           DBB   *-1,1
88 0      0085           LDB   D-
89 0      0086           STA - 0
90 0      0087           CSU - 0
91 0      0088           STA - 0
92 0      0089           MOW 5 0,T,2
93 0      0090           MRW 4 T
94 0      0091           CLT
95 0      0092           STA   D-,04
```

```
    96 0      0093          BOF   *+1
    97 0      0094          HLT   2222        STOP WHEN JOB IS COMPLETED
    98 0      0095          BUN   LOD

                                SECTION A.  BIG TABLES.

001 02 0      0096          LOCN  102    DICTIONARY OF ALL WORDS USED IN ERROR MESSAGES
 01 03 0      0102    DICT  CNST  34954575956   01 IMPROPER
 01 04 0      0103          CNST  $PER$
 01 05 0      0104          CNST  34348415941   03 CHARACTER
 01 06 0      0105          CNST  $CTER$
 01 07 0      0106          CNST  $PAIR$        05 PAIR
 01 08 0      0107          CNST  34464575349   06 DUPLICATE
 01 09 0      0108          CNST  $CATE$
 01 10 0      0109          CNST  35759564345   08 PROCEDURE
 01 11 0      0110          CNST  $DURE$
 01 12 0      0111          CNST  $NAME$        10 NAME
 01 13 0      0112          CNST  34664554363   11 FUNCTION
 01 14 0      0113          CNST  $ION$
 01 15 0      0114          CNST  34159476454   13 ARGUMENT
 01 16 0      0115          CNST  $ENT$
 01 17 0      0116          CNST  35449625753   15 MISPLACED
 01 18 0      0117          CNST  $ACED$
 01 19 0      0118          CNST  $LABEL$       17 LABEL
 01 20 0      0119          CNST  34159496348   18 ARITHMETIC
 01 21 0      0120          CNST  $METIC$
 01 22 0      0121          CNST  35657455941   20 OPERATION
 01 23 0      0122          CNST  $TION$
 01 24 0      0123          CNST  36541594941   22 VARIABLE
 01 25 0      0124          CNST  $BLE$
 01 26 0      0125          CNST  36268544256   24 SYMBOL
 01 27 0      0126          CNST  $L$
 01 28 0      0127          CNST  34445434954   26 DECIMAL
 01 29 0      0128          CNST  $AL$
 01 30 0      0129          CNST  $POINT$       28 POINT
 01 31 0      0130          CNST  $SCALE$       29 SCALE
 01 32 0      0131          CNST  34641436356   30 FACTOR
 01 33 0      0132          CNST  $R$
 01 34 0      0133          CNST  36263416345   32 STATEMENT
 01 35 0      0134          CNST  $MENT$
 01 36 0      0135          CNST  34356556263   34 CONSTANT
 01 37 0      0136          CNST  $ANT$
 01 38 0      0137          CNST  $OUT$         36 OUT
 01 39 0      0138          CNST  $OF$          37 OF
```

```
01 40 0      0139           CNST  $RANGE$          38 RANGE
01 41 0      0140           CNST  34356545749     39 COMPILER
01 42 0      0141           CNST  $LER$
01 43 0      0142           CNST  34341574143     41 CAPACITY
01 44 0      0143           CNST  $ITY$
01 45 0      0144           CNST  34567434545     43 EXCEEDED
01 46 0      0145           CNST  $DED$
01 47 0      0146           CNST  $COMMA$         45 COMMA
01 48 0      0147           CNST  $EXTRA$         46 EXTRA
01 49 0      0148           CNST  36264426243     47 SUBSCRIPT
01 50 0      0149           CNST  $RIPT$
01 51 0      0150           CNST  $EMPTY$         49 EMPTY
01 52 0      0151           CNST  35756624963     50 POSITION
01 53 0      0152           CNST  $ION$
01 54 0      0153           CNST  $RIGHT$         52 RIGHT
01 55 0      0154    TEMP   CNST  $LEFT$          NOT USED
01 56 0      0155           CNST  35741594555     54 PARENTHESIS
01 57 0      0156           CNST  36348456249
01 58 0      0157    EXO    CNST  26200007777
01 59 0      0158           CNST  35945534163     57 RELATION
01 60 0      0159           CNST  $ION$
01 61 0      0160           CNST  34256565345     59 BOOLEAN
01 62 0      0161           CNST  $AN$
01 63 0      0162           CNST  35657455941     61 OPERAND
01 64 0      0163           CNST  $ND$
01 65 0      0164           CNST  $ARRAY$         63 ARRAY
01 66 0      0165           CNST  34445435341     64 DECLARATION
01 67 0      0166           CNST  35941634956
01 68 0      0167           CNST  $N$
01 69 0      0168           CNST  34162624947     67 ASSIGNMENT
01 70 0      0169           CNST  $NMENT$
01 71 0      0170           CNST  $MOD$           69 MOD
01 72 0      0171           CNST  $INPUT$         70 INPUT
01 73 0      0172           CNST  35449626249     71 MISSING
01 74 0      0173           CNST  $NG$
```

TEMPORARY STORAGE AND COUNTERS

```
01 78 0      0174    ABASE  CNST  100000 BEGINNING LOCATION OF LAST ARRAY DECLARED
01 79 0      0175    ACCUM  HLT   0      RESULT OF ARITHMETIC OPERATION
01 80 0      0176    ARRI   HLT   0      PRODUCT OF ARRAY DIMENSIONS
01 81 0      0177    ARRL   HLT   0      BASE DECREMENT IN ARRAY DECLARATION
01 82 0      0178    ARTHM  HLT   0      IJ-PAIRS FOR ARITHMETIC GENERATOR
01 83 0      0179    CHAR   HLT   0      LAST CHARACTER READ FROM CARD
```

```
01 84 0      0180   CNTRI HLT    0       COUNTER FOR INSTRUCTIONS IN TARGET BUFFER
01 85 0      0181   CNTRF HLT    96      COUNTER FOR FIX-UPS IN BUFFER
01 86 0      0182   D     HLT    0       EXPONENT OF NUMBER
01 87 0      0183   WRTF  RTF 4  *,0     RECORD TRANSFER CONSTANT FOR WRITE SUBROUTINE
01 88 0      0184   DESCR HLT    0       OUTPUT INSTRUCTION
01 89 0      0185   EXPLN HLT    0       SYMBOLIC ADDRESSES OF INSTRUCTION
01 90 0      0186   DEX   HLT    0       CURRENT CONTENTS OF B REGISTER
01 91 0      0187   FP    HLT    0       FRACTIONAL PART OF CONSTANT
01 92 0      0188   FRSTP HLT    0       1ST PARAMETER TO PROCEDURE DECLARATION
01 93 0      0189   G     HLT    0       SIGN OF INSTRUCTION FOR ASSEMBLER
01 94 0      0190   GP    HLT    0       TEMP STORAGE OF G
01 95 0      0191   I     HLT    0       LEFTHAND DIGIT OF IJ-PAIR
01 96 0      0192   INSTP HLT    0       TEMP STORAGE OF INSTR
01 97 0      0193   INSTR HLT    0       INSTRUCTION BEING ASSEMBLED
01 98 0      0194   IOPUS HLT    0       I-O DECLARATION COMMUNICATION LINE
01 99 0      0195   IRSTP HLT    0       FRSTP IN 64-FIELD
02 00 0      0196   J     HLT    0       RIGHTHAND DIGIT OF IJ-PAIR
02 01 0      0197   K     HLT    0       TWICE NUMBER OF CHARACTERS IN IDENTIFIER
02 02 0      0198   K1    HLT    3       LEFT CHARACTER TYPE -- INITIALLY LEFT PAREN
02 03 0      0199   K2    HLT    3       RIGHT CHARACTER TYPE
02 04 0      0200   KC    HLT    0       NUMBER OF PROCEDURE AND FUNCTION DECLARATIONS
02 05 0      0201   L     HLT    0       CODE WORD FOR PRESENT IDENTIFIER
02 06 0      0202   LCMAX HLT    0       HIGHEST LOCATION USED IN SEGMENTS
02 07 0      0203   LEVEL HLT    0       KC LEVEL OF CURRENT PROCEDURE DECLARATION
02 08 0      0204   LLO   HLT    0       SCRAMBLED STARTING VALUE FOR ALPHA LOOKUP
02 09 0      0205   LOCNP HLT    0       TEMP STORAGE OF LOCN
02 10 0      0206   LP    HLT    0       TEMP STORAGE OF L
02 11 0      0207   LRTF  HLT    0       LOCATION OF LAST RTF IN OUTPUT BUFFER
02 12 0      0208   MSG   HLT 8          STORAGE FOR ERROR MESSAGES
02 13 0      0209         LOCN   *+6
02 14 0      0215   HALT1 DEFN   MSG
02 15 0      0215   OPRTM HLT    0       RELATIONAL OPERATION
02 16 0      0216   OPRTN HLT    0       CURRENT OPERATION SENT TO GENERATORS
02 17 0      0217   PAR   HLT    0       CURRENT DIMENSION OF ARRAY
02 18 0      0218   PLOC  HLT    0       BEGINNING OF PROCEDURE DECLARATION CODE
02 19 0      0219   RR1   HLT    0       OTHERWISE TYPE OF MAIN PROGRAM
02 20 0      0220   RR2   HLT    0       TYPE OF CURRENT DECLARATION
02 21 0      0221   RR3   HLT    0       OTHERWISE TYPE OF CURRENT PROGRAM
02 22 0      0222   S1    HLT    24      LEFT CHARACTER (CARDATRON CODE) INITIALLY (
02 23 0      0223   S2    HLT    24      RIGHT CHARACTER (CARDATRON CODE)
02 24 0      0224   SAVOP HLT    0       TEMP STORAGE FOR OPERATOR
02 25 0      0225   SCNCT HLT    2              CURRENT PLACE IN CARD IMAGE
02 26 0      0226   SER   HLT    0       LOCATION OF A-REGISTER CONTENTS IN STACK
02 27 0      0227   SMBL  HLT    0       TEMP STORAGE FOR SCANNED SYMBOL
```

```
02 28 0      0228    STSV  HLT   0        CIRCLE J(INPUT) OR CIRCLE K(OUTPUT)
02 29 0      0229    RRO   HLT   0        CONTROL CODE FOR SYMBL
02 30 0      0230    SYMBL HLT   0
02 31 0      0231          HLT   0        STORAGE FOR 50-CHARACTER IDENTIFIER
02 32 0      0232          HLT   0
02 33 0      0233          HLT   0
02 34 0      0234          HLT   0
02 35 0      0235          HLT   0
02 36 0      0236          HLT   0
02 37 0      0237          HLT   0
02 38 0      0238          HLT   0
02 39 0      0239          HLT   0
02 40 0      0240    V1    HLT   0        V-OPERANDS ARE SET UP BY GENERATOR
02 41 0      0241    V2    HLT   0         AND USED BY ASSEMBLER
02 42 0      0242    V3    HLT   0
02 43 0      0243    V4    F244  21,XONE,0          CONSTANT 1
02 44 0      0244    V5    F244  20,FONE,0          CONSTANT 1.0
02 45 0      0245    V6    F244  21,XZERO,0         CONSTANT 0
02 46 0      0246    V7    F244  20,FZERO,0         CONSTANT 0.0
02 47 0      0247    V8    F244  40,LALE,0
02 48 0      0248    V9    HLT
02 49 0      0249    V10   F244  21,XTWO,0          CONSTANT 2
02 50 0      0250    V11   F244  20,FTWO,0          CONSTANT 2.0
02 51 0      0251    VARB  HLT   MSIZE   LAST LOCATION USED FOR TARGET VARIABLES,ETC.
02 52 0      0252    VIMAG HLT   0        CURRENT V-OPERAND
02 53 0      0253    V     DEFN  V1-1

                                          SWITCHES SET BY TRANSLATOR
02 56 0      0253    SW2   HLT   0        PROCESSING SCALE FACTOR
02 57 0      0254    SW3   HLT   0        DECIMAL POINT SENSED IN CONSTANT
02 58 0      0255    SW6   HLT   0        WE MIGHT WANT IMPLIED MULTIPLICATION
02 59 0      0256    ALPHA HLT   1        CONTROL OF ITERATION LIST
02 60 0      0257    DELTA HLT   0        CONTROLS WHAT TO DO AT NEXT SEMICOLON
02 61 0      0258    EPSLN HLT   0        NUMBER OF EXTERNAL THINGS
02 62 0      0259    KAPPA HLT   0        EMPTY SUBSCRIPTS HAVE APPEARED
02 63 0      0260    PHI   HLT   0        IGNORE NEXT LEFT PARENTHESIS
02 64 0      0261    PSI   HLT   0        NEXT FORWARD REFERENCE IS INCREMENTED
02 65 0      0262    CHI   HLT   0        MONITOR LABELS IN CURRENT PROGRAM
02 66 0      0263    CHI3  HLT   0        MONITOR LABELS OUTSIDE OF PROCEDURES
02 67 0      0264    OMEGA HLT   0        FOR MODE IN ASSIGNMENT GENERATOR
02 68 0      0265    FNSW  HLT   0        PROCESSING FUNCTION DECLARATION
02 69 0      0266    PARSW HLT   0        PROCESSING PROCEDURE OR FUNCTION PARAMETERS
02 70 0      0267    TAG   HLT   0        IDENTIFIER IS A LABEL
02 71 0      0268    XI    HLT   0        LAST INSTRUCTION ASSEMBLED WAS SLT10
```

```
 02 72 0      0269   LAMDA HLT    0          OTHERWISE HAS APPEARED IN EITHER IF CASE
002 73 0      0270   PI    HLT    0          PUT FORWARD REFERENCE OPERATORS ON EXEC STACK
 02 74 0      0271   IOTA  HLT    0          ARRAY NOT YET DECLARED
 02 75 0      0272   OMCRN HLT    0          IGNORE NEXT SEMICOLON

                                            STACKS IN ASSOCIATIVE MEMORY
 02 78 0      0273   AVAIL F424   0000,0,0   FREED-UP LOCATIONS
 02 79 0      0274   FUNS  F424   FUNS,0,0   CONTROL OF PROCEDURE,FUNCTION CALLS
 02 80 0      0275   OP    F424   OP,0,0     OPERATORS WAITING TO BE USED
 02 81 0      0276   ARAS  F424   ARAS,0,0   INCREMENT WORDS FOR ARRAY
 02 82 0      0277   DIMS  F424   DIMS,0,0   ARRAY DIMENSIONS
 02 83 0      0278   EXEC  F424   EXEC,0,0   FORWARD REFERENCES TO FOR LOOP
 02 84 0      0279   FV    F424   FV,0,0     FOR VARIABLE
 02 85 0      0280   MULS  F424   MULS,0,0   DIMENSIONS
002 86 0      0281   MODE  F424   MODE,0,NRMMD MODE TRANSLATOR IS IN (INITIALLY NORMAL)
 02 87 0      0282   MULT  F424   MULT,0,0   MULS STACK BACKWARDS
 02 88 0      0283   OPRND F424   OPRND,0,0  OPERANDS WAITING TO BE USED
 02 89 0      0284   PAREF F424   PAREF,0,0  REFERENCE TO PROCEDURE PARAMETERS
 02 90 0      0285   PR1   F424   PR3,0,0    PREFIXES OUTSIDE OF PROCEDURES
 02 91 0      0286   PR3   F424   PR3,0,0    CURRENT PREFIXES
 02 92 0      0287   RV    F424   RV,0,0     FOR VARIABLE (BACKWARDS)
 02 93 0      0288   SAVET F424   SAVET,0,0  TEMP STORAGE CELLS SAVED
 02 94 0      0289   SETUP F424   SETUP,0,0  REFERENCE TO A PROCEDURE PARAMETER
 02 95 0      0290   TEMPS F424   TEMPS,0,0  TEMP STORAGE CELLS AVAILABLE
 02 96 0      0291   XVP   F424   XVP,0,0    ARRAYS IN MULTIPLE INDEXING
 02 97 0      0292   DUMBS F424   DUMBS,0,0  LEVELS WHERE DUMP CARD APPEARS


 03 00 0      0293   OPTAB DEFN   *          TABLE OF OPERATION SYMBOLS
 03 01 0      0293   CRA   F2443  0,GCRA,1   00 INPUT OR OUTPUT
 03 02 0      0294   CRB   F2441  01,GCRB,1  01 EQUAL
 03 03 0      0295   CRC   F2442  00,GCRC,1  02 FUNCTION CALL COMMA
 03 04 0      0296   DOT   F2440  12,0048,1  03 . MULTIPLICATION
 03 05 0      0297   RPAR  F2440  00,0000,3  04 ) RIGHT PARENTHESIS
 03 06 0      0298   CRD   F2441  41,GCRD,1  05 MOD COMMA
 03 07 0      0299   CRE   F2443  00,GCRE,1  06 EITHER
 03 08 0      0300   CRF   F2441  00,GCRF,1  07 ARRAY DECLARATION
 03 09 0      0301   CRG   F2442  00,GCRG,1  08 ARRAY DECLARATION
 03 10 0      0302   CRH   F2442  00,GCRH,1  09 SWITCH
 03 11 0      0303   PLUS  F2440  10,0000,1  10 + ADDITION
 03 12 0      0304   CRI   F2443  00,GCRI,1  11 INPUT OR OUTPUT
 03 13 0      0305   CRJ   F2442  00,GCRJ,1  12 INPUT LABEL COMMA
 03 14 0      0306   SMCLN F2446  00,SEMI,5  13 $ SEMICOLON
 03 15 0      0307   EXPN  F2441  14,GEXPN,1 14 * EXPONENTIATION
```

```
03 16 0      0308    CRK    F2443 00,GCRK,1      15 OUTPUT LABEL COMMA
03 17 0      0309    TEMP1  CNST  0                 NOT USED
03 18 0      0310    CRM    F2443 00,GCRM,1      17 MONITOR
03 19 0      0311    CRN    F2441 00,GCRN,1      18 PARAMETRIC ARRAY
03 20 0      0312    CRO    F2441 41,GCRO,1      19 FUNCTION CALL
03 21 0      0313    HYPH   F2443 14,GHYPH,1     20 - NEGATION
03 22 0      0314    SOLD   F2440 11,0024,1      21 / DIVISION
03 23 0      0315    CRP    F2443 00,GCRP,1      22 PROCEDURE
03 24 0      0316    KOMA   F2446 00,COMMA,5     23 , COMMA
03 25 0      0317    LPAR   F2440 00,0000,2      24 ( LEFT PARENTHESIS
03 26 0      0318    CRQ    F2443 00,GCRQ,1      25 PROCEDURE
03 27 0      0319    CRR    F2441 40,GCRR,1      26 ARRAY
03 28 0      0320    CRS    F2443 00,GCRS,1      27 SUBROUTINE
03 29 0      0321    CRT    F2442 00,GCRT,1      28 GO TO
03 30 0      0322    CRU    F2442 00,GCRU,1      29 UNTIL
03 31 0      0323    CRV    F2443 00,GCRV,1      30 SEGMENT
03 32 0      0324    CRW    F2443 00,GCRW,1      31 OTHERWISE
03 33 0      0325    CRX    F2443 00,GCRX,1      32 FOR
03 34 0      0326    SBST   F2446 00,EQUL,5      33 = ASSIGNMENT
03 35 0      0327    CRY    F2442 00,GCRY,1      34 FIX
03 36 0      0328    CRZ    F2442 00,GCRZ,1      35 STOP
03 37 0      0329    TEMP3  CNST  0                 NOT USED
03 38 0      0330    BREF   F2445 00,0000,1      37 BACKWARD REFERENCE
03 39 0      0331    TOP    CNST  0                 NOT USED
03 40 0      0332    CWEND  F2446 00,END,1       39 END
03 41 0      0333    CWNDX  F2446 00,NDXMD,4     40 ARRAY CALL
03 42 0      0334    CWARD  F2446 00,ARDEC,1     41 ARRAY DECLARATION
03 43 0      0335    CWEMP  F2446 00,EMPTY,5     42 EMPTY SUBSCRIPT
03 44 0      0336    CWLAB  F2446 00,LABMD,4     43 LABEL IN DECLARATION
03 45 0      0337    CWAPM  F2446 00,ARAPM,1     44 ARRAY PARAMETER
03 46 0      0338    CWCLN  F2446 00,FUNMD,4     45 FUNCTION,PROCEDURE CALL
03 47 0      0339    BOR    F2440 22,0203,1      46 BOOLEAN OR
03 48 0      0340    OPIF   F2442 00,GIF,1       47 IF
03 49 0      0341    RGEQ   F2448 01,0024,1      48 GEQ
03 50 0      0342    RLEQ   F2448 01,0012,1      49 LEQ
03 51 0      0343    OPMAX  F2440 00,0100,1      50 MAX
03 52 0      0344    OPMIN  F2440 00,0112,1      51 MIN
03 53 0      0345    CROY   F2443 22,GCROY,1     52 TRACE

                                                 VARIOUS MODES
03 56 0      0346    ARAMD  F244   0,ARACM,ARRAY ARRAY DECLARATION MODE
03 57 0      0347    ARFMD  F244   0,ARFCM,ARFGM ARRAY-FILL MODE
03 58 0      0348    DCLMD  DEFN   *              TYPE DECLARATION MODES
03 59 0      0348    INTMD  F244   0,DCLCM,INTG   INTEGER DECLARATION MODE
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```
 03 60 0      0349    FLTMD F244   0,DCLCM,FLTG   FLOATING DECLARATION MODE
003 61 0      0350    FORMD F244   1,FORCM,FOR    FOR MODE (PROCESSING ITERATION LIST)
 03 62 0      0351    FRMMD F2449  0,FRMCM,FRMT   FORMAT DECLARATION MODE
003 63 0      0352    FUNMD F244   0,FUNCM,COLON  FUNCTION MODE (SETTING UP PARAMETERS)
 03 64 0      0353    INNMD F2449  1,PUTCM,INPUT  INPUT DECLARATION MODE
 03 65 0      0354    MAXMD F244   0,MAXCM,NORM   MAX MODE
 03 66 0      0355    MINMD F244   0,MINCM,NORM   MIN MODE
 03 67 0      0356    MODMD F244   0,MODCM,NORM   MOD MODE
003 68 0      0357    NDXMD F244   0,NDXCM,INDEX  INDEX MODE (PROCESSING SUBSCRIPTS)
 03 69 0      0358    NRMMD F2441  10,0,0         NORMAL MODE
 03 70 0      0359    OUTMD F2449  1,PUTCM,OUTPT  OUTPUT DECLARATION MODE
 03 71 0      0360    PRCMD F244   0,PRCCM,PROCD  PROCEDURE DECLARATION MODE
 03 72 0      0361    SWMD  F244   0,SWCM,SWTCH   SWITCH MODE
 03 73 0      0362    FNCMD F244   0,PRCCM,FUNC   FUNCTION DECLARATION MODE
003 74 0      0363    LABMD F2442  0,LABCM,LABEL  LABEL MODE (OUTSIDE OF I-O,FORMAT MODES)
 03 75 0      0364    EXTMD F2448  1,FRMCM,EXTRN  EXTERNAL MODE
 03 76 0      0365    MEMMD F2447  1,ARACM,MEMST  TRACE MODE

                                                 RESERVED WORDS
 03 79 0      0366    SUBGN F4246  7001,0,SUBR
 03 80 0      0367          CNST   $SUBROUTINE$
 03 81 0      0369    UNTGN F4246  7001,0,UNTIL   (DO A SLA 4 ON THESE CODES
003 82 0      0370          CNST   $UNTIL$          TO GET THEIR TRUE SIGNIFICANCE)
 03 83 0      0371    INPGN F4246  7004,0,INNMD
 03 84 0      0372          CNST   $INPUT$
 03 85 0      0373    RETGN F4246  7001,0,RETN
 03 86 0      0374          CNST   $RETURN$
 03 87 0      0376    IFGN  F4246  7691,0,IF
 03 88 0      0377          CNST   $IF$
 03 89 0      0378    IMPGN F4240  7001,20,1209
 03 90 0      0379          CNST   $IMPL$
 03 91 0      0380    ORGN  F4246  7001,0,OR
 03 92 0      0381          CNST   $OR$
 03 93 0      0382    GOGN  F4246  7001,0,GO
 03 94 0      0383          CNST   $GO$
 03 95 0      0384    OUTGN F4246  7004,0,OUTMD
 03 96 0      0385          CNST   $OUTPUT$
 03 97 0      0387    EITGN F4246  7001,0,ETHR
 03 98 0      0388          CNST   $EITHER$
 03 99 0      0390    BOOGN F4246  7004,0,INTMD
 04 00 0      0391          CNST   $BOOLEAN$
 04 01 0      0393    COMGN F4246  7001,0,COMNT
 04 02 0      0394          CNST   $COMMENTS$
 04 03 0      0396    LEQGN F4248  7001,01,12
```

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04 04 0      0397           CNST  $LEQ$
04 05 0      0398    FORMG  F4246 7004,0,FRMMD
04 06 0      0399           CNST  $FORMAT$
04 07 0      0401    MINGN  F4246 7404,0,MINMD
04 08 0      0402           CNST  $MIN$
04 09 0      0403    NEQGN  F4248 7001,01,6
04 10 0      0404           CNST  $NEQ$
04 11 0      0405    FLOGN  F4246 7004,0,FLTMD
04 12 0      0406           CNST  $FLOATING$
04 13 0      0408    INTGN  F4246 7004,0,INTMD
04 14 0      0409           CNST  $INTEGER$
04 15 0      0411    FORGN  F4246 7004,0,FORMD
04 16 0      0412           CNST  $FOR$
04 17 0      0413    PROGN  F4246 7004,0,PRCMD
04 18 0      0414           CNST  $PROCEDURE$
04 19 0      0416    MAXGN  F4246 7404,0,MAXMD
04 20 0      0417           CNST  $MAX$
04 21 0      0418    FINGN  F4246 7001,0,FINSH
04 22 0      0419           CNST  $FINISH$
04 23 0      0421    PCSGN  F4242 7401,41,GPCS
04 24 0      0422           CNST  $PCS$
04 25 0      0423    SEGGN  F4246 7001,0,SGMT
04 26 0      0424           CNST  $SEGMENT$
04 27 0      0426    OVEGN  F4246 7001,0,OVRLY
04 28 0      0427           CNST  $OVERLAY$
04 29 0      0429    ENTGN  F4246 7001,0,ENTER
04 30 0      0430           CNST  $ENTER$
04 31 0      0431    GTRGN  F4248 7001,01,18
04 32 0      0432           CNST  $GTR$
04 33 0      0433    ARRGN  F4246 7004,0,ARAMD
04 34 0      0434           CNST  $ARRAY$
04 35 0      0435    OTHGN  F4246 7005,0,WISE
04 36 0      0436           CNST  $OTHERWISE$
04 37 0      0438    FUNGN  F4246 7004,0,FNCMD
04 38 0      0439           CNST  $FUNCTION$
04 39 0      0441    NOTGN  F4242 7001,24,GBNOT
04 40 0      0442           CNST  $NOT$
04 41 0      0443    LSSGN  F4248 7001,01,30
04 42 0      0444           CNST  $LSS$
04 43 0      0445    MONGN  F4246 7001,0,MONT
04 44 0      0446           CNST  $MONITOR$
04 45 0      0448    SWIGN  F4246 7004,0,SWMD
04 46 0      0449           CNST  $SWITCH$
04 47 0      0451    STOGN  F4246 7001,0,STOP
```

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04 48 0      0452           CNST   $STOP$
04 49 0      0453    FIXGN  F244   06,FIX,0
04 50 0      0454    GSEG   F244   14,SEGGN,0
04 51 0      0455    GNARR  F244   10,ARRGN,0
04 52 0      0456    ANDGN  F4240  7001,23,0200
04 53 0      0457           CNST   $AND$
04 54 0      0458    EXTGN  F4246  7004,0,EXTMD
04 55 0      0459           CNST   $EXTERNAL$
04 56 0      0461    REAL   F4246  7004,00,FLTMD
04 57 0      0462           CNST   $REAL $
04 58 0      0463    DUMPE  F4246  7001,0,DUMP
04 59 0      0464           CNST   $DUMP$
04 60 0      0465    MEMRY  F4246  7004,0,MEMMD
04 61 0      0466           CNST   $TRACE$
04 62 0      0467    STAX   F2446  73,0199,0      THERE ARE MORE RESERVED WORD CODES
04 63 0      0468           CNST   $STATEMENT$    SCATTERED THROUGH TABSC


04 66 0      0470    TABSC  F4248  8888,30,R1           AA
04 67 0      0471           F4248  8888,30,R1           AN      TABLE OF ADMISSIBLE
004 68 0     0472           F4248  8888,30,R3           A)      CHARACTER PAIRS AND
004 69 0     0473           F4248  8888,30,R2           A(      CORRESPONDING R-ROUTINES
04 70 0      0474           F4248  8888,30,R17          A.      IN SCANNER
04 71 0      0475           F4248  8888,30,R3           A$
04 72 0      0476           F4248  8888,30,R3           A,
04 73 0      0477           F4248  8888,30,R3           A*
04 74 0      0478           F4248  8888,30,R11          A-
04 75 0      0479           F4248  8888,30,R3K          AP      A=ALPHA
04 76 0      0480           F4248  8888,30,R4           NA      N=NUMBER
004 77 0     0481           F4248  8888,30,R5           NN      P=PLUS,DIVIDE,OR EQUALS
04 78 0      0482           F4248  8888,30,R6           N)
04 79 0      0483           F4248  8888,30,R19          N(
04 80 0      0484           F4248  8888,30,R20          N.
04 81 0      0485           F4248  8888,30,R6           N$
04 82 0      0486           F4248  8888,30,R6           N,
04 83 0      0487           F4248  8888,30,R22          N*
04 84 0      0488           F4248  8888,30,R18          N-
04 85 0      0489           F4248  8888,30,R6           NP
04 86 0      0490           F4248  8888,30,R7P          )A
04 87 0      0491           F4248  8888,30,R21          )N
04 88 0      0492           F4248  8888,30,R8           ))
04 89 0      0493           F4248  8888,30,R10          )(
04 90 0      0494           F4248  8888,30,R8           ).
04 91 0      0495           F4248  8888,30,R8           )$
```

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04 92 0      0496          F4248 8888,30,R8          ),
04 93 0      0497          F4248 8888,30,R8          )*
04 94 0      0498          F4248 8888,30,R12         )-
04 95 0      0499          F4248 8888,30,R8          )P
04 96 0      0500          F4248 8888,30,R7          (A
04 97 0      0501          F4248 8888,30,R23         (N
04 98 0      0502          F4248 8888,30,R25         ()
04 99 0      0503          F4248 8888,30,R8          ((
05 00 0      0504          F244  14,COMGN,0          (. ILLEGAL
05 01 0      0505          F4248 8888,30,R26         ($
05 02 0      0506          F4248 8888,30,R25         (,
05 03 0      0507          F244  06,LEQGN,0          (* ILLEGAL
05 04 0      0508          F4248 8888,30,R8          (-
05 05 0      0509          F4248 8888,30,R9          (P
05 06 0      0510          F4248 8888,30,R7          .A
05 07 0      0511          F4248 8888,30,R23         .N
05 08 0      0512          F244  06,NEQGN,0          .) ILLEGAL
05 09 0      0513          F4248 8888,30,R8          .(
05 10 0      0514          F244  14,INTGN,TABSC+72   .. ILLEGAL
05 11 0      0515          F244  18,PROGN,0          .$ ILLEGAL
05 12 0      0516          F244  12,FINGN,*+1        ., ILLEGAL
05 13 0      0517          F244  06,PCSGN,FIXGN      .* ILLEGAL
05 14 0      0518          F4248 8888,30,R8          .-
05 15 0      0519          F4248 8888,30,R9          .P
05 16 0      0520          F4248 8888,30,R7          $A
05 17 0      0521          F4248 8888,30,R23         $N
05 18 0      0522          F4248 8888,30,R27         $)
05 19 0      0523          F4248 8888,30,R8          $(
05 20 0      0524          F244  20,SUBGN,0          $. ILLEGAL
05 21 0      0525          F4248 8888,30,R26         $$
05 22 0      0526    SIGGN F4242 7401,41,GSIGN       $, ILLEGAL
05 23 0      0527          CNST  $SIGN$              $* ILLEGAL
05 24 0      0528          F4248 8888,30,R8          $-
05 25 0      0529          F4248 8888,30,R9          $P
05 26 0      0530          F4248 8888,30,R7          ,A
05 27 0      0531          F4248 8888,30,R23         ,N
05 28 0      0532          F4248 8888,30,R25         ,)
05 29 0      0533          F4248 8888,30,R8          ,(
05 30 0      0534    EQIGN F4240 7001,21,0206        ,. ILLEGAL
05 31 0      0535          CNST  $EQIV$              ,$ ILLEGAL
05 32 0      0536          F4248 8888,30,R25         ,,
05 33 0      0537          F244  08,SIGGN,0          ,* ILLEGAL
05 34 0      0538          F4248 8888,30,R8          ,-
05 35 0      0539          F4248 8888,30,R9          ,P
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05 36 0      0540           F4248 8888,30,R7            *A
05 37 0      0541           F4248 8888,30,R23           *N
05 38 0      0542           F2441 10,FONE,TABSC+82      *) ILLEGAL
05 39 0      0543           F4248 8888,30,R8            *(
05 40 0      0544    TOGN   F4246 7001,0,TO             *. ILLEGAL
05 41 0      0545           CNST  $TO$                  *$ ILLEGAL
05 42 0      0546    BEGGN  F4240 7002,0,0              *, ILLEGAL
05 43 0      0547           CNST  $BEGIN$               ** ILLEGAL
05 44 0      0548           F4248 8888,30,R8            *-
05 45 0      0549           F4248 8888,30,R9            *P
05 46 0      0550           F4248 8888,30,R7            -A
05 47 0      0551           F4248 8888,30,R23           -N
05 48 0      0552           F244  10,FLOAT,0            -) ILLEGAL
05 49 0      0553           F4248 8888,30,R8            -(
05 50 0      0554    ENDGN  F4246 7001,0,END            -. ILLEGAL
05 51 0      0555           CNST  $END$                 -$ ILLEGAL
05 52 0      0556    ABSGN  F4242 7401,41,GABSF         -, ILLEGAL
05 53 0      0557           CNST  $ABS$                 -* ILLEGAL
05 54 0      0558    GEQGN  F4248 7001,01,0024          -- ILLEGAL
05 55 0      0559           CNST  $GEQ$                 -P ILLEGAL
05 56 0      0560           F4248 8888,30,R7            PA
05 57 0      0561           F4248 8888,30,R23           PN
05 58 0      0562           F2440 08,STOGN,0            P) ILLEGAL
05 59 0      0563           F4248 8888,30,R8            P(
05 60 0      0564    MODGN  F4246 7404,0,MODMD          P. ILLEGAL
05 61 0      0565           CNST  $MOD$                 P$ ILLEGAL
05 62 0      0566    EQLGN  F4248 7001,01,0             P, ILLEGAL
05 63 0      0567           CNST  $EQL$                 P* ILLEGAL
05 64 0      0568           F4248 8888,30,R8            P-
05 65 0      0569           F4248 8888,30,R9            PP


05 68 0      0570    VOCAB  DEFN  *                TABLE OF 220 OPERATIONS WE CAN DO
05 69 0      0570    CADV1  CNST  00000100001     01
05 70 0      0571    CADV2  CNST  00000100002     02
05 71 0      0572    CADX1  CNST  00000100004     03
 5 72 0      0573    CADF1  CNST  00000100005     04
05 73 0      0574    CADL1  CNST  60000100001     05
05 74 0      0575    CSUV1  CNST  00000110001     06     SIGN OF 0,1, OR 3..
05 75 0      0576    CSUV2  CNST  00000110002     07     ADDRESS I IS TO BE REPLACED BY
05 76 0      0577    ADDV1  CNST  00000120001     08     V(I)  AND IF V(I) IS AN
05 77 0      0578    ADDV2  CNST  00000120002     09     ARRAY WE MUST ALSO COMPUTE
05 78 0      0579    ADDL1  CNST  60000120001     10     ITS SUBSCRIPT AND LOAD B
 5 79 0      0580    FADV1  CNST  00000220001     11
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05 80 0      0581   FADV2 CNST  00000220002   12
05 81 0      0582   SUBV1 CNST  00000130001   13      SIGN OF 1.. DONT RELEASE
05 82 0      0583   SUBV2 CNST  00000130002   14      TEMPORARY STORAGE CELL.
05 83 0      0584   SUBX1 CNST  00000130004   15      IF V(I) IS AN ARRAY DONT RELEASE
05 84 0      0585   FSUV1 CNST  00000230001   16      THE INCREMENT WORD
05 85 0      0586   FSUV2 CNST  00000230002   17
05 86 0      0587   MULV1 CNST  00000140001   18
05 87 0      0588   MULV2 CNST  00000140002   19      SIGN OF 3.. THIS IS A PSEUDO-OP.
05 88 0      0589   FMUV1 CNST  00000240001   20      WE GET READY TO CALCULATE V(I)
05 89 0      0590   FMUV2 CNST  00000240002   21      BUT DONT ACTUALLY FINISH
05 90 0      0591   DIVV1 CNST  00000150001   22
05 91 0      0592   DIVV2 CNST  00000150002   23
05 92 0      0593   FDVV1 CNST  00000250001   24      SIGN OF 4..  ADDRESS IS ABSOLUTE
05 93 0      0594   SHIFT CNST  40000000000   25      SIGN OF 5..  SAME, B-MODIFIED
05 94 0      0595   CFAV1 CNST  10000180001   26
05 95 0      0596   CFAV2 CNST  10000180002   27
05 96 0      0597   EXTV1 CNST  00000170001   28      SIGN OF 6..  ADDRESS IS RELATIVE
05 97 0      0598   EXTV2 CNST  00000170002   29      TO LOCATION
05 98 0      0599   STAV1 CNST  00000400001   30
 5 99 0      0600   STAV2 CNST  00000400002   31
06 00 0      0601   STAT1 CNST  10000400001   32      SIGN OF 7,8, OR 9..
06 01 0      0602   STAT2 CNST  10000400002   33      ADDRESS IS BLANKED OUT
06 02 0      0603   STAL2 CNST  61110400002   34
 6 03 0      0604   STAI  CNST  40410400000   35
06 04 0      0605   STAAB CNST  50000400000   36      SIGN OF 8.. FORWARD REFERENCE
06 05 0      0606   BUNV1 CNST  00000300001   37      IS PUT ON STACK
06 06 0      0607   BUNV2 CNST  00000300002   38      SIGN OF 9..  SAME, INCREMENTED
06 07 0      0608   BUNV3 CNST  00000300003   39
 6 08 0      0609   BUNZ  CNST  70000300400   40
 6 09 0      0610   BUNBZ CNST  50000300000   41
 6 10 0      0611   BUNI  CNST  40000300000   42
 6 11 0      0612   BUN3V CNST  00000300003   43
 6 12 0      0613   BUNL2 CNST  60000300002   44
06 13 0      0614   BSALN CNST  60001330003   45
06 14 0      0615   BSALP CNST  60000330003   46
06 15 0      0616   BZAL2 CNST  60000360002   47
06 16 0      0617   BZAL3 CNST  60000360003   48
06 17 0      0618   BZAL4 CNST  60000360004   49
06 18 0      0619   BNZAF CNST  80101369999   50
 6 19 0      0620   NOPZ  CNST  70000010000   51
 6 20 0      0621   NOPV1 CNST  00000010001   52
 6 21 0      0622   NOPV2 CNST  00000010002   53
06 22 0      0623   NOPAV F424  0,01,TOP-V    54
 6 23 0      0624   SLT10 CNST  40001490010   55
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06 24 0     0625   SLTZ  CNST  40001490000   56
06 25 0     0626   SLT30 CNST  40001490030   57
06 26 0     0627   SRT10 CNST  40001480010   58
 6 27 0     0628   SRTZ  CNST  40001480000   59
06 28 0     0629   SLA9  CNST  40000490009   60
 6 29 0     0630   LDBI  CNST  40000420000   61
06 30 0     0631   LDBL0 CNST  60000420000   62
06 31 0     0632   LBCV1 CNST  00001420001   63
06 32 0     0633   DLBV2 CNST  04400280002   64
06 33 0     0634   LSA0  CNST  40000430000   65
06 34 0     0635   LSA1  CNST  40001430000   66
06 35 0     0636   LSA9  CNST  40009430000   67
 6 36 0     0637   STPZ  CNST  70000440000   68
 6 37 0     0638   STPV2 CNST  00000440002   69
 6 38 0     0639   STPV3 CNST  00000440003   70
 6 39 0     0640   BCSL2 CNST  60000380002   71
 6 40 0     0641   CLA   CNST  40001450002   72
 6 41 0     0642   IBBI  CNST  40002200000   73
 6 42 0     0643   LDRV1 CNST  00000410001   74
06 43 0     0644   HLTZ  CNST  40137007310   75
06 44 0     0645   CAAV1 CNST  00001100001   76
06 45 0     0646   CSAV1 CNST  00001110001   77
06 46 0     0647   NDXV1 CNST  30000000001   78
06 47 0     0648   NDXV2 CNST  30000000002   79
06 48 0     0649   BCHL2 CNST  60000340002   80
06 49 0     0650   BCLL2 CNST  60001340002   81
06 50 0     0651   BCUL2 CNST  60011350002   82
06 51 0     0652   ADDX1 CNST  00000120004   83
 6 52 0     0653   CLLV2 CNST  00000460002   84
06 53 0     0654   BZAFR CNST  80000369999   85
 6 54 0     0655   BSAFN CNST  80001339999   86
06 55 0     0656   BSAFP CNST  80000339999   87
06 56 0     0657   BUNFR CNST  80000309999   88
06 57 0     0658   STPA  F4244 0,44,LODOX    89
06 58 0     0659   BUNA  F4244 0,30,LODOV    90
06 59 0     0660   BF1LR CNST  60101360002   91
06 60 0     0661   BUNFB CNST  90000309999   92
06 61 0     0662   STPFR CNST  80000449999   93
06 62 0     0663   STAT3 CNST  10000400003   94
 6 63 0     0664   LDBV9 CNST  00000420009   95
 6 64 0     0665   CSUV4 CNST  00000110004   96
06 65 0     0666   CLRO  CNST  40002450000   97
06 66 0     0667   BOF2  CNST  61111310002   98
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 06 69 0      0668          LOCN  *             OP V1 V2 RESULT
 06 70 0      0668    GTAB0 CNST  10900000000   + A  V  X  ADDV2      X=FIXED
 06 71 0      0669          CNST  11400000000   + A  V- X  SUBV2      F=FLOATING
 06 72 0      0670          CNST  31400000000   + A- V  X- SUBV2      A=IN ACCUMULATOR
006 73 0      0671          CNST  30900000000   + A- V- X- ADDV2      V=NOT IN ACCUMULATOR
 06 74 0      0672          CNST  10800000000   + V  A  X  ADDV1      -=NEGATED
 06 75 0      0673          CNST  31300000000   + V  A- X- SUBV1
 06 76 0      0674          CNST  11300000000   + V- A  X  SUBV1
 06 77 0      0675          CNST  30800000000   + V- A- X- ADDV1
 06 78 0      0676          CNST  10109000000   + V  V  X  CADV1 ADDV2
 06 79 0      0677          CNST  10708000000   + V  V- X  CSUV2 ADDV1
 06 80 0      0678          CNST  10213000000   + V- V  X  CADV2 SUBV1
 06 81 0      0679          CNST  10713000000   + V- V- X  CSUV2 SUBV1
 06 82 0      0680          CNST  21200000000   + A  V  F  FADV2
 06 83 0      0681          CNST  21700000000   + A  V- F  FSUV2
 06 84 0      0682          CNST  41700000000   + A- V  F- FSUV2
 06 85 0      0683          CNST  41200000000   + A- V- F- FADV2
 06 86 0      0684          CNST  21100000000   + V  A  F  FADV1
 06 87 0      0685          CNST  41600000000   + V  A- F- FSUV1
 06 88 0      0686          CNST  21600000000   + V- A  F  FSUV1
 06 89 0      0687          CNST  41100000000   + V- A- F- FADV1
 06 90 0      0688          CNST  20112000000   + V  V  F  CADV1 FADV2
 06 91 0      0689          CNST  20711000000   + V  V- F  CSUV2 FADV1
 06 92 0      0690          CNST  20216000000   + V- V  F  CADV2 VSUV1
 06 93 0      0691          CNST  20716000000   + V- V- F  CSUV2 FSUV1
 06 94 0      0692          CNST  13202582200   / A  V  X  STAT1 CADV2 SRT10 DIVV1
 06 95 0      0693          CNST  13207582200   / A  V- X  STAT1 CSUV2 SRT10 DIVV1
 06 96 0      0694          CNST  13207582200   / A- V  X  STAT1 CSUV2 SRT10 DIVV1
 06 97 0      0695          CNST  13202582200   / A- V- X  STAT1 CADV2 SRT10 DIVV1
 06 98 0      0696          CNST  15822000000   / V  A  X  SRT10 DIVV1
 06 99 0      0697          CNST  35822000000   / V  A- X- SRT10 DIVV1
 07 00 0      0698          CNST  35822000000   / V- A  X- SRT10 DIVV1
 07 01 0      0699          CNST  15822000000   / V- A- X  SRT10 DIVV1
 07 02 0      0700          CNST  10258220000   / V  V  X  CADV2 SRT10 DIVV1
 07 03 0      0701          CNST  10758220000   / V  V- X  CSUV2 SRT10 DIVV1
 07 04 0      0702          CNST  10758220000   / V- V  X  CSUV2 SRT10 DIVV1
 07 05 0      0703          CNST  10258220000   / V- V- X  CADV2 SRT10 DIVV1
 07 06 0      0704          CNST  23202972400   / A  V  F  STAT1 CADV2 CLR   FDVV1
 07 07 0      0705          CNST  23207972400   / A  V- F  STAT1 CSUV2 CLR   FDVV1
 07 08 0      0706          CNST  23207972400   / A- V  F  STAT1 CSUV2 CLR   FDVV1
 07 09 0      0707          CNST  23202972400   / A- V- F  STAT1 CADV2 CLR   FDVV1
 07 10 0      0708          CNST  29724000000   / V  A  F  CLR   FDVV1
 07 11 0      0709          CNST  49724000000   / V  A- F- CLR   FDVV1
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07 12 0      0710          CNST  49724000000  / V- A  F- CLR   FDVV1
07 13 0      0711          CNST  29724000000  / V- A- F  CLR   FDVV1
07 14 0      0712          CNST  20297240000  / V  V  F  CADV2 CLR   FDVV1
07 15 0      0713          CNST  20797240000  / V  V- F  CSUV2 CLR   FDVV1
07 16 0      0714          CNST  20797240000  / V- V  F  CSUV2 CLR   FDVV1
07 17 0      0715          CNST  20297240000  / V- V- F  CADV2 CLR   FDVV1
07 18 0      0716          CNST  11955000000  . A  V  X  MULV2 SLT10
07 19 0      0717          CNST  31955000000  . A  V- X- MULV2 SLT10
07 20 0      0718          CNST  31955000000  . A- V  X- MULV2 SLT10
07 21 0      0719          CNST  11955000000  . A- V- X  MULV2 SLT10
07 22 0      0720          CNST  11855000000  . V  A  X  MULV1 SLT10
07 23 0      0721          CNST  31855000000  . V  A- X- MULV1 SLT10
07 24 0      0722          CNST  31855000000  . V- A  X- MULV1 SLT10
07 25 0      0723          CNST  11855000000  . V- A- X  MULV1 SLT10
07 26 0      0724          CNST  10218550000  . V  V  X  CADV2 MULV1 SLT10
07 27 0      0725          CNST  10718550000  . V  V- X  CSUV2 MULV1 SLT10
07 28 0      0726          CNST  10718550000  . V- V  X  CSUV2 MULV1 SLT10
07 29 0      0727          CNST  10218550000  . V- V- X  CADV2 MULV1 SLT10
07 30 0      0728          CNST  22100000000  . A  V  F  FMUV2
07 31 0      0729          CNST  42100000000  . A  V- F- FMUV2
07 32 0      0730          CNST  42100000000  . A- V  F- FMUV2
07 33 0      0731          CNST  22100000000  . A- V- F  FMUV2
07 34 0      0732          CNST  22000000000  . V  A  F  FMUV1
07 35 0      0733          CNST  42000000000  . V  A- F- FMUV1
07 36 0      0734          CNST  42000000000  . V- A  F- FMUV1
07 37 0      0735          CNST  22000000000  . V- A- F  FMUV1
07 38 0      0736          CNST  20220000000  . V  V  F  CADV2 FMUV1
07 39 0      0737          CNST  20720000000  . V  V- F  CSUV2 FMUV1
07 40 0      0738          CNST  20720000000  . V- V  F  CSUV2 FMUV1
07 41 0      0739          CNST  20220000000  . V- V- F  CADV2 FMUV1

07 43 0      0740    GTAB1 CNST  52780020000 MAX A  V     CFAV2 BCHL2 CADV2
007 44 0     0741          CNST  53207268001 MAX A  V-    STAT1 CSUV2 CFAV1 BCHL2 CADV1
07 45 0      0742          CNST  53206278002 MAX A- V     STAT1 CSUV1 CFAV2 BCHL2 CADV2
07 46 0      0743          CNST  62781020000 MAX A- V- -  CFAV2 BCLL2 CADV2
07 47 0      0744          CNST  52680010000 MAX V  A     CFAV1 BCHL2 CADV1
07 48 0      0745          CNST  53307268001 MAX V  A-    STAT2 CSUV2 CFAV1 BCHL2 CADV1
07 49 0      0746          CNST  53306278002 MAX V- A     STAT2 CSUV1 CFAV2 BCHL2 CADV2
07 50 0      0747          CNST  62681010000 MAX V- A- -  CFAV1 BCLL2 CADV1
07 51 0      0748          CNST  50127800200 MAX V  V     CADV1 CFAV2 BCHL2 CADV2
07 52 0      0749          CNST  50726800100 MAX V  V-    CSUV2 CFAV1 BCHL2 CADV1
07 53 0      0750          CNST  50627800200 MAX V- V     CSUV1 CFAV2 BCHL2 CADV2
07 54 0      0751          CNST  60127810200 MAX V- V- -  CADV1 CFAV2 BCHL2 CADV2
07 55 0      0752          CNST  52781020000 MIN A  V     CFAV2 BCLL2 CADV2
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007 56 0      0753          CNST   53207268101 MIN A  V-    STAT1 CSUV2 CFAV1 BCLL2 CADV1
007 57 0      0754          CNST   53206278102 MIN A- V     STAT1 CSUV1 CFAV2 BCLL2 CADV2
 07 58 0      0755          CNST   62780020000 MIN A- V- -  CFAV2 BCHL2 CADV2
 07 59 0      0756          CNST   52681010000 MIN V  A     CFAV1 BCLL2 CADV1
007 60 0      0757          CNST   53307268101 MIN V  A-    STAT2 CSUV2 CFAV1 BCLL2 CADV1
007 61 0      0758          CNST   53306278102 MIN V- A     STAT2 CSUV1 CFAV2 BCLL2 CADV2
 07 62 0      0759          CNST   62680010000 MIN V- A- -  CFAV1 BCHL2 CADV1
 07 63 0      0760          CNST   50127810200 MIN V  V     CADV1 CFAV2 BCLL2 CADV2
 07 64 0      0761          CNST   50726810100 MIN V  V-    CSUV2 CFAV1 BCLL2 CADV1
 07 65 0      0762          CNST   50627810200 MIN V- V     CSUV1 CFAV2 BCLL2 CADV2
 07 66 0      0763          CNST   60127800200 MIN V- V- -  CADV1 CFAV2 BCLL2 CADV2


 07 69 0      0764    GTAB2 CNST   12900000000 AND A  V  X EXTV2
 07 70 0      0765          CNST   12800000000 AND V  A  X EXTV1
 07 71 0      0766          CNST   10129000000 AND V  V  X CADV1 EXTV2
 07 72 0      0767          CNST   17991020000 OR  A  V  X NDXV2 B1AL2 CADV2
 07 73 0      0768          CNST   17891010000 OR  V  A  X NDXV1 B1AL2 CADV1
 07 74 0      0769          CNST   10278910100 OR  V  V  X NDXV1 B1AL2 CADV1
 07 75 0      0770          CNST   10915650000 EQV A  V  X ADDV2 SUBX1 LSA0
 07 76 0      0771          CNST   10815650000 EQV V  A  X ADDV1 SUBX1 LSA0
 07 77 0      0772          CNST   10109156500 EQV V  V  X CADV1 ADDV2 SUBX1 LSA0
 07 78 0      0773          CNST   12782030000 IMP A  V  X CFAV2 BCUL2 CADX1
 07 79 0      0774          CNST   17883910100 IMP V  A  X NDXV1 ADDX1 B1AL2 CADV1
 07 80 0      0775          CNST   10127820300 IMP V  V  X CADV1 CFAV2 BCUL2 CADX1


 07 83 0      0776    GTAB3 CNST   14872440300 EQL    ()   BZAL3 CLA   BUNL2 CADX1
 07 84 0      0777          CNST   14872440300 EQL  - ()   BZAL3 CLA   BUNL2 CADX1
 07 85 0      0778          CNST   14788000000 EQL    IF   BZAL2 BUNFR
 07 86 0      0779          CNST   14788000000 EQL  - IF   BZAL2 BUNFR
 07 87 0      0780          CNST   18500000000 EQL    UN   BZAFR
 07 88 0      0781          CNST   18500000000 EQL  - UN   BZAFR
 07 89 0      0782          CNST   14703000000 NEQ    ()   BZAL2 CADX1
 07 90 0      0783          CNST   14703000000 NEQ  - ()   BZAL2 CADX1
 07 91 0      0784          CNST   18500000000 NEQ    IF   BZAFR
 07 92 0      0785          CNST   18500000000 NEQ  - IF   BZAFR
 07 93 0      0786          CNST   14788000000 NEQ    UN   BZAL2 BUNFR
 07 94 0      0787          CNST   14788000000 NEQ  - UN   BZAL2 BUNFR
007 95 0      0788          CNST   14945724403 LEQ    ()   BZAL4 BMAL3 CLA   BUNL2 CADX1
007 96 0      0789          CNST   14946724403 LEQ  - ()   BZAL4 BPAL3 CLA   BUNL2 CADX1
 07 97 0      0790          CNST   14787000000 LEQ    IF   BZAL2 BPAFR
 07 98 0      0791          CNST   14786000000 LEQ  - IF   BZAL2 BMAFR
 07 99 0      0792          CNST   18586000000 LEQ    UN   BZAFR BMAFR
```

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 08 00 0      0793          CNST   18587000000 LEQ  - UN   BZAFR BPAFR
008 01 0      0794          CNST   14945034472 GTR    ()   BZAL4 BMAL3 CADX1 BUNL2 CLA
008 02 0      0795          CNST   14946034472 GTR  - ()   BZAL4 BPAL3 CADX1 BUNL2 CLA
 08 03 0      0796          CNST   18586000000 GTR    IF   BZAFR BMAFR
 08 04 0      0797          CNST   18587000000 GTR  - IF   BZAFR BPAFR
 08 05 0      0798          CNST   14787000000 GTR    UN   BZAL2 BPAFR
 08 06 0      0799          CNST   14786000000 GTR  - UN   BZAL2 BMAFR
008 07 0      0800          CNST   14946724403 GEQ    ()   BZAL4 BPAL3 CLA   BUNL2 CADX1
008 08 0      0801          CNST   14945724403 GEQ  - ()   BZAL4 BMAL3 CLA   BUNL2 CADX1
 08 09 0      0802          CNST   14786000000 GEQ    IF   BZAL2 BMAFR
 08 10 0      0803          CNST   14787000000 GEQ  - IF   BZAL2 BPAFR
 08 11 0      0804          CNST   18587000000 GEQ    UN   BZAFR BPAFR
 08 12 0      0805          CNST   18586000000 GEQ  - UN   BZAFR BMAFR
008 13 0      0806          CNST   14946034472 LSS    ()   BZAL4 BPAL3 CADX1 BUNL2 CLA
008 14 0      0807          CNST   14945034472 LSS  - ()   BZAL4 BMAL3 CADX1 BUNL2 CLA
 08 15 0      0808          CNST   18587000000 LSS    IF   BZAFR BPAFR
 08 16 0      0809          CNST   18586000000 LSS  - IF   BZAFR BMAFR
 08 17 0      0810          CNST   14786000000 LSS    UN   BZAL2 BMAFR
 08 18 0      0811          CNST   14787000000 LSS  - UN   BZAL2 BPAFR

 08 20 0      0812    COMP  DEFN   *-2      IJ-PAIRS FOR ARITH GENERATOR
008 21 0      0812          LOCN   *                 V1  V2  X=FIX F=FLT A=ACC V=OPRND C=CONST
 08 22 0      0812          CNST   3000000000        XA  XV
 08 23 0      0813          CNST   1133000000        XA  FV
 08 24 0      0814          CNST   2630000000        XA  XC
 08 25 0      0815          CNST   1126330000        XA  FC
 08 26 0      0816    TEMP2 CNST   0000000000        (IMPOSSIBLE CASE)
 08 27 0      0817          CNST   7284007200        (IMPOSSIBLE CASE)
 08 28 0      0818          CNST   1224213400        FA  XV
 08 29 0      0819          CNST   3300000000        FA  FV  I=1 OR I=2..
 08 30 0      0820          CNST   2623330000        FA  XC  J=1 FLOAT V(I)
 08 31 0      0821          CNST   2633000000        FA  FC  J=2 STORE V(I) IN TEMP
 08 32 0      0822          CNST   3100000000        XV  XA  J=3 FLOAT CONSTANT V(I)
008 33 0      0823          CNST   2214113300        XV  FA  J=4 BRING V(I) INTO A REGISTER
008 34 0      0824          CNST   3200000000        XV  XV  J=5 CALC CONST OP CONST$ I=TYPE
008 35 0      0825          CNST   1411330000        XV  FV  J=6 CHECK IF V(I)=SPECIAL CONST
 08 36 0      0826          CNST   2632000000        XV  XC
 08 37 0      0827          CNST   1411263300        XV  FC
 08 38 0      0828          CNST   2134000000        FV  XA  I=3..
 08 39 0      0829          CNST   3400000000        FV  FA  J=0 V1 IS IN A, FIXED
 08 40 0      0830          CNST   2421340000        FV  XV  J=1 V2 IS IN A, FIXED
 08 41 0      0831          CNST   3500000000        FV  FV  J=2 NEITHER IN A, FIXED
 08 42 0      0832          CNST   2623350000        FV  XC  J=3 V1 IS IN A,FLOATING
 08 43 0      0833          CNST   2635000000        FV  FC  J=4 V2 IS IN A,FLOATING
```

```
008 44 0      0834          CNST  1631000000    XC  XA  J=5 NEITHER IS IN A, FLOATING
 08 45 0      0835          CNST  1613340000    XC  FA
 08 46 0      0836          CNST  1632000000    XC  XV
 08 47 0      0837          CNST  1613350000    XC  FV
 08 48 0      0838          CNST  1532000000    XC  XC
 08 49 0      0839          CNST  1325350000    XC  FC
 08 50 0      0840          CNST  2116340000    FC  XA
 08 51 0      0841          CNST  1634000000    FC  FA
 08 52 0      0842          CNST  2421163400    FC  XV
 08 53 0      0843          CNST  1635000000    FC  FV
 08 54 0      0844          CNST  2325350000    FC  XC
 08 55 0      0845          CNST  2535000000    FC  FC
```

SECTION B. THE SCANNER CO-ROUTINE.

```
 08 60 0      0846  SCAN    BUN   SCN1          EXIT-ENTRANCE LINE
 08 61 0      0847  SCN10   CAD   CWEMP
 08 62 0      0848  SCN5    STP   SCAN
 08 63 0      0849          BUN   EXCTR         GO TO EXECUTOR CO-ROUTINE.
 08 64 0      0850  SCN1    LDR   S2
 08 65 0      0851          STR   S1            MOVE SCANNING WINDOWS TO RIGHT
 08 66 0      0852          LDR   K2             ACROSS SOURCE STRING
 08 67 0      0853          STR   K1
 08 68 0      0854  SCN2    STP   INPTX
 08 69 0      0855          BUN   INPT          GET NEXT CHARACTER FROM CARD
 08 70 0      0856  SCN3    DEFN  *
 08 71 0      0856  STFOL   CLB
 08 72 0      0857          CAD   CHAR          SET K2 TO THE CODE FOR THIS CHARACTER
 08 73 0      0858          DBB   0,9999
 08 74 0      0859          BFA   C+,91,8       NUMBER 1
 08 75 0      0860          CFA   FORTY,02      ALPHA  0
 08 76 0      0861          BCH   D+                )  2
 08 77 0      0862          DBB   0,9999            (  3
 08 78 0      0863          BFA   C+,02,04          .  4
 08 79 0      0864          DBB   0,9999            $  5
 08 80 0      0865          BFA   C+,02,24          ,  6
 08 81 0      0866          DBB   0,9999            *  7
 08 82 0      0867          BFA   C+,02,03          -  8
 08 83 0      0868          DBB   0,9999      BLANK 10
 08 84 0      0869          BFA   C+,02,13      OTHER  9
 08 85 0      0870          DBB   0,9999
 08 86 0      0871          BFA   C+,02,23
 08 87 0      0872          DBB   0,9999
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 08 88 0      0873           BFA   C+,02,14
 08 89 0      0874           DBB   0,9999
 08 90 0      0875           BFA   C+,02,20
 08 91 0      0876           BFA   B+,02,34
 08 92 0      0877           DBB   0,9998
 08 93 0      0878           BFA   C+,02,00
 08 94 0      0879     *D    DBB   C+,1
008 95 0      0880     *B    DFL   CHAR,02,14     CHANGE CRAZY MINUS SIGN TO REGULAR ONE
 08 96 0      0881     *C    STB   K2

 08 98 0      0882     SCN4  LDR   CHAR
 08 99 0      0883           STR   S2
 09 00 0      0884           CAD   K1
 09 01 0      0885           BFA   A+,02,10       BRANCH IF EITHER
 09 02 0      0886           CAD   K2              SCANNED CHARACTER IS BLANK
 09 03 0      0887           BFA   B+,02,10
 09 04 0      0888           CAD   K1             OTHERWISE INDEX INTO TABLE AND
 09 05 0      0889           SLA   1               BRANCH TO PROPER R-ROUTINE
 09 06 0      0890           ADD   K2
 09 07 0      0891           STA   TEMP
 09 08 0      0892           LDB   TEMP
 09 09 0      0893           CAD - TABSC
 09 10 0      0894           BFA - TABSC,45,88
 09 11 0      0895           CLL   K2
 09 12 0      0896           IFL   K2,00,10       IF THE PAIR IS ILLEGAL,
 09 13 0      0897           STP   WEMX           WRITE ERROR MESSAGE
 09 14 0      0898           BUN   WEM,SCN4       IMPROPER CHARACTER PAIR
 09 15 0      0899           CNST  30103050000
 09 16 0      0900     *A    CAD   K2
 09 17 0      0901           BZA   R13            BLANK ALPHA ... TO R13
 09 18 0      0902           BFA   R24,02,01      BLANK NUMBER ... TO R24
 09 19 0      0903           BUN   SCN1           BLANK OTHER ... TO SCN1 AGAIN
 09 20 0      0904     *B    CAD   K1
 09 21 0      0905           BZA   C+             IF RIGHT CHARACTER IS BLANK,
 09 22 0      0906           BUN   R15             GET THE NEXT NONBLANK CHARACTER
 09 23 0      0907     SCN11 DEFN  *
 09 24 0      0907     *C    STP   PASSX
 09 25 0      0908           BUN   PASS           THEN COMPLETE THE PROCESSING OF THE
 09 26 0      0909           CFA   FORTY,02       LEFTHAND SYMBOL IN THE CASES OF
 09 27 0      0910           BCL   SCN3           ALPHA-ALPHA, ALPHA-NUMBER
 09 28 0      0911     SCN8  STP   CLASX
 09 29 0      0912           BUN   CLASS
 09 30 0      0913     SCN6  CLL   K1
 09 31 0      0914           IFL   K1,00,10       BLANK OUT LEFTHAND SYMBOL AND RECYCLE
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 09 32 0      0915          BUN    SCN3
 09 33 0      0916    SCN7  CLL    K2
 09 34 0      0917          IFL    K2,00,10        BLANK OUT BOTH SYMBOLS AND RECYCLE
 09 35 0      0918          BUN    SCN1


 09 38 0      0919    *B    IFL    SW1,62,29
 09 39 0      0920    R1    CLL    K2              AA AN
 09 40 0      0921    SW1   HLT    SCN1
 09 41 0      0922          LBC    K               THIS CHARACTER IS PART OF
 09 42 0      0923          CAD    S2              AN IDENTIFIER
 09 43 0      0924          SLA -  8               STORE IT IN SYMBL AREA
 09 44 0      0925          DLB    K,94,0
 09 45 0      0926          ADL -  SYMBL
 09 46 0      0927          IFL    K,02,2
009 47 0      0928          BOF    B-              IF IDENTIFIER IS MORE THAN 50 CHARACTERS
 09 48 0      0929    *A    BUN    SCN1             IN LENGTH, TRUNCATE IT TO 50


 09 51 0      0930    R2    STP    ALPLX           A(
 09 52 0      0931          BUN    ALPLU           WE HAVE MANY CASES TO EXAMINE.
 09 53 0      0932          CFR    PRCMD,64        LOOKUP IDENTIFIER FIRST
 09 54 0      0933          LDB    FUNS
 09 55 0      0934          CAD -  0
 09 56 0      0935          BCU    D+
 09 57 0      0936          BSA    A+,0            IF IN PROCEDURE MODE, CHECK
 09 58 0      0937          DLB    L,64,00          SEMICOLON COUNT
 09 59 0      0938          BSA    C+,3
009 60 0      0939          IFL -  0,11,5          THE PRESENT SYMBOL IS A PARAMETRIC ARRAY
009 61 0      0940          STP    FRMEX           SEND ITS NAME AND AN ARRAY-PARAMETER
 09 62 0      0941          BUN    FRME             OPERATOR TO THE EXECUTOR
 09 63 0      0942          CAD    CWAPM
 09 64 0      0943          BUN    SCN5
 09 65 0      0944    *A    IFL -  0,12,10
 09 66 0      0945          DLB    L,64,0          THE PRESENT SYMBOL IS THE NAME OF THE
 09 67 0      0946          LDR -  0                PROCEDURE BEING DECLARED
 09 68 0      0947          BFR    B+,11,0
 09 69 0      0948          STB -  0,11
 09 70 0      0949          STP    WEMX
 09 71 0      0950          BUN    WEM,A-+1        IF IT OCCURRED BEFORE,
 09 72 0      0951          CNST   30608100000     DUPLICATE PROCEDURE NAME
 09 73 0      0952    *B    IFL -  0,11,8
 09 74 0      0953          CAD    LOCN            SET SEMICOLON COUNT TO 1
 09 75 0      0954          STA -  0,64
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 09 76 0      0955    R2P   STP   FRMEX          SEND NAME TO EXECUTOR
 09 77 0      0956          BUN   FRME
 09 78 0      0957          BUN   SCN1
 09 79 0      0958    *C    DFL - 0,11,1         THE PRESENT SYMBOL IS THE NAME OF
009 80 0      0959          STP   FRMEX           A PARAMETRIC FUNCTION OR PROCEDURE
 09 81 0      0960          BUN   FRME
 09 82 0      0961    *E    LDR   SC7            PASS CHARACTERS UNTIL MATCHING RIGHT
 09 83 0      0962          BUN   PRCNT           PARENTHESIS IS FOUND AND GO TO SCN7
 09 84 0      0963    *D    CFR   FUNMD,64
 09 85 0      0964          BCU   F+
009 86 0      0965          BSA   F+,1           IF CALLING A FUNCTION,CHECK $ COUNT
 09 87 0      0966          STP   FRMEX          IF THIS COUNT IS 1,WE DONT KNOW YET
 09 88 0      0967          BUN   FRME            WHETHER OR NOT THE PRESENT SYMBOL IS
 09 89 0      0968          LDB   FUNS            A PARAMETRIC ARRAY, BUT IF THE COUNT
 09 90 0      0969          CAD - 0               IS 2 OR 3 WE KNOW IT IS A
 09 91 0      0970          DLB   L,64,00         PARAMETRIC ARRAY OR PROCEDURE
 09 92 0      0971          LDR - 0
 09 93 0      0972          BSA   G+,2
 09 94 0      0973          BFR   E-,11,6
 09 95 0      0974          BFR   E-,11,4
 09 96 0      0975          BFR   E-,11,8        IF IT ISNT,
 09 97 0      0976    *T    STP   WEMX
 09 98 0      0977          BUN   WEM,E-
 09 99 0      0978          CNST  30111130000    IMPROPER FUNCTION ARGUMENT
010 00 0      0979    *G    BFR   H+,11,5
010 01 0      0980          BUN   T-
010 02 0      0981    *F    DLB   L,64,00
010 03 0      0982          CAD - 0
010 04 0      0983          CFR   DCLMD,64       IF IN TYPE DECLARATION,
010 05 0      0984          BCE   E-              SKIP TO NEXT MATCHING RIGHT PARENTHESIS
010 06 0      0985          BFA   J+,11,0
010 07 0      0986          BFA   K+,11,9
010 08 0      0987    *I    STP   FRMEX          IF SYMBOL WAS CLASSIFIED BEFORE AND
010 09 0      0988          BUN   FRME            IS NOT A LABEL, SEND IT TO THE EXECUTOR.
010 10 0      0989          DLB   L,64,00
010 11 0      0990          LDR - 0              THEN LOOK SEE WHAT KIND IT IS
010 12 0      0991          BFR   R19P,11,1      IF VARIABLE INSERT DOT
010 13 0      0992          BFR   M+,11,4        IF LIBRARY ROUTINE, INSERT FUNC CALL OP
010 14 0      0993          BFR   H+,11,5        IF ARRAY, SEE BELOW
010 15 0      0994          BFR   SCN1,11,9      IF LABEL, EXIT
010 16 0      0995          BFR   SCN1,11,7      IF RESERVED WORD, EXIT
010 17 0      0996          BFR   M+,12,88       IF EXT PROCEDURE,INSERT FUNC CALL OP
010 18 0      0997    *P    CFR   LEVEL,02       IS IT THE NAME OF THE PRESENT
010 19 0      0998          BCE   E-              PROCEDURE BEING DECLARED
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010 20 0      0999    *M    CAD   CWCLN
010 21 0      1000          BUN   SCN5
010 22 0      1001    *H    LDB - 0              IF AN ARRAY, MOVE THE MULTIPLIERS TO
010 23 0      1002          SLT   0              THE DIMENSION STACK
010 24 0      1003          ADD   XZERO+1
010 25 0      1004          BSA   *+2,1
010 26 0      1005          LDB - 0              (IF NOT PARAMETRIC,SKIP OVER THE
010 27 0      1006          IBB   Q+,9999         TOTAL-LENGTH ENTRY)
010 28 0      1007    *R    CAD - 1              (IF ITS ONLY 1-DIMENSIONAL, WE
010 29 0      1008          STA   TEMP            LEAVE THE DIMENSION STACK ALONE)
010 30 0      1009          STP   INSX,DIMS
010 31 0      1010          BUN   INS
010 32 0      1011          LDB   TEMP
010 33 0      1012          DBB   R-,1
010 34 0      1013    *Q    CAD   CWNDX          SEND INDEX OP TO EXECUTOR
010 35 0      1014          BUN   SCN5
010 36 0      1015    *J    CFR   ARAMD,64       IF WE HAVE A NEW SYMBOL, AND WE ARENT
010 37 0      1016          DLB   L,64,00        PROCESSING AN ARRAY DECLARATION,
010 38 0      1017          BCE   S+              ITS A VARIABLE
010 39 0      1018          IFL - 0,11,1
010 40 0      1019          BUN   I-
010 41 0      1020    *S    IFL - 0,11,5         IN ARRAY DECLARATION, MARK THE PRESENT
010 42 0      1021          STP   FRMEX           SYMBOL AS AN ARRAY AND SEND IT AND AN
010 43 0      1022          BUN   FRME            ARRAY-DECLARATION OPERATOR TO EXECUTOR
010 44 0      1023          CAD   CWARD
010 45 0      1024          BUN   SCN5
010 46 0      1025    *K    SLT   0              IF IT IS A LABEL, THE MODE MUST
010 47 0      1026          BSA   N+,9           BE A DECLARATION OF SOME KIND
010 48 0      1027          BSA   N+,8
010 49 0      1028          STP   WEMX
010 50 0      1029          BUN   WEM,I-         ELSE, MISPLACED LABEL
010 51 0      1030          CNST  31517000000
010 52 0      1031    *N    STA - 0
010 53 0      1032          CFR   FRMMD,64
010 54 0      1033          BCU   *+2
010 55 0      1034          DFL   M+,62,29       I-O DECLARATION
010 56 0      1035          DLB   LOCN,64,00
010 57 0      1036          STB   IOPUS,04       STORE 1ST LOCATION IN IOPUS
010 58 0      1037          STP   TRTGX
010 59 0      1038          BUN   TRTG2          SEND A LABEL OPERATOR TO THE EXECUTOR
010 60 0      1039          IFL   ALEPH,62,6
010 61 0      1040          CAD   CWLAB
010 62 0      1041    *M    BUN   SCN5           IN FORMAT DECLARATION SEND THE
010 63 0      1042          IFL   M-,62,29        LABEL ITSELF TO EXECUTOR INSTEAD
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010 64 0      1043          STP   FRMEX
010 65 0      1044          BUN   FRME
010 66 0      1045    SC7   BUN   SCN7


010 69 0      1046    R3K   LDR   SYMBL          AP
010 70 0      1047          CFR   STOGN+1,00     IN THE STATEMENT STOP +E,  + IS REDUNDANT
010 71 0      1048          BCE   SCN11
010 72 0      1049    R3    BUN   A+             A) A$ A, A*
010 73 0      1050          IFL   *-1,62,29
010 74 0      1051          CAD   RR2            IF WE ARE WORKING ON A PREFIX,
010 75 0      1052          SLS   2
010 76 0      1053          STA   TEMP3,12       CALCULATE SL-FIELD FOR COMPARISON
010 77 0      1054          CAD   K
010 78 0      1055          SLA   8
010 79 0      1056          STA   TEMP3,21
010 80 0      1057          SLA   1
010 81 0      1058          STA   TEMP3,11
010 82 0      1059          DFL   TEMP3,22,22
010 83 0      1060          CAD   SSC            PUT PREFIX CODE INTO PR3-STACK
010 84 0      1061          SLA   4               IN ALPHABETICAL ORDERING
010 85 0      1062          STA   TEMP3,64
010 86 0      1063          LDB   SSC
010 87 0      1064          CAD   SYMBL
010 88 0      1065          STA - 0
010 89 0      1066          IFL   SSC,00,1
010 90 0      1067          LDR   *+1
010 91 0      1068          LDB   PR3
010 92 0      1069    *C    STR   TEMP2
010 93 0      1070          STB   TEMP1
010 94 0      1071          IBB   B+,9999
010 95 0      1072          LDR - 1
010 96 0      1073          STR   TEMP
010 97 0      1074          DLB   TEMP,64,0
010 98 0      1075          CFA - 0
010 99 0      1076          BCH   D+
011 00 0      1077    *B    LDB   TEMP2
011 01 0      1078          CAD   TEMP3
011 02 0      1079          STP   INSX
011 03 0      1080          BUN   INS1
011 04 0      1081          BUN   SCN1
011 05 0      1082    *D    LDR   TEMP1
011 06 0      1083          LDB   TEMP
011 07 0      1084          BUN   C-
```

```
011 08 0      1085    *A      STP     CLASX           FINISH PROCESSING IDENTIFIER OR
011 09 0      1086            BUN     CLASS            NUMERIC LABEL
011 10 0      1087            BUN     SCN1
011 11 0      1088    SW5     DEFN    R3


011 14 0      1088    R4      STP     WINDX           NA
011 15 0      1089            BUN     WIND1,SCN8      FINISH UP CONSTANT
011 16 0      1090            IFL     SW6,00,1        SET UP IMPLIED MULTIPLICATION
011 17 0      1091            BUN     R13


011 20 0      1092    R5      DFL     D,22,1          NN
011 21 0      1093            CAD     SYMBL
011 22 0      1094            SLS     1
011 23 0      1095            STA     SYMBL           BUILD CONSTANT
011 24 0      1096            LDR     S2
011 25 0      1097            STR     SYMBL,01
011 26 0      1098            BUN     SCN1


011 29 0      1099    R6      STP     WINDX           N) N$ N, NP
011 30 0      1100            BUN     WIND1,R3
011 31 0      1101            BUN     SCN1            FINISH WORKING ON CONSTANT
011 32 0      1102    NTAG    CNST    20000000010


011 35 0      1103    R7P     IFL     SW6,00,1        )A              IMPLIED MULTIPLICATION
011 36 0      1104    R7      STP     OPRTX,R13       (A .A $A ,A -A *A PA
011 37 0      1105            BUN     OPRT            SEND OPERATOR TO EXECUTOR,GO TO R13


011 40 0      1106    R8      STP     OPRTX,SCN1      MANY E.G. )) (-
011 41 0      1107            BUN     OPRT            SEND LEFTHAND OP TO EXECUTOR


011 44 0      1108    R9      LDR     S2              (P .P $P ,P *P PP
011 45 0      1109            BFR     SCN2,02,10
011 46 0      1110            CLL     SW2             THE RIGHTHAND SYMBOL MUST BE A
011 47 0      1111            STP     WEMX             REDUNDANT PLUS SIGN
011 48 0      1112            BUN     WEM,SCN7
011 49 0      1113            CNST    31518200000     MISPLACED ARITHMETIC OPERATION
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011 52 0      1114    R10   CAD   RPAR          )(
011 53 0      1115          STP   SCAN
011 54 0      1116          BUN   EXCTR         ) TO EXECUTOR
011 55 0      1117          BUN   R19P          IMPLIED MULTIPLICATION


011 58 0      1118    R11   STP   ALPLX         A-
011 59 0      1119          BUN   ALPLU         LEFTHAND SYMBOL MUST BE A SIMPLE VARIABLE
011 60 0      1120          BFA   D+,11,0
011 61 0      1121          BFA   C+,11,1
011 62 0      1122          BFA   R2P,11,7      OR A RESERVED WORD
011 63 0      1123          CLL   TAG
011 64 0      1124          STP   WEMX
011 65 0      1125          BUN   WEM,C+
011 66 0      1126          CNST  30122240000   IMPROPER VARIABLE SYMBOL
011 67 0      1127    *D    IFL - 0,11,1
011 68 0      1128    *C    STP   FRMEX
011 69 0      1129          BUN   FRME
011 70 0      1130    R11P  CAD   PLUS          INSERT PLUS SIGN SO EXECUTOR
011 71 0      1131          BUN   SCN5          ALWAYS THINKS MINUS IS UNARY OPERATOR


011 75 0      1132    R12   STP   OPRTX,R11P    )-
011 76 0      1133          BUN   OPRT          ) TO EXECUTOR, INSERT + SIGN


011 80 0      1134    R13   CLL   K             BLANK A
011 81 0      1135          STB   SW1,62
011 82 0      1136          IFL   SW1,62,01     PREPARE TO BUILD AN IDENTIFIER
011 83 0      1137          LDB   SBL
011 84 0      1138          CLL   SYMBL
011 85 0      1139          RTF   SYMBL,9
011 86 0      1140          BUN   R1


011 89 0      1141    R15   STP   PASSX         SKIP OVER BLANKS
011 90 0      1142          BUN   PASS
011 91 0      1143          BUN   SCN3


011 94 0      1144    R17   STP   PASSX         A.
011 95 0      1145          BUN   PASS          GET NEXT NONBLANK CHARACTER
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011 96 0      1146          BFA   R17Q,02,03
011 97 0      1147          STP   CLASX          IF NOT A COLON CLASSIFY
011 98 0      1148          BUN   CLASS           LEFT IDENTIFIER
011 99 0      1149    R17P  LDR   S2             MOVE WINDOW TO THE RIGHT
012 00 0      1150          STR   S1              AND CONTINUE SCANNING
012 01 0      1151          LDR   K2
012 02 0      1152          STR   K1
012 03 0      1153          BUN   SCN3
012 04 0      1154    R17R  LDR   NTAG
012 05 0      1155          STR   K               MARK NUMBER AS LABEL
012 06 0      1156    R17Q  STP   PASSX           GET NEXT NONBLANK CHARACTER
012 07 0      1157          BUN   PASS
012 08 0      1158          BFA   C+,02,03
012 09 0      1159          IFL   TAG,00,1        COLON IS DETECTED
012 10 0      1160          STP   ALPLX
012 11 0      1161          BUN   ALPLU           LOOK UP IDENTIFIER
012 12 0      1162          STP   TRTGX
012 13 0      1163          BUN   TRTG            PROCESS LABEL
012 14 0      1164          BUN   SCN6            RETURN
012 15 0      1165    *C    LDB   K
012 16 0      1166          DBB   R17Q,12         THREE DOTS DETECTED
012 17 0      1167          CLL   S2              TREAT AS COLON IF IDENTIFIER IS
012 18 0      1168          IFL   S2,00,90        OVER FIVE CHARACTERS. SET RIGHT
012 19 0      1169          CLL   K2              CHARACTER AS SPECIAL CODE 90 FOR PREFIXES
012 20 0      1170          DFL   R3,62,29        SET PREFIX SWITCH
012 21 0      1171          BUN   R1              PROCESS AS IDENTIFIER


012 24 0      1172    R18   STP   WINDX           N-
012 25 0      1173          BUN   WINDU           PROCESS CONSTANT
012 26 0      1174          BUN   R11P            AND INSERT + SIGN


012 29 0      1175    R19   STP   WINDX           N(
012 30 0      1176          BUN   WIND1,R2        PROCESS CONSTANT
012 31 0      1177    R19P  CAD   DOT             IF NOT A LABEL, INSERT IMPLIED MULT
012 32 0      1178          BUN   SCN5


012 35 0      1179    R20   STP   PUNCTX          N.
012 36 0      1180          BUN   PUNC
012 37 0      1181          LDR   CHAR            IF THE NEXT CHARACTER IS A DOT,WE HAVE
012 38 0      1182          BFR   R17R,02,03       A STATEMENT LABEL.
012 39 0      1183          BFR   C+,91,08        OTHERWISE IF ITS NOT NUMBERIC
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012 40 0      1184   *A     STP   WINDX          WE FINISH MAKING UP THE CONSTANT
012 41 0      1185          BUN   WINDU          AND CONTINUE
012 42 0      1186          BUN   R17P
012 43 0      1187   *C     CAA   SW2            OTHERWISE WE HAVE A FLOATING CONSTANT
012 44 0      1188          ADA   SW3
012 45 0      1189          BZA   E+
012 46 0      1190   *D     STP   WEMX           ERROR CONDITIONS ARE N.N.N OR N**N.N
012 47 0      1191          BUN   WEM,A-
012 48 0      1192          CNST  31526280000    MISPLACED DECIMAL POINT
012 49 0      1193   *E     CLL   D
012 50 0      1194          IFL   D,22,58        RECORD DECIMAL POINT AND CONTINUE
012 51 0      1195          IFL   SW3,00,1       SCANNING AND BUILDING CONSTANT
012 52 0      1196          STR   S2
012 53 0      1197          LDR   XONE+1
012 54 0      1198          STR   K2
012 55 0      1199          BUN   R5


012 58 0      1200   R21    CAD   RPAR           )N
012 59 0      1201          STP   SCAN
012 60 0      1202          BUN   EXCTR          ) TO EXECUTOR
012 61 0      1203          CAD   DOT
012 62 0      1204          STP   SCAN           . TO EXECUTOR
012 63 0      1205          BUN   EXCTR
012 64 0      1206          BUN   R24


012 68 0      1207   R22    STP   PASSX          N*
012 69 0      1208          BUN   PASS
012 70 0      1209          BFA   B+,02,14       CHECK FOR SECOND ASTERISK
012 71 0      1210          BUN   A-             IF NOT * MEANS EXPONENTIATE
012 72 0      1211   *B     LDB   SW3            START SCALE FACTOR
012 73 0      1212          DBB   G+,1
012 74 0      1213          CLL   D              IF MANTISSA HAD NO DECIMAL POINT
012 75 0      1214          IFL   D,22,58        MANUFACTURE ONE
012 76 0      1215          IFL   SW3,00,01
012 77 0      1216   *G     STP   WNDSX          PROCESS MANTISSA
012 78 0      1217          BUN   WINDS
012 79 0      1218   *B     LDR   SYMBL
012 80 0      1219          STR   FP
012 81 0      1220          IFL   SW2,00,1
012 82 0      1221          STP   PASSX
012 83 0      1222          BUN   PASS           EXAMINE NEXT NONBLANK CHARACTER
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012 84 0      1223          BFA   D+,02,20
012 85 0      1224          BFA   D+,02,34      WE MUST HAVE **N  **-N  OR  **+N
012 86 0      1225          BFA   E+,02,10
012 87 0      1226    *C    BFA   F+,91,08
012 88 0      1227          STP   WEMX
012 89 0      1228          BUN   WEM,A-
012 90 0      1229          CNST  30129300000   IMPROPER SCALE FACTOR
012 91 0      1230    *D    IFL   SW4,61,1      RECORD SIGN
012 92 0      1231    *E    STP   PASSX
012 93 0      1232          BUN   PASS
012 94 0      1233          BUN   C-
012 95 0      1234    *F    STA   S2            PREPARE TO PROCESS SCALE FACTOR
012 96 0      1235          DFL   K2,02,6
012 97 0      1236          BUN   R24P          R23 IS LOCATED BY OPRT

013 00 0      1237    R24   CLL   SW2           BLANK N
013 01 0      1238          STB   SW4,61
013 02 0      1239          CAD   S2
013 03 0      1240    R24P  CLL   SYMBL        PREPARE TO BUILD A CONSTANT
013 04 0      1241          CLL   D
013 05 0      1242          CLL   SW3
013 06 0      1243          STA   SYMBL,01
013 07 0      1244          BUN   SCN1

013 10 0      1245    R25   STP   OPRTX,SCN10  (, ,, ,) ()
013 11 0      1246          BUN   OPRT          INSERT THE EMPTY OPERATOR

013 14 0      1247    R26   STP   OPRTX,*+2     ($ $$
013 15 0      1248          BUN   OPRT
013 16 0      1249          LDB   FUNS
013 17 0      1250          IFL - 0,12,10       INCREASE THE SEMICOLON COUNT
013 18 0      1251          CAD - 0
013 19 0      1252          IFL   OMCRN,00,1
013 20 0      1253          BSA   SCN1,2
013 21 0      1254          IFL   TAG,00,1
013 22 0      1255          BUN   SCN1

013 25 0      1256    R27   DEFN  SCN1          $)
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013 28 0      1256   TRTG2 DFL   ALEPH,62,6     TRTG2 ENTRANCE -- SUPPRESS MONITORING
013 29 0      1257   TRTG  CLL   TAG
013 30 0      1258         DLB   L,64,0         DEFINE A LABEL
013 31 0      1259         CAD - 0
013 32 0      1260         BFA   D+,64,0        IT HAD BETTER BE UNDEFINED
013 33 0      1261         BFA   COMNT,12,67    OR THE WORD COMMENT
013 34 0      1262         STP   WEMX
013 35 0      1263         BUN   WEM,TRTGX      DUPLICATE LABEL
013 36 0      1264         CNST  30617000000
013 37 0      1265   *E    BPA   T+
013 38 0      1266         LDR   DUMPR          PUT OUT CODE FOR DUMP ROUTINE
013 39 0      1267         STR   V3             IF THIS LABEL WAS SPECIFIED ON TRACE CARD
013 40 0      1268         LDR   MEMRY+1
013 41 0      1269         STR   EXPLN
013 42 0      1270         STP   CONVX
013 43 0      1271         BUN   CONV3
013 44 0      1272         BUN   TRTG1
013 45 0      1273   *T    DLB   L,64,0
013 46 0      1274         LDR - 0
013 47 0      1275         STP   FXUPX
013 48 0      1276         BUN   FXUP+1
013 49 0      1277         BUN   TRTG1
013 50 0      1278   *D    CAD   LOCN           THE NEW DEFINITION IS LOCN
013 51 0      1279         STA - 0,64
013 52 0      1280   NU    BUN   TRTG1
013 53 0      1281         STP   ASMBX          IF THIS IS A SUBROUTINE LABEL,
013 54 0      1282         BUN   ASMBL,NOPZ      INSERT A NOP INSTRUCTION
013 55 0      1283         IFL   NU,62,29
013 56 0      1284   TRTG1 DLB   L,64,0         FIX ALL FORWARD REFERENCES TO THIS LABEL
013 57 0      1285         STP   REMX
013 58 0      1286         BUN   REM1,E-
013 59 0      1287         LDR   LOCNP          IF THIS IS A SEGMENT NUMBER,
013 60 0      1288   ZUTA  F424  0001,01,LOCN    RESTORE LOCN
013 61 0      1289   *B    CAD   CHI            IF MONITOR STATEMENT HASNT APPEARED,EXIT
013 62 0      1290   ALEPH BZA   TRTGX
013 63 0      1291         DLB   V8,64,0
013 64 0      1292         STP   LIBRX          BRING IN THE LABEL PROCESSOR ROUTINE
013 65 0      1293         BUN   LIBRF
013 66 0      1294         DLB   L,64,0
013 67 0      1295         STB   MNTR,04
013 68 0      1296         CAD   L              IF THIS IS A NUMERIC LABEL
013 69 0      1297         BSA   *+2,0          ATTACH A MINUS SIGN TO IT
013 70 0      1298         IFL - 1,12,10         AS A SIGNAL TO THE LABEL PROCESSOR
013 71 0      1299         STP   CONVX
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013 72 0      1300          BUN   CONV
013 73 0      1301    MNTR  CAA   *              IF LABEL IS REQUESTED FOR MONITORING,
013 74 0      1302    MU    NOP   TRTGX
013 75 0      1303          BSA   *+3,2
013 76 0      1304          BSA   *+2,6          PREPARE TO MONITOR ALL ASSIGNMENT
013 77 0      1305    TRTGX BUN   *              STATEMENTS IN ITS SCOPE
013 78 0      1306          STP   CMPLX
013 79 0      1307          BUN   WMG,CRM        COMPILE CIRCL-M (THIS WILL COME UP
013 80 0      1308          IFL   MU,62,29       WHEN THE SCOPE OF THE LABEL IS ENDED)
013 81 0      1309          BUN   TRTGX


013 84 0      1310    PASS  STP   INPTX          GET NEXT NONBLANK CHARACTER FROM CARD
013 85 0      1311          BUN   INPT
013 86 0      1312          BZA   INPT
013 87 0      1313    PASSX BUN   *


013 90 0      1314    WIND1 LDB   TAG            FINISH PROCESSING CONSTANT.
013 91 0      1315          DBB   E+,1           IF TAG IS ON, IT IS A NUMERIC LABEL
013 92 0      1316    WINDU STP   WNDSX
013 93 0      1317          BUN   WINDS          OTHERWISE MAKE A CONSTANT OUT OF IT
013 94 0      1318          STP   NMBRX
013 95 0      1319          BUN   NMBR


013 98 0      1320    FRME  DLB   L,64,00        SEND CODED SYMBOL TO EXECUTOR
013 99 0      1321          CAD - 0
014 00 0      1322          BFA   A+,11,7
014 01 0      1323          STA   L,22
014 02 0      1324          BFA   C+,11,6
014 03 0      1325    *D    CAD   L              IF IT ISNT A RESERVED WORD,
014 04 0      1326          EXT   BOF2           MARK IT AS AN OPERAND
014 05 0      1327    *B    STP   SCAN
014 06 0      1328          BUN   EXCTR
014 07 0      1329    FRMEX BUN   *
014 08 0      1330    *A    SLA   4              RESERVED WORD - SLA4 FOR PROPER CODE
014 09 0      1331          BUN   B-
014 10 0      1332    *C    IFL   L,11,2         FUNCTION CODE IS 6 IN SCANNER,
014 11 0      1333          BUN   D-                              8 IN EXECUTOR
014 12 0      1334    *E    LDR   NTAG
014 13 0      1335          STR   K
014 14 0      1336          LDB   WINDX
014 15 0      1337          DLB - 9999,44,0
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014 16 0      1338          BUN - 0


014 19 0      1339    WINDS CLL    RR0            PUT CONSTANT INTO FINAL FORM
014 20 0      1340          CAD    SW3
014 21 0      1341          BZA    E+
014 22 0      1342          CAD    SYMBL          IF DECIMAL POINT WAS SENSED,
014 23 0      1343    *G    BFA    F+,23,0        TRUNCATE CONSTANT TO EIGHT SIGNIFICANT
014 24 0      1344          IFL    D,22,01                         DIGITS
014 25 0      1345          SRS    1
014 26 0      1346          BUN    G-
014 27 0      1347    *F    SRT    10
014 28 0      1348          CAD    D
014 29 0      1349          STR    D,08           ATTACH EXPONENT
014 30 0      1350          FAD    D
014 31 0      1351          STA    SYMBL          NORMALIZE
014 32 0      1352    WNDSX BUN    *
014 33 0      1353    *E    CAD    SW2
014 34 0      1354          BZA    D+
014 35 0      1355    SW4   CAA    SYMBL          IF SCALE FACTOR TO BE ADDED,
014 36 0      1356          BFA    B+,88,0        MAKE SURE IT IS IN THE PROPER RANGE
014 37 0      1357    *A    STP    WEMX
014 38 0      1358          BUN    WEM,C+
014 39 0      1359          CNST   33436373800    CONSTANT OUT OF RANGE
014 40 0      1360    *B    SLA    8
014 41 0      1361          ADA    FP
014 42 0      1362          BOF    A-
014 43 0      1363          BPA    WNDSX-1
014 44 0      1364    SVAR  DEFN   *
014 45 0      1364    *C    CLA                   IF UNDERFLOW OR TOO BIG USE ZERO
014 46 0      1365          BUN    WNDSX-1
014 47 0      1366    *D    IFL    RR0,22,1       SET TYPE OF FIXED POINT CONSTANT
014 48 0      1367          BUN    WNDSX
014 49 0      1368    WINDX DEFN   FRMEX


014 52 0      1368    INSRT ADD    LL0            PUT A NEW SYMBOL INTO MEMORY
014 53 0      1369          EXT    NN
014 54 0      1370          ADD    SCT
014 55 0      1371          STA    L,04
014 56 0      1372          LDR    SSC
014 57 0      1373          SLT    4
014 58 0      1374          STR    L,64
014 59 0      1375          CAD    D2D3
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014 60 0      1376          STA   L,23
014 61 0      1377          SRA   2
014 62 0      1378          STA   B+,43
014 63 0      1379          BFA   D+,42,00
014 64 0      1380    *E    LDB   L                 IF IT DOESNT FIT INTO THE SCRAMBLE
014 65 0      1381          LDR - 0                 TABLE, PUT IT INTO ASSOCIATIVE MEMORY
014 66 0      1382          CAD   L
014 67 0      1383          BFR   C+,00,0
014 68 0      1384          STP   INSX
014 69 0      1385          BUN   INS1
014 70 0      1386    *C    STA - 0,67
014 71 0      1387    *A    LDB   SSC
014 72 0      1388          IFL   *+1,43,19
014 73 0      1389    *B    RTF   RR0,0             MOVE NAME INTO SSC AREA
014 74 0      1390          STB   SSC
014 75 0      1391          LDR   SSC
014 76 0      1392          CFR   MAMAX,04          CHECK IF MEMORY EXCEEDED
014 77 0      1393          BCH   FULL
014 78 0      1394          DLB   L,64,0
014 79 0      1395          CLL - 0
014 80 0      1396    INSRX BUN   *
014 81 0      1397    *D    IFL   B-,21,1           50-CHARACTER IDENTIFIER WORRIES
014 82 0      1398          BUN   E-


014 85 0      1399    ALPLU CAD   K                 LOOKUP IDENTIFIER OR NUMERIC LABEL
014 86 0      1400          SLA   8
014 87 0      1401          STA   D2D3,23           CONTROL ROUTINE
014 88 0      1402    D2D3  CAA   SYMBL
014 89 0      1403          SRT   10                SCRAMBLE FIRST PART OF SYMBOL
014 90 0      1404          DIV   NN                BY TAKING ITS REMAINDER MOD 99
014 91 0      1405          STR   LL0
014 92 0      1406          LDR   PARSW
014 93 0      1407          CAD   FNSW
014 94 0      1408          BZR   E+
014 95 0      1409          LDR   DICT+3
014 96 0      1410          BZA   B+
014 97 0      1411          STP   SRCHX             COLLECTING FUNCTION PARAMETERS
014 98 0      1412          BUN   SRCH1             USE TYPE AS SPECIFIED IN TYPE DECLRATNS
014 99 0      1413          BUN   X+
015 00 0      1414          BFR   B+,21,0
015 01 0      1415          BFR   B+,21,1
015 02 0      1416          LDR   RR3
015 03 0      1417    *B    STR   RR2,21            COLLECTING PROCEDURE PARAMETERS
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015 04 0      1418           CAD   KC              MARK TYPE AS UNSPECIFIED
015 05 0      1419           STP   INSRX
015 06 0      1420           BUN   INSRT           PUT PARAMETER INTO TABLE AT KC LEVEL
015 07 0      1421           LDR   RR2
015 08 0      1422           STR - 0,21
015 09 0      1423           LDR   TAG
015 10 0      1424           BZR   ALPX1
015 11 0      1425           BUN   Y+
015 12 0      1426    *E     BZA   D+              PROCESSING A FUNCTION DECLARATION
015 13 0      1427           CAD   KC              IS THE IDENTIFIER A PARAMETER
015 14 0      1428           STP   SRCHX
015 15 0      1429           BUN   SRCH
015 16 0      1430           BUN   D+              IF NOT TREAT AS NORMAL
015 17 0      1431    *J     LDR   SW6
015 18 0      1432           BZR   ALPX1
015 19 0      1433           LDR   L               INSERT IMPLIED MULTIPLICATION
015 20 0      1434           STR   LP              IF REQUIRED
015 21 0      1435           CAD   DOT
015 22 0      1436           STP   SCAN
015 23 0      1437           BUN   EXCTR
015 24 0      1438           LDR   LP
015 25 0      1439           STR   L
015 26 0      1440           CLL   SW6
015 27 0      1441    ALPX1  LDB   MODE            ON EXIT, PUT MODE IN R REGISTER
015 28 0      1442           LDR - 0                       SYMBL CODE IN A REGISTER
015 29 0      1443           DLB   L,64,0
015 30 0      1444           BFR   W+,12,70
015 31 0      1445           CAD - 0
015 32 0      1446    ALPLX  BUN   *
015 33 0      1447    *D     STP   SRCHX           NORMAL CASE
015 34 0      1448           BUN   SRCH1           SEARCH FOR THIS IDENTIFIER
015 35 0      1449           BUN   F+
015 36 0      1450    THI    NOP   FRME            IF PROCESSING MONITOR LIST,EXIT TO FRME
015 37 0      1451           BFR   J-,22,74        IF ITS AN INTRINSIC FUNCTION GO TO J-
015 38 0      1452           BFR   ALPX1-1,11,7    IF ANOTHER RESERVED WORD,EXIT
015 39 0      1453           BFR   G+,11,9         IS IT A LABEL
015 40 0      1454    *L     BFR   H+,22,83        IS IT A PROCEDURE NAME
015 41 0      1455           BFR   Z+,21,3         IS ITS TYPE UNSPECIFIED
015 42 0      1456           STP   LIBRX           IF IT IS A NEW LIBRARY PROCEDURE,
015 43 0      1457           BFR   LIBRF,11,3      ADD IT TO THE LIBRARY
015 44 0      1458           BUN   J-              OTHERWISE CHEK IMPLIED MULTIPLICATION
015 45 0      1459    *F     CAD   LEVEL
015 46 0      1460    PEH    BZA   M+                SYMBOL NOT FOUND
015 47 0      1461    L9     CLA   9               INSIDE PROCEDURE
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015 48 0      1462          STP   SRCHX
015 49 0      1463          BUN   SRCH
015 50 0      1464          BUN   K+              MAYBE ITS A RESERVED WORD
015 51 0      1465          BFR   J-,22,74
015 52 0      1466          BFR   ALPX1-1,11,7
015 53 0      1467          BFR   J-,11,4         OR A PROCEDURE, LIBRARY FUNCTION NAME
015 54 0      1468          BFR   L-,11,3
015 55 0      1469          BFR   L-,11,8
015 56 0      1470    *K    CAD   LEVEL           IF WE HAVE A BONA FIDE NEW SYMBOL,
015 57 0      1471    *M    STP   INSRX           ADD IT TO THE TABLE
015 58 0      1472          BUN   INSRT
015 59 0      1473    *Z    LDR   TAG
015 60 0      1474          BZR   H+
015 61 0      1475    *Y    DFL - 0,11,1          MAKE IT A LABEL, IF IT APPEARS IN
015 62 0      1476          BUN   ALPX1-1         THAT CONTEXT
015 63 0      1477    *X    CAD   KC
015 64 0      1478          BUN   M-
015 65 0      1479    *G    CLL   SW6
015 66 0      1480    *H    LDB   MODE            OTHERWISE IF IN TYPE DECLARATION MODE
015 67 0      1481          LDR - 0                SET ITS TYPE
015 68 0      1482          CFR   DCLMD,64
015 69 0      1483          BCU   N+
015 70 0      1484          CAD   RR2
015 71 0      1485          DLB   L,64,0
015 72 0      1486          STA - 0,21
015 73 0      1487          BUN   ALPX1
015 74 0      1488    *N    CAD   SYMBL           GIVEN A NEW SYMBOL, LETS ASSIGN
015 75 0      1489          LDB   PR3              A TYPE FOR IT
015 76 0      1490    *A2   IBB   F+,9999         LOOK IN PREFIX STACK FOR
015 77 0      1491          LDR - 1                FIRST PREFIX WHICH APPLIES
015 78 0      1492          STR   TEMP
015 79 0      1493          DLB   TEMP,64,0
015 80 0      1494          STR   *+1,22
015 81 0      1495          CFA - 0,22
015 82 0      1496          LDB   TEMP
015 83 0      1497          BCU   A2-
015 84 0      1498          CAD   TEMP
015 85 0      1499          SRS   2
015 86 0      1500    *P    DLB   L,64,0
015 87 0      1501          STA - 0,21
015 88 0      1502          BUN   J-               IF NONE FITS, SET OTHERWISE TYPE
015 89 0      1503    *F    CAD   RR3
015 90 0      1504          BUN   P-
015 91 0      1505    *W    CAD 8 *
```

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015 92 0      1506          STB   JCROY,04
015 93 0      1507          CLL   TAG            LABEL ON A TRACE CARD SENSED
015 94 0      1508          STP   INSX
015 95 0      1509          BUN   INS1           PUT CODE REFERENCE ON ITS FIXUP STACK
015 96 0      1510          STP   CMPLX
015 97 0      1511          BUN   WMG,CROY
015 98 0      1512          IFL   CHI,00,1
015 99 0      1513          BUN   SCN1


016 02 0      1514    NMBR  CAD   SYMBL          SEE IF CONSTANT HAS APPEARED BEFORE.
016 03 0      1515          LDR   RR0            EITHER SEARCH FLOATING POINT ONES
016 04 0      1516    RHO   NOP   C+              OR INTEGER ONES
016 05 0      1517          DLB   V6,64,00
016 06 0      1518          BFR   *+2,21,1
016 07 0      1519          DLB   V7,64,00
016 08 0      1520    *A    CFA - 1
016 09 0      1521          BCE   B+
016 10 0      1522          STB   E+,04
016 11 0      1523          LDB - 0
016 12 0      1524          IBB   D+,9999
016 13 0      1525          IBB   A-,1
016 14 0      1526    *D    LDB   SSC
016 15 0      1527    *E    STB   *,04           ENTER NEW CONSTANT IN TABLE
016 16 0      1528          RTF   RR0,2
016 17 0      1529          STB   SSC
016 18 0      1530          IFL - 9998,11,2
016 19 0      1531          IBB   *+1,9998
016 20 0      1532    *B    STB   L              CONSTANT IN TABLE
016 21 0      1533          CAD   L
016 22 0      1534          SLA   4
016 23 0      1535          STA   L,64
016 24 0      1536          DLB   L,64,0
016 25 0      1537    NMBRX BUN   *
016 26 0      1538    *C    CFR   V2,21          IN ARRAY FILL
016 27 0      1539          BCH   FLTCM          CHANGE TO PROPER TYPE, IF NECESSARY
016 28 0      1540          BCL   FIXCM
016 29 0      1541          DFL   RHO,62,29
016 30 0      1542          STA   V1
016 31 0      1543          STP   TSTOX          REVERSE ITS SIGN IF NECESSARY
016 32 0      1544          BUN   TSTOP
016 33 0      1545          LDR   V1
016 34 0      1546          CAD   ABASE
016 35 0      1547          IFL   ABASE,00,1
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016 36 0      1548          STP   WRITX          COMPILE IT
016 37 0      1549          BUN   WRIT3
016 38 0      1550          BUN   WINDX



016 43 0      1551    CLASS STP   ALPLX          PROCESS AND CLASSIFY SYMBOL
016 44 0      1552          BUN   ALPLU
016 45 0      1553          BFA   FRME,11,7
016 46 0      1554          CFR   DCLMD,64
016 47 0      1555          BCE   SCN1           EXIT IF IN A TYPE DECLARATION
016 48 0      1556          LDB   TAG
016 49 0      1557          BFA   B+,11,0       OTHERWISE IT MUST BE A
016 50 0      1558          BFA   C+,11,1       LABEL OR SIMPLE VARIABLE
016 51 0      1559          BFA   D+,11,9
016 52 0      1560          DBB   P+,1
016 53 0      1561    *Q    STP   WEMX
016 54 0      1562          BUN   WEM,FRME
016 55 0      1563          CNST  30122240000    IMPROPER VARIABLE SYMBOL
016 56 0      1564    *C    IBB   FRME,9999
016 57 0      1565    *P    STP   WEMX
016 58 0      1566          BUN   WEM,A+
016 59 0      1567          CNST  30117240000    IMPROPER LABEL SYMBOL
016 60 0      1568    *D    DBB   A+,1
016 61 0      1569          BUN   Q-
016 62 0      1570    *B    CFR   FUNMD,64       MAKE UNASSIGNED SYMBOL
016 63 0      1571          BCU   X+             INTO EITHER A SIMPLE VARIABLE
016 64 0      1572          LDB   FUNS
016 65 0      1573          CAD - 0              OR, IF IN LABEL PART OF A PROCEDURE
016 66 0      1574          BSA   Y+,3           CALL, INTO A LABEL
016 67 0      1575    *X    DLB   L,64,0
016 68 0      1576          IFL - 0,11,1
016 69 0      1577    *A    CLL   TAG
016 70 0      1578          BUN   FRME           EXIT TO FRME ROUTINE IN ANY EVENT
016 71 0      1579    *Y    DLB   L,64,0
016 72 0      1580          IFL - 0,11,9
016 73 0      1581          BUN   FRME
016 74 0      1582    CLASX DEFN  FRMEX



016 77 0      1582    THETA DEFN  *
016 78 0      1582    INPT  NOP   INP3           GET NEXT CHARACTER, FROM FV-STACK
016 79 0      1583    INP1  DLB   SCNCT,94,00        OR FROM CARD. NORMALLY FROM CARD
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016 80 0      1584           CAD - IMAGE          BRING IN ALPHA WORD
016 81 0      1585           LDB   SCNCT
016 82 0      1586           SLA - 0              ISOLATE NEXT DIGIT PAIR
016 83 0      1587    CCCNT  DBB   D+,144         CHECK FOR END OF CARD
016 84 0      1588    ZETA   BFA   E+,00,00
016 85 0      1589           SRA   8
016 86 0      1590           IFL   SCNCT,05,02
016 87 0      1591    *F     STA   CHAR,02
016 88 0      1592    BETA   BUN   INPTX
016 89 0      1593           SLA   4              IF PROCESSING FOR STATEMENT
016 90 0      1594           STP   INSX,RV        WE PUT CHARACTERS INTO RV-STACK
016 91 0      1595           BUN   INS
016 92 0      1596           BFA   *+3,62,33
016 93 0      1597           CAD   CHAR
016 94 0      1598    INPTX  BUN   *
016 95 0      1599    *B     CAD   FV             IF BETA ON AND WE HAVE JUST PUT IN
016 96 0      1600           LDB   RV             AN EQUAL SIGN,
016 97 0      1601           STB   FV,04          RV STACK HAS CHARACTERS IN BACKWARDS$
016 98 0      1602           LDR - 0              TRANSFER THEM TO FV-STACK IN RIGHT ORDER
016 99 0      1603           STA - 0,04
017 00 0      1604           STR   RV,04          UNTIL RV-STACK IS EMPTY
017 01 0      1605           BFR   *+2,04,00
017 02 0      1606           BUN   B-
017 03 0      1607    *C     IFL   BETA,62,29
017 04 0      1608           CAD   CHAR
017 05 0      1609           BUN   INPTX
017 06 0      1610    *D     BCS   *+3,4
017 07 0      1611           STP 4 9898,1642
017 08 0      1612           BUN 4 9898,IMAGE
017 09 0      1613           STP 4 9999
017 10 0      1614           BUN 4 9999,IMAGE
017 11 0      1615           CLL   SCNCT
017 12 0      1616           STB   LCCT,62
017 13 0      1617           IFL   LCCT,62,1
017 14 0      1618    CCBEG  IFL   SCNCT,00,02   START IN COLUMN 2
017 15 0      1619           BUN   INP1
017 16 0      1620    *E     IFL   SCNCT,05,10   HIGH SPEED IGNORING OF SUCCESIVE
017 17 0      1621           STA   SCNCT,01
017 18 0      1622           BUN   F-             BLANK COLUMNS UNLESS ZETA SWITCH IS ON
017 19 0      1623    INP3   LDB   STFOL
017 20 0      1624           CAD - 0              PULL CHARACTERS OUT OF FV (FOR-VARIABLE)
017 21 0      1625           SRA   4               STACK
017 22 0      1626           STA   CHAR,02
017 23 0      1627           IBB   RUNXX,9999
```

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017 24 0      1628          LDR - 1
017 25 0      1629          STR   STFOL,04
017 26 0      1630          BUN   INPTX


017 29 0      1631          CNST  20002000000
017 30 0      1632    IMAGE HLT   0
017 31 0      1633          CNST  0,0
017 32 0      1635          CNST  $BAC-220 STANDARD VERSION$
017 33 0      1640          CNST  $  2/1/62$
017 34 0      1642          CNST  0,0,0,0,0
017 35 0      1647          LOCN  IMAGE+16


017 38 0      1648    SRCH1 CAD   LEVEL
017 39 0      1649    SRCH  ADD   LL0
017 40 0      1650          EXT   NN              LOOK FOR SYMBOL IN TABLE
017 41 0      1651          ADD   SCT
017 42 0      1652          STA   L
017 43 0      1653    *B    LDB   L
017 44 0      1654          IBB   SRCHX,9999
017 45 0      1655    *C    CAD - 1
017 46 0      1656          STA   L               FIRST COMPARE LENGTHS
017 47 0      1657          CFA   D2D3,23         (AND WHETHER OR NOT A NUMERIC LABEL)
017 48 0      1658          BCU   B-
017 49 0      1659          SRA   4
017 50 0      1660          STA   TEMP
017 51 0      1661          IFL   TEMP,63,9
017 52 0      1662          STA   A+,04
017 53 0      1663          IFL   A+,04,1
017 54 0      1664          DLB   TEMP,54,1
017 55 0      1665          BRP   A+
017 56 0      1666          LDB   L9
017 57 0      1667    *A    CAD - *               IF LENGTHS AGREE, COMPARE THE REST
017 58 0      1668          CFA - SYMBL,00
017 59 0      1669          BCU   B-
017 60 0      1670          DBB   A-,1
017 61 0      1671          IFL   SRCHX,04,1      EXIT TO ONE BIGGER LOCATION
017 62 0      1672          DLB   L,64,0          IF SYMBOL IS FOUND
017 63 0      1673          LDR - 0
017 64 0      1674    SRCHX BUN   *


017 67 0      1675    R23   STP   OPRTX,R24       (N .N $N ,N *N -N PN
```

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017 70 0      1676   OPRT  LDB    OPRTX
017 71 0      1677         DLB  - 9998,44,0
017 72 0      1678         STB    SCAN,04
017 73 0      1679         LDB    S1              SEND S1 OPERATOR TO EXECUTOR
017 74 0      1680         CAD  - OPTAB
017 75 0      1681         BUN    EXCTR
017 76 0      1682   OPRTX DEFN   SCAN



017 82 0      1682   WEM   CLL    MSG             WRITE ERROR MESSAGE
017 83 0      1683         LDB    C+
017 84 0      1684         IFL    MSG,12,20
017 85 0      1685         RTF    MSG,6           CLEAR MESSAGE BUFFER
017 86 0      1686         CLL    TEMP
017 87 0      1687   WEMX  CAD    *
017 88 0      1688   *E    CLR    0000
017 89 0      1689         SRT    8
017 90 0      1690         BFA    F+,00,0
017 91 0      1691         STA    E-,04
017 92 0      1692         STR    TEMP3
017 93 0      1693   *H    IFL    E-,04,1
017 94 0      1694         LDB    E-
017 95 0      1695         LDR  - DICT-2          GET DICTIONARY ENTRY
017 96 0      1696   *C    CLA    MSG+1
017 97 0      1697         LBC    TEMP
017 98 0      1698         SLT    2               TRANSFER CHARACTERS
017 99 0      1699         BFA    B+,00,00        ONE AT A TIME INTO
018 00 0      1700         SLA  - 8               BUFFER AREA
018 01 0      1701         DLB    TEMP,94,00
018 02 0      1702         LSA    0
018 03 0      1703         ADD  - MSG
018 04 0      1704         STA  - MSG,00
018 05 0      1705         IFL    TEMP,05,02
018 06 0      1706         BUN    C-
018 07 0      1707   *B    BSA    H-,3
018 08 0      1708         IFL    TEMP,05,02      PUT SPACE BETWEEN WORDS
018 09 0      1709         CAD    TEMP3
018 10 0      1710         BUN    E-
018 11 0      1711   *F    BCS    *+2,4
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018 12 0      1712           BUN    *+3
018 13 0      1713           STP 4  9898,1642
018 14 0      1714           BUN 4  9898,IMAGE
018 15 0      1715           STP 4  9898,0706
018 16 0      1716           BUN 4  9898,MSG
018 17 0      1717           LDB    WEMX            RETURN TO PROGRAM,
018 18 0      1718           DLB -  9999,44,0       ATTEMPT TO CONTINUE ON
018 19 0      1719           CAD    V4              PUT V4 (CODE FOR CONSTANT 1)
018 20 0      1720           BUN -  0               IN A REGISTER ON EXIT



018 24 0      1721    NEWT   CAD    TEMPS           RECORD CURRENT SET OF TEMPORARY
018 25 0      1722           SLA    4               STORAGE CELLS IN SAVET STACK
018 26 0      1723           CLL    TEMPS           AND MARK THE TEMPS STACK EMPTY
018 27 0      1724           BUN    INS



018 30 0      1725    INS2   CAD    LOCN
018 31 0      1726    INS    LDB    INSX            INSERT RA(67) INTO ASSOCIATIVE MEMORY
018 32 0      1727           DLB -  9998,44,0        LOCATION PRECEDING (RB)
018 33 0      1728    INS1   STB    A+,04
018 34 0      1729           LDR    AVAIL           NORMALLY THIS MEANS ON TOP OF THE
018 35 0      1730           BFR    B+,04,00        STACK NAMED BY THE B REGISTER OR
018 36 0      1731    *C     LDR -  0               BY THE 44-FIELD OF THE STP
018 37 0      1732           LDB    AVAIL
018 38 0      1733           STA -  0,67
018 39 0      1734           CAD -  0
018 40 0      1735           STR -  0,04
018 41 0      1736    *A     STB    *,04
018 42 0      1737           STA    AVAIL,04
018 43 0      1738    INSX   BUN    *
018 44 0      1739    NEWTX  DEFN   INSX
018 45 0      1739    *B     LDR    MAMAX           IF AVAIL STACK IS EMPTY, TRY TO
018 46 0      1740           CFR    SSC,04          INCREASE THE SIZE OF
018 47 0      1741           STR    AVAIL,04        ASSOCIATIVE MEMORY
018 48 0      1742           STR    D+,04
018 49 0      1743           DFL    MAMAX,00,1
018 50 0      1744    *D     CLL    *
018 51 0      1745           BCH    C-              IF NO ROOM IS LEFT, GIVE UP
018 52 0      1746    FULL   STP    WEMX
018 53 0      1747           BUN    WEM,EX0
018 54 0      1748           CNST   33941430000     COMPILER CAPACITY EXCEEDED
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018 57 0      1749   REM2  CLL    SER
018 58 0      1750   REM   LDB    REMX          REMOVE INFORMATION FROM
018 59 0      1751         DLB -  9998,44,0      ASSOCIATIVE MEMORY LOCATION FOLLOWING
018 60 0      1752   REM1  STB    A+,04         (RB) ... NORMALLY THIS MEANS PULL OFF
018 61 0      1753         LDB -  0             TOP OF STACK NAMED BY THE B REGISTER
018 62 0      1754         CAD -  0             OR NAMED IN 44-FIELD OF STP INSTRUCTION
018 63 0      1755   REMX  IBB    *,9999
018 64 0      1756         DBB    *+1,9999      IF THE STACK IS EMPTY, EXIT
018 65 0      1757         LDR    AVAIL         OTHERWISE MARK LOCATION AVAILABLE
018 66 0      1758         STB    AVAIL,04      FOR FUTURE USE
018 67 0      1759         STR -  0,04
018 68 0      1760   *A    STA    *,04          EXIT WITH THE REMOVED QUANTITY IN
018 69 0      1761         LDB    REMX          REGISTER A, TO THE LOCATION SPECIFIED
018 70 0      1762         DLB -  9999,44,0     IN THE 44-FIELD OF THE BUN INSTRUCTION
018 71 0      1763         BUN -  0

018 73 0      1764   ASSN1 CAD    VARB          ASSIGN A PLACE FOR A VARIABLE,
018 74 0      1765         SLA    4             OR CONSTANT, OR TEMP STORAGE,
018 75 0      1766         STA -  0,64          IF ITS NOT IN MEMORY ALREADY
018 76 0      1767         DFL    VARB,04,1
018 77 0      1768   ASSN  CAD -  0
018 78 0      1769         BFA    ASSN1,64,0
018 79 0      1770   ASSNX BUN    *

018 81 0      1771   CONV  CAD -  0             PUT OUT MONITOR CODING
018 82 0      1772         LDR    DICT+16
018 83 0      1773         STR    EXPLN
018 84 0      1774         LDR    V8
018 85 0      1775         STB    STPV3,44      FOR A LABEL,TO THE LABEL PROCESSOR
018 86 0      1776         BFA    F+,11,9
018 87 0      1777         LDR    MONGN+1
018 88 0      1778         STR    EXPLN
018 89 0      1779         LDR    MNTRE         OTHERWISE TO THE MONITOR ROUTINE
018 90 0      1780         STA    STPV3,22      PUT TYPE IN THE STP INSTRUCTION
018 91 0      1781         BFA    F+,11,1
018 92 0      1782         BFA    F+,11,8       MONITOR FUNCTION NAMES
018 93 0      1783         LDB    VIMAG           (ARRAY NAME IS IN VIMAG)
018 94 0      1784   *F    STR    V3
018 95 0      1785         CAD -  1
018 96 0      1786         STA    SYMBL
018 97 0      1787         STB    RR0,21        MAKE UP A CONSTANT WITH THE
018 98 0      1788         STP    NMBRX         LEADING ALPHABETIC CHARACTERS
018 99 0      1789         BUN    NMBR          (OR NUMERIC LABEL QUANTITY)
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019 00 0      1790          STP   ASSNX
019 01 0      1791          BUN   ASSN
019 02 0      1792          SLA   2
019 03 0      1793    CONV3 STA   BUN3V,44      PUT ADDRESS OF THIS CONSTANT
019 04 0      1794          CAD   G2            IN BUN INSTRUCTION
019 05 0      1795          BUN   INTRP

                                                SECTION C.  THE EXECUTOR CO-ROUTINE

019 09 0      1796    MAXCM CAD   OPMAX
019 10 0      1797          BUN   EXIT
019 11 0      1798    MINCM CAD   OPMIN
019 12 0      1799    EXIT  STP   CMPLX
019 13 0      1800          BUN   CMPL
019 14 0      1801    NORM  STP   EXCTR         NORMAL EXIT TO THE
019 15 0      1802          BUN   SCAN           SCANNER CO-ROUTINE
019 16 0      1803    ANALZ STA   TEMP,64       AT THIS POINT WE USUALLY GO TO
019 17 0      1804          DLB   TEMP,64,0     CMPL(THE COMPILER) BUT SOME SPECIAL
019 18 0      1805          BFA   A+,01,1        CASES OCCUR
019 19 0      1806          BFA   B+,01,4
019 20 0      1807          BFA   C+,01,5
019 21 0      1808          BUN   EXIT
019 22 0      1809    *A    BSA - 0,6           SPECIAL CONTROL OPERATOR, BRANCH
019 23 0      1810          BUN   EXIT           DIRECTLY TO IT
019 24 0      1811    *B    CAD - 0
019 25 0      1812    ANALY STA   INSX,04       SET UP MODE FIRST, THEN GO DIRECTLY
019 26 0      1813          DLB   MODE,44,0
019 27 0      1814          BUN   INS1
019 28 0      1815    *C    STB   D+,04
019 29 0      1816          LDB   MODE          PICK UP MODE FIRST, THEN GO DIRECTLY
019 30 0      1817          CAD - 0
019 31 0      1818    *D    BUN   *
019 32 0      1819    EXCTR BUN   ANALZ         EXIT-ENTRANCE LINE



019 36 0      1820    COMMA BSA   A+,1          COMMA FOUND. WE CANT BE IN NORMAL MODE
019 37 0      1821          DLB - 0,64,0
019 38 0      1822    COMMX F4241 6273,30,0     BRANCH TO THE COMMA-GENERATOR
019 39 0      1823    *A    STP   WEMX           SPECIFIED BY THIS MODE.
019 40 0      1824          BUN   WEM,NLRB
019 41 0      1825          CNST  31545000000   MISPLACED COMMA
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019 44 0      1826   MODCM STP   CMPLX          MOD COMMA IS THOUGHT OF AS )CRD(
019 45 0      1827         BUN   RIGHT
019 46 0      1828         STP   CMPLX
019 47 0      1829         BUN   WMG,CRD
019 48 0      1830         CAD   LPAR
019 49 0      1831         BUN   EXIT


019 52 0      1832   OVRLY CAA   G12            GENERATE STP,BUN
019 53 0      1833         STP   INTRX
019 54 0      1834         BUN   INTRP          FOLLOWED BY N  (THE SEGMENT NUMBER)


019 57 0      1835   GO    IFL   TAG,00,1       SET UP TO EXPECT A LABEL
019 58 0      1836         CAD   CRT            AND COMPILE A CIRCLE-T OPERATOR
019 59 0      1837         BUN   EXIT


019 62 0      1838   TO    DEFN  NORM           IGNORE THE WORD TO

019 64 0      1838   SWTCH STP   CMPLX          SET UP TO PROCESS A SWITCH STATEMENT
019 65 0      1839         BUN   LEFT           SWITCH E,(L,...,L)
019 66 0      1840         IFL   DELTA,00,5
019 67 0      1841         DFL   SWCM,62,29
019 68 0      1842         CAD   CRH
019 69 0      1843         BUN   EXIT

019 71 0      1844   SWCM  BUN   GO             IF PROC. THE LABELS, ACT LIKE GO TO
019 72 0      1845         IFL   SWCM,62,29
019 73 0      1846         STP   NULSX
019 74 0      1847         BUN   NULSB          OTHERWISE,EVALUATE E, AND LBC E.
019 75 0      1848         STP   ASMBX
019 76 0      1849         BUN   ASMBL,BUNFB
019 77 0      1850         CLL   DEX            THEN COMPILE -BUN FORWARD AND
019 78 0      1851         BUN   GO             ACT LIKE GO TO


019 81 0      1852   UNTIL IFL   PSI,00,01
019 82 0      1853         CAD   LOCN
019 83 0      1854         STA   BREF,64
019 84 0      1855         STP   CMPLX          PUT OUT A BACKWARD REFERENCE OPERATOR,
019 85 0      1856         BUN   WMG,BREF       TO THE PRESENT LOCATION
019 86 0      1857         CAD   CRU            COMPILE A CIRCLE-U OPERATION
019 87 0      1858   *A    IFL   DELTA,22,1
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019 88 0      1859          BUN   EXIT


019 91 0      1860    IF    CAD   OPIF          IF AND UNTIL  TURN ON SWITCH
019 92 0      1861          BUN   A-            WHICH CHANGES = SIGN INTO EQL


019 95 0      1862    ETHR  STP   CMPLX         EITHER IS JUST A CIRCLE E OPERATOR
019 96 0      1863          BUN   WMG,CRE       AND A LEFT PARENTHESIS
019 97 0      1864          STP   CMPLX
019 98 0      1865          BUN   LEFT
019 99 0      1866          IFL   PSI,00,1
020 00 0      1867          BUN   NORM


020 03 0      1868    OR    STP   EXCTR
020 04 0      1869          BUN   SCAN
020 05 0      1870          STA   SMBL
020 06 0      1871          BFA   A+,92,69
020 07 0      1872          STP   CMPLX         OR,    NOT OR IF.
020 08 0      1873          BUN   WMG,BOR       COMPILE A BOOLEAN OR
020 09 0      1874    *B    CAD   SMBL
020 10 0      1875          BUN   EXIT
020 11 0      1876    *A    STP   CMPLX         OR IF.
020 12 0      1877          BUN   RIGHT         THIS ) MATCHES THE EITHER
020 13 0      1878          STP   ASMBX
020 14 0      1879          BUN   ASMBL,BUNFR   PUT OUT A BUN FORWARD
020 15 0      1880          STP   CMPLX
020 16 0      1881          BUN   LEFT          AND ANOTHER EITHER
020 17 0      1882          IFL   PSI,00,1
020 18 0      1883          BUN   IF            AND THEN THE IF


020 21 0      1884    WISE  CFA   DCLMD,64      OTHERWISE SENSED.
020 22 0      1885          BCE   B+
020 23 0      1886    *A    STP   CMPLX         IF IN  EITHER IF  CONTEXT,
020 24 0      1887          BUN   RIGHT         ACT LIKE  OR IF
020 25 0      1888          STP   ASMBX
020 26 0      1889          BUN   ASMBL,BUNFR
020 27 0      1890          IFL   DELTA,00,4
020 28 0      1891          CAD   CRW
020 29 0      1892          BUN   EXIT          THEN PUT OUT CIRCLE-W OPERATOR.
020 30 0      1893    *B    LDR   RR2
020 31 0      1894          STR   RR3           IF IN TYPE DECLARATION, SET
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020 32 0      1895           LDB   LEVEL          RR3 TO CURRENT TYPE
020 33 0      1896           DBB   NORM,1         AND IF OUTSIDE OF PROCEDURE DECLARATIONS,
020 34 0      1897           STR   RR1            PUT IT INTO RR1 ALSO.
020 35 0      1898           BUN   NORM


020 38 0      1899    ENTER  IFL   TAG,00,1
020 39 0      1900           STP   EXCTR
020 40 0      1901           BUN   SCAN
020 41 0      1902           STP   LINKX          LINK TO SUBROUTINE
020 42 0      1903           BUN   LINK2
020 43 0      1904           BUN   NORM


020 46 0      1905    STOP   STP   CMPLX          COMPILE CIRCLE Z
020 47 0      1906           BUN   WMG,CRZ
020 48 0      1907    SCT    CLA   SCRTB          AND AN ACCUMULATOR SYMBOL.
020 49 0      1908           BUN   EXIT


020 52 0      1909    RETN   STP   VSUBX          RETURN.   SEE VSUB.
020 53 0      1910           BUN   VSUB
020 54 0      1911           BUN   NORM


020 57 0      1912    COMNT  CLL   TAG            COMMENT.
020 58 0      1913           STP   INPTX
020 59 0      1914           CAD   CHAR           BYPASS CHARACTERS
020 60 0      1915           BFA   SCN7,02,13     UNTIL WE SEE A SEMICOLON
020 61 0      1916           BUN   INPT


020 64 0      1917    FOR    STP   CMPLX          CIRCLE X - WILL GENERATE THE FINAL BUN
020 65 0      1918           BUN   WMG,CRX
020 66 0      1919           STP   CMPLX
020 67 0      1920           BUN   LEFT
020 68 0      1921           DFL   BETA,62,29     SET TO STORE NEXT CHARACTERS
020 69 0      1922           CAD   CHAR           AWAY (UP UNTIL THE = SIGN)
020 70 0      1923           SLA   4
020 71 0      1924           STP   INSX,RV
020 72 0      1925           BUN   INS
020 73 0      1926           CLL   ALPHA
020 74 0      1927           IFL   ALPHA,01,1     ALPHA TELLS WHAT KIND OF
020 75 0      1928           BUN   C+             ITERATION LIST ELEMENT WE HAVE
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020 78 0      1929   FORCM CLL   PI            COMMA IN ITERATION LIST.
020 79 0      1930         LDR   ALPHA
020 80 0      1931         BFR   A+,01,1
020 81 0      1932         BFR   B+,01,2
020 82 0      1933         DFL   ALPHA,01,2
020 83 0      1934         CLL   PHI           THE V=(E1,E2,E3),  CASE.
020 84 0      1935         STP   FSUBX         ASSEMBLE STP,BUN
020 85 0      1936         BUN   FSUB2         RUN BACK THE V=
020 86 0      1937         BUN   C+
020 87 0      1938   *B    STP   SEMIX         THE V=(E1,E2,  CASE
020 88 0      1939         BUN   SEMIC         FINISH INCREMENTATION OF V
020 89 0      1940         STP   REMX,EXEC
020 90 0      1941         BUN   REM,*+2
020 91 0      1942   G1    F424  6141,0,*
020 92 0      1943         STP   FXUPX         FIX UP BUN INSTRUCTION
020 93 0      1944         BUN   FXUP
020 94 0      1945         STP   CMPLX         COMPILE AN UNTIL OPERATOR
020 95 0      1946         BUN   WMG,CRU
020 96 0      1947         IFL   PI,00,1
020 97 0      1948         DFL   DELTA,01,2
020 98 0      1949         IFL   ALPHA,01,1
020 99 0      1950         CAD   TOP           AND THE LEQ OR GEQ RELATION
021 00 0      1951         BUN   EXIT
021 01 0      1952   *A    LDB   MODE
021 02 0      1953         LDR - 0
021 03 0      1954         BFR   B+,22,2
021 04 0      1955         IFL   ALPHA,00,1    THE V=(E1,  CASE.
021 05 0      1956         STP   CMPLX
021 06 0      1957         BUN   RIGHT         ASSEMBLE V=E1, STP, BUN
021 07 0      1958         STP   QSUBX
021 08 0      1959         BUN   QSUB
021 09 0      1960         STP   FSUBX         RUN BACK V=V
021 10 0      1961         BUN   FSUB1
021 11 0      1962         STP   RUNX
021 12 0      1963         BUN   RUN
021 13 0      1964         STP   EXCTR
021 14 0      1965         BUN   SCAN
021 15 0      1966         CFA   HYPH          REMEMBER IF E2 BEGINS WITH
021 16 0      1967         LDR   RLEQ          THE CHARACTER MINUS
021 17 0      1968         BCU   *+2
021 18 0      1969         LDR   RGEQ
021 19 0      1970         STR   TOP
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021 20 0      1971            STA   SMBL        COMPILE +, AND THEN CONTINUE SCANNING
021 21 0      1972            STP   CMPLX
021 22 0      1973            BUN   WMG,PLUS
021 23 0      1974            CAD   SMBL
021 24 0      1975            BUN   EXIT
021 25 0      1976      *B    STP   QSUBX       THE V=E1, CASE.
021 26 0      1977            BUN   QSUB
021 27 0      1978            STP   FSUBX       ASSEMBLE V=E1, STP, BUN
021 28 0      1979            BUN   FSUB1       SCAN V= AGAIN
021 29 0      1980      *C    CLL   DELTA
021 30 0      1981            IFL   DELTA,00,3
021 31 0      1982            BUN   NORM


021 34 0      1983      SEMI  BSA   C+,2        SEMICOLON GENERATOR.
021 35 0      1984            LDB   OMCRN       CHECKS FIRST FOR LABEL MODE.
021 36 0      1985            CLL   OMCRN       EXIT IF EXPECTING A SEMICOLON
021 37 0      1986            DBB   NORM,1
021 38 0      1987            CFA   FUNMD,64
021 39 0      1988            BCE   A+          CHECK FOR FUNCTION OR PROCEDURE CALL
021 40 0      1989            CFA   PRCMD,64
021 41 0      1990            BCE   B+
021 42 0      1991            LDB   DELTA       OTHERWISE BRANCH ACCORDING TO THE
021 43 0      1992            BUN - *+1          SETTING OF DELTA
021 44 0      1993            BUN   DEL0        DELTA UNSET
021 45 0      1994            BUN   DEL1        FOR STATEMENT,AFTER (E1,E2,E3)
021 46 0      1995            BUN   DEL2        THIS LOCATION IS WASTED
021 47 0      1996            BUN   DEL3        FOR STATEMENT, AFTER E
021 48 0      1997            BUN   DEL4        AFTER OTHERWISE,SEGMENT,SUBROUTINE,ETC.
021 49 0      1998      DEL5  STP   CMPLX       DECLARATION (E.G., INTEGER, FORMAT)
021 50 0      1999            BUN   RIGHT
021 51 0      2000            BUN   DEL0
021 52 0      2001      *B    STP   YSUBX       PROCESS PARAMETER
021 53 0      2002            BUN   YSUB1
021 54 0      2003      *B    CAA - 0           INCREASE SEMICOLON COUNT
021 55 0      2004            IFL - 0,12,10
021 56 0      2005            BSA   NORM,0
021 57 0      2006      MEMST IFL   TAG,00,1    IF IT WAS 2,SET TO EXPECT LABELS.
021 58 0      2007            BUN   NORM
021 59 0      2008      *A    STP   PRSBX,CRC   COMPILE A PARAMETER CALL OP
021 60 0      2009            BUN   PRSB
021 61 0      2010            LDB   FUNS
021 62 0      2011            BUN   B-
021 63 0      2012      DEL1  STP   CMPLX       FINISH FOR LIST
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021 64 0      2013          BUN   RIGHT
021 65 0      2014          CLL   PI
021 66 0      2015          BUN   Q+              (SEE Q+ BELOW)
021 67 0      2016    *E    BFA   DEL4,11,0
021 68 0      2017          STP   WEMX
021 69 0      2018          BUN   WEM,DEL4
021 70 0      2019          CNST  34661000000     EXTRA OPERAND
021 71 0      2020    *F    STP   WEMX
021 72 0      2021          BUN   WEM,A+
021 73 0      2022          CNST  30147000000     IMPROPER SUBSCRIPT
021 74 0      2023    DEL0  STP   SEMIX           SEMICOLON IS )(
021 75 0      2024          BUN   SEMIC
021 76 0      2025    DEL4  STP   REMX,OPRND      ARE THERE ANY OPERANDS ON THE STACK
021 77 0      2026          BUN   REM,E-          IF SO THEY HAD BETTER BE ACCUM SYMBOLS
021 78 0      2027    *A    STP   REMX,DIMS       ARE THERE ANY DIMENSIONS LEFT
021 79 0      2028          BUN   REM,F-          WE HOPE NOT
021 80 0      2029    *A    CLL   SER
021 81 0      2030          CLL   DEX             IF EVERYTHING IS COPACETIC,
021 82 0      2031          CLL   PI              CLEAR ALL SWITCHES IN SIGHT,
021 83 0      2032          CLL   PSI             IN PREPARATION FOR A NEW STATEMENT
021 84 0      2033          CLL   DELTA
021 85 0      2034          CLL   TAG
021 86 0      2035          BUN   NORM
021 87 0      2036    *C    STP   DECNX
021 88 0      2037          BUN   DECN
021 89 0      2038          BUN   DEL5
021 90 0      2039    DEL2  DEFN  *
021 91 0      2039    DEL3  STP   QSUBX           ASSEMBLE STP,BUN IN FOR LOOP
021 92 0      2040          BUN   QSUB
021 93 0      2041    *Q    IFL   PSI,00,01       ASSEMBLE BUN AROUND THE LOOP
021 94 0      2042          STP   ASMBX
021 95 0      2043          BUN   ASMBL,BUNFR
021 96 0      2044          STP   CMPLX           COMPILE INPUT OR OUTPUT, IF THIS
021 97 0      2045    UPSLN F424  CRA,01,WMG      FOR APPEARED THERE.
021 98 0      2046    *E    STP   REMX,EXEC       FIX UP ALL THE BUNS TO THIS FOR LOOP
021 99 0      2047          BUN   REM,C+
022 00 0      2048    *A    STP   DECNX           DROP THE FOR MODE
022 01 0      2049          BUN   DECN
022 02 0      2050          CLL   PHI
022 03 0      2051    *B    STP   REMX,FV         RELEASE THE SYMBOLS FROM THE
022 04 0      2052          BUN   REM,B-          FOR-VARIABLE STACK
022 05 0      2053          BUN   DEL4            THEN DO LIKE A REGULAR SEMICOLON.
022 06 0      2054    *C    STP   FXUPX
022 07 0      2055          BUN   FXUP
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022 08 0      2056          BUN    E-


022 11 0      2057    INPUT CAD    CRJ
022 12 0      2058          BUN    A+


022 15 0      2059    OUTPT CAD    CRK            ASSEMBLE BUN FORWARD
022 16 0      2060    *A    STA    STSV
022 17 0      2061    *B    STP    ASMBX
022 18 0      2062          BUN    ASMBL,BUNFR
022 19 0      2063          IFL    TAG,00,1
022 20 0      2064          BUN    NLRB


022 23 0      2065    PUTCM STP    NULSX          COMMA BETWEEN TWO INPUT OR
022 24 0      2066          BUN    NULSB          OUTPUT DECLARATIONS
022 25 0      2067          BUN    B-


022 28 0      2068    LABEL STP    ASMBX          ASSEMBLE  BUN 0000
022 29 0      2069          BUN    ASMBL,BUNZ     AS THE FIRST INSTRUCTION OF A DECLARATION
022 30 0      2070          IFL    UPSLN,62,29
022 31 0      2071          STP    CMPLX
022 32 0      2072          BUN    WMG,CRI        COMPILE CIRCLE I, CIRCLE A
022 33 0      2073          CAD    CRA
022 34 0      2074          BUN    EXIT


022 37 0      2075    LABCM DEFN   *
022 38 0      2075    *A    STP    PRSBX,CRA      COMPILE CIRCLE A
022 39 0      2076          BUN    PRSB           (INPUT OR OUTPUT)


022 42 0      2077    NLRB  CLL    DEX
022 43 0      2078          BUN    NORM           MARK B REGISTER UNKNOWN


022 46 0      2079    FRMT  STP    ASMBX          FORMAT. ASSEMBLE BUN AROUND.
022 47 0      2080          BUN    ASMBL,BUNFR
022 48 0      2081          IFL    DELTA,00,5
022 49 0      2082          STP    CMPLX
022 50 0      2083          BUN    LEFT
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022 53 0      2084   FRMCM IFL   TAG,00,1       PROCESS FORMAT STRING.
022 54 0      2085         STP   EXCTR
022 55 0      2086         BUN   SCAN
022 56 0      2087         BFA   LEFT,02,02     (THIS IS A LITTLE SCANNER)
022 57 0      2088         CLL   DESCR
022 58 0      2089   *L    STP   INSX,DIMS      BEGIN NEST
022 59 0      2090         BUN   INS2
022 60 0      2091         LDB   DIMS
022 61 0      2092         CAD   DESCR
022 62 0      2093         SLS   8
022 63 0      2094         STA -  0,23
022 64 0      2095   *A    CLL   INSTR
022 65 0      2096   *B    CLL   DESCR
022 66 0      2097         STP   PASSX
022 67 0      2098         BUN   PASS
022 68 0      2099         BFA   L-,02,24      LEFT PARENTHESIS
022 69 0      2100         BFA   N+,91,8       NUMERIC
022 70 0      2101         BFA   D+,02,03      DOT
022 71 0      2102         BFA   C+,02,23      COMMA
022 72 0      2103         BFA   S+,02,14      STAR
022 73 0      2104         BFA   R+,02,04      RIGHT PARENTHESIS
022 74 0      2105         SRT   2
022 75 0      2106         CAD   DESCR
022 76 0      2107         SLT   7
022 77 0      2108         STA   INSTR,55      INSERT NUMBER(33 FIELD)ALPHA(52FIELD)
022 78 0      2109         BUN   B-
022 79 0      2110   *N    SRT   1             BUILD NUMBER
022 80 0      2111         CAD   DESCR
022 81 0      2112         SLT   1
022 82 0      2113         STA   DESCR
022 83 0      2114         BUN   PASS
022 84 0      2115   *D    CAD   DESCR         INSERT NUMBER IN 83-FIELD
022 85 0      2116         SLA   2
022 86 0      2117         STA   INSTR,83
022 87 0      2118         BUN   B-
022 88 0      2119   *R    DFL   L+,62,29
022 89 0      2120   *C    CAD   DESCR         INSERT NUMBER IN EITHER 02 OR 83 FIELD
022 90 0      2121         LDR   INSTR
022 91 0      2122         BZR   L+            (OR DO NOTHING - AFTER *)
022 92 0      2123         BFR   F+,83,0
022 93 0      2124         STA   INSTR,02
022 94 0      2125   *R    STP   WRITX
022 95 0      2126         BUN   WRIT2
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022 96 0      2127           LDB    DIMS
022 97 0      2128           IBB    NORM,9999
022 98 0      2129     *L    BUN    A-
022 99 0      2130           IFL    L-,62,29        RIGHT PARENTHESIS.  GET
023 00 0      2131           STP    REMX,DIMS       LOCATION OF MATCHING LEFT PARENTHESIS
023 01 0      2132           BUN    REM,*+2
023 02 0      2133     G2    F424   7043,0,*
023 03 0      2134           SRS    4
023 04 0      2135           LSA    1
023 05 0      2136           STA    INSTR
023 06 0      2137           BUN    R-
023 07 0      2138     *S    DFL    ZETA,62,35      ALPHANUMERIC STRINGS.
023 08 0      2139     *S    CLL    IOPUS
023 09 0      2140           CLL    INSTR
023 10 0      2141     *B    STP    INPTX
023 11 0      2142           BUN    INPT            TRANSFER FIVE CHARACTERS
023 12 0      2143           DLB    IOPUS,04,2      AT A TIME, UP TO AND
023 13 0      2144           SLA -  0               INCLUDING THE NEXT ASTERISK.
023 14 0      2145           ADL    INSTR
023 15 0      2146           CAD    CHAR
023 16 0      2147           BFA    C+,02,14
023 17 0      2148           DBB    INPT,9992
023 18 0      2149           IFL    INSTR,12,20
023 19 0      2150           STP    WRITX
023 20 0      2151           BUN    WRIT2
023 21 0      2152           BUN    S-
023 22 0      2153     *C    IFL    INSTR,12,30
023 23 0      2154           IFL    ZETA,62,35
023 24 0      2155           BUN    R-
023 25 0      2156     *F    SLA    2
023 26 0      2157           STA    INSTR,83
023 27 0      2158           BUN    R-


023 30 0      2159     SGMT  CAA    PREV            SEGMENT BEGINNING.
023 31 0      2160           ADA    BUF+98          IF BUFFER NOT EMPTY, DUMP IT
023 32 0      2161           BZA    *+3
023 33 0      2162           STP    WRITX
023 34 0      2163           BUN    WRIT5
023 35 0      2164           IFL    BUF,64,1        INCREASE SEGMENT NUMBER
023 36 0      2165           CAD    BUF
023 37 0      2166           EXT    BCUL2
023 38 0      2167           STA    BUF
023 39 0      2168           SLA    4
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023 40 0      2169          ADD   LOCN
023 41 0      2170          STP   INSX,FUNS      STORE SEG NO,LOCN IN FUN-STACK
023 42 0      2171          BUN   INS
023 43 0      2172          IFL   TAG,00,1
023 44 0      2173          IFL   DELTA,04,4
023 45 0      2174          CAD   LOCN           FIX UP FORWARD REFERENCES TO THIS
023 46 0      2175          LDR   BUF             SEGMENT NUMBER
023 47 0      2176          STR   LOCN
023 48 0      2177          STA   LOCNP
023 49 0      2178          STP   EXCTR
023 50 0      2179          BUN   SCAN
023 51 0      2180          IFL   ZUTA,62,39
023 52 0      2181          STP   TRTGX
023 53 0      2182          BUN   TRTG
023 54 0      2183          DFL   ZUTA,62,39
023 55 0      2184          CAD   CRV            COMPILE CIRCLE V,WHICH
023 56 0      2185          BUN   EXIT           WILL FINISH THE SEGMENT.


023 59 0      2186    END   STP   CMPLX          THE WORD END.
023 60 0      2187          BUN   RIGHT
023 61 0      2188    *A    IFL   TAG,00,1
023 62 0      2189          STP   EXCTR          SCAN UNTIL WE REACH
023 63 0      2190          BUN   SCAN
023 64 0      2191          CFA   CWEND,67       END,RIGHT PAREN,SEMICOLON,OR COMMA.
023 65 0      2192          BCE   END
023 66 0      2193          CFA   RPAR
023 67 0      2194          BCE   END
023 68 0      2195          CFA   SMCLN
023 69 0      2196          BCE   ANALZ
023 70 0      2197          CFA   KOMA,67
023 71 0      2198          BCU   A-
023 72 0      2199          CLL   TAG
023 73 0      2200          BUN   ANALZ


023 76 0      2201    FINSH STP   CMPLX          FINISH.
023 77 0      2202          BUN   RIGHT          THIS RIGHT PARENTHESIS SHOULD MATCH
023 78 0      2203          MLS 4 T              THE LEFT PAREN TO WHICH WE
023 79 0      2204          MNC 4 400,2,5        INITIALIZED THE OPERATOR STACK
023 80 0      2205          BUN   700


023 83 0      2206    EQUL  CFA   ARAMD,64
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023 84 0      2207            BCE   B+
023 85 0      2208      *A    CAD   CRB          = IN STATEMENT.
023 86 0      2209            BUN   EXIT         REPLACE BY CIRCLE B OP.
023 87 0      2210      *B    STP   NULSX        IF = APPEARS IN ARRAY DECLARATION,
023 88 0      2211            BUN   NULSB        GO INTO ARRAY-FILL MODE.
023 89 0      2212            CAD   ARFMD
023 90 0      2213            BUN   ANALY


023 93 0      2214      INDEX STP   INSX,AVAIL   INDEX OP IS INSERTED BETWEEN A AND (
023 94 0      2215            BUN   INS          OF A(I). IT BEGINS PROCESSING SUBSCRIPTS.
023 95 0      2216            STR   A+,04        FIRST FIND SOME AVAILABLE LOCATION
023 96 0      2217            STR   B+,04        IN ASSOC MEMORY. THIS WILL BE CALLED
023 97 0      2218            SLT   14           THE INCREMENT WORD FOR THIS ARRAY.
023 98 0      2219            STP   INSX,ARAS    IN ARAS- AND OPERAND-STACKS WE PUT A
023 99 0      2220            BUN   INS          REFERENCE TO THIS INCREMENT WORD, WHICH
024 00 0      2221            LDB   OPRND        IS INITIALIZED TO    V 5 R 0000 AAAA
024 01 0      2222            DLB - 0,64,0       V=0 NORMAL  V=1 CALL BY NAME V=2 MONITOR
024 02 0      2223            LDR - 0            R=0 FLOATING   R=1 FIXED
024 03 0      2224      *A    STR   *,23         AAAA=LOCATION OF OTHER INFORMATION
024 04 0      2225      *B    STB   *,08
024 05 0      2226            LDB   OPRND
024 06 0      2227            STA - 0,64
024 07 0      2228            STP   CMPLX        PUT CIRCLE-R OPERATOR ONTO THE STACK,
024 08 0      2229            BUN   WMG,CRR      ALSO A LEFT PARENTHESIS
024 09 0      2230            STP   CMPLX
024 10 0      2231            BUN   LEFT
024 11 0      2232            CAD   V6
024 12 0      2233            STP   CMPLX        FURTHERMORE,INSERT THE CHARACTERS  0 +
024 13 0      2234            BUN   VRBL         INTO THE INPUT STRING
024 14 0      2235            CAD   PLUS
024 15 0      2236            IFL   PHI,00,1     FINALLY, SET UP TO IGNORE THE LEFT
024 16 0      2237            BUN   EXIT         PARENTHESIS WE LL GET NEXT FROM SCANNER.


024 19 0      2238      NDXCM STP   PRSBX,CRY    COMMA IN SUBSCRIPT POSITION.
024 20 0      2239            BUN   PRSB         FINISH EVALUATING SUBSCRIPT,MAKE SURE
024 21 0      2240            STP   SPERX        IT IS FIXED POINT.
024 22 0      2241            BUN   SPERO        MULTIPLY IT BY THE PROPER DIMENSION
024 23 0      2242            STP   CMPLX
024 24 0      2243            BUN   WMG,PLUS     INSERT PLUS OPERATOR
024 25 0      2244            CAD   PAR
024 26 0      2245            BFA   A+,11,2
024 27 0      2246            BUN   B+
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024 28 0      2247   *A     DLB   PAR,64,0       IF THE DIMENSION WAS A CONSTANT,
024 29 0      2248          LDR - 1              THE INCREMENT WORD CONTAINS SOME INCREMNT
024 30 0      2249          STR   TEMP1          WE HAVE SUPPRESSED FROM THE TARGET CODE,
024 31 0      2250          LDB   ARAS           AND WE MULTIPLY IT BY THE DIMENSION
024 32 0      2251          DLB - 0,64,0         AND REPLACE IT IN THE INCREMENT WORD.
024 33 0      2252          CAD - 0
024 34 0      2253          EXT   EX42
024 35 0      2254          MUL   TEMP1
024 36 0      2255          STR - 0,64
024 37 0      2256   *B     LDB   ARAS
024 38 0      2257          LDR - 0              IF AN EMPTY SUBSCRIPT APPEARED,
024 39 0      2258          BFR   NORM,22,0      PUT THIS DIMENSION ON MULT STACK
024 40 0      2259          CAD   PAR
024 41 0      2260   INSXX  STP   INSX,MULT
024 42 0      2261          BUN   INS
024 43 0      2262          BUN   NORM


024 46 0      2263   SPERO  STP   CMPLX          MULTIPLY PREVIOUS RESULT BY
024 47 0      2264          BUN   WMG,DOT        THE NEXT DIMENSION
024 48 0      2265          IFL   CMPLX,04,6
024 49 0      2266          STP   REMX,DIMS
024 50 0      2267          BUN   REM,VRBL1      IF THERE IS NO NEXT DIMENSION,
024 51 0      2268          STP   WEMX
024 52 0      2269          BUN   WEM,VRBL1
024 53 0      2270          CNST  30147000000    USE 1,AND SAY IMPROPER SUBSCRIPT
024 54 0      2271   SPERX  BUN   *


0VX XX 0      VVXV   DECN   LDB   MODE           DECREASE PARENTHESIS COUNT ON THIS MODE
0VX X( 0      VVXX          DLB - 0,22,1
05X 7( 0      55XX   DECNX  DBB   *,100          AND IF IT IS NOW ZERO, PULL OFF THE
024 60 0      2275          STP   REMX,MODE      TOP OF THE MODE STACK
024 61 0      2276          BUN   REM,*+2
024 62 0      2277   G5     F424  0552,0,*
024 63 0      2278          CFA   NDXMD,64
024 64 0      2279          LDB   DECNX          IF WE FINISHED THE SUBSCRIPTS OF AN ARRAY
024 65 0      2280          BCU - 0              WE GO THROUGH MORE MANIPULATIONS
024 66 0      2281   MLTS   LDB   ARAS           OTHERWISE WE EXIT.
024 67 0      2282          DLB - 0,64,0         NOW WE FINISH PROCESSING ARRAY SBSCRIPTS
024 68 0      2283          STB   P+,04
024 69 0      2284          STB   Q+,04
024 70 0      2285          LDB - 0
024 71 0      2286          STB   R+,04          THE FINAL DIMENSION TO MULTIPLY BY
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024 72 0     2287          CLA                    IS EITHER THE CONSTANT  1
024 73 0     2288          ADD - 0
024 74 0     2289          BSA    A+,1
024 75 0     2290          LDR    V4
024 76 0     2291          STR    PAR
024 77 0     2292          BUN    B+
024 78 0     2293    *A    STP    CMPLX           OR A PARAMETER TO THE PROCEDURE
024 79 0     2294          BUN    LEFT
024 80 0     2295          STP    SPERX
024 81 0     2296          BUN    SPERO           MULTIPLY BY IT.
024 82 0     2297          STP    CMPLX
024 83 0     2298          BUN    RIGHT
024 84 0     2299    *B    STP    REMX,ARAS       PULL OFF TOP OF ARRAY STACK
024 85 0     2300          BUN    REM,*+2
024 86 0     2301    G3    F424   6742,0,*
024 87 0     2302          SRT    10
024 88 0     2303    *P    CAD    *               INCR WORD/64 IS CHANGED FROM THE
024 89 0     2304          EXT    BCUL2           INCREMENT TO THE BASE ADDRESS PLUS THE
024 90 0     2305    *R    ADD    *               INCREMENT (MOD 10000)
024 91 0     2306    *Q    STA    *,64
024 92 0     2307          BFR    G+,22,0
024 93 0     2308          CAD    PAR             IF AN EMPTY SUBSCRIPT HAS APPEARED,
024 94 0     2309          STP    INSX,MULT
024 95 0     2310          BUN    INS             PUT LAST DIMENSION ONTO MULT-STACK
024 96 0     2311          STP    USUBX,CRN       WITH THE OTHERS
024 97 0     2312          BUN    USUB            PUT OUT THE RECALCULATED BASE ADDRESS
024 98 0     2313    *K    STP    REMX,MULT        AS A PARAMETER
024 99 0     2314          BUN    REM,I+          SET MULS TO MULT STACK IN REVERSE ORDER
025 00 0     2315    *C    STP    REMX,MULS
025 01 0     2316          BUN    REM,*+2         FORGET TOP ENTRY OF MULS, IT IS ZERO
025 02 0     2317    G4    F424   6938,0,*
025 03 0     2318    *A    IFL    KAPPA,00,1
025 04 0     2319          STP    PRSBX,CRC       STORE THE PARAMETER.
025 05 0     2320          BUN    PRSB
025 06 0     2321    *F    STP    REMX,MULS
025 07 0     2322          BUN    REM,J+
025 08 0     2323    *D    IFL    KAPPA,00,1      WE ARE FINISHED. PULL SPURIOUS + OPERATOR
025 09 0     2324          STP    REMX,OP         (WE GET AN EXTRA ONE FOR EACH
025 10 0     2325          BUN    REM,NORM         EMPTY SUBSCRIPT)
025 11 0     2326    TWL   HLT    12
025 12 0     2327    *J    BFA    E+,66,0
025 13 0     2328          STP    CMPLX           MULTIPLY TOGETHER ALL DIMENSIONS
025 14 0     2329          BUN    VRBL            BETWEEN EMPTY SUBSCRIPT POSITIONS
025 15 0     2330          STP    CMPLX
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025 16 0      2331          BUN   WMG,DOT
025 17 0      2332          BUN   F-
025 18 0      2333    *I    STP   INSX,MULS
025 19 0      2334          BUN   INS
025 20 0      2335          BUN   K-
025 21 0      2336    *E    STP   REMX,OP        REMOVE EXTRA + SIGN AND STORE
025 22 0      2337          BUN   REM,A-         COMPUTED MULTIPLIER
025 23 0      2338    NN    HLT   99
025 24 0      2339    *G    LDB   MODE
025 25 0      2340          CAD - 0             IF NO EMPTY SUBSCRIPTS OCCURRED
025 26 0      2341          CFA   FUNMD,64       BUT IT IS A NAME CALL ANYWAY,
025 27 0      2342          BCU   NORM          WE PUT IT IN AS A NAME PARAMETER.
025 28 0      2343          LDB   FUNS
025 29 0      2344          CAD - 0
025 30 0      2345          STP   USUBX,CRN
025 31 0      2346          BSA   USUB,2
025 32 0      2347          BUN   NORM


025 35 0      2348    EMPTY CFA   PRCMD,64      EMPTY SUBSCRIPT POSITION OPERATOR
025 36 0      2349          BCU   A+
025 37 0      2350          LDB   SSC           IF IT IS SENSED WHILE COLLECTING
025 38 0      2351          CLL - 0             NEW PROCEDURE PARAMETERS,
025 39 0      2352          DFL - 0,12,10
025 40 0      2353          DFL - 0,23,89       CREATE A PSEUDO SIMPLE VARIABLE
025 41 0      2354          CAD   SSC           FOR THIS SUBSCRIPT MULTIPLIER
025 42 0      2355          SLA   4
025 43 0      2356          ADD - 0
025 44 0      2357          STP   INSX,OPRND    PUT IT INTO THE OPERAND STACK
025 45 0      2358          BUN   INS
025 46 0      2359    ARMS  STP   INSX,ARMS     AND INTO THE LIST OF MULTIPLIERS
025 47 0      2360          BUN   INS            FOR THIS ARRAY
025 48 0      2361          IFL   SSC,00,1
025 49 0      2362          IFL   KAPPA,00,1
025 50 0      2363          BUN   NORM
025 51 0      2364    *A    CFA   NDXMD,64      OTHERWISE CHECK THAT THIS EMPTY POSITION
025 52 0      2365          BCU   B+            OCCURS IN AN ARRAY PARAMETER
025 53 0      2366          LDB - 0             WHILE CALLING A PROCEDURE
025 54 0      2367          LDR - 0
025 55 0      2368          CFR   FUNMD,64
025 56 0      2369          BCU   B+
025 57 0      2370          LDB   FUNS
025 58 0      2371          CAD - 0
025 59 0      2372          BSA   B+,3
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025 60 0      2373          STP   REMX,OP
025 61 0      2374          BUN   REM,E+
025 62 0      2375    *B    STP   WEMX
025 63 0      2376          BUN   WEM,NORM
025 64 0      2377          CNST  30149475000    IMPROPER EMPTY SUBSCRIPT POSITION
025 65 0      2378    *E    LDB   ARAS
025 66 0      2379          IFL - 0,22,1         RECORD IT IN ARAS
025 67 0      2380    SBL   CLA   SYMBL+1        AND PUT MARKER ON MULT STACK.
025 68 0      2381          BUN   INSXX


025 71 0      2382    COLON CLL   KAPPA          BEGINNING OF FUNCTION CALL
025 72 0      2383          LDB   OPRND
025 73 0      2384          DLB - 0,64,0
025 74 0      2385          CAD - 0              PUT NAME OF FUNCTION WERE CALLING
025 75 0      2386          STA   A+,64           ONTO FUN-STACK
025 76 0      2387          CAD   A+
025 77 0      2388          STP   INSX,FUNS
025 78 0      2389          BUN   INS
025 79 0      2390          CAD   CRO            COMPILE A CIRCLE-O
025 80 0      2391          BUN   EXIT
025 81 0      2392    *A    F4241 0,0,0


025 84 0      2393    FUNCM STP   PRSBX,CRC      COMMA IN PROCEDURE,FUNCTION CALL
025 85 0      2394          BUN   PRSB
025 86 0      2395          BUN   NORM           STORE THE PARAMETER


025 89 0      2396    DUMP  CAD   LEVEL
025 90 0      2397          SLA   4
025 91 0      2398          STP   INSX,DUMBS     PUT RECORD ON DUMB STACK,FOR OVERLAY
025 92 0      2399          BUN   INS
025 93 0      2400          DFL   S+,61,4
025 94 0      2401          DLB   LOCN,64,0
025 95 0      2402          DBB   MONT,400       MAKE SURE LOCN IS AT LEAST 400
025 96 0      2403          STP   ASMBX
025 97 0      2404          BUN   ASMBL,BUNZ
025 98 0      2405          STB   LOCN,64
025 99 0      2406          IFL   LOCN,44,4
026 00 0      2407    MONT  DFL   THI,62,71      MONITOR STATEMENT.
026 01 0      2408          IFL   TAG,00,1
026 02 0      2409          IFL   CHI,00,1       PREPARE FOR NUMERIC LABELS
026 03 0      2410          STP   EXCTR
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026 04 0      2411           BUN   SCAN           GET NEXT ITEM FROM SCANNER.
026 05 0      2412           CFA   SMCLN
026 06 0      2413           BCU   *+5            IF IT IS A SEMICOLON WE EXIT
026 07 0      2414           DFL   THI,62,29
026 08 0      2415           STB   S+,61
026 09 0      2416           CLL   TAG
026 10 0      2417           BUN   ANALZ
026 11 0      2418           BFA   *+2,01,0      IF IT IS NOT AN OPERAND WE RECYCLE
026 12 0      2419           BUN   MONT+1
026 13 0      2420           DLB   L,64,0
026 14 0      2421           LDR - 0
026 15 0      2422           BFR   *+2,21,3
026 16 0      2423           DFL - 0,22,87      MARK OPERAND AS MONITORED,UNCLASSIFIED
026 17 0      2424    *S     BUN   A+,0299
026 18 0      2425           DFL - 0,12,60      OR IF PROCESSING DUMP,
026 19 0      2426           LDB   DUMBS        AS A VARIABLE TO BE DUMPED
026 20 0      2427           IFL - 0,45,1
026 21 0      2428           BUN   MONT+1
026 22 0      2429    *A     DFL - 0,12,80
026 23 0      2430           LDB   ARTHG
026 24 0      2431           STP   LIBRX        PUT MONITOR SUBROUTINE INTO PROGRAM
026 25 0      2432           BUN   LIBRF
026 26 0      2433           BUN   MONT+1


026 29 0      2434    SUBR   IFL   TAG,00,1     SUBROUTINE
026 30 0      2435          DFL   NU,62,29
026 31 0      2436          IFL   DELTA,00,4
026 32 0      2437          STP   ASMBX
026 33 0      2438          BUN   ASMBL,BUNFR   COMPILE BUN FORWARD
026 34 0      2439          STP   INSX,FUNS     PUT LOCN INTO FUNS
026 35 0      2440          BUN   INS2          (RETURN WILL LOOK AT THIS)
026 36 0      2441          STP   EXCTR
026 37 0      2442          BUN   SCAN          GET NAME OF SUBROUTINE FROM SCANNER
026 38 0      2443          STP   TRTGX
026 39 0      2444          BUN   TRTG          DEFINE IT
026 40 0      2445          STP   NEWTX,SAVET
026 41 0      2446          BUN   NEWT          SAVE TEMP STORAGES
026 42 0      2447          CAD   CRS
026 43 0      2448          BUN   EXIT          COMPILE CIRCLE S.


026 46 0      2449    EXTRN  STP   EXCTR        EXTERNAL.
026 47 0      2450          BUN   SCAN
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026 48 0      2451          IFL   EPSLN,00,1
026 49 0      2452          STA   V2
026 50 0      2453          IFL   TAG,00,1
026 51 0      2454          DFL   PEH,62,6        DONT LOOK ON LEVEL ZERO WHEN DOING
026 52 0      2455          STP   EXCTR           A DECLARATION
026 53 0      2456          BUN   SCAN          GET NAME FROM SCANNER
026 54 0      2457          IFL   PEH,62,6
026 55 0      2458          DLB   V2,64,0       IS IT AN EXT STATEMENT OR EXT PROCEDURE
026 56 0      2459          DBB   A+,PRCMD
026 57 0      2460          STP   TRTGX         EXTERNAL STATEMENT
026 58 0      2461          BUN   TRTG2         DEFINE IT
026 59 0      2462          CAD   BUF           RECORD ITS SEGMENT NUMBER
026 60 0      2463          DLB   L,64,0        (THE OVERLAY WILL FIX UP ANY
026 61 0      2464          DFL - 0,12,20
026 62 0      2465          STP   INSX
026 63 0      2466          BUN   INS1
026 64 0      2467          IFL   ALEPH,62,6    SEGMENT NUMBER)
026 65 0      2468          STP   ASMBX
026 66 0      2469          BUN   ASMBL,BUNZ    COMPILE BUN FORWARD
026 67 0      2470          BUN   NORM
026 68 0      2471    *A    DLB   L,64,0        EXTERNAL PROCEDURE
026 69 0      2472          STB - 0,66          MARK AS 83 CODE.
026 70 0      2473          IFL - 0,22,83
026 71 0      2474          LDR   NRM           SCAN OFF THE PARAMETERS.


026 74 0      2475    PRCNT STR   C+,04         (R/04 IS EXIT LINE)
026 75 0      2476          CLL   V2
026 76 0      2477          STP   INPTX         BYPASS PARTS OF CARD
026 77 0      2478          BUN   INPT          UNTIL WE HAVE AN EXTRA RIGHT PARENTHESIS
026 78 0      2479          BFA   B+,02,04
026 79 0      2480          BFA   A+,02,24
026 80 0      2481          BUN   INPT
026 81 0      2482    *A    IFL   V2,00,2
026 82 0      2483    *B    DFL   V2,00,1
026 83 0      2484          BRP   INPT
026 84 0      2485    *C    BUN   *


026 87 0      2486    PROCD CLL   RR3           WORD PROCEDURE SENSED.
026 88 0      2487          LDR   VARB
026 89 0      2488          STR   FRSTP,04      SET FRSTP TO LOCATION OF 1ST PARAMETER
026 90 0      2489          LDR   PR3
026 91 0      2490          STR   PR1           SAVE PREFIX LIST
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026 92 0      2491          CLL   PR3
026 93 0      2492          LDR   CHI
026 94 0      2493          CLL   CHI          SHUT OFF LABEL PROCESSING
026 95 0      2494          STR   CHI3
026 96 0      2495          STP   XSUBX        INITIALIZE DECLARATION
026 97 0      2496          BUN   XSUB         (THIS PART COMMON TO PROC AND FUNCTION)
026 98 0      2497          STA   LEVEL        SET LEVEL = KC
026 99 0      2498          STB - 0,21
027 00 0      2499          IFL - 0,21,3       MARK TYPE OF THIS PROCEDURE UNSPECIFIED
027 01 0      2500    NRM   BUN   NORM


027 04 0      2501    FUNC  STP   XSUBX        WORD FUNCTION SENSED.
027 05 0      2502          BUN   XSUB         DO INITIAL STEPS
027 06 0      2503          DFL - 0,11,2       SET TAU DIGIT = 6
027 07 0      2504          IFL   FNSW,00,1
027 08 0      2505          CAD   TOP          COMPILE NAME OF THIS FUNCTION
027 09 0      2506          BUN   EXIT


027 12 0      2507    PRCCM STP   YSUBX        RECORD PARAMETER
027 13 0      2508          BUN   YSUB1
027 14 0      2509          BUN   NORM


027 17 0      2510    ARAPM LDB   OPRND        ARRAY NAME APPEARS AS PARAMETER
027 18 0      2511          CAD - 0
027 19 0      2512          SLT   2
027 20 0      2513          STA   ARMS,44      PUT NAME INTO ARMS
027 21 0      2514          STP   YSUBX
027 22 0      2515          BUN   YSUB2        MARK IT AS PARAMETER
027 23 0      2516          BUN   NORM


027 26 0      2517    INTG  CLL   RR2          INTEGER DECLARATION
027 27 0      2518          IFL   RR2,21,1      SET TYPE = FIXED
027 28 0      2519          BUN   ARRAY


027 31 0      2520    BOOL  DEFN  INTG         BOOLEAN DECLARATION (SAME)


027 34 0      2520    FLTG  CLL   RR2          FLOATING,REAL. SET TYPE = FLOATING
027 35 0      2521    ARRAY IFL   DELTA,00,5
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027 36 0      2522          STP   CMPLX          ARRAY DECLARATION
027 37 0      2523          BUN   LEFT

027 40 0      2524    DCLCM BUN   NORM           DECLARATIONS ARE HANDLED BY SCANNER

027 43 0      2525    ARDEC IFL   IOTA,00,1      START TO DECLARE AN ARRAY, JUST AFTER A(
027 44 0      2526          CAD   XONE+1         OF A(I,J,K,L) IS SENSED
027 45 0      2527          STA   ARRI           INITIALIZE ARRI,ARRL TO 1
027 46 0      2528          STA   ARRL
027 47 0      2529          CAD   CRF
027 48 0      2530          BUN   EXIT

027 51 0      2531    ARACM STP   NULSX          ARRAY DECLARATION COMMA SENSED
027 52 0      2532          BUN   NULSB          TREAT AS )( BUT PRESERVE ARRAY MODE
027 53 0      2533          LDB   IOTA
027 54 0      2534          IBB   NORM,9999     IF THIS IS A COMMA BETWEEN DIMENSIONS,
027 55 0      2535          CAD   CRG            IT IS A CIRCLE-G OPERATOR
027 56 0      2536          BUN   EXIT

027 59 0      2537    ARFCM IFL   RHO,62,29      ARRAY FILL IS ALL HANDLED BY SCANNER
027 60 0      2538          BUN   NORM           (IN UNUSUAL WAY) SEE NUMBER SUBROUTINE

027 65 0      2539    SEMIC STP   CMPLX          SEMICOLON IS THOUGHT OF AS )(
027 66 0      2540          BUN   RIGHT
027 67 0      2541          STP   CMPLX          THIS INNOCENT-LOOKING THING MAY CAUSE
027 68 0      2542          BUN   LEFT           ALL SORTS OF THINGS TO HAPPEN.
027 69 0      2543    SEMIX BUN   *

027 72 0      2544    QSUB  STP   CMPLX          FINISH SETTING V=E
027 73 0      2545          BUN   RIGHT
027 74 0      2546          STP   ASMBX          ASSEMBLE STP FORWARD
027 75 0      2547          BUN   ASMBL,STPFR
027 76 0      2548          CLL   DEX
027 77 0      2549          IFL   PI,00,1
027 78 0      2550          STP   ASMBX          BUN FORWARD
027 79 0      2551          BUN   ASMBL,BUNFR
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027 80 0      2552          CLL   PI
027 81 0      2553    QSUBX BUN   *


027 84 0      2554    RUN   LDR   K2              INTERRUPT NORMAL SCANNING.
027 85 0      2555          STR   K3,04
027 86 0      2556          LDR   S2              RUN BACK THE VARIABLE PART
027 87 0      2557          STR   S3,04           OF THE FOR STATEMENT AGAIN
027 88 0      2558          LDR   SCAN
027 89 0      2559          STR   SCNXX,04
027 90 0      2560          LDR   FV
027 91 0      2561          STR   STFOL,04
027 92 0      2562          IFL   THETA,62,29
027 93 0      2563          BUN   SCN7
027 94 0      2564    RUNXX DFL   THETA,62,29    AFTER THE = SIGN COMES,
027 95 0      2565          LDR   K3              RESTORE NORMAL SCANNING PROCEDURE.
027 96 0      2566          STR   K2,04
027 97 0      2567          LDR   S3
027 98 0      2568          STR   S2,04
027 99 0      2569          LDR   SCNXX
028 00 0      2570          STR   SCAN,04
028 01 0      2571    RUNX  BUN   *


028 04 0      2572    FSUB1 STP   REMX,OPRND
028 05 0      2573          BUN   REM2,*+2        PULL LEFT PARENTHESIS
028 06 0      2574    G6    F424  7039,0,*
028 07 0      2575          STP   CMPLX
028 08 0      2576          BUN   LEFT            PUT ANOTHER ONE ON
028 09 0      2577    FSUB2 CLL   DEX
028 10 0      2578          STP   RUNX            RUN BACK V =
028 11 0      2579          BUN   RUN
028 12 0      2580          STP   CMPLX
028 13 0      2581          BUN   WMG,CRB
028 14 0      2582    FSUBX BUN   *

                                                  THROW AWAY TOP OF STACK,SUBSTITUTE CRN
028 17 0      2583    USUB  STP   REMX,OP
028 18 0      2584          BUN   REM,PRSB
028 19 0      2585    G8    F424  1053,0,*


028 22 0      2586    PRSB  LDB   PRSBX
028 23 0      2587          DLB - 9998,44,0       PRSB SENDS SPECIFIED OPERATOR TO COMPILER
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028 24 0      2588          CAD - 0
028 25 0      2589          STP   CMPLX          AND THEN DOES NULSB
028 26 0      2590          BUN   WMG1
028 27 0      2591    NULSB LDB   MODE           NULSB IS A SEMICOLON WHICH PROTECTS
028 28 0      2592          IFL - 0,22,1         THE MODE STACK
028 29 0      2593          STP   SEMIX
028 30 0      2594          BUN   SEMIC
028 31 0      2595          LDB   MODE
028 32 0      2596          DFL - 0,22,1
028 33 0      2597    PRSBX BUN   *
028 34 0      2598    USUBX DEFN  PRSBX
028 35 0      2598    NULSX DEFN  PRSBX


028 38 0      2598    OLDT  STP   REMX,TEMPS     THROW OUT ALL TEMP STORAGES
028 39 0      2599          BUN   REM,OLDT       CURRENTLY BEING USED, THEY CANT
028 40 0      2600    *A    STP   REMX,SAVET      BE USED ANY MORE
028 41 0      2601          BUN   REM,*+2
028 42 0      2602    G7    F424  1565,0,*       REINSTATE OLD SET
028 43 0      2603          SRA   4
028 44 0      2604          STA   TEMPS,04
028 45 0      2605          BUN   GENRX


028 48 0      2606    GETMP STP   REMX,TEMPS     SET AN AVAILABLE TEMP STORAGE CELL
028 49 0      2607          BUN   REM,GETMX
028 50 0      2608          CAD   VARB           EITHER FROM TEMPS STACK
028 51 0      2609          SLA   4              OR A NEW ONE,IF THAT STACK HAS BEEN
028 52 0      2610          DFL   VARB,04,1      CLEANED OUT.
028 53 0      2611    GETMX BUN   GETMX


028 56 0      2612    XSUB  STP   ASMBX          COMMON PART OF BEGINNING OF PROCEDURE
028 57 0      2613          BUN   ASMBL,BUNFR    AND FUNCTION DECLARATIONS
028 58 0      2614          STP   INSX,FUNS      FIRST COMPILE FORWARD REFERENCE AROUND
028 59 0      2615          BUN   INS2
028 60 0      2616          STP   NEWTX,SAVET    PUT LOCN ONTO FUN-STACK
028 61 0      2617          BUN   NEWT           STASH AWAY CURRENT SET OF TEMP STORAGE
028 62 0      2618          STP   EXCTR
028 63 0      2619          BUN   SCAN           GET NAME OF PROCEDURE FROM SCANNER
028 64 0      2620          STA   TOP
028 65 0      2621          STP   CMPLX          COMPILE CIRCLE-P OPERATOR
028 66 0      2622          BUN   WMG,CRP
028 67 0      2623          IFL   PARSW,00,1
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028 68 0      2624            IFL   KC,00,1
028 69 0      2625            STP   CMPLX          AND A LEFT PARENTHESIS
028 70 0      2626            BUN   LEFT
028 71 0      2627            STP   CMPLX          AND A CIRCLE Q
028 72 0      2628            BUN   WMG,CRQ
028 73 0      2629            CAD   VARB
028 74 0      2630            SRT   4
028 75 0      2631            STR   NOPAV,44       ASSEMBLE
028 76 0      2632            STP   ASMBX            (LOC OF PARAMETER 1) NOP  0000
028 77 0      2633            BUN   ASMBL,NOPAV
028 78 0      2634            IFL   PHI,00,1
028 79 0      2635            DLB   L,64,0
028 80 0      2636            CAD   KC             RECORD NUMBER OF THIS PROCEDURE
028 81 0      2637            STA - 0,04
028 82 0      2638            DFL - 0,82,1
028 83 0      2639    XSUBX   BUN   *


028 86 0      2640    YSUB1   LDB   KAPPA          COLLECTING PARAMETERS
028 87 0      2641            CLL   KAPPA
028 88 0      2642            DBB   A+,1           HAVE EMPTY SUBSCRIPTS APPEARED
028 89 0      2643            LDB   FUNS           OR DO WE HAVE A CALL BY VALUE
028 90 0      2644            CAD - 0
028 91 0      2645            BSA   A+,1
028 92 0      2646    YSUB2   DLB   L,64,00        IF NOT,
028 93 0      2647            IFL - 0,12,10        MARK PARAMETER AS CALL BY NAME
028 94 0      2648            LDB   FUNS
028 95 0      2649            CAD - 0
028 96 0      2650            BSA   *+2,3
028 97 0      2651            BUN   *+2
028 98 0      2652            IFL   TAG,00,1       PUT TAG ON AFTER 2ND SEMICOLON
028 99 0      2653            SRA   4
029 00 0      2654            LSA   0
029 01 0      2655            STP   INSX,PAREF     PUT CALL BY NAME PARAMETERS ONTO
029 02 0      2656            BUN   INS            PAREF STACK.WE WILL USE THIS
029 03 0      2657            CAD - 0
029 04 0      2658            SLA   4              LATER TO FIX UP REFERENCES TO THEM
029 05 0      2659            STA - 0              SHIFT LINK FIELD AROUND(SHREWD MOVE)
029 06 0      2660    PRFSW   F4241 1210,01,0      IN PAREF LINK FIELD IS 64-FIELD
029 07 0      2661    *A      STP   REMX,OPRND
029 08 0      2662            BUN   REM,*+2
029 09 0      2663    FUR     HLT   4
029 10 0      2664            SRA   4              ASSIGN PARAMETER LOCATION
029 11 0      2665            STA   *+3,04
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029 12 0      2666           CAD    VARB
029 13 0      2667           SLA    4
029 14 0      2668           STA    *,64
029 15 0      2669           DLB    TOP,64,0        KEEP COUNT OF NUMBER OF
029 16 0      2670           DFL  - 0,82,99         PARAMETERS FOR FUTURE CHECKING
029 17 0      2671           DFL    VARB,04,1
029 18 0      2672           LDB    FUNS            KEEP COUNT OF NUMBER OF
029 19 0      2673           IFL  - 0,22,1          PARAMETERS IN FUNS.
029 20 0      2674    YSUBX  BUN    *



029 25 0      2675    CMPL   BFA    VRBL,01,0       THIS HERE IS THE COMPILER
029 26 0      2676           BFA    WMG1,01,1
029 27 0      2677           BFA    LEFT,01,2       CHECK KIND OF QUANTITY..
029 28 0      2678    RIGHT  STP    REMX,OP         OPERAND,OPERATOR,LEFT PAREN, OR RIGHT PAR
029 29 0      2679           BUN    REM,E+          PROCESS RIGHT PARENTHESIS..
029 30 0      2680           STP    WEMX
029 31 0      2681           BUN    WEM,LEFT
029 32 0      2682           CNST   34652540000     (EXTRA RIGHT PARENTHESIS)
029 33 0      2683    *E     CFA    LPAR,67
029 34 0      2684           BCE    B+              DO ALL OPERATIONS OUTSTANDING SINCE
029 35 0      2685           STP    GENRX           LAST LEFT PARENTHESIS
029 36 0      2686           BUN    GENR
029 37 0      2687           BUN    RIGHT
029 38 0      2688    *B     STP    DECNX           CHANGE PARENTHESIS COUNT
029 39 0      2689           BUN    DECN             ON THIS MODE
029 40 0      2690    LCCT   BUN    *+4
029 41 0      2691           LDR    LOCN
029 42 0      2692           STR    IMAGE-1,64
029 43 0      2693           IFL    LCCT,62,29
029 44 0      2694    CMPLX  BUN    *
029 45 0      2695    VRBL1  STA    PAR
029 46 0      2696    VRBL   STP    INSX,OPRND      PROCESS OPERAND..
029 47 0      2697           BUN    INS              SIMPLY PUT IT ON OPERAND STACK
029 48 0      2698           BUN    CMPLX
029 49 0      2699    LEFT   LDB    PHI             PROCESS LEFT PARENTHESIS..
029 50 0      2700           CLL    PHI
029 51 0      2701           DBB    CMPLX,1         EXIT, IF EXPECTING A LEFT PARENTHESIS
029 52 0      2702           LDB    MODE
029 53 0      2703           IFL  - 0,22,1          INCREASE PARENTHESIS COUNT ON THIS MODE
029 54 0      2704    FORTY  CLA    40
029 55 0      2705           BUN    A+              AND INSERT LEFT PARENTHESIS IN OP STACK
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029 56 0      2706   WMG    LDB    CMPLX
029 57 0      2707          DLB  - 9999,44,0      PROCESS OPERATOR..
029 58 0      2708          CAD  - 0
029 59 0      2709   WMG1   LDB    OP
029 60 0      2710          LDR  - 0
029 61 0      2711          BFR    A+,66,0        IF TOP OF OPERATOR STACK IS A LEFT
029 62 0      2712          STA    SAVOP           PARENTHESIS,
029 63 0      2713          CFA  - 0,22           OR HIERARCHY OF NEW OP IS HIGHER THAN
029 64 0      2714          BCH    A+             THAT OF THE TOP OF THE OP STACK,
029 65 0      2715          BCL    B+             MERELY PLACE NEW OP ONTO THE STACK.
029 66 0      2716          BSA    *+2,0
029 67 0      2717          BUN    A+             ON EQUAL HIERARCHY DO THE SAME
029 68 0      2718          BFA    *+2,31,0       EXCEPT ON ORDINARY BINARY OPERATIONS
029 69 0      2719          BUN    A+
029 70 0      2720          LDB    OPRND          FOR THESE, CHECK IF EITHER THE
029 71 0      2721          LDR  - 0              LAST OR THE SECOND-LAST OPERAND IS IN
029 72 0      2722          BFR    B+,11,0        THE ACCUMULATOR, AND IF SO
029 73 0      2723          LDB  - 0              PERFORM THE OPERATION IMMEDIATELY
029 74 0      2724          LDR  - 0
029 75 0      2725          BFR    B+,11,0
029 76 0      2726   *A     STP    INSX,OP
029 77 0      2727          BUN    INS
029 78 0      2728   *C     BUN    CMPLX
029 79 0      2729   *B     STP    REMX,OP        IN THE CASE OF LOWER HIERARCHY,
029 80 0      2730          BUN    REM,*+2        EXECUTE THE LAST OPERATOR
029 81 0      2731   NPCN   NOP    0
029 82 0      2732          STP    GENRX          GO TO ITS GENERATOR
029 83 0      2733          BUN    GENR
029 84 0      2734          CAD    SAVOP
029 85 0      2735          BUN    WMG1           AND RECYCLE


029 88 0      2736   ASMBL  LDB    ASMBX          THE ASSEMBLER.
029 89 0      2737          DLB  - 9999,44,0
029 90 0      2738   ASMBZ  CAD  - 0
029 91 0      2739   ASMBY  CLL    INSTR
029 92 0      2740          CLL    INSTP
029 93 0      2741          STA    INSTR,00
029 94 0      2742          STA    INSTP,00
029 95 0      2743          STA    G
029 96 0      2744          LDR    XI
029 97 0      2745          BZR    A+
029 98 0      2746          CLL    XI             OMIT SLT10 INSTRUCTION, IF STA OR SRT10
029 99 0      2747          BFA    B+,62,40           FOLLOWS
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030 00 0      2748          CFA   SRT10,07
030 01 0      2749          BCU   A+
030 02 0      2750          DFL   LOCN,64,1
030 03 0      2751          BUN   ASMBX
030 04 0      2752    *B    DFL   LOCN,64,1
030 05 0      2753          IFL   INSTR,41,1     (CHANGE STA TO STR)
030 06 0      2754          IFL   INSTP,41,1
030 07 0      2755    *A    CFA   +9999999999
030 08 0      2756          BCH   C+
030 09 0      2757          LDB   INSTR          ASSEMBLE WITH V(I) IF THE
030 10 0      2758          LDR - V              SIGN IS 0,1,2, OR 3
030 11 0      2759          BFR   D+,11,5
030 12 0      2760    *E    STP   LASMX          IN ORDINARY CASES, GO TO THE
030 13 0      2761          BUN   LASMB           LITTLE ASSEMBLER.
030 14 0      2762          BUN   ASMBX
030 15 0      2763    *D    DLB - V,64,0         WHOOPS, ITS AN ARRAY NAME.
030 16 0      2764          LDR - 0              WE PROBABLY HAVE TO GET ITS INDEX
030 17 0      2765          STA   GP             IN REGISTER B
030 18 0      2766          BFR   F+,11,7        IF THE ARRAY HAS ALREADY BEEN INDEXED,
030 19 0      2767          BFR   E-,11,5        SKIP THIS PHASE. IF THE SUBSCRIPT IS
030 20 0      2768          IFL - 0,11,1         CONSTANT,GO TO LITTLE ASSEMBLER
030 21 0      2769          STB   TEMP
030 22 0      2770          LDB - 0              GET THE SUBSCRIPT VALUE
030 23 0      2771          CAD - 0              IT CANT BE AN ACCUMULATOR SYMBOL
030 24 0      2772          DLB - 0,64,0
030 25 0      2773          LDR - 0
030 26 0      2774          BFA   Q+,11,3        IS IT A TEMP STORAGE
030 27 0      2775          BFR   Q+,11,6        IS IT ANOTHER ARRAY
030 28 0      2776          STP   ASSNX          OTHERWISE PREPARE A PLACE FOR IT IN
030 29 0      2777          BUN   ASSN           MEMORY
030 30 0      2778          CFA   DEX,67          IF IT HASNT YET BEEN ASSIGNED
030 31 0      2779          STA   DEX,67
030 32 0      2780          BCU   G+             IS THE INDEX IN THE B REGISTER
030 33 0      2781          LDB   TEMP
030 34 0      2782          STP   REMX           IF SO,REMOVE REFERENCE TO  IT
030 35 0      2783          BUN   REM1,F+
030 36 0      2784    G99   F424  9629,0,0
030 37 0      2785    *Q    CLL   DEX            SET CONTENTS OF REGISTER B TO UNKNOWN
030 38 0      2786    *G    LDB   TEMP           HERES A TRICKY PART.
030 39 0      2787          STP   REMX           PUT THE SUBSCRIPT  ONTO THE XVP STACK
030 40 0      2788          BUN   REM1,*+2       IF IT IS ANOTHER ARRAY WHICH MUST BE
030 41 0      2789          BUN   H+             CALLED,KEEP THIS UP UNTIL WE GET
030 42 0      2790          STP   INSX,XVP       TO A NON-ARRAY.
030 43 0      2791          BUN   INS
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030 44 0      2792          DLB - 0,64,0
030 45 0      2793          BFA   H+,11,3
030 46 0      2794          CAD - 0
030 47 0      2795          BFA   REM1,11,6
030 48 0      2796    *H    CAD   LDBV9
030 49 0      2797    *H    STA   INSTR          COMPILE A SERIES OF  LDB S
030 50 0      2798          CLL   G              UNTIL THE INDEX IS FINALLY IN REGISTER B
030 51 0      2799          STP   REMX,XVP
030 52 0      2800          BUN   REM,I+
030 53 0      2801    *F    CAD   INSTP          THE INSTRUCTION IS TO BE B-MODIFIED
030 54 0      2802          LSA   1
030 55 0      2803          STA   INSTR
030 56 0      2804          LDR   GP
030 57 0      2805          STR   G
030 58 0      2806          BUN   E-             GO TO THE LITTLE ASSEMBLER
030 59 0      2807    *I    STA   V9
030 60 0      2808          STP   LASMX
030 61 0      2809          BUN   LASMB
030 62 0      2810          CSU   LDBV9
030 63 0      2811          BUN   H-
030 64 0      2812    *C    BSA   G4P,4           ABSOLUTE MACHINE ADDRESS
030 65 0      2813          BSA   G6P,6           ADDRESS RELATIVE TO THIS LOCATION
030 66 0      2814          BSA   G7P,7           ADDRESS TO BE BLANKED OUT
030 67 0      2815          BSA   G8P,8           FORWARD REFERENCE ADDRESS
030 68 0      2816          IFL   INSTR,12,10     (B-MODIFICATION ON SIGNS OF 5 OR 9)
030 69 0      2817          BSA   G8P,9           B-MODIFIED FORWARD REFERENCE
030 70 0      2818  GEXIT   STP   WRITX
030 71 0      2819          BUN   WRIT2
030 72 0      2820  ASMBX   BUN   *
030 73 0      2821  G4P     LDR   INSTR          SET FLAG IF THIS IS SLT10 INSTRUCTION
030 74 0      2822          CFR   SLT10,07
030 75 0      2823          BCU   GEXIT
030 76 0      2824          IFL   XI,00,1
030 77 0      2825          BUN   GEXIT
030 78 0      2826  G6P     CAD   LOCN
030 79 0      2827          SRA   4
030 80 0      2828          ADA   INSTR
030 81 0      2829          STA   INSTR,04
030 82 0      2830          BUN   GEXIT
030 83 0      2831  G8P     CAD   LOCN
030 84 0      2832          LSA   4
030 85 0      2833          LDR   PSI
030 86 0      2834          BZR   *+2
030 87 0      2835          LSA   7              INCREMENTED FORWARD REFERENCE
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030 88 0      2836            DLB   OP,44,0
030 89 0      2837            LDR   PI              PUT FORWARD REFERENCE OPERATOR
030 90 0      2838            BZR   *+2             ONTO EITHER OPERATOR STACK, OR
030 91 0      2839            DLB   EXEC,44,0       (THE STP,BUN S OF FOR) ONTO EXEC-STACK
030 92 0      2840            STP   INSX
030 93 0      2841            BUN   INS1
030 94 0      2842    G7P     IFL   WRTSW,41,4
030 95 0      2843            BUN   GEXIT


030 98 0      2844    LASMB   LDB   INSTR           LITTLE ASSEMBLER.
030 99 0      2845            LDR - V
031 00 0      2846            DLB - V,64,0          ASSEMBLE AN OPERAND FOR ME
031 01 0      2847            CAD - 0
031 02 0      2848            STA   VIMAG           WHAT KIND OF AN OPERAND
031 03 0      2849            BFR   T3,11,3         A TEMP STORAGE
031 04 0      2850            BFR   T1,11,1         A SIMPLE VARIABLE
031 05 0      2851            BFR   T2,11,2         A CONSTANT
031 06 0      2852            BFR   T4,11,4         A LIBRARY,EXTERNAL PROCEDURE
031 07 0      2853            BFR   T5,11,5         AN ARRAY
031 08 0      2854            BFR   T4,11,8         A PROCEDURE OR FUNCTION
031 09 0      2855    T9      LDR - 1
031 10 0      2856            BFR   *+2,11,0
031 11 0      2857            STR   EXPLN
031 12 0      2858            STP   INSX            A LABEL
031 13 0      2859            BFA   H+,64,0         IF IT HASNT BEEN DEFINED YET,
031 14 0      2860            BUN   T4              RECORD PLACE FOR FORWARD REFERENCE
031 15 0      2861    T1      BSA   T4+1,8          IS IT A DIMENSION PARAMETER
031 16 0      2862            LDR - 1
031 17 0      2863            BUN   *+2
031 18 0      2864    T2      LDR   DICT+33
031 19 0      2865            STR   EXPLN
031 20 0      2866            STP   ASSNX           ASSIGN PLACE FOR VARIABLE OR CONSTANT
031 21 0      2867            BFA   ASSN1,64,0       IF NOT THERE ALREADY
031 22 0      2868            BUN   T4+1
031 23 0      2869    T3      CLL   VIMAG
031 24 0      2870            STR   VIMAG,00        FREE UP TEMP STORAGE CELL FOR
031 25 0      2871            CAD   G               FUTURE USE UNLESS G = 1 OR 3
031 26 0      2872            BSA   LASMX,3
031 27 0      2873            BSA   T4-2,1
031 28 0      2874            SLT   10
031 29 0      2875            STP   INSX,TEMPS
031 30 0      2876            BUN   INS
031 31 0      2877            CAD   TCONS
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031 32 0      2878            STA   EXPLN
031 33 0      2879    T4      CAD   VIMAG          INSERT NEW ADDRESS INTO INSTRUCTION
031 34 0      2880            SRA   4
031 35 0      2881            STA   INSTR,04
031 36 0      2882            STP   INSX
031 37 0      2883            BSA   H+,9
031 38 0      2884            BSA   *+2,8
031 39 0      2885            BUN   *+2
031 40 0      2886            BFA   H+,51,8
031 41 0      2887    *F      ADD   XZERO+1
031 42 0      2888            BSA   B+,1
031 43 0      2889            CAD   G
031 44 0      2890            BSA   LASMX-1,3      G=3 MEANS THIS IS ONLY AN INDEX PSEUDO-OP
031 45 0      2891    *G      STP   WRITX
031 46 0      2892            BUN   WRIT2
031 47 0      2893            CLL   EXPLN
031 48 0      2894    LASMX   BUN   *
031 49 0      2895    *B      EXT   EXO            CHECK IF THIS ADDRESS IS A
031 50 0      2896            SUB   FRSTP          NAME PARAMETER WHICH MUST BE FIXED
031 51 0      2897            SLA   8              UP AT RUNNING TIME
031 52 0      2898            LDB   PAREF
031 53 0      2899    *E      CFA - 0,22
031 54 0      2900            BCE   H+
031 55 0      2901            DLB - 0,64,0
031 56 0      2902            BUN   E-
031 57 0      2903    T5      LDR   G              ARRAY - IF G NEQ 1 OR 3
031 58 0      2904            BFR   T4,12,10      RETURN THE INCREMENT WORD TO
031 59 0      2905            BFR   T4,12,30        AVAILABLE STORAGE, WE ARE DONE WITH IT
031 60 0      2906            CAD   AVAIL
031 61 0      2907            STB   AVAIL
031 62 0      2908            STA - 0,04
031 63 0      2909            LDB   VIMAG
031 64 0      2910            CAD - 1
031 65 0      2911            BUN   T4-1
031 66 0      2912    *H      CAA   BUF
031 67 0      2913            SLA   4
031 68 0      2914            EXT   GTAB0+5
031 69 0      2915            ADD   LOCN
031 70 0      2916            BUN   INS1
031 71 0      2917    TCONS   CNST  $TEMP$



031 75 0      2918    WRIT2   CAD   LOCN           WRITE SUBROUTINE - PUTS INSTRUCTION
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031 76 0      2919            SRA   4                 INTO OUTPUT BUFFER.
031 77 0      2920            IFL   LOCN,64,1         WRIT2 ENTRY - PUT INSTRUCTION OUT FOR
031 78 0      2921            LDR   INSTR              LOCATION LOCN AND INCREMENT LOCN
031 79 0      2922    WRIT3   STA   WRTF,04           WRIT3 ENTRY - LOCATION IS IN RA(04)
031 80 0      2923            SUB   PREV              AND INSTRUCTION IS IN REGISTER R
031 81 0      2924            LDB   CNTRI
031 82 0      2925            BFA   E+,04,0
031 83 0      2926            SUB   XONE+1           DOES THIS LOCATION EQUAL THE PREVIOUS ONE
031 84 0      2927            BFA   F+,04,0          (IF SO WE WILL ERASE THE PREVIOUS ONE)
031 85 0      2928            STB   LRTF,04          OR IS IT ONE HIGHER
031 86 0      2929            CAD   WRTF             IF NOT,WE WILL PUT OUT A NEW RECORD TRANS
031 87 0      2930            STA - BUF+1
031 88 0      2931            IFL   CNTRI,00,1
031 89 0      2932    *F      LDB   LRTF
031 90 0      2933            IFL - BUF+1,32,1       THE 32-FIELD CONTAINS THE NUMBER OF
031 91 0      2934    WRIT7   IFL   CNTRI,00,1       SEQUENTIAL WORDS TO LOAD
031 92 0      2935            LDB   CNTRI
031 93 0      2936    *E      STR - BUF
031 94 0      2937            STR   DESCR
031 95 0      2938            BCS   *+2,2
031 96 0      2939            BUN   *+3
031 97 0      2940    WRTSW   STP 4 9898,0300
031 98 0      2941            BUN 4 9898,WRTF
031 99 0      2942            STB   WRTSW,41
032 00 0      2943            LDR   WRTF
032 01 0      2944            STR   PREV,04
032 02 0      2945    WRIT6   LDR   CNTRI            IS THE BUFFER FULL NOW
032 03 0      2946            CFR   CNTRF
032 04 0      2947            BCL   WRITX            IF NOT,EXIT
032 05 0      2948    WRIT5   LBC   NN               IF SO, CALCULATE CHECK SUM
032 06 0      2949    *C      CLA   BUF+2
032 07 0      2950            SUB - BUF+99
032 08 0      2951            IBB   *-1,1
032 09 0      2952            BOF   *+1
032 10 0      2953            STA   BUF+99
032 11 0      2954            MOW 4 BUF,OT,1         WRITE ONE BLOCK
032 12 0      2955            IFL   BUF,00,1
032 13 0      2956            CLL   CNTRI
032 14 0      2957            CLL   CNTRF            INITIALIZE FOR NEXT BLOCK
032 15 0      2958            IFL   CNTRF,00,96
032 16 0      2959    WRIT4   CLL   BUF+1
032 17 0      2960            LDB   C-
032 18 0      2961            RTF   BUF+1,98
032 19 0      2962    WRITX   BUN   *
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032 23 0      2963   GENXK STB    V1,12          MARK V1 AS IN A-REGISTER
032 24 0      2964   GENXV CAD    V1             V1 = RESULT
032 25 0      2965   GENXX STP    INSX,OPRND     PUT RESULT OF SOME GENERATED QUANTITY
032 26 0      2966         BUN    INS            IN OPERAND STACK AND RECORD IN
032 27 0      2967         LDB    OPRND          SER THE POSITION WHERE STORED
032 28 0      2968         LDR -  0              IF IT IS AN ACCUMULATOR SYMBOL.
032 29 0      2969         BFR    A+,11,0
032 30 0      2970         BUN    GENRX          (HINT..SER IS USED TO CONTROL PLACEMENT
032 31 0      2971   *A    STB    SER            INTO TEMP STORAGE)
032 32 0      2972   GENRX BUN    *
032 33 0      2973         CAD    BUNZ
032 34 0      2974   GENXY STP    ASMBX          ASSEMBLE FINAL INSTRUCTION AND EXIT.
032 35 0      2975         BUN    ASMBY
032 36 0      2976         BUN    GENRX


032 39 0      2977   GENR  STA    OPRTN          GENERATORS.BRANCH ACCORDING TO KIND OF OP
032 40 0      2978         BSA    GEN2,2         UNARY OP
032 41 0      2979         BSA    GEN3,3         NULLARY OP
032 42 0      2980         BSA    GFWRF,4        FORWARD REFERENCE
032 43 0      2981         BSA    GBWRF,5        BACKWARD REFERENCE
032 44 0      2982         BSA    GFWRF,7        INCREMENTED FORWARD REFERENCE
032 45 0      2983         STP    OBTNX          BINARY OP
032 46 0      2984         BUN    OBTN1          GET V1 OPERAND
032 47 0      2985         STP    OBTNX
032 48 0      2986         BUN    OBTN2          GET V2 OPERAND
032 49 0      2987         CAD    OPRTN
032 50 0      2988         BSA    GEN3,1         SPECIAL BINARY OP
032 51 0      2989         BSA    GRELN,8        RELATIONAL OP
032 52 0      2990         BFA    A+,64,0
032 53 0      2991   GENAG STP    ARTHX          PLUS TIMES OR DIVIDE, ETC.
032 54 0      2992         BUN    ARTHG
032 55 0      2993         CAD    ACCUM
032 56 0      2994         BUN    GENXX
032 57 0      2995   *A    LDB    MODE           GIVEN A PLUS OPERATION WHICH TAKES
032 58 0      2996         CAD -  0              PLACE ON PARENTHESIS LEVEL ONE OF AN
032 59 0      2997         CFA    TEST,67        ARRAY SUBSCRIPT AND WHERE ONE OF THE
032 60 0      2998         BCU    GENAG          TWO OPERANDS IS A FIXED POINT CONSTANT
032 61 0      2999         CAD    V1
032 62 0      3000         BFA    B+,22,21       IF ALL THIS IS TRUE WE DONT COMPILE
032 63 0      3001         LDR    V2             EXTRA INSTRUCTIONS, WE ADD IT TO THE
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032 64 0      3002          BFR   *+2,22,21     BASE ADDRESS OF THE ARRAY.
032 65 0      3003          BUN   GENAG
032 66 0      3004          STR   V1
032 67 0      3005          STA   V2
032 68 0      3006          SLT   10
032 69 0      3007    *B    DLB   V1,64,0
032 70 0      3008          LDR - 1             UNLESS THE CONSTANT IS BIGGER THAN  +1
032 71 0      3009          SRT   0             IN WHICH CASE WE COULD GET INTO TROUBLE
032 72 0      3010          CFR   XONE+1        LOADING B WITH A NEGATIVE QUANTITY.
032 73 0      3011          BCH   GENAG
032 74 0      3012          LDB   ARAS          IF THE ARRAY IS A CALL-BY-NAME
032 75 0      3013          DLB - 0,64,0        WITHIN A PROCEDURE WE CANT DO THIS
032 76 0      3014    GENDX SRT   0             INCREMENTATION EITHER
032 77 0      3015    TS001 CLA
032 78 0      3016          ADD - 0
032 79 0      3017          BSA   GENAG,1
032 80 0      3018          SLT   10            ADD THIS TO THE INCREMENT WORD (MOD10000)
032 81 0      3019          SLA   4
032 82 0      3020          ADA - 0
032 83 0      3021          STA - 0,64
032 84 0      3022    GENX2 CAD   V2
032 85 0      3023          BUN   GENXX         PUT OPERAND FOR UNARY OP INTO V1
032 86 0      3024    GEN2  STP   OBTNX
032 87 0      3025          BUN   OBTN1         OPRTN/64 IS THE NAME OF THE GENERATOR
032 88 0      3026    GEN3  DLB   OPRTN,64,0    FOR THIS OPERATOR
032 89 0      3027          BUN - 0
032 90 0      3028    TEST  F244  1,NDXCM,0



032 94 0      3029    GREL2 STP   WEMX
032 95 0      3030          BUN   WEM,*+2
032 96 0      3031          CNST  30167200000   IMPROPER ASSIGNMENT OPERATION
032 97 0      3032          CLL   OPRTN         CHANGE OPERATION TO EQL
032 98 0      3033    GRELN CSU   V1            RELATIONS  EQL,GTR, ETC.
032 99 0      3034          STA   V1
033 00 0      3035          CAD   OPRTN
033 01 0      3036          STA   OPRTM
033 02 0      3037          DFL   YETH,62,10    CHANGE TO FIXED POINT SUBTRACT OPERATION
033 03 0      3038          CLL   OPRTN
033 04 0      3039          STB   BOF,61
033 05 0      3040          STP   ARTHX
033 06 0      3041          BUN   ARTHG
033 07 0      3042          IFL   YETH,62,10
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033 08 0      3043          BSA   *+2,0
033 09 0      3044          IFL   OPRTM,64,1
033 10 0      3045          BFA   D+,11,0        IF RESULT IS NOT IN REGISTER A,GET IT
033 11 0      3046          LSA   0
033 12 0      3047          STA   V1
033 13 0      3048          STP   CADX
033 14 0      3049          BUN   CAD1           ASSEMBLE  BOF *+2  IF NECESSARY
033 15 0      3050    *D    STP   ASMBX
033 16 0      3051    BOF   BUN   ASMBL,BOF2
033 17 0      3052    *D    LDB   OP             CHECK HOW WE ARE USING THIS RELATION
033 18 0      3053          LDR - 0
033 19 0      3054          BFR   A+,67,00       IS IT IN A BOOLEAN EXPRESSION
033 20 0      3055          IFL   OPRTM,64,2
033 21 0      3056          CFR   OPIF,67        IS IT IN AN IF CLAUSE
033 22 0      3057          BCE   C+
033 23 0      3058          IFL   OPRTM,64,2     IS IT IN AN UNTIL CLAUSE
033 24 0      3059          CFR   CRU,67
033 25 0      3060          BCE   C+
033 26 0      3061          STP   WEMX           IF NOT IT IS AN IMPROPER
033 27 0      3062          BUN   WEM,CMPLX                RELATIONAL OPERATION
033 28 0      3063          CNST  30157200000
033 29 0      3064    *A    STP   INTRX
033 30 0      3065          BUN   B+
033 31 0      3066          BUN   GENXX
033 32 0      3067    *C    CAD   AVAIL          REMOVE IF OR UNTIL FROM OP STACK
033 33 0      3068          STB   AVAIL,04
033 34 0      3069          STA - 0
033 35 0      3070          STR   OP,04
033 36 0      3071          STP   INTRX
033 37 0      3072          BUN   B+
033 38 0      3073    GREL1 CLL   PSI            IF, UNTIL FINISHED..  MAKE A COMPOUND
033 39 0      3074          IFL   PHI,00,01      STATEMENT.
033 40 0      3075          BUN   CMPLX
033 41 0      3076    *B    DLB   OPRTM,64,0
033 42 0      3077          CAD - GTAB3
033 43 0      3078          BUN   INTRP


033 46 0      3079    GEXPN CAD   V1             POWER GENERATOR.  V2*V1
033 47 0      3080          CLL   XI
033 48 0      3081          CFA   V10,67         IF V1 IS 2
033 49 0      3082          BCE   Q+
033 50 0      3083          LDR   V2             OR 2.0 WITH V2 FLOATING,
033 51 0      3084          CFA   V11,67
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033 52 0      3085          BCU   *+2             WE WILL MAKE THIS INTO A MULTIPLY
033 53 0      3086          BFR   Q+,21,0        OTHERWISE IF V1 IS NEGATED
033 54 0      3087          BSA   A+,0
033 55 0      3088          STP   ACCX            EMPTY THE A-REGISTER
033 56 0      3089          BUN   ACC3
033 57 0      3090          STP   CADX            AND CAD V1, SRT 10.
033 58 0      3091          BUN   CAD1
033 59 0      3092    *B    CAD   SRT10
033 60 0      3093          BUN   C+              ELSE, IF IT IS IN THE A REGISTER, SRT 10.
033 61 0      3094    *A    BFA   B-,11,0
033 62 0      3095          CAD   LDRV1           IN OTHER CASES, LDR V1
033 63 0      3096    *C    STP   ASMBX
033 64 0      3097          BUN   ASMBY           THEN CAD  V2
033 65 0      3098          STP   CADX
033 66 0      3099          BUN   CAD2            SEPARATE FOUR CASES
033 67 0      3100    *D    CLB                    FIX TO FIX = 0
033 68 0      3101          CAD   V1               FIX TO FLT = 1
033 69 0      3102          BFA   *+2,21,1         FLT TO FIX = 2
033 70 0      3103          IBB   *+1,1            FLT TO FLT = 3
033 71 0      3104          CAD   V2
033 72 0      3105          BFA   *+2,21,1
033 73 0      3106          IBB   *+1,2
033 74 0      3107          STB   D-,04           GENERATE STP BUN TO APPROPRIATE SUBRUTINE
033 75 0      3108          LDR - NUTBL             SET UP TO PRINT THE NAME
033 76 0      3109          STP   LINKX
033 77 0      3110          IBB   LINK-1,EXPF
033 78 0      3111          LDB   D-              COMPUTE TYPE OF RESULT
033 79 0      3112          CAD - EXPA
033 80 0      3113    EXPA  BUN   GENXX,0100
033 81 0      3114    *Q    CAA   V2
033 82 0      3115          STA   V2              THE SQUARE CASE
033 83 0      3116          STA   V1
033 84 0      3117          BFA   T+,11,2
033 85 0      3118          STP   ACCX            FREE A REGISTER
033 86 0      3119          BUN   ACC3
033 87 0      3120          CAD   V2              IF V2 WAS IN THE A REGISTER, IT WILL
033 88 0      3121          BFA   T+,11,0         HAVE BEEN STORED OUT
033 89 0      3122          CSA   CADV1           OTHERWISE WE WANT TO CADV1 AND PREVENT
033 90 0      3123          STP   ASMBX           DOUBLE-INDEXING IF V1 IS AN ARRAY
033 91 0      3124          BUN   ASMBY
033 92 0      3125          STB   V1,11
033 93 0      3126    *T    CAD   DOT             MULTIPLY V2.V2
033 94 0      3127          STA   OPRTN
033 95 0      3128          BUN   GENAG
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033 96 0      3129   NUTBL CNST  $FX*FX$
033 97 0      3130         CNST  $FX*FL$
033 98 0      3131         CNST  $FL*FX$
033 99 0      3132         CNST  $FL*FL$


034 02 0      3133   GABSF STP   TSTOX          ABSOLUTE VALUE.
034 03 0      3134         BUN   TSTOP           LOOK SEE IF ITS  -ABS
034 04 0      3135         LDB   *+3
034 05 0      3136         LDR   V1
034 06 0      3137         BFR   *+2,11,0        V1 IN MEMORY, ABS    CAA V1
034 07 0      3138         DBB   LSA0,LSA0-CAAV1 V1 IN MEMORY,-ABS    CSA V1
034 08 0      3139         BCU   *+2             V1 IN ACCUM,  ABS    LSA 0
034 09 0      3140         DBB   0,9999          V1 IN ACCUM, -ABS    LSA 1
034 10 0      3141         STP   ASMBX
034 11 0      3142         BUN   ASMBZ
034 12 0      3143         BUN   GENXK



034 17 0      3144   GHYPH LDB   OPRND          MINUS OPERATOR
034 18 0      3145   EX42  CNST  10013110000    SIMPLY REVERSE SIGN DIGIT OF
034 19 0      3146         STA - 0              NEXT ITEM IN OPERAND STACK
034 20 0      3147         BUN   GENRX


034 23 0      3148   GBNOT LDR   V1             BOOLEAN NOT.
034 24 0      3149         CAD   G7
034 25 0      3150         BFR   GEN4,22,01
034 26 0      3151         STP   ACCX           IF V1 NOT IN A-REGISTER,
034 27 0      3152         BUN   ACC4            STORE A-REGISTER IF NECESSARY
034 28 0      3153         CAD   V1
034 29 0      3154         BSA   E+,1           CHECK THAT V1 IS BOOLEAN
034 30 0      3155         BFA   E+,21,0
034 31 0      3156   *F    CAD   G11            CAD =1=, SUB V1.
034 32 0      3157   GEN4  STP   INTRX
034 33 0      3158         BUN   INTRP
034 34 0      3159         BUN   GENXK          IF V1 IS IN THE ACCUMULATOR,
034 35 0      3160   *E    STP   WEMX           SUB=1=, LSA 0
034 36 0      3161         BUN   WEM,F-
034 37 0      3162         CNST  30159610000    IMPROPER BOOLEAN OPERAND
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034 40 0      3163   GIF   LDR   BZAFR          IF AND UNTIL
034 41 0      3164   GIF1  STR   T+
034 42 0      3165         CAD   V1
034 43 0      3166         BFA   E+,21,0        CHECK V1 BOOLEAN
034 44 0      3167         BSA   E+,1
034 45 0      3168   *A    STP   CADX           BRING IT INTO A REGISTER
034 46 0      3169         BUN   CAD1
034 47 0      3170         STP   ASMBX          ASSEMBLE  BFA FORWARD,01,0 (IF)
034 48 0      3171         BUN   ASMBL,T+             OR  BFA FORWARD,01,1 (UNTIL)
034 49 0      3172         BUN   GREL1          MAKE COMPOUND STATEMENT
034 50 0      3173   *E    STP   WEMX
034 51 0      3174         BUN   WEM,A-
034 52 0      3175         CNST  30159610000    IMPROPER BOOLEAN OPERAND
034 53 0      3176   *T    HLT   0


034 56 0      3177   GPCS  STP   ACCX           PCS GENERATOR
034 57 0      3178         BUN   ACC4           FREE A REGISTER
034 58 0      3179         STP   FIXEX          BRING V1 FIXED POINT INTO A
034 59 0      3180         BUN   FIXER          UNLESS ITS A CONSTANT
034 60 0      3181         BFA   A+,11,2        THEN GENERATE SLA 0009
034 61 0      3182         CAD   +6034037172                STA *+2,11
034 62 0      3183         BUN   GEN4                       CAD  +1
034 63 0      3184   *A    DLB   V1,64,00                   BCS *+2,0
034 64 0      3185         CAD - 1                          CLA
034 65 0      3186         SLA   9              OR IF IT WAS A CONSTANT GENERATE
034 66 0      3187         STA   BCSL2,11       MERELY THE LAST THREE OF THESE
034 67 0      3188         CAD   +0371720000
034 68 0      3189   *B    BUN   GEN4


034 71 0      3190   GSIGN STP   TSTOX          SIGN(V1)
034 72 0      3191         BUN   TSTOP
034 73 0      3192         STP   CADX           BRING V1 INTO A-REGISTER
034 74 0      3193         BUN   CAD1
034 75 0      3194         SRT   10       GENERATE   BZA *+4
034 76 0      3195         CAD   +4959045600         SRT 0
034 77 0      3196         BFR   B+,21,0             CAD =1.0= OR =1=
034 78 0      3197         CAD   +4959035600         SLT 0
034 79 0      3198   GEN5  DEFN  *
034 80 0      3198   *B    STP   INTRX
034 81 0      3199         BUN   INTRP
034 82 0      3200         BUN   GENXV
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034 85 0      3201   GFWRF STP   FXUPX          FIX UP FORWARD REFERENCE
034 86 0      3202         BUN   FXUP
034 87 0      3203         BUN   GENRX


034 90 0      3204   GBWRF DLB   OPRTN,64,00    BUN TO BACKWARD REFERENCE
034 91 0      3205         STB   BUNI,04
034 92 0      3206         CAD   BUNI
034 93 0      3207         BUN   GENXY

034 95 0      3208   GCRA  STP   REMX,OPRND     OBTAIN V1.
034 96 0      3209         BUN   REM,*+2
034 97 0      3210         BUN   GENRX
034 98 0      3211         STA   V1
034 99 0      3212         CLL   SER            BRANCH TO GCRJ(INPUT)OR GCRK(OUTPUT)
035 00 0      3213         DLB   STSV,64,0
035 01 0      3214         BUN - 0

035 03 0      3215   GCRB  DLB   DELTA,22,0     =  OPERATOR
035 04 0      3216         DBB   GREL2,1        OR DID HE MEAN EQL
035 05 0      3217         DLB   V2,64,0
035 06 0      3218         LDR - 0
035 07 0      3219         STR   TS001,34
035 08 0      3220         CAD   V2
035 09 0      3221         BSA   Z+,1
035 10 0      3222         STR   V2
035 11 0      3223         STA   V2,00
035 12 0      3224         LDB   OP
035 13 0      3225         CAD - 0
035 14 0      3226         CFA   CRB,64         CHECK FOR MULTIPLE ASSIGNMENT
035 15 0      3227         BCE   A+             OR A FOR STATEMENT, WHERE WE
035 16 0      3228         LDB   MODE           CANT DO  STR  INSTEAD OF  STA
035 17 0      3229         CAD - 0
035 18 0      3230         CFA   FORMD,64
035 19 0      3231         BCU   *+3
035 20 0      3232         IFL   OMEGA,00,1
035 21 0      3233   *A    CLL   XI
035 22 0      3234         CAD   V2             LEFTHAND OPERAND CANNOT BE
035 23 0      3235         BFA   Z+,11,9        A LABEL, ACCUMULATOR SYMBOL
035 24 0      3236         BFA   *+3,11,1       CONSTANT, TEMP STORAGE
035 25 0      3237         CFA   *+1,11          OR A LIBRARY PROCEDURE
035 26 0      3238         F424  5001,34,Z+
035 27 0      3239         CAD   V1
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035 28 0      3240          BFA   S+,21,3          (CLL IN MULTIPLE ASSIGNMENT)
035 29 0      3241          BFA   A+,11,2          IS RHS A CONSTANT.
035 30 0      3242    *V    STP   CADX             IF NOT, GET RHS INTO ACCUMULATOR
035 31 0      3243          BUN   CAD1
035 32 0      3244          LDR   V2
035 33 0      3245          CFR   V1,21
035 34 0      3246          STR   V1,21            DO THE TYPES AGREE
035 35 0      3247          BCE   C+               IF NOT, LINK EITHER TO
035 36 0      3248          BFR   Y+,21,0          FIX OR FLOAT ROUTINE
035 37 0      3249          DLB   FIXGN,64,0
035 38 0      3250          BUN   X+
035 39 0      3251    *Y    DLB   TABSC+82,64,0
035 40 0      3252    *X    STP   LINKX
035 41 0      3253          BUN   LINK1
035 42 0      3254    *C    CAA   V2
035 43 0      3255          BFA   Y+,11,8
035 44 0      3256          CAA   G13
035 45 0      3257    *K    STP   INTRX            ASSEMBLE STA V2   UNLESS FUNCTION OR
035 46 0      3258          BUN   INTRP            OR PROCEDURE NAME
035 47 0      3259          CAA   TS001
035 48 0      3260    *Y    LDR   MU
035 49 0      3261          BFR   W+,62,01         IF WE ARE IN SCOPE OF A LABEL REQUESTED
035 50 0      3262    *M    DLB   V2,64,0          FOR MONITORING, OR THE VARIABLE
035 51 0      3263          STP   CONVX            ASSIGNED IS SO REQUESTED,
035 52 0      3264          BUN   CONV+1           ASSEMBLE LINK TO MONITOR SUBROUTINE
035 53 0      3265          BUN   E+
035 54 0      3266    *W    BSA   M-,2
035 55 0      3267          BSA   M-,6
035 56 0      3268    *E    CLL   OMEGA
035 57 0      3269          BUN   GENXV
035 58 0      3270    *A    CFA   V7,64            IF WE ARE SETTING SOMETHING TO A
035 59 0      3271          BCE   S+               NONZERO CONSTANT,
035 60 0      3272          CFA   V6,64
035 61 0      3273          BCE   S+
035 62 0      3274    *D    CFA   V2,21            MATCH THE TYPES
035 63 0      3275          BCE   V-
035 64 0      3276          BFA   U+,21,0
035 65 0      3277          STP   FLTCX
035 66 0      3278          BUN   FLTCN
035 67 0      3279          BUN   T+
035 68 0      3280    *U    STP   FIXCX
035 69 0      3281          BUN   FIXCN
035 70 0      3282    *T    STA   V1,00
035 71 0      3283          BUN   A-
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035 72 0      3284    *S      CAD     COMP+7          SOMETHING = 0
035 73 0      3285            LDB     OMEGA
035 74 0      3286            LDR     V2              SEVERAL CASES TO CONSIDER
035 75 0      3287            STB     V1,23
035 76 0      3288            IFL     V1,21,3
035 77 0      3289            DBB     K-,1            CLA, CLL V2  IN FOR STATEMENT
035 78 0      3290            SLA     6
035 79 0      3291            BFR     K-,11,8         CLA IN PROCEDURE OR FUNCTION CASE
035 80 0      3292            SLA     6
035 81 0      3293            BUN     K-              CLL V2 OTHERWISE
035 82 0      3294    *Z      STB     V1,21
035 83 0      3295            STP     WEMX
035 84 0      3296            BUN     WEM,E-
035 85 0      3297            CNST    30167320000     IMPROPER ASSIGNMENT STATEMENT



035 90 0      3298    GCRC    STP     PMTRX
035 91 0      3299            BUN     PMTR            ASSEMBLE THE PARAMETER-OBTAINING INSTRUC-
035 92 0      3300            LDB     OPRND                                   TION
035 93 0      3301            CAD -   0
035 94 0      3302            CFA     DEX,67          DOES REGISTER B CONTAIN THE FIRST
035 95 0      3303            BCE     A+              PARAMETER LOCATION
035 96 0      3304            STA     DEX
035 97 0      3305            STA     V2              IF NOT, ASSEMBLE A DLB V2,44,0
035 98 0      3306            STP     ASMBX
035 99 0      3307            BUN     ASMBL,DLBV2
036 00 0      3308    *A      LDB     FUNS
036 01 0      3309            CAD -   0
036 02 0      3310            BSA     *+2,3           TURN TAG ON IF WE HAVE PASSED THE
036 03 0      3311            BUN     *+2              2ND SEMICOLON
036 04 0      3312            IFL     TAG,00,1
036 05 0      3313            SRA     8
036 06 0      3314            LSA     0
036 07 0      3315            SUA     GTAB0           WHAT PARAMETER NUMBER IS THIS
036 08 0      3316            STA     STAAB,04        (FIRST 0000,THEN 9999, THEN 9998,ETC.)
036 09 0      3317            IFL -   0,22,1
036 10 0      3318            CAD     STAAB
036 11 0      3319            BUN     GENXY


036 14 0      3320    GCRD    STP     TSTOX           MOD OPERATION  MOD(V2,V1)
036 15 0      3321            BUN     TSTOP
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036 16 0      3322          CSU   V2              IF  -MOD  CHANGE SIGN OF V2.
036 17 0      3323          BCU   *+2
036 18 0      3324          STA   V2
036 19 0      3325          EXT   V1
036 20 0      3326          BFA   E+,21,0         CHECK THAT V1,V2 BOTH INTEGER
036 21 0      3327    *F    LDR   V1
036 22 0      3328          CFR   V10,66          IF V1 IS THE CONSTANT 2 OR -2 WE HAVE
036 23 0      3329          BCE   Z+              A SPECIAL CASE
036 24 0      3330    *F    STP   ACCX
036 25 0      3331          BFR   ACC1,11,0       PUT V1 IN MEMORY
036 26 0      3332    *C    STP   CADX
036 27 0      3333          BUN   CAD2            BRING V2 INTO ACCUMULATOR
036 28 0      3334          CAD   V1
036 29 0      3335          CFA   *+1,11
036 30 0      3336          F424  2001,35,Y+
036 31 0      3337          DLB   V1,64,0
036 32 0      3338          CSA - 1               CHECK IF V1 IS A CONSTANT,POWER OF TEN
036 33 0      3339          CLL   SYMBL
036 34 0      3340          BZA   E+
036 35 0      3341          SRT   1
036 36 0      3342          ADL   SYMBL
036 37 0      3343          BFR   *-2,11,0
036 38 0      3344          SLT   1
036 39 0      3345          CFA   XONE+1,00
036 40 0      3346    *Y    CAD   +5822570000
036 41 0      3347          BCU   GEN4            IF NOT,GENERATE SRT10,DIV V1, SLT 30
036 42 0      3348          CLL   RR0
036 43 0      3349          STP   FLTCX           OTHERWISE GENERATE EXTRACT
036 44 0      3350          BUN   FLTC1           WITH THE CONSTANT -1 OR -11 OR -111,ETC.
036 45 0      3351          STA   V1,64
036 46 0      3352          CAD   *+1
036 47 0      3353          BUN   GEN4,2800
036 48 0      3354    *E    STP   WEMX
036 49 0      3355          BUN   WEM,GENXX
036 50 0      3356          CNST  30113376911     IMPROPER ARGUMENT OF MOD FUNCTION
036 51 0      3357    *Z    STP   ACCX
036 52 0      3358          BUN   ACC3            IF IT IS MOD 2, GENERATE
036 53 0      3359          CAD   G99             CSU =1=  EXT V2
036 54 0      3360          BUN   GEN4


036 57 0      3361    GCRE  LDB   LAMDA           EITHER IF FINISHING.
036 58 0      3362          CLL   LAMDA           IF OTHERWISE APPEARED, DO NOTHING
036 59 0      3363          DBB   GENRX,1         IF NO OTHERWISE APPEARED,
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036 60 0      3364          CAD   NOPZ          PUT OUT A NOP INSTRUCTION
036 61 0      3365          BUN   GENXY

036 64 0      3366    GCRF  CLL   IOTA          FINISH DECLARING SOME ARRAY
036 65 0      3367          DLB   V1,64,0       V1 IS FIRST DIMENSION,V2 IS ARRAY NAME
036 66 0      3368          CSU - 1
036 67 0      3369          MUL   ARRI
036 68 0      3370          SLT   10
036 69 0      3371    *B    LDR   MULS
036 70 0      3372          ADL   VARB          RESERVE SPACE FOR THIS ARRAY
036 71 0      3373          STA   TEMP
036 72 0      3374    *A    CAD   VARB
036 73 0      3375          ADD   XONE+1
036 74 0      3376          STA   ABASE,04      PUT BEGINNING LOCATION IN ABASE
036 75 0      3377          SUB   ARRL
036 76 0      3378          ADA   GTAB0         COMPUTE BASE ADDRESS (MOD 10000)
036 77 0      3379          SLA   4
036 78 0      3380          DLB   V2,64,0
036 79 0      3381          STA - 0,64          MOVE LIST OF MULTIPLIERS
036 80 0      3382          STR - 0,04          TO THIS ARRAY NAME
036 81 0      3383          CAA   TEMP
036 82 0      3384          SLA   4             PUT TOTAL LENGTH OF ARRAY ON TOP
036 83 0      3385          CLL   MULS          OF MULTIPLIER LIST
036 84 0      3386          BUN   LNGTH

036 87 0      3387    GCRG  DLB   V1,64,0       MIDDLE OF ARRAY DECLARATION
036 88 0      3388          CAD - 1
036 89 0      3389          MUL   ARRL          IF GIVEN  ARRAY  A(I,J,K,L)
036 90 0      3390          STR   ARRL
036 91 0      3391          IFL   ARRL,00,1     ARRL IS SET TO ((J+1)K+1)L+1
036 92 0      3392          CAD - 1
036 93 0      3393          MUL   ARRI
036 94 0      3394          STR   ARRI
036 95 0      3395          CAD   V1            ARRI IS SET TO JKL
036 96 0      3396          LDB   B-
036 97 0      3397    LNGTH LDR   V1            ALL DIMENSIONS MUST BE
036 98 0      3398          BFR   A+,22,21      FIXED POINT CONSTANTS
036 99 0      3399          STP   WEMX
037 00 0      3400          BUN   WEM,GENRX
037 01 0      3401          CNST  30163640000   IMPROPER ARRAY DECLARATION
037 02 0      3402    *A    STP   INSX
037 03 0      3403          BUN   INS1          J,K,L GO TO MULTIPLIER STACK
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037 04 0      3404          BUN   GENRX

037 07 0      3405    GCRH  STP   XSTX          MAKE V1 INTEGRAL,IN MEMORY
037 08 0      3406          BUN   XST
037 09 0      3407          CAD   LBCV1         GENERATE LBC V1
037 10 0      3408          BUN   GENXY

037 13 0      3409    GCRI  CAA   G3            GENERATE LSA 9,BUN IOPUS
037 14 0      3410          DFL   UPSLN,62,29
037 15 0      3411          BUN   A+

037 18 0      3412    GCRJ  CAD   V1
037 19 0      3413          BFA   E+,11,0
037 20 0      3414          BFA   E+,11,2       CHECK FOR VALID INPUT EXPRESSION
037 21 0      3415          BSA   E+,1
037 22 0      3416          CAA   COMMX
037 23 0      3417          BUN   A+

037 26 0      3418    GCRK  STP   CADX          BRING EXPRESSION INTO A-REGISTER
037 27 0      3419          BUN   CAD1
037 28 0      3420    *B    CAD   G10
037 29 0      3421    *A    LDR   IOPUS         GENERATE LDB *  IBB IOPUS,2
037 30 0      3422          CLL   DEX
037 31 0      3423          STR   BUNI,04
037 32 0      3424          STR   IBBI,04
037 33 0      3425          LDR   V1
037 34 0      3426          STR   LDBL0,21
037 35 0      3427          STP   INTRX
037 36 0      3428          BUN   INTRP
037 37 0      3429          BUN   GENRX
037 38 0      3430    *E    STP   WEMX
037 39 0      3431          BUN   WEM,B-        IMPROPER INPUT DECLARATION
037 40 0      3432          CNST  30170640000

037 43 0      3433    GCRM  DFL   MU,62,29       END OF SCOPE OF MONITORED LABEL
037 44 0      3434          BUN   GENRX

037 47 0      3435    GCRN  STP   FIXEX          MAKE SURE V1 IS INTEGER
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037 48 0      3436          BUN   FIXER          EITHER A CONSTANT OR IN A REGISTER
037 49 0      3437          BFA   A+,11,2
037 50 0      3438          CAA   G8             IF NOT A CONSTANT, ADD *+1 NOP V2
037 51 0      3439          BUN   GEN5
037 52 0      3440    *A    STB   V1,11          IF A CONSTANT, ADD OR SUBTRACT ITS
037 53 0      3441          DLB   V1,64,0        VALUE FROM THE ASSIGNMENT OF V2,MOD 10000
037 54 0      3442          LDR - 1
037 55 0      3443          SRT   0
037 56 0      3444          SLT   14
037 57 0      3445          EXT   EX42           (-11110000)
037 58 0      3446          DLB   V2,64,00
037 59 0      3447          ADA - 0
037 60 0      3448          STA - 0,64
037 61 0      3449          STP   ACCX
037 62 0      3450          BUN   ACC4
037 63 0      3451          CAA   G9             CAD *+1, NOP V2
037 64 0      3452    *B    BUN   GEN5


037 67 0      3453    GCRO  STP   PMTRX          LAST PARAMETER TO FUNCTION IS V1
037 68 0      3454          BUN   PMTR
037 69 0      3455          CLL   DEX
037 70 0      3456          STP   REMX,FUNS
037 71 0      3457          BUN   REM,*+2
037 72 0      3458    G9    F424  0553,0,*
037 73 0      3459          STA   BUNV2,22
037 74 0      3460          DLB   V2,64,0        CHECK THAT PROPER
037 75 0      3461          LDR - 1                NUMBER OF ARGUMENTS
037 76 0      3462          STR   EXPLN            HAS APPEARED
037 77 0      3463          LDR - 0
037 78 0      3464          BFR   B+,12,88
037 79 0      3465          SLT   6
037 80 0      3466          BFA   A+,51,4
037 81 0      3467          CFR   BUNV2,22
037 82 0      3468          BCE   B+
037 83 0      3469          BFR   B+,22,0
037 84 0      3470          STP   WEMX
037 85 0      3471          BUN   WEM,*+2
037 86 0      3472          CNST  30113370800    IMPROPER ARGUMENT OF PROCEDURE
037 87 0      3473    *B    CAD   G4             GENERATE STP V2, BUN V2
037 88 0      3474          STP   INTRX
037 89 0      3475          BUN   INTRP
037 90 0      3476          STB   V2,11
037 91 0      3477          CLL   TAG
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037 92 0      3478          BUN    GENX2
037 93 0      3479    *A    SLT    2
037 94 0      3480          BFR    B-,21,3
037 95 0      3481          CFR    V1,21          IF ARGUMENT TO LIBRARY FUNCTION
037 96 0      3482          BCE    B-             IS WRONG TYPE, CONVERT IT.
037 97 0      3483          DLB    TABSC+82,64,0
037 98 0      3484          BFR    *+2,21,0
037 99 0      3485          DLB    FIXGN,64,0
038 00 0      3486          STP    LINKX
038 01 0      3487          BUN    LINK1
038 02 0      3488          BUN    B-


038 05 0      3489    *E    BFA    GCRP,11,0
038 06 0      3490          STP    WEMX
038 07 0      3491          BUN    WEM,GCRP
038 08 0      3492          CNST   34661000000
038 09 0      3493    GCRP  STP    REMX,OPRND     END OF PROCEDURE OR FUNCTION DECLARATION
038 10 0      3494          BUN    REM,E-         CHECK FOR EXTRA OPERANDS
038 11 0      3495    *A    STP    REMX,FUNS
038 12 0      3496          BUN    REM2,*+2       PULL NAME OF THIS OFF FUN-STACK
038 13 0      3497    G10   F424   6273,0,*
038 14 0      3498          LDR    FNSW
038 15 0      3499          BZR    A+
038 16 0      3500          SRA    4
038 17 0      3501          STA    LDBI,4         RETURN FROM FUNCTION
038 18 0      3502          STP    VSUBX
038 19 0      3503          BUN    VSUB1
038 20 0      3504    *D    CLL    FNSW           BRING BACK OLD TEMP STORAGE CELLS
038 21 0      3505          BUN    OLDT           AND EXIT
038 22 0      3506    *A    STP    REMX,PR3       FORGET ALL PREFIXES DEFINED IN THIS
038 23 0      3507          BUN    REM,A-         PROCEDURE
038 24 0      3508          LDR    RR1
038 25 0      3509          STR    RR3            BRING IN OTHERWISE TYPE OF MAIN PROGRAM
038 26 0      3510          LDR    PR1
038 27 0      3511          STR    PR3            BRING IN PREFIXES OF MAIN PROGRAM
038 28 0      3512          LDR    CHI3
038 29 0      3513          STR    CHI            BRING IN MONITOR STATUS OF MAIN PROGRAM
038 30 0      3514          LDR    PAREF
038 31 0      3515          BFR    H+,04,00
038 32 0      3516    *C    CAD    PLOC           IF PARAMETERS OF OUTPUT TYPE HAVE
038 33 0      3517          STP    FXUPX          OCCURRED, FIX UP THE INSTRUCTION
038 34 0      3518          BUN    FXUP           TO BUN TO THIS PART OF THE PROCEDURE
038 35 0      3519          CAD    FRSTP
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038 36 0      3520          SLA   4
038 37 0      3521          STA   IRSTP
038 38 0      3522    *E    LDB   PAREF
038 39 0      3523          IBB   F+,9999
038 40 0      3524          CAD - 1
038 41 0      3525          IBB   *+1,1          REMOVE LIST OF REFERENCES TO THIS
038 42 0      3526          STA   SETUP,04       PARAMETER, MAKE IT THE SETUP STACK
038 43 0      3527          SRA   4
038 44 0      3528          LDR   AVAIL
038 45 0      3529          STB   AVAIL
038 46 0      3530          STR - 0
038 47 0      3531          STA   PAREF,04
038 48 0      3532          BSA   G+,1           (THE FIRST PARAMETER MAY ALREADY BE
038 49 0      3533          EXT   BCUL2          IN REGISTER A)
038 50 0      3534          SUB   IRSTP          CAD PARAMETER
038 51 0      3535          STA   VEE,64
038 52 0      3536          STP   ASMBX
0X( XX 0      XXXX          BUN   ASMBL,X+
0X( XX 0      XXX(    *G    STP   REMX,SETUP     GENERATE ALL  STA ----,04
03- 55 0      353-          BUN   REM,*+2         FOR THIS PARAMETER
038 56 0      3540          BUN   E-
038 57 0      3541          SRA   4
038 58 0      3542          STA   STAI,04
038 59 0      3543          STP   ASMBX
038 60 0      3544          BUN   ASMBL,STAI
038 61 0      3545          BUN   G-
038 62 0      3546    *F    CAD   PLOC           ASSEMBLE TO BUN TO THE
038 63 0      3547          SRA   4              BEGINNING OF THE PROCEDURE
038 64 0      3548          STA   BUNI,04
038 65 0      3549          IFL   BUNI,04,01
038 66 0      3550          STP   ASMBX
038 67 0      3551          BUN   ASMBL,BUNI
038 68 0      3552    *H    CLL   LEVEL          EXIT,WE ARE THROUGH WITH THE PROCEDURE
038 69 0      3553          BUN   D-
038 70 0      3554    VEE   F2448 11,0,0
038 71 0      3555    *W    F244  11,VEE,0
038 72 0      3556    *X    F424  0,10,W--V


038 75 0      3557    GCRQ  IFL   PRFSW,62,25    PROCESS LAST PARAMETER.  MARK IT
038 76 0      3558          STP   YSUBX          AS IN ACCUMULATOR IF ITS A CALL BY NAME
038 77 0      3559          BUN   YSUB1
038 78 0      3560          DFL   PRFSW,62,25    WE HAVE JUST FINISHED COLLECTING
038 79 0      3561          CLL   TAG            FUNCTION OR PROCEDURE PARAMETERS
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038 80 0     3562          STA   V3
038 81 0     3563          IFL   V3,11,3
038 82 0     3564          STP   ASMBX          STORE LAST PARAMETER
038 83 0     3565          BUN   ASMBL,STAT3
038 84 0     3566    *C    CLL   PARSW
038 85 0     3567          LDB   FNSW
038 86 0     3568          DBB   GENRX,1        EXIT IF A FUNCTION DECLARATION
038 87 0     3569          LDR   PAREF
038 88 0     3570          BFR   D+,04,00       IF CALL BY NAME PARAMETERS HAVE
038 89 0     3571          CAD   LOCN           APPEARED, ASSEMBLE BUN INSTRUCTION
038 90 0     3572          STA   PLOC           WHICH WILL GO TO THE INITIALIZATION PART
038 91 0     3573          STP   ASMBX
038 92 0     3574          BUN   ASMBL,BUNZ
038 93 0     3575    *D    IFL   DELTA,04,4
038 94 0     3576          BUN   GENRX


038 97 0     3577    GCRR  STP   XSTX           V1 IS LAST ARRAY SUBSCRIPT
038 98 0     3578          BUN   XST            MAKE SURE IT IS FIXED POINT AND
038 99 0     3579          DLB   V1,64,0        NOT IN REGISTER A
039 00 0     3580          LDR - 1              NOW COMES VERY TRICKY CODING.
039 01 0     3581          DLB   V2,64,00       IF THE SUBSCRIPT IS A CONSTANT,
039 02 0     3582          CAD   V1             SIMPLY CALCULATE THE ADDRESS
039 03 0     3583          BFA   GENDX,22,21
039 04 0     3584          IFL - 0,11,1         OTHERWISE SET INCREMENT WORD TO A 6
039 05 0     3585          STP   INSX           AND SET UP A LINK TO V1
039 06 0     3586          BUN   INS1           NOW INC WD/64=BASE ADDR. /04=AAAA
039 07 0     3587          BUN   GENX2          AAAA/67=V1    /04=ARRAY INFORMATION


039 10 0     3588    GCRS  STP   REMX,FUNS       FINISH SUBROUTINE DECLARATION.  REMOVE
039 11 0     3589          BUN   REM,OLDT        LOCATION FROM FUNS, REMOVE TEMP STORAGES.
039 12 0     3590    G11   F424  0313,0,*


039 15 0     3591    GCRT  CAD   BUNV1          GENERATE BUN V1
039 16 0     3592          BUN   GENXY


039 19 0     3593    GCRU  LDR   BNZAF
039 20 0     3594          BUN   GIF1           UNTIL SIMILAR TO IF


039 23 0     3595    GCRV  LDR   LOCN           END OF SEGMENT
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039 24 0      3596          CFR   LCMAX,64
039 25 0      3597          BCL   *+2
039 26 0      3598          STR   LCMAX,64        SET LCMAX TO GREATEST LOCN
039 27 0      3599          STP   REMX,FUNS       USED IN SEGMENTS
039 28 0      3600          BUN   REM,*+2
039 29 0      3601    G12   F424  8990,0,*
039 30 0      3602          STA   LOCN,64         RESET LOCN TO BEGINNING OF SEGMENT
039 31 0      3603          LSA   8
039 32 0      3604          SRA   4               OUTPUT CONTROL WORD FOR LOADER
039 33 0      3605          BUN   GFWRF



039 37 0      3606    GCRW  IFL   LAMDA,00,1     RECORD THAT OTHERWISE HAS OCCURRED
039 38 0      3607          BUN   GENRX


039 41 0      3608    GCRX  DEFN  GENXY-1


039 44 0      3608    GCRY  CAD   V1              MAKE SURE A SUBSCRIPT IS FIXED POINT
039 45 0      3609          STP   FIXEX
039 46 0      3610          BFA   FIXER,21,0
039 47 0      3611          BUN   GENXV


039 50 0      3612    GCRZ  STP   CADX            STOP
039 51 0      3613          BUN   CAD1            THERE WILL BE AN ACCUMULATOR
039 52 0      3614    *A    CAD   HLTZ            SYMBOL PRESENT, IF THE STATEMENT
039 53 0      3615          BUN   GENXY           WAS SIMPLY STOP$
                                                  GENERATE CAD V1     HLT


039 57 0      3616    GCROY DLB   *+2,44,0        TRACE
039 58 0      3617          STP   LIBRX
039 59 0      3618          BUN   LIBRF,DMPER
039 60 0      3619          IFL   TAG,00,1
039 61 0      3620          STP   REMX,OPRND
039 62 0      3621          BUN   REM,*+2
039 63 0      3622          BUN   GENRX           IF LABEL ONLY,EXIT
039 64 0      3623          STA   TEMP            IF LABEL(N), PUT N ON STACK
039 65 0      3624          DLB   TEMP,64,0
039 66 0      3625          CAD   - 1
039 67 0      3626          SLA   6
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039 68 0      3627   JCROY LDB    *
039 69 0      3628         STA  - 0,44
039 70 0      3629         BUN    GENRX


039 73 0      3630   OBTN1 STP    REMX,OPRND
039 74 0      3631         BUN    REM,*+2          GET  TOP OF OPERAND STACK
039 75 0      3632         BUN    E+                AND PLACE IT IN V1
039 76 0      3633         STA    V1
039 77 0      3634         BUN    A+


039 80 0      3635   OBTN2 STP    REMX,OPRND       GET TOP OF OPERAND STACK AND PLACE IT IN
039 81 0      3636         BUN    REM,C+           V2
039 82 0      3637   *E    STP    WEMX
039 83 0      3638         BUN    WEM,GENRX
039 84 0      3639         CNST   37161000000      MISSING OPERAND
039 85 0      3640   *C    STA    V2
039 86 0      3641   *A    BFA    B+,11,0          IF AN ACCUMULATOR SYMBOL WAS
039 87 0      3642         BUN    OBTNX            REMOVED, SET SER TO ZERO
039 88 0      3643   *B    CLL    SER
039 89 0      3644   OBTNX BUN    *


039 92 0      3645   PMTR  LDR    KAPPA            SELECTIVELY BRING PARAMETER INTO A REG.
039 93 0      3646         BZR    A+               HAVE EMPTY SUBSCRIPTS APPEARED
039 94 0      3647         CLL    KAPPA
039 95 0      3648   *B    STP    CADX
039 96 0      3649         BUN    CAD1             IF SO, ASSEMBLE CAD V1 AND EXIT
039 97 0      3650         BUN    PMTRX
039 98 0      3651   *A    LDB    FUNS
039 99 0      3652         CAD  - 0                IF BEFORE THE FIRST SEMICOLON,
040 00 0      3653         BSA    B-,1             ASSEMBLE CAD V1 AND EXIT
040 01 0      3654         STP    ACCX
040 02 0      3655         BUN    ACC4
040 03 0      3656         CAD    V1               OTHERWISE WE HAVE A CALL BY NAME
040 04 0      3657         BFA    PMTRX,11,0       FREE THE A-REGISTER
040 05 0      3658         BSA    C+,0
040 06 0      3659   *E    STP    WEMX
040 07 0      3660         BUN    WEM,*+2
040 08 0      3661         CNST   30111130000      IMPROPER FUNCTION ARGUMENT
040 09 0      3662         STA    V1
040 10 0      3663   *C    CAA    G5
040 11 0      3664         STP    INTRX            ASSEMBLE  CAD *+1, NOP V1
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040 12 0      3665          BUN   INTRP
040 13 0      3666    PMTRX BUN   *


040 16 0      3667    ACC   DEFN  *-1
040 17 0      3667    ACC1  BUN   C+            ACC1.. PLACE V1 IN TEMP STORAGE
040 18 0      3668    ACC2  STP   GETMX         ACC2.. PLACE V2 IN TEMP STORAGE
040 19 0      3669          BUN   GETMP
040 20 0      3670          STA   V2,64
040 21 0      3671          IFL   V2,11,3
040 22 0      3672          CAD   STAT2
040 23 0      3673          BUN   ASMBY
040 24 0      3674    *C    STP   GETMX
040 25 0      3675          BUN   GETMP
040 26 0      3676          STA   V1,64
040 27 0      3677          IFL   V1,11,3
040 28 0      3678          CAD   STAT1
040 29 0      3679          BUN   ASMBY
040 30 0      3680    ACCX  DEFN  ASMBX
040 31 0      3680    ACC3  LDR   V1            ACC3.. FREE THE A REGISTER
040 32 0      3681          BFR   C-,11,0       IF V1 IS IN A, DO ACC1
040 33 0      3682          LDR   V2
040 34 0      3683          BFR   ACC2,11,0     IF V2 IS IN A, DO ACC2
040 35 0      3684    ACC4  LDB   SER           ELSE DO ACC4
040 36 0      3685          IBB   ACCX,9999     ACC4.. IF THE A-REGISTER IS IN USE
040 37 0      3686          STP   GETMX         WITH OTHER OPERANDS BESIDES THE CURRENT
040 38 0      3687          BUN   GETMP         ONE(S), STORE IT INTO TEMP
040 39 0      3688          LDB   SER
040 40 0      3689          STA - 0,64          AND MODIFY THE STACK ACCORDINGLY
040 41 0      3690          IFL - 0,11,3
040 42 0      3691          LDR - 0
040 43 0      3692          STR   V3
040 44 0      3693          CAD   STAT3
040 45 0      3694          CLL   SER
040 46 0      3695          BUN   ASMBY


040 49 0      3696    CAD2  LDB   XTWO+1         CAD V2
040 50 0      3697          BUN   CAD
040 51 0      3698    CAD1  LDB   XONE+1         CAD V1
040 52 0      3699    CAD   CAD - V
040 53 0      3700          STB   ZHE,04        BRING V(RB) INTO A REGISTER
040 54 0      3701          BFA   CADX,11,0
040 55 0      3702          STP   ACCX          IF ITS NOT THERE ALREADY, FREE
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040 56 0      3703            BUN   ACC4          THE ACCUMULATOR
040 57 0      3704            LDB   ZHE
040 58 0      3705            CAD - V             COMPILE CAD OR CSU  V1 OR V2
040 59 0      3706            BSA   B+,1
040 60 0      3707            CAD - CADV1-1
040 61 0      3708      *D    STP   ASMBX
040 62 0      3709            BUN   ASMBY
040 63 0      3710      *C    LDB   ZHE
040 64 0      3711            STB - V,12
040 65 0      3712            CAD - V
040 66 0      3713      CADX  BSA   *,0
040 67 0      3714            STP   ACCX          TO REVERSE SIGN OF A-REGISTER, STORE
040 68 0      3715            BUN - ACC           IT THEN COMPILE CSU INSTRUCTION
040 69 0      3716            LDB   ZHE
040 70 0      3717      *B    CAD - CSUV1-1
040 71 0      3718            BUN   D-


040 74 0      3719      XST   CAD   V1
040 75 0      3720            STP   FIXEX         FIX V1 IF IT IS AN INTEGER
040 76 0      3721            BFA   FIXER,21,0
040 77 0      3722            STP   ACCX
040 78 0      3723            BFA   ACC1,11,0     STORE V1 IF IT IS IN REGISTER A
040 79 0      3724      XSTX  BUN   *


040 82 0      3725      FIXER CAD   V1
040 83 0      3726            BFA   A+,11,2
040 84 0      3727            STP   CADX
040 85 0      3728            BUN   CAD1          CHANGE V1 TO INTEGER FORM
040 86 0      3729            BFA   FIXEX,21,1
040 87 0      3730            DLB   FIXGN,64,00
040 88 0      3731            STP   LINKX         LINK TO FIX ROUTINE
040 89 0      3732            BUN   LINK1
040 90 0      3733            IFL   V1,21,1
040 91 0      3734            CAD   V1
040 92 0      3735      FIXEX BUN   *
040 93 0      3736      *A    BFA   FIXEX,21,1    IF V1 IS A CONSTANT,
040 94 0      3737            STP   FIXCX         CHANGE IT WITH FIXCN
040 95 0      3738            BUN   FIXCN
040 96 0      3739            STA   V1,00
040 97 0      3740            BUN   FIXEX-1
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041 00 0      3741   TSTOP STP    ACCX          STORE A IF IT IS IN USE WITH
041 01 0      3742         BUN    ACC4          NON-CURRENT OPERAND(S)
041 02 0      3743         LDB    OP
041 03 0      3744         LDR -  0             IF NEXT ITEM IN OPERATION STACK
041 04 0      3745         CFR    HYPH,67       IS A MINUS, REMOVE IT AND REVERSE
041 05 0      3746         BCU    TSTOX         THE SIGN OF V1
041 06 0      3747         STP    REMX,OP
041 07 0      3748         BUN    REM,*+2
041 08 0      3749   G13   F424   3100,0,0
041 09 0      3750         CSU    V1
041 10 0      3751         STA    V1
041 11 0      3752   TSTOX BUN    *


041 14 0      3753   FLTCN STA    TEMP          CONVERT CONSTANT FROM INTEGER
041 15 0      3754         DLB    TEMP,64,00     TO FLOATING POINT FORM
041 16 0      3755         CAD -  1
041 17 0      3756   FLTCM CLL    RR0
041 18 0      3757         CLL    SYMBL
041 19 0      3758         BFA    B+,00,0
041 20 0      3759         IFL    SYMBL,22,61
041 21 0      3760   ZHE   CLR
041 22 0      3761         SRT    3
041 23 0      3762   *A    SLT    1             NORMALIZE
041 24 0      3763         DFL    SYMBL,22,1
041 25 0      3764         BFA    A-,31,00
041 26 0      3765         STA    SYMBL,08
041 27 0      3766   FLTC1 DEFN   *
041 28 0      3766   *B    STP    NMBRX         PUT INTO TABLE
041 29 0      3767         BUN    NMBR
041 30 0      3768         CAD -  0
041 31 0      3769         STA    L,23
041 32 0      3770         CAD    L
041 33 0      3771   FLTCX BUN    *


041 36 0      3772   FIXCN STA    TEMP          CONVERT FLOATING POINT CONSTANT
041 37 0      3773         DLB    TEMP,64,00     INTO INTEGER FORM
041 38 0      3774         CAD -  1
041 39 0      3775   FIXCM CLL    RR0
041 40 0      3776         IFL    RR0,21,1
041 41 0      3777         CFA    +6099999999
041 42 0      3778         BCH    E+
041 43 0      3779   S3    CLR
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041 44 0      3780            SRT    8
041 45 0      3781            STA    TEMP
041 46 0      3782            CFA    *+1,02
041 47 0      3783            CLA    51
041 48 0      3784            BCL    C+
041 49 0      3785            DLB    TEMP,04,50     UNNORMALIZE (CLEVERLY)
041 50 0      3786            SLT -  0
041 51 0      3787   *C       STA    SYMBL
041 52 0      3788            BUN    B-
041 53 0      3789   *E       STP    WEMX
041 54 0      3790            BUN    WEM,FIXCM
041 55 0      3791            CNST   33436373800    CONSTANT OUT OF RANGE
041 56 0      3792   FIXCX    DEFN   FLTCX


041 59 0      3792   ARTHG    CLB    MONTR          ARITHMETIC SEQUENCE GENERATOR
041 60 0      3793            LDR    V2
041 61 0      3794            BFR    A+,11,0        CODE..  0  ACCUMULATOR FLOATING
041 62 0      3795            DBB    0,9996                 1  ACCUMULATOR FIXED
041 63 0      3796            BFR    A+,11,2                2  (OTHER)     FLOATING
041 64 0      3797            IBB    0,9998                 3  (OTHER)     FIXED
041 65 0      3798   *A       BFR    B+,21,1                4  CONSTANT    FLOATING
041 66 0      3799            DBB    0,9999                 5  CONSTANT    FIXED
041 67 0      3800   *B       LDR    V1
041 68 0      3801            BFR    C+,11,0
041 69 0      3802            DBB    0,9976
041 70 0      3803            BFR    C+,11,2        CALCULATE 6 TIMES CODE(V1) PLUS CODE(V2)
041 71 0      3804            IBB    0,9988
041 72 0      3805   *C       BFR    D+,21,1
041 73 0      3806            DBB    0,9994
041 74 0      3807   *D       LDR -  COMP           INDEX WITH THIS VALUE TO GET FANCY
041 75 0      3808            STR    ARTHM          COMP TABLE ENTRY, WHICH CONSISTS OF
041 76 0      3809   ARTHA    LDR    ARTHM          IJ-PAIRS, LIKE AN INTERPRETIVE
041 77 0      3810   K3       CLA                   SYSTEM PROGRAM
041 78 0      3811            SLT    2
041 79 0      3812            STR    ARTHM          TAKE IJ-PAIRS FROM LEFT TO RIGHT
041 80 0      3813            STA    J,01
041 81 0      3814            BFA    ARTHC,91,3     TO ARTHC IF THIS IS THE LAST ENTRY
041 82 0      3815            SRT    1
041 83 0      3816            STA    I
041 84 0      3817            LDB    I
041 85 0      3818            BFR    J1,11,1        FLOAT OPERAND V(I)
041 86 0      3819            BFR    J2,11,2        STORE V(I) IN TEMP
041 87 0      3820            BFR    J3,11,3        FLOAT CONSTANT V(I)
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041 88 0      3821          BFR   J4,11,4          BRING V(I) INTO A REGISTER
041 89 0      3822          BFR   J5,11,5          COMPUTE SUM,PRODUCT,ETC. OF CONSTANTS
041 90 0      3823          BUN   J6               CHECK FOR SPECIAL CASES IN CONSTANTS
041 91 0      3824    J1    DLB   TABSC+82,64,0
041 92 0      3825          STP   LINKX            CALL IN FLOAT SUBROUTINE
041 93 0      3826          BUN   LINK1
041 94 0      3827          LDB   I
041 95 0      3828          STB - V,21             FLOAT V(I)
041 96 0      3829          BUN   ARTHA
041 97 0      3830    J2    STP   ACCX             STORE V(I) IN TEMP
041 98 0      3831          BUN - ACC
041 99 0      3832          BUN   ARTHA
042 00 0      3833    J3    CAD - V                FLOAT THE CONSTANT V(I)
042 01 0      3834          STP   FLTCX
042 02 0      3835          BUN   FLTCN
042 03 0      3836          LDB   I
042 04 0      3837          STA - V,00
042 05 0      3838          BUN   ARTHA
042 06 0      3839    J4    STP   ACCX             FREE THE A REGISTER.
042 07 0      3840          BUN   ACC3
042 08 0      3841          LDB   I
042 09 0      3842          STP   CADX             BRING V(I) IN
042 10 0      3843          BUN   CAD
042 11 0      3844          BUN   ARTHA
042 12 0      3845    J5    DLB   V1,64,00
042 13 0      3846          LDR   V1               GET CONSTANTS V1,V2
042 14 0      3847          CAD - 1
042 15 0      3848          SLT   0
042 16 0      3849          STA   TEMP2
042 17 0      3850          DLB   V2,64,00
042 18 0      3851          LDR   V2
042 19 0      3852          CAD - 1
042 20 0      3853          SLT   0
042 21 0      3854          STA   TEMP1
042 22 0      3855          LDR   OPRTN
042 23 0      3856          CAD   I
042 24 0      3857          CLL   RR0              I SPECIFIES WHETHER FLOATING OR FIXED
042 25 0      3858          BFA   X+,01,1
042 26 0      3859          CAD   TEMP1
042 27 0      3860          CFR   PLUS,67
042 28 0      3861          BCU   A+               COMPUTE V2 OP V1
042 29 0      3862          FAD   TEMP2            FAD
042 30 0      3863          BUN   ARTHB
042 31 0      3864    *A    CFR   DOT,67
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042 32 0      3865            BCU   B+
042 33 0      3866            FMU   TEMP2          FMU
042 34 0      3867            BUN   ARTHB
042 35 0      3868      *B    CFR   SOLD,67
042 36 0      3869            BCU   ARTHA
042 37 0      3870      SCNXX CLR                  CLR,FDV
042 38 0      3871            FDV   TEMP2
042 39 0      3872            BUN   ARTHB
042 40 0      3873      *X    IFL   RR0,21,1
042 41 0      3874            CAD   TEMP1
042 42 0      3875            CFR   PLUS,67
042 43 0      3876            BCU   A+
042 44 0      3877            ADD   TEMP2          ADD
042 45 0      3878            BUN   ARTHB
042 46 0      3879      *A    CFR   DOT,67
042 47 0      3880            BCU   B+
042 48 0      3881            MUL   TEMP2          MUL,SLT10
042 49 0      3882            SLT   10
042 50 0      3883            BZR   ARTHB
042 51 0      3884            BUN   V+
042 52 0      3885      *B    CFR   SOLD,67
042 53 0      3886            BCU   ARTHA
042 54 0      3887            SRT   10
042 55 0      3888            DIV   TEMP2          SRT 10,DIV
042 56 0      3889      ARTHB BOF   V+
042 57 0      3890      *A    STA   SYMBL,00       CHECK IF OUT OF RANGE
042 58 0      3891            STA   ACCUM          PUT COMPUTED CONSTANT INTO TABLE
042 59 0      3892            STP   NMBRX
042 60 0      3893            BUN   NMBR
042 61 0      3894            CAA - 0
042 62 0      3895            STA   ACCUM,00
042 63 0      3896            LDR   L              AND INTO ACCUM
042 64 0      3897            STR   ACCUM,64
042 65 0      3898            CAD   ACCUM
042 66 0      3899            BUN   ARTHX          AND EXIT
042 67 0      3900      *V    STP   WEMX
042 68 0      3901            BUN   WEM,A-
042 69 0      3902            CNST  33436373800    CONSTANT OUT OF RANGE.  USE =1=
042 70 0      3903      J6    CAD - V
042 71 0      3904            BPA   X+
042 72 0      3905            LDR   OPRTN
042 73 0      3906            BFR   X+,21,0
042 74 0      3907            LBC   I
042 75 0      3908            CSU - V3
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042 76 0      3909          STA - V3
042 77 0      3910          LDB   I
042 78 0      3911          CAA - V
042 79 0      3912          STA - V
042 80 0      3913    *X    DLB - V,64,0        V(I) IS A CONSTANT.
042 81 0      3914          LDR - 1             CHECK IF IT IS A SPECIAL ONE
042 82 0      3915          BZR   A+            IS IT ZERO
042 83 0      3916          CFR   FONE+1
042 84 0      3917          BCE   D+            IS IT 1.0
042 85 0      3918    *Q    CAB
042 86 0      3919          DBB   0,9999        IS IT 10,100,1000,...,1000000000
042 87 0      3920          SLT   19
042 88 0      3921          BFA   *-2,11,0
042 89 0      3922          SLT   1
042 90 0      3923          CFR   XONE+1,00
042 91 0      3924          BCU   ARTHA
042 92 0      3925          IBB   D+,9998       IS IT 1
042 93 0      3926          CAD   V1
042 94 0      3927          EXT   V2
042 95 0      3928          BFA   ARTHA,21,0
042 96 0      3929          LDR   OPRTN
042 97 0      3930          DBB   0,9999
042 98 0      3931          STB   SHIFT,06
042 99 0      3932          BFR   Q+,62,48      CHECK IF OP IS MUL OR DIV
043 00 0      3933          LDB   I
043 01 0      3934          DBB   ARTHA,2
043 02 0      3935          BFR   T+,62,24
043 03 0      3936          BUN   ARTHA
043 04 0      3937    *Q    IFL   SHIFT,62,1    IF SO,  SLA
043 05 0      3938    *T    IFL   SHIFT,62,48     OR     SRA
043 06 0      3939          LBC   I
043 07 0      3940          STP   CADX
043 08 0      3941          DBB   CAD,9997
043 09 0      3942          STP   ASMBX
043 10 0      3943          BUN   ASMBL,SHIFT
043 11 0      3944          BUN   C+
043 12 0      3945    *A    DFL   BOF,61,9       SUPPRESS BOF *+2 IN RELATIONALS
043 13 0      3946    *A    LDR   OPRTN         IF ITS ZERO, AND WE ARE ADDING,
043 14 0      3947          BFR   C+,65,0       OR ONE AND WE ARE MULTIPLYING,
043 15 0      3948          BFR   M+,62,48      THE RESULT IS THE OTHER OPERAND
043 16 0      3949          BUN   ARTHA         IF ZERO AND MULTIPLYING, THE RESULT
043 17 0      3950    *D    LDR   OPRTN         IS ZERO.
043 18 0      3951          CFR   DOT,67
043 19 0      3952          BCU   ARTHA
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043 20 0      3953   *C     LBC   I
043 21 0      3954          CAD - V3
043 22 0      3955   *M     STA   ACCUM
043 23 0      3956          BUN   ARTHX
043 24 0      3957   ARTHC  STP   ACCX            FINISH OF ARITHMETICS.
043 25 0      3958          BUN   ACC4            FIRST FREE A REGISTER IF NECESSARY
043 26 0      3959          CAD   OPRTN
043 27 0      3960          SRA   4
043 28 0      3961          EXT   NN
043 29 0      3962          STA   TEMP1
043 30 0      3963          STA   TEMP2
043 31 0      3964          CAD   V2              COMPUTE OPERATION CODE
043 32 0      3965          SRS   10              PLUS SIGN OF V2
043 33 0      3966          ADL   TEMP2           PLUS TWICE SIGN OF V1
043 34 0      3967          CAD   V1
043 35 0      3968          SRS   10
043 36 0      3969          ADL   TEMP2
043 37 0      3970          ADL   TEMP2
043 38 0      3971          CAD   OPRTN
043 39 0      3972          BFA   A+,41,0         ADD,MULTIPLY, DIVIDE OPS
043 40 0      3973          BFA   B+,41,1         MAX, MIN OPS
043 41 0      3974          CAD   J               AND,OR,EQIV,IMPL OPS.
043 42 0      3975          ADL   TEMP2
043 43 0      3976          CSU   V1              CHECK FOR VALID BOOLEAN OPERANDS
043 44 0      3977          BPA   E+
043 45 0      3978          EXT   V2
043 46 0      3979          BMA   E+
043 47 0      3980          BFA   H+,21,1
043 48 0      3981   *E     STP   WEMX
043 49 0      3982          BUN   WEM,*+2
043 50 0      3983          CNST  30159610000     IMPROPER BOOLEAN OPERAND
043 51 0      3984   *H     LDB   TEMP2
043 52 0      3985   *K     CAD - GTAB2
043 53 0      3986          BUN   I+
043 54 0      3987   *A     CAD   J               INDEX INTO APPROPRIATE GTAB TABLE
043 55 0      3988          ADD   J
043 56 0      3989          ADL   TEMP2
043 57 0      3990          ADL   TEMP2
043 58 0      3991          LDB   TEMP2
043 59 0      3992          CAD - GTAB0
043 60 0      3993   YETH   BUN   I+,9988         (IN RELATION CASE,CHANGE FLOATING
043 61 0      3994          IBB   I+-1,GTAB0-GTAB1    TO FIXED)
043 62 0      3995   *B     CAD   J
043 63 0      3996          MUL   FUR
```

```
043 64 0      3997          DIV   TWL
043 65 0      3998          SLT   10
043 66 0      3999          ADL   TEMP2
043 67 0      4000          LDB   TEMP2
043 68 0      4001          CAD - GTAB1          THIS TABLE ENTRY CAUSES THE ASSEMBLER
043 69 0      4002    *I    STP   INTRX          TO PRODUCE ALL CODE NECESSARY FOR
043 70 0      4003          BUN   INTRP          THE BINARY OPERATOR.
043 71 0      4004    ARTHX BUN   *


043 74 0      4005    LINK1 LDR - 1
043 75 0      4006          STR   EXPLN
043 76 0      4007    LINK  STP   LIBRX          MAKE SURE LIBRARY ROUTINE IS IN STORAGE
043 77 0      4008          BUN   LIBRF
043 78 0      4009          STB   V3
043 79 0      4010          IFL   V3,51,4
043 80 0      4011          CAD   V3
043 81 0      4012          SLA   4
043 82 0      4013    LINK2 STA   V3
043 83 0      4014          CAA   G6             COMPILE  STP, BUN INSTRUCTIONS
043 84 0      4015          STP   INTRX
043 85 0      4016          BUN   INTRP
043 86 0      4017          CLL   DEX            MARK B REGISTER UNKNOWN
043 87 0      4018    LINKX BUN   *


043 90 0      4019    VSUB  LDB   FUNS
043 91 0      4020          DLB - 0,64,00        RETURN..   COMPILE  LDB ()
043 92 0      4021          STB   LDBI,04                            BUN - 0
043 93 0      4022    VSUB1 CAD   G1


043 96 0      4023    INTRP STP   ASMBX          GENERATE SERIES OF INSTRUCTIONS
043 97 0      4024          STA   A+             FROM VOCABULARY TABLE.
043 98 0      4025          LDR   A+
043 99 0      4026    *B    CLA   *
044 00 0      4027          SLT   2
044 01 0      4028          STR   A+
044 02 0      4029          BFA   C+,02,00
044 03 0      4030          BFA   ACC1,02,32     POSSIBLY GENERATE A STORE INTO
044 04 0      4031          BFA   ACC2,02,33     TEMP STORAGE
044 05 0      4032          STA   B-,04
044 06 0      4033          LDB   B-
044 07 0      4034          CAD - VOCAB-1
```

```
044 08 0      4035          BUN    ASMBY
044 09 0      4036    *A    HLT    *
044 10 0      4037    *C    BSA    INTRX,0          AFTER THIS IS DONE, AND IF THE
044 11 0      4038          LDR    V1               RESULT IS IN THE ACCUMULATOR,
044 12 0      4039          STR    ACTBL+4,21
044 13 0      4040          STR    ACTBL+5,21
044 14 0      4041          SRS    10
044 15 0      4042          STA    B-,04            SET ACCUM TO THE CURRENT RESULT
044 16 0      4043          LDB    B-
044 17 0      4044          CAD -  ACTBL-1
044 18 0      4045          STA    ACCUM
044 19 0      4046    INTRX BUN    *
044 20 0      4047    ACTBL CNST   00100000000      1 FIXED - TRUE SIGN
044 21 0      4048          CNST   00000000000      2 FLOATING - TRUE SIGN
044 22 0      4049          CNST   10100000000      3 FIXED - OPPOSITE SIGN
044 23 0      4050          CNST   10000000000      4 FLOATING - OPPOSITE SIGN
044 24 0      4051          CNST   00000000000      5 TYPE OF V1 - TRUE SIGN
044 25 0      4052          CNST   10000000000      6 TYPE OF V1 - REVERSED SIGN
044 26 0      4053    CONVX DEFN   INTRX
044 27 0      4053    VSUBX DEFN   INTRX

044 30 0      4053    LIBRF CAD -  0                PUT LIBRARY SUBROUTINE INTO TARGET
044 31 0      4054    LIBRX BFA    LIBRX,11,4       PROGRAM IF IT HASNT BEEN PUT THERE
044 32 0      4055          SRA    4                ALREADY.
044 33 0      4056          EXT    EXO
044 34 0      4057          SUB    VARB
044 35 0      4058          STA    VARB,04
044 36 0      4059          SLT    4
044 37 0      4060          STA -  0,64
044 38 0      4061          IFL -  0,64,1
044 39 0      4062          IFL -  0,11,1
044 40 0      4063          BUN    LIBRF

044 43 0      4064    FXUP  LDR    LOCN             COMPILE TO SET A PREVIOUS FORWARD
044 44 0      4065          STA    DESCR
044 45 0      4066          SRT    4
044 46 0      4067          STR    DESCR,04
044 47 0      4068          STA    WRTF,04
044 48 0      4069          BSA    *+2,7
044 49 0      4070          BUN    *+2
044 50 0      4071          IFL    DESCR,00,1       IF SIGN IS SEVEN, WE MEAN THE
044 51 0      4072          BCS    *+2,2
```

```
044 52 0      4073          BUN    *+4
044 53 0      4074          BSA    *+3,8
044 54 0      4075          STP 4  9898,0208
044 55 0      4076          BUN 4  9898,WRTF
044 56 0      4077          LDR    DESCR          PRESENT LOCATION PLUS 1
044 57 0      4078          LDB    LRTF           REFERENCE TO THE PRESENT LOCATION
044 58 0      4079          CAD    WRTF
044 59 0      4080          CFA    PREV,04
044 60 0      4081          BCH    A+             IF WE CAN FIX UP THE INSTRUCTION WHILE
044 61 0      4082          CAD -  BUF+1          IT SITS IN THE OUTPUT BUFFER, WE WILL
044 62 0      4083          BFA    A+,04,0        DO IT DIRECTLY
044 63 0      4084          CFA    WRTF,04
044 64 0      4085          BCH    A+
044 65 0      4086          SUB    WRTF
044 66 0      4087          SLA    6
044 67 0      4088          STA    *+1,44
044 68 0      4089          DBB    *+1,0
044 69 0      4090          STR -  BUF+2,04
044 70 0      4091          BUN    FXUPX
044 71 0      4092    *A    DLB    CNTRF,04,1
044 72 0      4093          STR -  BUF+3
044 73 0      4094          BUN    WRIT6
044 74 0      4095    FXUPX DEFN   WRITX
044 75 0      4095    PREV  DEFN   BUF+99



044 79 0      4095    XZERO F244   21,0,XONE      THE FIRST FEW CONSTANTS
044 80 0      4096          CNST   0000000000
044 81 0      4097    FZERO F244   20,0,FONE
044 82 0      4098          CNST   0000000000
044 83 0      4099    XONE  F244   21,0,XTWO
044 84 0      4100          CNST   0000000001
044 85 0      4101    FONE  F244   20,0,FTWO
044 86 0      4102          CNST   5110000000
044 87 0      4103    XTWO  F244   21,0,0
044 88 0      4104          CNST   0000000002
044 89 0      4105    FTWO  F244   20,0,0
044 90 0      4106          CNST   5120000000
044 91 0      4107    LALE  F244   30,100,20
044 92 0      4108    FCTIN F244   16,FUNGN,0


044 95 0      4109    LOC   DEFN   *
```

```
044 96 0      4109            LOCN  *+7
044 97 0      4116    SCRTB   F244  08,REAL,0       SCRAMBLE TABLE FOR IDENTIFIERS
044 98 0      4117            HLT   0
044 99 0      4118            HLT   0               THIS TABLE IS INITIALIZED TO
045 00 0      4119            HLT   0               THE RESERVED WORDS
045 01 0      4120            F244  04,GOGN,0
045 02 0      4121            HLT   0
045 03 0      4122            HLT   0
045 04 0      4123            F244  12,OUTGN,0
045 05 0      4124            HLT   0
045 06 0      4125            HLT   0
045 07 0      4126            HLT   0
045 08 0      4127            HLT   0
045 09 0      4128            HLT   0
045 10 0      4129            HLT   0
045 11 0      4130            HLT   0
045 12 0      4131            F244  08,IMPGN,TABSC+67
045 13 0      4132            F244  04,ORGN,0
045 14 0      4133            HLT   0
045 15 0      4134            HLT   0
045 16 0      4135            F244  08,EQIGN,0
045 17 0      4136            F244  04,TOGN,0
045 18 0      4137            F244  08,DUMPE,0
045 19 0      4138            HLT   0
045 20 0      4139            HLT   0
045 21 0      4140            HLT   0
045 22 0      4141            HLT   0
045 23 0      4142            HLT   0
045 24 0      4143            HLT   0
045 25 0      4144            HLT   0
045 26 0      4145            HLT   0
045 27 0      4146            HLT   0
045 28 0      4147            HLT   0
045 29 0      4148            HLT   0
045 30 0      4149            HLT   0
045 31 0      4150            HLT   0
045 32 0      4151            HLT   0
045 33 0      4152            HLT   0
045 34 0      4153            HLT   0
045 35 0      4154            HLT   0
045 36 0      4155            HLT   0
045 37 0      4156            F244  10,BEGGN,TABSC+92
045 38 0      4157            F244  06,ANDGN,0
045 39 0      4158            HLT   0
```

```
045 40 0      4159          HLT    0
045 41 0      4160          HLT    0
045 42 0      4161          F244   06,ENDGN,0
045 43 0      4162          F244   06,ABSGN,0
045 44 0      4163          HLT    0
045 45 0      4164          HLT    0
045 46 0      4165          HLT    0
045 47 0      4166          HLT    0
045 48 0      4167          F244   06,GEQGN,0
045 49 0      4168          F2440  12,EITGN,0
045 50 0      4169          F244   10,MEMRY,0
045 51 0      4170          F244   14,BOOGN,TABSC+34
045 52 0      4171          F244   06,MODGN,GSEG
045 53 0      4172          HLT    0
045 54 0      4173          F244   06,EQLGN,TABSC+37
045 55 0      4174          F244   12,FORMG,0
045 56 0      4175          F244   06,MINGN,TABSC+42
045 57 0      4176          HLT    0
045 58 0      4177          F244   16,FLOGN,TABSC+44
045 59 0      4178          F244   06,FORGN,TABSC+45
045 60 0      4179          F244   06,MAXGN,TABSC+46
045 61 0      4180          HLT    0
045 62 0      4181          HLT    0
045 63 0      4182          HLT    0
045 64 0      4183          HLT    0
045 65 0      4184          HLT    0
045 66 0      4185          F244   10,ENTGN,0
045 67 0      4186          F244   06,GTRGN,GNARR
045 68 0      4187          HLT    0
045 69 0      4188          HLT    0
045 70 0      4189          F244   18,OTHGN,FCTIN
045 71 0      4190          HLT    0
045 72 0      4191          F244   06,NOTGN,0
045 73 0      4192          F244   18,STAX,0
045 74 0      4193          HLT    0
045 75 0      4194          F244   06,LSSGN,0
045 76 0      4195          F244   14,MONGN,0
045 77 0      4196          F244   14,OVEGN,0
045 78 0      4197          F244   16,EXTGN,0
045 79 0      4198          HLT    0
045 80 0      4199          HLT    0
045 81 0      4200          HLT    0
045 82 0      4201          F244   12,SWIGN,TABSC+54
045 83 0      4202          F244   10,UNTGN,0
```

```
045 84 0      4203          HLT   0
045 85 0      4204          HLT   0
045 86 0      4205          HLT   0
045 87 0      4206          F244  10,INPGN,0
045 88 0      4207          HLT   0
045 89 0      4208          F244  12,RETGN,0
045 90 0      4209          HLT   0
045 91 0      4210          HLT   0
045 92 0      4211          F244  04,IFGN,0
045 93 0      4212          HLT   0
045 94 0      4213          HLT   0
045 95 0      4214          HLT   0
045 96 0      4215          HLT   0


045 99 0      4216  SSC     HLT   SCNT
046 00 0      4217  LOCN    F244  0,0200,0
046 01 0      4218  SYS     DEFN  *
046 02 0      4218  EXPF    F244  31,100,20      SOME LIBRARY ROUTINES
046 03 0      4219          F244  30,100,30
046 04 0      4220          F244  30,100,40      THE 64-FIELDS OF THESE CODES
046 05 0      4221          F244  30,100,50      ARE FIXED UP TO THE NUMBER
046 06 0      4222  FIX     F244  31,100,60      OF LOCATIONS USED BY THE ROUTINES,
046 07 0      4223          CNST  $FIX$          BY THE LIBRARY PROCESSOR.
046 08 0      4224  FLOAT   F244  30,100,71
046 09 0      4225          CNST  $FLOAT$
046 10 0      4226  MONTR   F244  30,100,80
046 11 0      4227  MAMAX   HLT   MSIZE
046 12 0      4228  MNTRE   F244  40,MONTR,0
046 13 0      4229  ERROR   F244  30,100,90
046 14 0      4230  DMPER   F244  30,100,100
046 15 0      4231  DUMPR   F244  40,DMPER,0
046 16 0      4232  RITE    F244  30,10,0
046 17 0      4233  REED    F244  30,10,0
046 18 0      4234  SCNT    DEFN  *              THE BEGINNING OF ASSOCIATIVE MEMORY

046 20 0      4234          LOCN  4500
046 21 0      4500  STACK   CRF 4 FR1+28,21,RLO INITIALIZATION OF THE PROGRAM
046 22 0      4501          MRW 4 OT
046 23 0      4502          CLL   BUF
046 24 0      4503          LDB   WRIT4          CLEAR OUTPUT BUFFER
046 25 0      4504          RTF   BUF,99
046 26 0      4505          CRF 4 FR2+28,51      LOAD FORMAT BANDS
046 27 0      4506          CWF 4 FR6+28,32       FORWARD REFERENCES
```

```
046 28 0      4507          CWF 4 FR3+28,12       OUTPUT INSTRUCTIONS
046 29 0      4508          CWF 4 FR4+28,42       ERROR MESSAGES
046 30 0      4509          CWF 4 FR8+28,22      ALGOL STATEMENTS
046 31 0      4510          CWF 4 FR7+28,52       FIXUPS
046 32 0      4511          MPF 4 OT,3
046 33 0      4512          BCS   HDNG+2,4
046 34 0      4513    *H    BUN   HDNG            BUN/HPI SWITCH
046 35 0      4514          SPO   RDY,8
046 36 0      4515          F424  8421,0,1248
046 37 0      4516          BUN   H-
046 38 0      4517    HDNG  STP 4 9898,1632
046 39 0      4518          BUN 4 9898,IMAGE
046 40 0      4519          STP 4 9999
046 41 0      4520          BUN 4 9999,IMAGE
046 42 0      4521          BUN   SCN2            PROGRAM STARTS AT SCAN2


046 45 0      4522          CNST  20002000000
046 46 0      4523    HPV   CNST  0,0,0
046 47 0      4526          CNST  $BAC-220 ON LINE HSP VERSION$
046 48 0      4532          CNST  $  2/1/62$
046 49 0      4534          CNST  0,0,0,0,0
046 50 0      4539    PTV   CNST  21615000000,20000000000,20000000000
046 51 0      4542          CNST  $BAC-220 PAPER TAPE VERSION $
046 52 0      4548          CNST  $  2/1/62$
046 53 0      4550    RDY   CNST  21600000000
046 54 0      4551          CNST  $PLEASE READY HIGH-SPEED PRINTER$


046 57 0      4558    FR1   FBGR  INPUT,T2Z1B4A,15(T5A)
046 58 0      4587    FR2   FBGR  INPUT,16(P5A),P10Z
046 59 0      4616    FR3   FBGR  PRINT,49B,TZZZZZZNNNN,BBB,SBNNNNBNNBNNNN,BT5A,44B
046 60 0      4645    FR6   FBGR  PRINT,49B,TZZZZZZNNNN,BBB,SBNNNNBNNBZZZZ,5BT5A,44B
046 61 0      4674    FR7   FBGR  PRINT,49B,TZZZZZZNNNN,BBB,T6Z10BNNNN,50B
046 62 0      4703    FR4   FBGR  PRINT,7(T5A),85B
046 63 0      4732    FR8   FBGR  PRINT,TZZNNNNZZZZ,4B,16(T5A),32B




046 69 0      4761          LOCN  LOC
046 70 0      4109          FINI  1
              4109                +0371720000
```

4110	+6099999999
4111	+5822570000
4112	+9999999999
4113	+6034037172
4114	+4959035600
4115	+4959045600

```
                 ASMBL 2
                 REORD 100.0
0000    BUF      DEFN  0002           TAPE OUTPUT BUFFER
0000    OT       DEFN  1              OUTPUT TAPE
0000    T        DEFN  2              COMPILER TAPE UNIT
0000    PNTR     DEFN  2              PRINTER UNIT
0000    PREV     DEFN  101            ADDRESS OF PREVIOUS INSTRUCTION IN BUF
0000    CNTRI    DEFN  180            COUNTER FOR INSTRUCTIONS IN BUFFER
0000    CNTRF    DEFN  181            COUNTER FOR FIX-UPS IN BUFFER
0000    WRTF     DEFN  183            RTF CONSTANT FOR WRITE SUBROUTINE
0000    DESCR    DEFN  184            INSTRUCTION IN OUTPUT BUFFER
0000    EXPLN    DEFN  185            SYMBOLIC EXPLANATION
0000    LCMAX    DEFN  202            HIGHEST LOCATION USED IN SEGMENTS
0000    LRTF     DEFN  207            LOCATION OF LAST RTF IN OUTPUT BUFFER
0000    HALT1    DEFN  208            ERROR FLAG(SIGN IS 8 IF NO ERRORS)
0000    VARB     DEFN  251            LAST LOCATION USED FOR VARIABLES, ECT
0000    EPSLN    DEFN  258            NUMBER OF EXTERNAL PROGRAMS
0000    AVAIL    DEFN  273            FREED-UP LOCATIONS
0000    OP       DEFN  275            OPERATOR STACK
0000    DUMBS    DEFN  292            DUMP STACK
0000    SX       DEFN  400            MAG TAPE BUFFER
0000    IMAGE    DEFN  1632           CARD INPUT BUFFER
0000    XZERO    DEFN  4095           START OF FIXED POINT CONSTANT LIST
0000    FZERO    DEFN  4097           START OF FLOATING POINT CONSTANT LIST
0000    XONE     DEFN  4099           FIXED POINT CONSTANT 1
0000    LALE     DEFN  4107           POINTS TO LABEL PROCESSING SUBROUTINE
0000    SCRTB    DEFN  4116           SCRAMBLE TABLE FOR IDENTIFIERS
0000    SSC      DEFN  4216           POINTS TO WHATS LEFT OF MEMORY
0000    LOCN     DEFN  4217           LOCATION COUNTER FOR INSTRUCTIONS
0000    MAMAX    DEFN  4227           END OF ASSOCIATIVE MEMORY
0000    MSIZE    DEFN  4999           MEMORY SIZE


0000             LOCN  0000
0000    MDUMP    HLT   0              SYMBOLIC MEMORY DUMP IS ON ODD LANE
0001             SOH                  SET INDICATOR FOR ENTIRE DUMP
0002             BOF   *+2
0003             IFL   T+,51,3
0004             MRW 4 OT+10
0005             STA   A
0006             STB   B
0007             LBC   *+1
0008             NOP   LOD1-100
0009             MOW 4 0,OT,4
```

```
01 42 0      0010          MRD 4 100,OT,3,BMOD
01 43 0      0011          BUN   100
01 44 0      0012    A     HLT
01 45 0      0013    B     HLT   MSIZE+1


01 48 0      0014    MLOAD LDB   0
01 49 0      0015          STB   B+,04          GET EXIT LINE
01 50 0      0016          MLS 4 OT             POSITION TAPE SO THAT
01 51 0      0017          MPF 4 OT,1           SEGMENTATION WILL WORK
01 52 0      0018          LDB   B
01 53 0      0019          SOR
01 54 0      0020          FDV   *
01 55 0      0021          CAD   A
01 56 0      0022    *T    NOP   *+1
01 57 0      0023          STB   T-,51
01 58 0      0024    *B    BUN   *              RETURN TO PROGRAM


01 61 0      0025          LDB   *+2
01 62 0      0026          RTF   A,1
01 63 0      0027    ZERO  RTF   199,100        ZERO MEMORY
01 64 0      0028          STB   A              BEFORE LOADING PROGRAM
01 65 0      0029          CFR   A,04
01 66 0      0030          BCU   ZERO
01 67 0      0031    LOADP MRD 4 100,OT,1
01 68 0      0032          LDR   X+
01 69 0      0033          STR   M+
01 70 0      0034          LBC   *+1
01 71 0      0035          CLA   100
01 72 0      0036    *A    ADD - 200
01 73 0      0037          ADD - 201
01 74 0      0038          ADD - 202
01 75 0      0039          ADD - 203
01 76 0      0040          ADD - 204            SUM CHECK THE BLOCK
01 77 0      0041          IBB   A-,5
01 78 0      0042          BOF   *+1
01 79 0      0043          BZA   M+
01 80 0      0044          SPO   Q1+,4          IF IT DOES NOT
01 81 0      0045          F424  9669,0,9669    SAY SO AND HALT
01 82 0      0046          MPB 4 OT,1           TRY AGAIN
01 83 0      0047          BUN   LOADP
```

```
 01 86 0      0048   *M     CAD    101              GET BUFFER ENTRY
 01 87 0      0049          LDB    M-
001 88 0      0050          BSA    C+,4             IS IT A RTF(IF NOT, ALL INSTRUCTIONS

001 90 0      0051          CLL    Z+               ARE LOADED SO PROCESS FIX-UPS
 01 91 0      0052          IFL    Z+,02,99
 01 92 0      0053   *A     DLB    Z+,04,1
001 93 0      0054          LDR -  100              IF FIX-UP HAS A SIGN OF 8 IT INDICATES
 01 94 0      0055          BFR    B+,12,80         END OF SOME SEGMENT
 01 95 0      0056          BZR    LOADP
 01 96 0      0057          DLB -  100,64,0         DO FIX-UP
 01 97 0      0058          STR -  0,04
 01 98 0      0059          BUN    A-


 02 01 0      0060   *C     STA    R+,66
002 02 0      0061          DBB    0,9999           INSTRUCTIONS ARE TRANSFERED TO
 02 03 0      0062          STB    R+,04            MEMORY WITH A RTF
 02 04 0      0063          LDB -  9999
 02 05 0      0064   *R     RTF    0,100
 02 06 0      0065          SRT    7
 02 07 0      0066          ADD    O+               GO GET NEXT RTF
 02 08 0      0067          ADL    M-
 02 09 0      0068          BUN    M-
 02 10 0      0069   *X     CAD    101
 02 11 0      0070   *O     HLT    1
 02 12 0      0071   *Z     HLT    99               FIX-UP COUNTER


 02 15 0      0072   *B     CFR    SECT,67          HAVE WE LOADED ALL OF THE
 02 16 0      0073          BCU    A-               SEGMENT INDICATED BY SECT
 02 17 0      0074   LODOX  BUN    200


 02 20 0      0075   *V     HLT    1111
 02 21 0      0076   LODOV  LDB    LODOX
 02 22 0      0077          CAD -  0
 02 23 0      0078          EXT    V-
 02 24 0      0079          SLA    4
 02 25 0      0080          STA    SECT,00          GET SEGMENT NUMBER
 02 26 0      0081          IFL    LODOX,04,1       ADVANCE EXIT LINE BY ONE
 02 27 0      0082          CLB
 02 28 0      0083   *B     MTS 4  SECT,OT          SEARCH FOR SEGMENT
 02 29 0      0084          MRD 4  100,OT,1
```

```
 02 30 0      0085          CAD   100
 02 31 0      0086          CFA   SECT,00          DID THE MACHINE WORK
 02 32 0      0087          BCE   LOADP+1         IF YES, LOAD THE SEGMENT
 02 33 0      0088          SPO   Q2+,3           IF NOT PRINT THE MESSAGE
 02 34 0      0089          F424  9669,0,9669         SEGMENT ERROR
 02 35 0      0090          BUN   B-              TRY AGAIN

 02 37 0      0091    SECT  HLT 8 0               SEGMENT NUMBER

 02 39 0      0092    *Q1   CNST  21602020202
 02 40 0      0093          CNST  24348454352
 02 41 0      0094          CNST  20062645400
 02 42 0      0095          CNST  24559595659
 02 43 0      0096    *Q2   CNST  21662454754
 02 44 0      0097          CNST  24555630045
 02 45 0      0098          CNST  25959565902


 02 48 0      0099          LOCN  100
 02 49 0      0100          HLT   0
 02 50 0      0101    FMT1  FBGR  INPUT,16(P5A),P10Z
002 51 0      0130    FMT3  FBGR  PRINT,49B,T5A,T1A1B2A4Z,T10N,T8Z1A,XB6Z2A,48B MONITOR
002 52 0      0159    FMT4  FBGR  PRINT,32B,11(T5A),33B        ERROR MESSAGE FORMAT BAND
 02 53 0      0188    TAB   DEFN  *
 02 54 0      0188          LOCN  200
 02 55 0      0200          HLT   0
002 56 0      0201    FMT5  FBGR  PRINT,24(T5A)                PRINTER-PUNCH FORMAT BAND

 02 58 0      0230    LOADL CRI 4 *+2,1           LOADER ENTRANCE
 02 59 0      0231          BUN   LOADC
002 60 0      0232          CRF 4 FMT1+28,51      LOAD INPUT FORMAT IF READY
 02 61 0      0233    LOADC STB   200,55
 02 62 0      0234    *A    IFL   200,54,1
 02 63 0      0235          BOF   A+
 02 64 0      0236          CWI 4 A+,2
 02 65 0      0237          BUN   A-
 02 66 0      0238    *A    CWI 4 *+2,2
 02 67 0      0239          BUN   *+4
002 68 0      0240          CWF 4 FMT3+28,32      LOAD PRINTER FORMATS IF PRINTER READY
 02 69 0      0241          CWF 4 FMT4+28,42
 02 70 0      0242          CWF 4 FMT5+28,52
 02 71 0      0243          CWI 4 *+2,1
 02 72 0      0244          BUN   *+2
002 73 0      0245          CWF 4 FMT5+28,51      LOAD PUNCH FORMAT IF PUNCH IS READY
```

```
02 74 0      0246          LDR   B
02 75 0      0247          BUN   ZERO-2


02 78 0      0248          LOCN  700

02 80 0      0700          BCS   *+3,4
02 81 0      0701          STP 4 9898,1642
02 82 0      0702          BUN 4 9898,IMAGE
02 83 0      0703          MRD 4 0900,T,7
02 84 0      0704          MRD 4 1600,T,0
02 85 0      0705          MRD 4 2600,T,0
02 86 0      0706          CLA   3200
02 87 0      0707          LBC   *-1
02 88 0      0708          ADD - 3600
02 89 0      0709          ADD - 3601
02 90 0      0710          ADD - 3602
02 91 0      0711          ADD - 3603
02 92 0      0712          ADD - 3604
02 93 0      0713          ADD - 3605
02 94 0      0714          ADD - 3606
02 95 0      0715          ADD - 3607
02 96 0      0716          ADD - 3608
02 97 0      0717          ADD - 3609
02 98 0      0718          IBB   *-10,10
02 99 0      0719          BOF   *+1
03 00 0      0720          BZA   A+                IF IT DOES NOT      PRINT
03 01 0      0721          SPO   CSERR,4           CHECK SUM ERROR
03 02 0      0722          F424  9669,0,9669
03 03 0      0723          MPB 4 T,2
03 04 0      0724          MPB 4 T,10
03 05 0      0725          MPB 4 T,10
03 06 0      0726          MPB 4 T,10
03 07 0      0727          MRD 4 400,T,10          TRY AGAIN
03 08 0      0728          MRD 4 1400,T,10
03 09 0      0729          MRD 4 2400,T,10
03 10 0      0730          MRD 4 3400,T,2
03 11 0      0731          BUN   707


03 14 0      0732    *A    CWF 4 ERFRM+28,42
03 15 0      0733          LDB   DUMBS
03 16 0      0734          IBB   A+,9999
03 17 0      0735          LDB   +SCRTB+117
```

```
03 18 0      0736          STP   LIBRX
03 19 0      0737          BUN   LIBRF
03 20 0      0738    *A    CAD   HALT1          SET THE X X UP IF AN ERROR
03 21 0      0739          BSA   *+3,8            OCCURED DURING COMPILATION
03 22 0      0740          LDR   +525005250
03 23 0      0741          STR   HALT
03 24 0      0742          LDB   OP
03 25 0      0743    *A    STB   C+,04           TEST FOR OP STACK EMPTY
03 26 0      0744          IBB   A+,9999         IT SHOULD BE
03 27 0      0745          STP   WEMX
03 28 0      0746          BUN   WEM
03 29 0      0747          CNST  30102030000     EXTRA LEFT PARENTHESIS
03 30 0      0748          LDB   C+
03 31 0      0749          LDB - 0
03 32 0      0750          BUN   A-
03 33 0      0751    *C    HLT   0


003 36 0     0752    *A    CAD   BUF            DUMP BUFFER IF SEGMENTATION WAS USED
 03 37 0     0753          BFA   A+,64,0        AND BUFFER IS NOT EMPTY
 03 38 0     0754          CAD   BUF+99
 03 39 0     0755          ADD   BUF+98
 03 40 0     0756          BZA   *+3
 03 41 0     0757          STP   WRITX
 03 42 0     0758          BUN   WRIT5
 03 43 0     0759          CAD   BUF            INCREASE SEGMENT NUMBER
 03 44 0     0760          CLL   BUF
 03 45 0     0761          STA   BUF,64
 03 46 0     0762          IFL   BUF,64,1
 03 47 0     0763          BUN   C+
 03 48 0     0764    *A    LDR   +9669009669    GENERATE BIG X X HALT
 03 49 0     0765          STR   INSTR
 03 50 0     0766          STP   WRITX
 03 51 0     0767          BUN   WRIT2
 03 52 0     0768          LDR   +1000600000    FOLLOWED BY A CARD READ
 03 53 0     0769          STR   INSTR          IF NOT USING SEGMENTATION
 03 54 0     0770          STP   WRITX
 03 55 0     0771          BUN   WRIT2


 03 58 0     0772    *C    LDR   $POOL$
 03 59 0     0773          STR   EXPLN
 03 60 0     0774    *C    LDB   *+1
 03 61 0     0775          CAD   XZERO
```

```
 03 62 0      0776   *A     STA   HOLD
 03 63 0      0777          BFA   B+,64,0
 03 64 0      0778          SRA   4
 03 65 0      0779          LDR - 1
 03 66 0      0780          STP   WRITX          OUTPUT ALL CONSTANTS USED BY
 03 67 0      0781          BUN   WRIT3          OBJECT PROGRAM
 03 68 0      0782          CAD   HOLD
 03 69 0      0783   *B     BFA   C+,04,0        XXXX  2R YYYY LINK  R=0 FLOATING
 03 70 0      0784          LDB   HOLD           XXXX+1  (CONSTANT)  R=1 INTEGER
 03 71 0      0785          CAD - 0              YYYY  IS THE ASIGNMENT
 03 72 0      0786          BUN   A-             LINK=0 INDICATES END OF LIST
 03 73 0      0787   *C     LDB   *+1
 03 74 0      0788          CAD   FZERO          PROCESS FLOATING LIST
 03 75 0      0789          STP   B-
 03 76 0      0790          BUN   A-


 03 79 0      0791          CLL   EXPLN
 03 80 0      0792          MLS 4 T
 03 81 0      0793          MIB 4 *+2,T
 03 82 0      0794          BUN   *-1
 03 83 0      0795          MRD 4 LBRT,T,3       READ LIBRARY TABLE
003 84 0      0796          DFL   WRT10,11,9     CHANGE CONTROL SWITCH FOR EXTERNAL
 03 85 0      0797          DFL   FXUPY,11,9
 03 86 0      0798          LDB   EPSLN             PROGRAMS
003 87 0      0799          STP   EXTEX          PROCESS EXTERNAL PROGRAMS IF EPSLN
 03 88 0      0800          DBB   EXTP,1            IS NON-ZERO
003 89 0      0801          DFL   WRT10,11,2     CHANGE CONTROL SWITCH FOR LIBRARY
 03 90 0      0802          DFL   FXUPY,11,2
003 91 0      0803          CAD   +545600        MODIFY ERROR MESSAGE FOR LIBRARY
003 92 0      0804          STA   CNST9,06       TO READ  UNDEFINED EQUIVALENCE LIBRARY
                                                                  INCORRECT


 03 96 0      0805   *F     CLL   TST
 03 97 0      0806          CLB
 03 98 0      0807          CAD   LOCN
 03 99 0      0808          STA   LCHOD
 04 00 0      0809          DBB   *+1,9999-LBRT  START AT LBRT+1
 04 01 0      0810   *E     STB   I
 04 02 0      0811          CAD - 0
00X 0X 0      08/V          BSA   A+,1
00X 0X 0      0(/X          BZA   B+             END OF THIS PASS ON THE TABLE
00X 0X 0      0(/X          STA   J,00
```

```
 04 06 0      0815          DLB   J,64,0
 04 07 0      0816          CAD - 0
 04 08 0      0817          BFA   A+,11,3        IS THE ROUTINE ASSIGNED
 04 09 0      0818          LDB   I                    IF YES
 04 10 0      0819          IFL - 0,12,10        MARK IT WITH A SIGN OF 1
 04 11 0      0820          BUN   C+
 04 12 0      0821    *D    DLB   J,64,0
 04 13 0      0822          CAD - 0
 04 14 0      0823          BFA   C+,11,4
 04 15 0      0824          IFL   TST,00,1       ASSIGN SUBROUTINE IF IT HAS NOT
004 16 0      0825          STP   LIBRX          ALREADY ASSIGNED,  TST COUNTS NUMBER
004 17 0      0826          BUN   LIBRF          OF SUBROUTINES ASSIGNED ON THIS PASS
 04 18 0      0827    *C    LDB   J              THRU TABLE
 04 19 0      0828          IBB   A+,9999        SEQUENCE DOWN LIST OF REQUIRED
 04 20 0      0829          CAD - 1                   SUBROUTINES
 04 21 0      0830          STA   J
 04 22 0      0831          BUN   D-
 04 23 0      0832    *A    LDB   I              ADVANCE TO NEXT TABLE ENTRY
 04 24 0      0833          IBB   E-,1
004 25 0      0834    *B    LDB   TST            IF 1 ADDITIONAL SUBROUTINE WAS ASSIGNED
004 26 0      0835          DBB   F-,1           ANOTHER PASS THRU TABLE IS NECESSARY


 04 29 0      0836    *E    DEFN  *
 04 30 0      0836    *F    DLB   II,44,0
 04 31 0      0837          CAD - LBRT
 04 32 0      0838          BFA   A+,00,0        END OF LIBRARY TABLE
004 33 0      0839          BSA   B+,1           IF ENTRY WAS MARKED PROCESS THIS
 04 34 0      0840    *C    IFL   II,44,1        ROUTINE
 04 35 0      0841          BUN   F-
 04 36 0      0842    *B    DLB - LBRT,64,0
004 37 0      0843          CAD - 0              GET OPERAND OF ROUTINE TO BE PROCESSED
004 38 0      0844          DLB   *,44,0         POSITION TAPE TO BEGINNING OF ROUTINE
 04 39 0      0845          MFS   II,T
 04 40 0      0846          STA   LOCN,64        SETUP LOCATION COUNTER
 04 41 0      0847          SLA   2
004 42 0      0848          STA   MSK,44         AND MASK FOR RELOCATION OF INSTRUCTIONS
 04 43 0      0849          SRA   6
 04 44 0      0850          STA   MSK,04
 04 45 0      0851          CLL   EQTAB-1        CLEAR EQUIVALENCE TABLE
 04 46 0      0852          LDB   +EQTAB
 04 47 0      0853          RTF   EQTAB-1,100
 04 48 0      0854          CLL   JJ
 04 49 0      0855          IFL   JJ,02,2
```

```
04 50 0      0856          MLS 4 T
04 51 0      0857          MIB 4 *+2,T
04 52 0      0858          BUN   *-1
04 53 0      0859          MRD 4 BUFR,T,1
04 54 0      0860          CAD   BUFR          DID WE FIND THE RIGHT BLOCK
04 55 0      0861          CFA   II
04 56 0      0862          BCE   E+
04 57 0      0863          SPO   SRERR,3
04 58 0      0864          F424  9669,0,9669
04 59 0      0865          BUN   B-
04 60 0      0866    *G    CLL   JJ
04 61 0      0867          IFL   JJ,02,2
04 62 0      0868          MLS 4 T
04 63 0      0869          MIB 4 *+2,T
04 64 0      0870          BUN   *-1
04 65 0      0871          MRD 4 BUFR,T,1
04 66 0      0872    *E    LDB   *+1
04 67 0      0873          CLA   98
04 68 0      0874          ADD - BUFR+1
04 69 0      0875          DBB   *-1,1         CHECK SUM
04 70 0      0876          BOF   *+1
04 71 0      0877          BZA   D+
04 72 0      0878          SPO   CSERR,4
04 73 0      0879          F424  9669,0,9669
04 74 0      0880          MPB 4 T,1
04 75 0      0881          BUN   G-


04 78 0      0882    *D    LDB   JJ
04 79 0      0883          CAD - BUFR-1
04 80 0      0884          STA   INSTR
04 81 0      0885          STP   LBSBX         PROCESS INSTRUCTION IN BUFFER
04 82 0      0886          BUN   LBSB
04 83 0      0887          BUN   C-            END OF LIBRARY PROCEDURE
04 84 0      0888          IFL   JJ,02,1
04 85 0      0889          BOF   G-            END OF TAPE BLOCK
04 86 0      0890          BUN   D-


04 89 0      0891    *A    MIB 4 *+2,T
04 90 0      0892          BUN   *-1
04 91 0      0893          MRW 4 T
04 92 0      0894          CLA                 EMIT AN END OF
004 93 0     0895          LSA   8             PROGRAM SIGNAL FOR THE LOADER
```

```
04 94 0      0896          STP   FXUPX
04 95 0      0897          BUN   FXUP
04 96 0      0898          CAD   BUF+98
04 97 0      0899          BSA   *+2,8
04 98 0      0900          BZA   *+3
04 99 0      0901          STP   WRITX            DUMP BUFFER IF NOT EMPTY
05 00 0      0902          BUN   WRIT5
05 01 0      0903          CAD   +9999999999
05 02 0      0904          STA   BUF              OUTPUT A SENTINEL BLOCK
05 03 0      0905          STP   WRITX
05 04 0      0906          BUN   WRIT5
05 05 0      0907          MIB 4 *+2,OT
05 06 0      0908          BUN   *-1
05 07 0      0909          MRW 4 OT


                           COMMENT
                           SEARCH FOR UNDEFINED LABELS AND EXTERNAL PROGRAMS
                           WORD= T LL SSSS LINK    LL= LENGTH OF IDENTIFIER
                                          T=2  FOR A NUMERIC LABLE
                                 SSSS  =     V TR ASIGN 0000
                                 SSSS+1=     (FIRST FIVE CHARACTERS OF IDENTIFIER)
                                 SSSS+2=     (NEXT FIVE CHARACTERS)
                           WE ARE LOOKING FOR THE CASES
                           (T=9, ASIGN=0) OR (V=9, T=8,9, ASIGN=0)

05 20 0      0910    *E    LDB   Z+
05 21 0      0911          CAD - SCRTB            GET HEAD OF STACK
05 22 0      0912    *D    STA   Y+
05 23 0      0913          DLB   Y+,64,0
05 24 0      0914          IBB   A+,9999          STACK HAS NO ENTRIES
05 25 0      0915          BOF   *+1
05 26 0      0916          IFL   Y+,12,90         SET OVERFLOW IF
05 27 0      0917          CAD - 1                OPERAND IS A NUMERIC LABEL
05 28 0      0918          BSA   E+,8             EXTERNAL PROGRAM
05 29 0      0919          BFA   B+,11,9          IS IT A LABEL
05 30 0      0920    *C    LDB   Y+               SEQUENCE DOWN STACK
05 31 0      0921          LDR   +34353600
05 32 0      0922          STR   CNST8,08
05 33 0      0923          CAD - 0
05 34 0      0924          DBB   D-,1000          IF LINK IS LESS THAN 1000
05 35 0      0925    *A    DFL   Z+,02,1          SKIP TO NEXT STACK
05 36 0      0926          BRP   E-
05 37 0      0927          BUN   OUT              END OF SCRAMBLE TABLE
```

```
05 38 0      0928   *B     BFA   *+2,64,0          HAS LABEL BEEN ASSIGNED
05 39 0      0929          BUN   C-
05 40 0      0930          DFL   Y+,22,11          SET REPEAT IF IDENTIFIER
05 41 0      0931          CAD - 2                 IS LONGER THAN 5 CHARACTERS
05 42 0      0932          LDR - 3
 5 43 0      0933          LSA   3
05 44 0      0934          BRP   *+2
05 45 0      0935          CLR
05 46 0      0936          BOF   NMBRL             NUMERIC LABEL
05 47 0      0937          STA   DICT+35
05 48 0      0938          STR   DICT+36
05 49 0      0939   PRNT   STP   WEMX
05 50 0      0940          BUN   WEM
05 51 0      0941   CNST8  CNST  33234353600      UNDIFENED LABEL (EXT PROGRAM) L
05 52 0      0942          BUN   C-
05 53 0      0943   *E     BOF   *+1
05 54 0      0944          BFA   *+3,11,8
05 55 0      0945          BFA   B-+2,12,89
05 56 0      0946          BUN   C-
05 57 0      0947          LDR   +10123536
05 58 0      0948          STR   CNST8,08
05 59 0      0949          BUN   B-


05 62 0      0950   NMBRL  LSA   0                 CONVERT INTEGER
05 63 0      0951          SRT   10                TO ALFANUMERIC CODE
05 64 0      0952   *B     SLT   1
05 65 0      0953          ADD   +80
05 66 0      0954          BFA   A+,11,8
05 67 0      0955          SLA   1
05 68 0      0956          BUN   B-
05 69 0      0957   *A     STA   DICT+35
05 70 0      0958          IFL   DICT+35,12,30
05 71 0      0959          CLA
05 72 0      0960   *B     SLT   1
05 73 0      0961          ADD   +80
05 74 0      0962          BFA   A+,11,8
05 75 0      0963          SLA   1
05 76 0      0964          BUN   B-
05 77 0      0965   *A     STA   DICT+36
05 78 0      0966          BUN   PRNT
05 79 0      0967   *Y     HLT   0                 PRESENT OPERAND
05 80 0      0968   *Z     HLT   99                STACK COUNT
```

```
05 83 0      0969    OUT    CAD    LCHOD
05 84 0      0970           CFA    LCMAX,64
05 85 0      0971           BCH    *+2
05 86 0      0972           CAD    LCMAX
05 87 0      0973           SUB    +10000
05 88 0      0974           SRT    8
05 89 0      0975           BOF    *+1
05 90 0      0976    *B     CLA    300
05 91 0      0977    *C     ADD    +8
05 92 0      0978           SLT    1
05 93 0      0979           SLA    1
05 94 0      0980           DFL    B-,81,1
05 95 0      0981           BRP    C-
05 96 0      0982           SLA    1
05 97 0      0983           STA    DICT+35
05 98 0      0984           CAD    VARB            SET UP CONSTANTS
05 99 0      0985           ADD    +1              IN ALFANUMERIC FORMAT
06 00 0      0986           BPA    *+2
06 01 0      0987           CLA
06 02 0      0988           SRT    4
06 03 0      0989    *C     CLA    3
 6 04 0      0990    *B     ADD    +8
06 05 0      0991           SLT    1
06 06 0      0992           SLA    1
06 07 0      0993           DFL    C-,01,1
06 08 0      0994           BRP    B-
06 09 0      0995           SLA    1               IF NOT PCS(4)
06 10 0      0996           STA    DICT+36         PRINT MESSAGES
06 11 0      0997           BCS    A+,4
06 12 0      0998           CAD    DICT+36
06 13 0      0999           CFA    DICT+35,88
06 14 0      1000           BCH    *+4
06 15 0      1001           STP    WEMX
06 16 0      1002           BUN    WEM
06 17 0      1003           CNST   36866707147
06 18 0      1004           STP    WEMX
06 19 0      1005           BUN    WEM+2
06 20 0      1006           CNST   34547495036     COMPILED PROGRAM ENDS AT XXXX
06 21 0      1007           STP    WEMX
06 22 0      1008           BUN    WEM+2
06 23 0      1009           CNST   34751535037     PROGRAM VARIABLES START AT XXXX
06 24 0      1010    *A     LDB    DUMBS
06 25 0      1011           DBB    MONST,1         GO GENERATE SYMBOLIC DUMP
```

```
 06 29 0      1012   LDBG  CAD    HALT
 06 30 0      1013         BFA    *+4,31,5
 06 31 0      1014         STP 4  9898,0916
 06 32 0      1015         BUN 4  9898,IFERR
 06 33 0      1016         BUN    *+4
 06 34 0      1017         BCS    *+3,4
 06 35 0      1018         STP 4  9898,0916
 06 36 0      1019         BUN 4  9898,ZERSS

 06 38 0      1020   AGAIN DLB    FIXUP,44,0      THE FIXUP STACK CONTAINS THE
006 39 0      1021         STP    REMX            FIX-UPS FOR CALLS OF EXTERNAL PROGRAMS
 06 40 0      1022         BUN    REM             FROM WITHIN SEGMENTS
 06 41 0      1023   XT001 BUN    S+              STACK EMPTY
 06 42 0      1024         LDR    +POST           A REWIND
 06 43 0      1025         STR    XT001,04        WILL BE NECESSARY
 06 44 0      1026         STA    HOLD
 06 45 0      1027         DLB    HOLD,64,0
 06 46 0      1028         CAD -  0
 06 47 0      1029         STA    HOLD
 06 48 0      1030         SRA    8
 06 49 0      1031         SLA    4
 06 50 0      1032         STA    THROW
 06 51 0      1033         CLB
 06 52 0      1034   MTS   MTS 4  THROW,OT        SEARCH FOR PROPER SEGMENT
 06 53 0      1035         MRD 4  100,OT,1
 06 54 0      1036         CFA    100,00
 06 55 0      1037         BCE    RDT+1
 06 56 0      1038         SPO    SRERR,3
 06 57 0      1039         F424   9669,0,9669
 06 58 0      1040         BUN    MTS             TRY AGAIN

 06 60 0      1041   RDT   MRD 4  100,OT,1
 06 61 0      1042         CLA    100
 06 62 0      1043         LBC    *-1
 06 63 0      1044   *A    ADD -  200
 06 64 0      1045         ADD -  201
 06 65 0      1046         ADD -  202
 06 66 0      1047         ADD -  203
 06 67 0      1048         ADD -  204
 06 68 0      1049         IBB    A-,5            CHECK SUM BLOCK
 06 69 0      1050         BOF    *+1
```

```
06 70 0      1051          BZA   A+
06 71 0      1052          SPO   CSERR,4
06 72 0      1053          F424  9669,0,9669
06 73 0      1054          BUN   *-1

06 75 0      1055    *A    CAD   101
06 76 0      1056          BSA   B+,4              IN CASE IT IS NOT
06 77 0      1057          LDR   +1                GET NEXT BLOCK
06 78 0      1058          STR   A-,02
06 79 0      1059          BUN   RDT


06 82 0      1060    *B    STA   T+                CAN THE FIX-UP BE
06 83 0      1061          SLA   4                 IN THIS GROUP OF INSTRUCTIONS
06 84 0      1062          CFA   HOLD,64
06 85 0      1063          BCL   Y+                YES
06 86 0      1064          BCE   Y+
06 87 0      1065    *W    CAD   T+                NO - TRY NEXT GROUP
06 88 0      1066          SRA   1
06 89 0      1067          STA   *+1,42
06 90 0      1068          IFL   A-,02,0
06 91 0      1069          IFL   A-,02,1           GET NEXT RTF
06 92 0      1070          BUN   A-

06 94 0      1071    *Y    CAD   T+
06 95 0      1072          SRA   7
06 96 0      1073          ADD   T+
06 97 0      1074          SLA   4
06 98 0      1075          CFA   HOLD,64           IS THE FIX-UP IN THIS GROUP
06 99 0      1076          BCH   F+
07 00 0      1077          BUN   W-                NO

07 02 0      1078    *F    MPB 4 OT,1
07 03 0      1079          CSU   HOLD
07 04 0      1080          SRA   4
07 05 0      1081          EXT   -1111
07 06 0      1082          ADL   T+                DO ACTUAL FIX-UP IN
07 07 0      1083          CAD   A-                THE BUFFER
07 08 0      1084          LBC   T+
07 09 0      1085          STA   A+,04
07 10 0      1086          DBB   *+1,9999
07 11 0      1087          LDR   HOLD
07 12 0      1088    *A    STR - 0,04
07 13 0      1089          CLA   100
```

```
07 14 0      1090          LBC   *-1
07 15 0      1091          CLL   199
07 16 0      1092    *A    SUB - 200
07 17 0      1093          SUB - 201
07 18 0      1094          SUB - 202
07 19 0      1095          SUB - 203
07 20 0      1096          SUB - 204
07 21 0      1097          IBB   A-,5
07 22 0      1098          BOF   *+1
07 23 0      1099          STA   199
07 24 0      1100          MOW 4 100,OT,1
07 25 0      1101          BUN   AGAIN
07 26 0      1102    *T    HLT   0

07 28 0      1103    POST  MIB 4 *+2,OT
07 29 0      1104          BUN   *-1
07 30 0      1105          MRW 4 OT
07 31 0      1106    *S    CLB
07 32 0      1107          RTF   SX,100
07 33 0      1108          RTF   SX+100,100
07 34 0      1109          RTF   SX+200,100
07 35 0      1110          MIB 4 *+2,OT
07 36 0      1111          BUN   *-1
07 37 0      1112          MOW 4 0,OT,3
07 38 0      1113          CAD   HALT
07 39 0      1114          BCS   A+,4          IF NOT PCS(4)
07 40 0      1115    *B    STA   *+1           HALT WITH OK OR XX IN A
07 41 0      1116          HLT   0
07 42 0      1117          BUN   LOADC
07 43 0      1118    *A    BFA   B-,31,2       IF PCS(4) HALT ONLY IF XX
07 44 0      1119          BUN   LOADC
07 45 0      1120    II    CNST  1000000       LIBRARY INDEX NUMBER
07 46 0      1121    JJ    HLT   0             TEMP
07 47 0      1122    MSK   HLT   0             RELOCATION MASK FOR INSTRUCTIONS

                           PROCESS EXTERNAL PROGRAMS

07 52 0      1123    EXTP  CAD   LOCN
07 53 0      1124          CFA   LCMAX
07 54 0      1125          BCH   *+2
07 55 0      1126          CAD   LCMAX
07 56 0      1127          STA   LOCN          LOCN=MAX(LCMAX,LOCN)
07 57 0      1128    NAME  CLL   EQTAB-1
```

```
 07 58 0      1129          LDB   +EQTAB          CLEAR EQUIVALENCE TABLE
 07 59 0      1130          RTF   EQTAB-1,100
 07 60 0      1131          CLL   LEVEL
007 61 0      1132    *Z    STP   READX           READ NAME CARD OF EXTERNAL PROGRAM
 07 62 0      1133          BUN   READ
 07 63 0      1134          CAD   LOCN
 07 64 0      1135          STA   CRD-1
 07 65 0      1136          CAD   CRD
 07 66 0      1137          BSA   A+,2
 07 67 0      1138          STP   WEMX
 07 68 0      1139          BUN   WEM
 07 69 0      1140          CNST  30608090000     MISSING NAME CARD
 07 70 0      1141          BUN   Z-
 07 71 0      1142    *A    BCS   *+2,3
 07 72 0      1143          BCS   *+3,4
 07 73 0      1144          STP 4 9898,1602
 07 74 0      1145          BUN 4 9898,CRD
 07 75 0      1146    *A    STP   SCANX
 07 76 0      1147          BUN   SCAN
 07 77 0      1148          CAD   SYMBL
 07 78 0      1149          CFA   $FINIS$,00
 07 79 0      1150          BCU   *+5
 07 80 0      1151          CAD   SYMBL+1
 07 81 0      1152          CFA   $H$,00
 07 82 0      1153    EXTEX BCE   *
 07 83 0      1154          CAD   SYMBL
 07 84 0      1155          BSA   B+,2            IS THIS A PREFIX
 07 85 0      1156          SRT   10
 07 86 0      1157          DIV   +99
 07 87 0      1158          STR   LL0
 07 88 0      1159          CAD   LEVEL
 07 89 0      1160          STP   SRCHX           SEARCH FOR SYMBOL
 07 90 0      1161          BUN   SRCH
 07 91 0      1162          BUN   Y+              COULD NOT FIND IT
 07 92 0      1163          CAD   L
 07 93 0      1164          SLA   2
007 94 0      1165          STA   EQTAB-1,44      PUT LOCATION OF OPERAND OF THE EXTERNAL
 07 95 0      1166          CAD   LOCN            PROGRAM INTO EQTAB-1
 07 96 0      1167          SRA   4
 07 97 0      1168          STA   EQTAB-1,04      ALSO THE ASSIGNMENT
 07 98 0      1169          STA   MSK,04
 07 99 0      1170          SLA   6
 08 00 0      1171          STA   MSK,44          SET UP A MASK FOR RELOCATION
 08 01 0      1172          DLB   L,64,0          OF INSTRUCTIONS
```

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 08 02 0      1173          CAD - 0
 08 03 0      1174          BFA   C+,11,9          EXTERNAL STATEMENT
 08 04 0      1175          BFA   E+,11,8          EXTERNAL PROCEDURE
 08 05 0      1176    *Y    STP   WEMX
 08 06 0      1177          BUN   WEM
 08 07 0      1178          CNST  31047141500      EXTERNAL PROGRAM NOT DECLARED
 08 08 0      1179          BUN   A+
 08 09 0      1180    *B    SRT   10
 08 10 0      1181          DIV   +99
 08 11 0      1182          STR   LLO
 08 12 0      1183          CLA
008 13 0      1184          STP   SRCHX            SEARCH FOR OPERAND OF PREFIX PROCEDURE
 08 14 0      1185          BUN   SRCH
 08 15 0      1186          BUN   F+
 08 16 0      1187          DLB   L,64,0
 08 17 0      1188          CAD - 0
 08 18 0      1189          BFA   B+,11,8          DID WE GET A PROCEDURE
 08 19 0      1190    *F    STP   WEMX
 08 20 0      1191          BUN   WEM
 08 21 0      1192          CNST  31712141500      PREFIX PROCEDURE NOT DECLARED
 08 22 0      1193          BUN   A-
 08 23 0      1194    *B    STA   LEVEL,02
 08 24 0      1195          BUN   A-


 08 27 0      1196    *C    DLB   L,64,0
 08 28 0      1197          CAD - 0
 08 29 0      1198          STA   HOLD
 08 30 0      1199          SLA   2
 08 31 0      1200          STA   EQTAB-1,44
 08 32 0      1201          STP   REMX
 08 33 0      1202          BUN   REM
 08 34 0      1203          HLT
 08 35 0      1204          SLA   4
 08 36 0      1205          STA   HOLD,22
 08 37 0      1206          CAD   HOLD
 08 38 0      1207          BFA   S+,22,00
 08 39 0      1208          EXT   +1111110000
008 40 0      1209          SLA   4                IT WAS - SO ENTER INTO THE FIXUP STACK
 08 41 0      1210          ADD   LOCN
 08 42 0      1211          SLA   6                LL XXXX YYYY
 08 43 0      1212          STA   HOLD
008 44 0      1213          LDB   AVALE            WHERE      LL= SEGMENT NUMBER
008 45 0      1214          STP   INSX                   XXXX= LOCATION TO BE FIXED UP
```

```
 08 46 0      1215          BUN   INS                YYYY= FIX-UP
 08 47 0      1216          CAD   HOLD
 08 48 0      1217          STA - 0
 08 49 0      1218          STB   HOLD
 08 50 0      1219          CAD   HOLD
 08 51 0      1220          SLA   4
 08 52 0      1221          DLB   FIXUP,44,0
 08 53 0      1222          STP   INSX
 08 54 0      1223          BUN   INS
 08 55 0      1224          BUN   *+4
 08 56 0      1225    *S    LSA   0
 08 57 0      1226          STP   FXUPX        GENERATE FIX-UP FOR EXTERNAL
 08 58 0      1227          BUN   FXUP                STATEMENT
 08 59 0      1228          DLB   L,64,00

 08 62 0      1229    *E    STP   REMX         REMOVE NEXT FIX-UP FROM LIST OF
008 63 0      1230          BUN   REM          ALL CALLS OF THE DECLARED PROCEDURE
 08 64 0      1231          BUN   D+                 LIST IS EXHAUSTED
 08 65 0      1232          BSA   T+,8
008 66 0      1233          BFA   S+,22,0      IS FIX-UP FOR CALL WITHIN A SEGMENT
 08 67 0      1234          EXT   +1111110000
 08 68 0      1235          SLA   4            IT WAS  --  SO ENTER
 08 69 0      1236          ADD   LOCN         LL XXXX YYYY
 08 70 0      1237          SLA   6            WHERE     LL= SEGMENT NUMBER
008 71 0      1238          STA   HOLD               XXXX= LOCATION TO BE FIXED UP
 08 72 0      1239          LDB   AVALE              YYYY= FIX-UP
 08 73 0      1240          STP   INSX
 08 74 0      1241          BUN   INS
 08 75 0      1242          CAD   HOLD
 08 76 0      1243          STA - 0
 08 77 0      1244          STB   HOLD
 08 78 0      1245          CAD   HOLD
 08 79 0      1246          SLA   4
 08 80 0      1247          DLB   FIXUP,44,0
 08 81 0      1248          STP   INSX
 08 82 0      1249          BUN   INS
 08 83 0      1250          DLB   L,64,0
 08 84 0      1251          BUN   E-
 08 85 0      1252    *S    STP   FXUPX        GENERATE FIX-UP FOR EXTERNAL
 08 86 0      1253          BUN   FXUP                PROCEDURE
 08 87 0      1254          DLB   L,64,0
 08 88 0      1255          BUN   E-
 08 89 0      1256    *T    STA   HOLD
```

```
 08 90 0      1257          DLB   L,64,0
 08 91 0      1258          STP   REMX
 08 92 0      1259          BUN   REM
 08 93 0      1260          HLT
 08 94 0      1261          EXT   +11110000
 08 95 0      1262          LDR   LOCN
 08 96 0      1263          ADL   LOCN
 08 97 0      1264          CSA   HOLD
 08 98 0      1265          STR   HOLD
 08 99 0      1266          STP   FXUPX
 09 00 0      1267          BUN   FXUP
 09 01 0      1268          DLB   L,64,0
 09 02 0      1269          LDR   HOLD
 09 03 0      1270          STR   LOCN
 09 04 0      1271          BUN   E-
 09 05 0      1272    *D    DLB   L,64,0
 09 06 0      1273          CAD - 0              SET SIGN TO 8 TO INDICATE
 09 07 0      1274          LSA   0             THAT EXTERNAL PROGRAM HAS BEEN
 09 08 0      1275          STA - 0              GIVEN AN ASSIGNMENT
009 09 0      1276          CAD   LOCN           GIVE ASSIGNMENT TO THE EXTERNAL PROGRAM
 09 10 0      1277          STA - 0,64
 09 11 0      1278    *A    STP   READX          READ ANOTHER CARD
 09 12 0      1279          BUN   READ
 09 13 0      1280          CLL   LEVEL
 09 14 0      1281          CAD   CRD
 09 15 0      1282          BSA   NUMB,0         IS THIS AN EQUIVALENCE CARD
 09 16 0      1283          BCS   *+2,3
 09 17 0      1284          BCS   *+3,4
 09 18 0      1285          STP 4 9898,1602
 09 19 0      1286          BUN 4 9898,CRD
 09 20 0      1287    *B    STP   SCANX          IF YES SCAN FOR THE IDENTIFIER
 09 21 0      1288          BUN   SCAN
 09 22 0      1289          CAD   SYMBL
 09 23 0      1290          BSA   Z+,2           IS THE IDENTIFIER A PREFIX
 09 24 0      1291          SRT   10             NO IT IS NOT
 09 25 0      1292          DIV   +99
 09 26 0      1293          STR   LL0
 09 27 0      1294          CAD   LEVEL
 09 28 0      1295          STP   SRCHX
 09 29 0      1296          BUN   SRCHP          SEARCH FOR OPERAND
 09 30 0      1297          BUN   Y+             IT WAS NOT DEFINED
 09 31 0      1298          STP   LIBRX
 09 32 0      1299          DLB   L,64,0
 09 33 0      1300          CAD - 0
```

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 09 34 0      1301          BSA   *+2,8
 09 35 0      1302          LSA   0
 09 36 0      1303          SRA   4
 09 37 0      1304          STA   TEMP              GET THE ASSIGNMENT OF THE
 09 38 0      1305          STB   TEMP,66           REFERENCED IDENTIFIER
 09 39 0      1306          IFL   TEMP,62,12
 09 40 0      1307          BFA   LIBRF,51,3       IF IT WAS AN UNASSIGNED LIBRARY
                                                    PROCEDURE- GIVE IT AN ASSIGNMENT
 09 42 0      1308          CAD   L
 09 43 0      1309          SLA   2
009 44 0      1310          STA   TEMP,44          ALSO SAVE THE SREF OF THE IDENTIFIER
 09 45 0      1311          STP   SCANX
 09 46 0      1312          BUN   SCAN
 09 47 0      1313          LDB   SYMBL            GET EQUIVALENCE NUMBER
 09 48 0      1314          DBB   Y+,100           IS IT GREATED THAN 100
 09 49 0      1315          CAD   TEMP
 09 50 0      1316          STA - EQTAB+100        PUT ENTRY INTO EQUIVALENCE TABLE
 09 51 0      1317          BUN   A-
 09 52 0      1318    *Y    STP   WEMX
 09 53 0      1319          BUN   WEM
 09 54 0      1320          CNST  31921090000      IMPROPER EQUIVALENCE CARD
 09 55 0      1321          BUN   A-
 09 56 0      1322    *Z    SRT   10
 09 57 0      1323          DIV   +99
 09 58 0      1324          STR   LL0
 09 59 0      1325          CLA
 09 60 0      1326          STP   SRCHX            GET OPERAND OF PREFIX PROCEDURE
 09 61 0      1327          BUN   SRCH
 09 62 0      1328          BUN   Y-               IT WAS NOT THERE
 09 63 0      1329          DLB   L,64,0
 09 64 0      1330          CAD - 0
009 65 0      1331          STA   LEVEL,02         SET UP LEVEL FOR SEARCH OF PROCEDURE
 09 66 0      1332          BFA   B-,11,8
 09 67 0      1333          BUN   Y-


 09 70 0      1334    NUMB  DFL   CRD+8,01,1       DECREASE WORD COUNT
 09 71 0      1335    *A    LDB   CRD
 09 72 0      1336          CAD - CRD+10
 09 73 0      1337          STA   INSTR            GET INSTRUCTION
 09 74 0      1338          STP   LBSBX
 09 75 0      1339          BUN   LBSB             GO DECODE INSTRUCTION
009 76 0      1340          BUN   NAME             ALL THROUGH WITH THIS EXTERNAL PROGRAM
 09 77 0      1341          IFL   CRD,04,1
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 09 78 0      1342          DFL   CRD+8,01,1       DECREASE WORD COUNT
 09 79 0      1343          BRP   A-
 09 80 0      1344          STP   READX            READ ANOTHER CARD
 09 81 0      1345          BUN   READ
 09 82 0      1346          CAD   CRD
 09 83 0      1347          BSA   NUMB,0           IS THIS A INSTRUCTION CARD
 09 84 0      1348          STP   WEMX            IF NOT PRINT ERROR MESSAGE
 09 85 0      1349          BUN   WEM
 09 86 0      1350          CNST  30624260000      MISSING FINISH PSEUDO-OP


 09 89 0      1351   READ   CLL   CRD
 09 90 0      1352          LDB   +CRD+1
 09 91 0      1353          RTF   CRD,15           ZERO INPUT AREA
 09 92 0      1354          CLL   SCNCT            SET SCAN TO COLUMN 2
 09 93 0      1355          IFL   SCNCT,04,2       AND
 09 94 0      1356          STP 4 9999
 09 95 0      1357          BUN 4 9999,CRD
 09 96 0      1358   READX  BUN   *


 09 99 0      1359   SCAN   CLL   K
010 00 0      1360          CLL   SYMBL            ZERO SYMBOL STORAGE AREA
010 01 0      1361          LDB   +SYMBL+1
010 02 0      1362          RTF   SYMBL,9
010 03 0      1363   *A     DLB   SCNCT,94,0
010 04 0      1364          CAD - CRD
010 05 0      1365          LDB   SCNCT
010 06 0      1366          SLA - 0                GET A CHARACTER
010 07 0      1367          SRA   8                ADVANCE COLUMN COUNT
010 08 0      1368          IFL   SCNCT,05,2
010 09 0      1369          STA   CHAR
010 10 0      1370          BFA   B+,02,00         IGNORE LEADING BLANKS
010 11 0      1371          BFA   C+,02,24         INDICATES THAT A PREFIX FOLLOWS
010 12 0      1372          BFA   N+,91,8          FIRST CHARACTER NUMERIC, DO NUMBER SCAN
010 13 0      1373          BFA   R+,91,4          FIRST CHARACTER ALFA, BUILD IDENTIFIER
010 14 0      1374          BFA   R+,91,5
010 15 0      1375          BFA   R+,91,6
010 16 0      1376          BUN   B+               IGNORE ALL OTHER CHARACTERS
010 17 0      1377   *C     IFL   SYMBL,12,20
010 18 0      1378   *B     IBB   A-,9840          DID WE FINISH THE CARD
010 19 0      1379   *D     STP   WEMX
010 20 0      1380          BUN   WEM
010 21 0      1381          CNST  30628295809      MISSING FIELD ON SYMBOLIC CARD
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010 22 0      1382          BUN   SCNXX

010 25 0      1383    *R    LBC   K                ENTER CHARACTER
010 26 0      1384          SLA - 8                INTO SYMBOL STORAGE AREA
010 27 0      1385          DLB   K,94,0
010 28 0      1386          DBB   *+4,10          TRUNCATE IDENTIFIER TO 50 CHARACTERS
010 29 0      1387          ADD - SYMBL+10
010 30 0      1388          STA - SYMBL+10,00
010 31 0      1389          IFL   K,05,2
010 32 0      1390          DLB   SCNCT,94,0
010 33 0      1391          CAD - CRD
010 34 0      1392          LDB   SCNCT
010 35 0      1393          SLA - 0
010 36 0      1394          SRA   8                GET NEXT CHARACTER
010 37 0      1395          STA   CHAR
010 38 0      1396          IFL   SCNCT,05,2
010 39 0      1397          DBB   D-,162           DID WE FINISH THE CARD(IF SO-ERROR)
010 40 0      1398          CFA   +40,02           IS THE NEW CHARACTER
010 41 0      1399          BCH   R-               AN ALFANUMERIC
010 42 0      1400          BFA   R-,02,14
010 43 0      1401          CAD   SYMBL
010 44 0      1402          BSA   SCNXX,0          TERMINATE IF OTHER CHARACTER IS FOUND
010 45 0      1403          CAD   CHAR             AND WE ARE NOT SCANING A PREFIX
010 46 0      1404    *E    BFA   SCNXX,02,04      TERMINATE A PREFIX SOON AS WE GET A )
010 47 0      1405          DLB   SCNCT,94,0
010 48 0      1406          CAD - CRD
010 49 0      1407          LDB   SCNCT
010 50 0      1408          SLA - 0
010 51 0      1409          SRA   8
010 52 0      1410          IFL   SCNCT,05,02      CONTINUE LOOKING FOR A )
010 53 0      1411          IBB   E-,9838
010 54 0      1412          BUN   D-               IF WE DO NOT FIND IT  ERROR

010 57 0      1413    *N    SRT   1
010 58 0      1414          CAD   SYMBL
010 59 0      1415          SLT   1
010 60 0      1416          STA   SYMBL            NUMBER BUILDER
010 61 0      1417          DLB   SCNCT,94,0
010 62 0      1418          CAD - CRD
010 63 0      1419          LDB   SCNCT
010 64 0      1420          IFL   SCNCT,04,2
010 65 0      1421          SLA - 0
```

```
010 66 0      1422          SRA   8
010 67 0      1423          BFA   N-,91,8
010 68 0      1424          CAD   NTAG            SET LENGTH COUNT TO 10
010 69 0      1425          STA   K               AND MARK AS A NUMERIC LABEL
010 70 0      1426    SCNXX CAD   K
010 71 0      1427          SLA   8
010 72 0      1428          STA   D2D3            SET UP LENGTH
010 73 0      1429    SCANX BUN   *
010 74 0      1430    NTAG  CNST  20000000010


010 77 0      1431    SRCHP BFA   A+,02,00        IF AN EQUIVALENCE CARD ENTRY IS
010 78 0      1432          BUN   SRCH            AT LEVEL ZERO AND HAS LENGTH
010 79 0      1433    *A    LDR   K               LESS THAT 10 -- IT MAY BE
010 80 0      1434          CFR   +10,03          IN THE LIST OF SPECIAL LIBRARY
010 81 0      1435          BCH   SRCH            SUBROUTINES
010 82 0      1436          LDB   I
010 83 0      1437          CAD   SYMBL
010 84 0      1438    *C    CFA - EXLBT,00
010 85 0      1439          BCE   B+
010 86 0      1440          DBB   C-,2
010 87 0      1441    I     CLA   24
010 88 0      1442          BUN   SRCH            IT IS NOT SO DO NORMAL SEARCH
010 89 0      1443    *B    CAD - EXLBT+1         I FOUND IT
010 90 0      1444          STA   L,64            SET UP L TO POINT TO THE OPERAND
010 91 0      1445          LDB   SRCHX
010 92 0      1446          BUN - 1               INCREMENTED EXIT

                            PROCESSING SUBROUTINE FOR INSTRUCTIONS
                            IN THE LIBRARY AND EXTERNAL PROGRAMS

010 97 0      1447    *A    F4247 0,0,0
010 98 0      1448    LBSB  NOP   *               NOP-BUN SWITCH (SEE WHY BELOW)
010 99 0      1449          CFA   A-
011 00 0      1450          BCL   Z+              INSTRUCTION IS ABSOLUTE
011 01 0      1451          BFA   Y+,62,90       PARTIAL FIELD SCAN INSTRUCTION
011 02 0      1452          BFA   Y+,62,91       PARTIAL FIELD SEARCH INSTRUCTION
011 03 0      1453          BSA   A+,8            ADDRESS PROGRAM RELATIVE
011 04 0      1454          BSA   A+,9            ADDRESS PROGRAM RELATIVE - B MOD
011 05 0      1455          BSA   B+,7            CONTROL FIELD PROGRAM RELATIVE
011 06 0      1456          BSA   C+,6            ADDRESS IDENTIFIER RELATIVE
011 07 0      1457          BSA   D+,5            ADDRESS IDENTIFIER RELATIVE - B MOD
011 08 0      1458    LBSBX BFA   *,62,99         EXIT IF FINISH PSEUDO-OP IS FOUND
011 09 0      1459          BFA   E+,62,30        RETURN FOR AN EXTERNAL STATEMENT
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011 10 0      1460          BFA   F+,62,00        ADVANCE LOCATION COUNTER
011 11 0      1461          BFA   G+,62,12        EQUIVALENCE DEFINITION FOR LIBRARY
011 12 0      1462          BFA   X2+,62,01       NEXT INSTRUCTION IS A 11 DIGIT CONSTANT
011 13 0      1463          BFA   X1+,62,02       MARKS NEXT INSTRUCTION AS I-O COMMAND
011 14 0      1464          BFA   X3+,62,03
011 15 0      1465          BFA   X4+,62,04   RELOCATE CONTROL FIELD OF NEXT INSTR
011 16 0      1466          STP   WEMX
011 17 0      1467          BUN   WEM
011 18 0      1468          CNST  31926000000     IMPROPER PSEUDO-OP
011 19 0      1469          BUN   X+


011 22 0      1470    BIGCN DFL   LBSB,62,29
011 23 0      1471          BUN   Z+


011 26 0      1472    I1    CNST  41000600000     CARD READER CONSTANT
011 27 0      1473    O1    CNST  41000610000     CARD PUNCH CONSTANT
011 28 0      1474    O2    CNST  42000610000     PRINTER CONSTANT
011 29 0      1475    CHNG  BFA   I+,62,60
011 30 0      1476          BFA   I+,62,62
011 31 0      1477          BFA   I+,62,64
011 32 0      1478          LDR   O1
011 33 0      1479          BFA   *+4,11,1
011 34 0      1480          LDR   O2
011 35 0      1481          BFA   *+2,11,2
011 36 0      1482          BUN   IOERR
011 37 0      1483    *S    BFA   *+4,62,61
011 38 0      1484          BFA   S+,62,63
011 39 0      1485          BFA   S+,62,65
011 40 0      1486          BUN   IOERR
011 41 0      1487    *S    STR   INSTR,11
011 42 0      1488          CAD   INSTR
011 43 0      1489          DFL   LBSB,62,29
011 44 0      1490          BUN   LBSB
011 45 0      1491    *I    LDR   I1
011 46 0      1492          BFA   S-,11,1
011 47 0      1493    IOERR STP   WEMX
011 48 0      1494          BUN   WEM
011 49 0      1495          CNST  31960380000     IMPROPER CARDATRON INSTRUCTION
011 50 0      1496          LDR   INSTR
011 51 0      1497          BUN   S-
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011 54 0      1498   *A     DFL   INSTR,12,80      ADJUST SIGN
011 55 0      1499   *L     CAA   MSK
011 56 0      1500          ADA   INSTR            RELOCATE ADDRESS FIELD
011 57 0      1501          BOF   *+1
011 58 0      1502          STA   INSTR,04
011 59 0      1503          BUN   Z+

011 61 0      1504   *B     DFL   INSTR,12,70      ADJUST SIGN
011 62 0      1505          SUA   MSK              RELOCATE CONTROL FIELD
011 63 0      1506          STA   INSTR,44
011 64 0      1507          BOF   *+1
011 65 0      1508          BUN   Z+

011 67 0      1509   *H     HLT   0
011 68 0      1510   *C     DFL   INSTR,12,20      ADJUST SIGN
011 69 0      1511   *D     DFL   INSTR,12,40
011 70 0      1512   *K     STA   H-,82
011 71 0      1513          DLB   H-,84,0          GET EQUIVALENCE TABLE ENTRY
011 72 0      1514          CAD - EQTAB
011 73 0      1515          BZA   L+               IMPROPER ENTRY
011 74 0      1516          BSA   J+,8           SIGN OF 9 MEANS FORWARD REFERENCE TO
011 75 0      1517          ADA   INSTR            AN EXTERNAL PROCEDURE
011 76 0      1518   *N     SUB   H-               RELOCATE ADDRESS
011 77 0      1519          STA   INSTR,04         FIELD RELATIVE TO
011 78 0      1520          DLB - EQTAB,44,0       THE EQUIVALENCE TABLE ENTRY
011 79 0      1521          STP   EXPLX
011 80 0      1522          BUN   EXPL
011 81 0      1523          BUN   Z+

011 83 0      1524   *J     DLB - EQTAB,44,0       INSERT 9 KK XXXX 0000  KK=INCREMENT
011 84 0      1525          STP   EXPLX                           XXXX= LOCATION FIXED UP
011 85 0      1526          BUN   EXPL
011 86 0      1527          CAD - 0
011 87 0      1528          BFA   *+2,11,8
011 88 0      1529          LDB - 0
011 89 0      1530          STB   H-
011 90 0      1531          CAA   INSTR
011 91 0      1532          EXT   +11
011 92 0      1533          ADA   ADDIT
011 93 0      1534          CLL   ADDIT
011 94 0      1535          SLA   4
011 95 0      1536          STP   INSX
011 96 0      1537          BUN   INS
011 97 0      1538          CAA   LOCN
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011 98 0      1539          LSA   8
011 99 0      1540          LDB   H-
012 00 0      1541          CLL   H-
012 01 0      1542          STP   INSX
012 02 0      1543          BUN   INS
012 03 0      1544          CAD   INSTR
012 04 0      1545          CLL   INSTR
012 05 0      1546          STA   INSTR,67
012 06 0      1547          BUN   Z+

012 08 0      1548    *Y    DFL   INSTR,62,40
012 09 0      1549          BSA   Z+,4            SPECIAL CONVENTIONS FOR PARTIAL FIELD
012 10 0      1550          BSA   Z+,5            SCAN AND SCEARCH(90,91 SPECIAL OPS)
012 11 0      1551          DFL   INSTR,12,20     S=4,5    ADDRESS ABSOLUTE
012 12 0      1552          BSA   K-,6            S=6,7    ADDRESS RELATIVE TO IDENTIFIER
012 13 0      1553          BSA   K-,7            S=8,9    ADDRESS RELATIVE TO PROGRAM
012 14 0      1554          DFL   INSTR,12,20
012 15 0      1555          BUN   L-

012 17 0      1556    *F2   BUN   BIGCN
012 18 0      1557    *X2   LDR   F2-             SET UP FOR AN 11 DIGIT
012 19 0      1558          STR   LBSB            WHICH FOLLOWS
012 20 0      1559          BUN   X+

012 22 0      1560    *F1   BUN   CHNG
012 23 0      1561    *X1   LDR   F1-             SET UP FOR THE CARDATRON
012 24 0      1562          STR   LBSB            INSTRUCTION WHICH FOLLOWS
012 25 0      1563          BUN   X+

012 27 0      1564    *X3   LDR   INSTR
012 28 0      1565          STR   ADDIT,04
012 29 0      1566          BUN   X+
012 30 0      1567    *X4   LDR   MSK
012 31 0      1568          STR   MADIT,44
012 32 0      1569          BUN   X+

012 34 0      1570    *Z    CAA   INSTR
012 35 0      1571          ADA   ADDIT
012 36 0      1572          CLL   ADDIT
012 37 0      1573          STA   INSTR,04
012 38 0      1574          CAA   INSTR
012 39 0      1575          ADA   MADIT
012 40 0      1576          STA   INSTR,44
012 41 0      1577          CLL   MADIT
```

```
012 42 0      1578          STP   WRITX          OUTPUT PROCESSED INSTRUCTION
012 43 0      1579          BUN   WRIT2
012 44 0      1580    *X    LDB   LBSBX            INCREMENTED EXIT
012 45 0      1581          BUN - 1                INDICATES NO FINISH PSEUDO-OP WAS HERE

012 47 0      1582    *E    DLB   EQTAB-1,44,0     RETURN PSEUDO-OP FOR EXTERNAL STATEMENT
012 48 0      1583          DBB   *+1,9999
012 49 0      1584          STB   INSTR,04
012 50 0      1585          BUN   Z-

012 52 0      1586    *F    CAA   INSTR
012 53 0      1587          SLA   4
012 54 0      1588          ADA   LOCN
012 55 0      1589          STA   LOCN,64
012 56 0      1590          BUN   X-               LOCN=LOCN+NNNN

012 58 0      1591    *G    DLB   INSTR,44,0       EQUIVALENCE DEFINITION FOR LIBRARY
012 59 0      1592          LDR - 0                GET OPERAND FOR EQUIVALENCE DEFINITION
012 60 0      1593          LDB   INSTR
012 61 0      1594          STA - EQTAB,66
012 62 0      1595          SRT   4                ENTER THE OPERAND INTO EQUIVALENCE
012 63 0      1596          STR - EQTAB,04         TABLE ALONG WITH ITS ASSIGNMENT
012 64 0      1597          BUN   X-
012 65 0      1598    *L    STP   WEMX
012 66 0      1599          BUN   WEM
012 67 0      1600    CNST9 CNST  33221000000      IMPROPER EQUIVALENCE  LIBRARY INCORRECT
012 68 0      1601          BUN   N-


012 71 0      1602    EXPL  STB   HOLD
012 72 0      1603          CAD   HOLD
012 73 0      1604          SLA   4
012 74 0      1605          LDB   +23
012 75 0      1606    *A    CFA - EXLBT,64         OF THE THING REFERENCED
012 76 0      1607          BCE   A+               BY USE OF AN EQUIVALENCE
012 77 0      1608          DBB   A-,2
012 78 0      1609          LDB   HOLD
012 79 0      1610          LDR - 1
012 80 0      1611          BFR   *+2,11,0
012 81 0      1612          STR   EXPLN
012 82 0      1613    EXPLX BUN   *
012 83 0      1614    *A    LDR - EXLBT-1
012 84 0      1615          STR   EXPLN
012 85 0      1616          LDB   HOLD
```

DICTIONARY OF WORDS FOR ERROR MESSAGES IN THE OVERLAY

```
012 91 0     1618   DICT  CNST  $EXTRA$          01 EXTRA
012 92 0     1619         CNST  $LEFT$           02 LEFT
012 93 0     1620         CNST  35741594555      03 PARENTHESIS
012 94 0     1621         CNST  36348456249
012 95 0     1622         CNST  $S$
012 96 0     1623         CNST  35449626249      06 MISSING
012 97 0     1624         CNST  $NG$
012 98 0     1625         CNST  $NAME$           08 NAME
012 99 0     1626         CNST  $CARD$           09 CARD
013 00 0     1627         CNST  34567634559      10 EXTERNAL
013 01 0     1628         CNST  $NAL$
013 02 0     1629         CNST  35759564345      12 PROCEDURE
013 03 0     1630         CNST  $DURE$
013 04 0     1631         CNST  $NOT$            14 NOT
013 05 0     1632         CNST  34445435341      15 DECLARED
013 06 0     1633         CNST  $RED$
013 07 0     1634         CNST  35759454649      17 PREFIX
013 08 0     1635         CNST  $X$
013 09 0     1636         CNST  34954575956      19 IMPROPER
013 10 0     1637         CNST  $PER$
013 11 0     1638         CNST  34558644965      21 EQUIVALENCE
013 12 0     1639         CNST  34153455543
013 13 0     1640         CNST  $E$
013 14 0     1641         CNST  34649554962      24 FINISH
013 15 0     1642         CNST  $H$
013 16 0     1643         CNST  35762456444      26 PSEUDO-OP
013 17 0     1644         CNST  $O-OP$
013 18 0     1645         CNST  $FIELD$          28 FIELD
013 19 0     1646         CNST  $ON$             29 ON
013 20 0     1647         CNST  34845414445      30 HEADER
013 21 0     1648         CNST  $R$
013 22 0     1649         CNST  36455444546      32 UNDEFINED
013 23 0     1650         CNST  $INED$
013 24 0     1651         CNST  $LABEL$          34 LABEL
013 25 0     1652         CNST  $-$              35 -
013 26 0     1653         CNST  $NAME$           36 (STORAGE FOR PROGRAMED MESSAGES)
013 27 0     1654         CNST  $NAME$           37 (STORAGE FOR PROGRAMED MESSAGES)
013 28 0     1655         CNST  34955626359      38 INSTRUCTION
013 29 0     1656         CNST  36443634956
```

```
013 30 0      1657          CNST   $N$
013 31 0      1658          CNST   $,$                41 ,
013 32 0      1659          CNST   $TOTAL$            42 TOTAL
013 33 0      1660          CNST   $CHECK$           43 CHECK
013 34 0      1661          CNST   $SUM$             44 SUM
013 35 0      1662          CNST   34356545749       45 COMPILED
013 36 0      1663          CNST   $LED$
013 37 0      1664          CNST   35759564759       47 PROGRAM
013 38 0      1665          CNST   $AM$
013 39 0      1666          CNST   $ENDS$            49 ENDS
013 40 0      1667          CNST   $AT$              50 AT
013 41 0      1668          CNST   36541594941       51 VARIABLES
013 42 0      1669          CNST   $BLES$
013 43 0      1670          CNST   $BEGIN$           53 BEGIN
013 44 0      1671          CNST   35349425941       54 LIBRARY
013 45 0      1672          CNST   $RY$
013 46 0      1673          CNST   34955435659       56 INCORRECT
013 47 0      1674          CNST   $RECT$
013 48 0      1675          CNST   36268544256       58 SYMBOLIC
013 49 0      1676          CNST   $LIC$
013 50 0      1677          CNST   34341594441       60 CARDATRON
013 51 0      1678          CNST   $TRON$
013 52 0      1679          CNST   34356545749       62 COMPILER
013 53 0      1680          CNST   $LER$
013 54 0      1681          CNST   34341574143       64 CAPACITY
013 55 0      1682          CNST   $ITY$
013 56 0      1683          CNST   34567434545       66 EXCEEDED
013 57 0      1684          CNST   $DED$
013 58 0      1685          CNST   35445545659       68 MEMORY
013 59 0      1686          CNST   $Y$
013 60 0      1687          CNST   $FOR$             70 FOR
013 61 0      1688          CNST   35642514543       71 OBJECT
013 62 0      1689          CNST   $T$


013 65 0      1690    LIBRF CAD -  0                 PUT LIBRARY SUBROUTINE INTO TARGET
013 66 0      1691    LIBRX BFA    LIBRX,11,4        PROGRAM IF IT HASNT BEEN PUT THERE
013 67 0      1692          SRA    4                 ALREADY.
013 68 0      1693          EXT    +1111
013 69 0      1694          SUB    VARB
013 70 0      1695          STA    VARB,04
013 71 0      1696          SLT    4
013 72 0      1697          STA -  0,64
013 73 0      1698          IFL -  0,64,1
```

```
013 74 0      1699          IFL - 0,11,1
013 75 0      1700          BUN   LIBRF


013 78 0      1701    FXUP  LDR   LOCN      COMPILE TO SET A PREV FRW REF TO PRES LOC
013 79 0      1702          STA   DESCR
013 80 0      1703          SRT   4
013 81 0      1704          STR   DESCR,04
013 82 0      1705          STA   WRTF,04
013 83 0      1706          BSA   *+2,7
013 84 0      1707          BUN   *+2
013 85 0      1708          IFL   DESCR,00,1     IF SIGN IS SEVEN, WE MEAN THE
013 86 0      1709    FXUPY BCS   *+2,2
013 87 0      1710          BUN   *+4
013 88 0      1711          BSA   *+3,8
013 89 0      1712          STP 4 9898,0208
013 90 0      1713          BUN 4 9898,WRTF
013 91 0      1714          LDR   DESCR          PRESENT LOCATION PLUS 1
013 92 0      1715          LDB   LRTF
013 93 0      1716          CAD   WRTF
013 94 0      1717          CFA   PREV,04
013 95 0      1718          BCH   A+             IF WE CAN FIX UP THE INSTRUCTION WHILE
013 96 0      1719          CAD - BUF+1          IT SITS IN THE OUTPUT BUFFER, WE WILL
013 97 0      1720          BFA   A+,04,0       DO IT DIRECTLY
013 98 0      1721          CFA   WRTF,04
013 99 0      1722          BCH   A+
014 00 0      1723          SUB   WRTF
014 01 0      1724          SLA   6
014 02 0      1725          STA   *+1,44
014 03 0      1726          DBB   *+1,0
014 04 0      1727          STR - BUF+2,04
014 05 0      1728          BUN   FXUPX
014 06 0      1729    *A    DFL   CNTRF,00,1     OTHERWISE WE PUT OUT A FIX UP
014 07 0      1730          LDB   CNTRF          CODE FOR THE LOADING ROUTINE
014 08 0      1731          STR - BUF+3
014 09 0      1732          BUN   WRIT6
014 10 0      1733    FXUPX BUN   FXUPX



014 14 0      1734    WRIT2 CAD   LOCN          WRITE SUBROUTINE - PUTS INSTRUCTION
014 15 0      1735          SRA   4               INTO OUTPUT BUFFER.
014 16 0      1736          IFL   LOCN,64,1      WRIT2 ENTRY - PUT INSTRUCTION OUT FOR
014 17 0      1737          BOF   *+1
```

```
014 18 0      1738          LDR    INSTR          LOCATION LOCN AND INCREMENT LOCN
014 19 0      1739   WRIT3  STA    WRTF,04        WRIT3 ENTRY - LOCATION IS IN RA(04)
014 20 0      1740          SUB    PREV           AND INSTRUCTION IS IN REGISTER R
014 21 0      1741          LDB    CNTRI
014 22 0      1742          BFA    E+,04,0
014 23 0      1743          SUB    XONE+1         DOES THIS LOCATION EQUAL THE PREVIOUS ONE
014 24 0      1744          BFA    F+,04,0        (IF SO WE WILL ERASE THE PREVIOUS ONE)
014 25 0      1745          STB    LRTF,04        OR IS IT ONE HIGHER
014 26 0      1746          CAD    WRTF           IF NOT,WE WILL PUT OUT A NEW RECORD TRANS
014 27 0      1747          STA -  BUF+1
014 28 0      1748          IFL    CNTRI,00,1
014 29 0      1749   *F     LDB    LRTF
014 30 0      1750          IFL -  BUF+1,32,1     THE 32-FIELD CONTAINS THE NUMBER OF
014 31 0      1751   WRIT7  IFL    CNTRI,00,1     SEQUENTIAL WORDS TO LOAD
014 32 0      1752          LDB    CNTRI
014 33 0      1753   *E     STR -  BUF
014 34 0      1754          STR    DESCR
014 35 0      1755   WRT10  BCS    *+2,2
014 36 0      1756          BUN    *+3
014 37 0      1757          STP 4  9898,0300
014 38 0      1758          BUN 4  9898,WRTF
014 39 0      1759          CLL    EXPLN
014 40 0      1760          LDR    WRTF
014 41 0      1761          STR    PREV,04
014 42 0      1762   WRIT6  LDR    CNTRI          IS THE BUFFER FULL NOW
014 43 0      1763          CFR    CNTRF
014 44 0      1764          BCL    WRITX          IF NOT,EXIT
014 45 0      1765   WRIT5  LBC    NN             IF SO, CALCULATE CHECK SUM
014 46 0      1766   *C     CLA    BUF+2
014 47 0      1767          SUB -  BUF+99
014 48 0      1768          IBB    *-1,1
014 49 0      1769          BOF    *+1
014 50 0      1770          STA    BUF+99
014 51 0      1771          MIB 4  *+2,OT
014 52 0      1772          BUN    *-1
014 53 0      1773          MLS 4  OT
014 54 0      1774          MIB 4  *+2,OT
014 55 0      1775          BUN    *-1
014 56 0      1776          MOW 4  BUF,OT,1       WRITE ONE BLOCK
014 57 0      1777          IFL    BUF,00,1
014 58 0      1778          CLL    CNTRI
014 59 0      1779          CLL    CNTRF          INITIALIZE FOR NEXT BLOCK
014 60 0      1780          IFL    CNTRF,00,96
014 61 0      1781   WRIT4  CLL    BUF+1
```

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014 62 0      1782          LDB   C-
014 63 0      1783          RTF   BUF+1,98
014 64 0      1784          BUN   FXUPX
014 65 0      1785    WRITX DEFN  FXUPX


014 68 0      1785    SRCH  ADD   LL0
014 69 0      1786          EXT   +11          LOOK FOR SYMBOL IN TABLE
014 70 0      1787          ADD   +SCRTB
014 71 0      1788          STA   L
014 72 0      1789          LDB   L
014 73 0      1790          DBB   C+,1
014 74 0      1791    *B    LDB   L
014 75 0      1792          IBB   SRCHX,9999
014 76 0      1793    *C    CAD - 1
014 77 0      1794          CFA   D2D3,23      FIRST COMPARE LENGTHS
014 78 0      1795          STA   L            (AND WHETHER OR NOT A NUMERIC LABEL)
014 79 0      1796          SRA   4
014 80 0      1797          BCU   B-
014 81 0      1798          STA   TEMP
014 82 0      1799          IFL   TEMP,63,9
014 83 0      1800          STA   A+,04
014 84 0      1801          IFL   A+,04,1
014 85 0      1802          DLB   TEMP,54,1
014 86 0      1803          BRP   A+
014 87 0      1804          LDB   +9
014 88 0      1805    *A    CAD - *            IF LENGTHS AGREE, COMPARE THE SYMBOLS
014 89 0      1806          CFA - SYMBL,00
014 90 0      1807          BCU   B-
014 91 0      1808          DBB   A-,1
014 92 0      1809          IFL   SRCHX,04,1   INCREMENTED EXIT
014 93 0      1810          DLB   L,64,0       IF SYMBOL IS FOUND
014 94 0      1811    SRCHX BUN   *


014 97 0      1812    WEM   LDR   +0525005250  WRITE ERROR MESSAGE
014 98 0      1813          STR   HALT
014 99 0      1814          CLL   MSG
015 00 0      1815          IFL   MSG,12,20
015 01 0      1816          LDB   C+
015 02 0      1817          RTF   MSG,8        CLEAR MESSAGE BUFFER
015 03 0      1818          CLL   TEMP
015 04 0      1819    *G    LDB   WEMX
015 05 0      1820          CAD - 0
```

```
015 06 0      1821   *E     CLR   0000
015 07 0      1822          SRT   8
015 08 0      1823          BFA   A+,00,00
015 09 0      1824          STA   E-,04
015 10 0      1825          STR   TEMP3
015 11 0      1826   *H     IFL   E-,04,1
015 12 0      1827          LDB   E-
015 13 0      1828          LDR - DICT-2          GET DICTIONARY ENTRY
015 14 0      1829   *C     CLA   MSG+1
015 15 0      1830          LBC   TEMP
015 16 0      1831          SLT   2               TRANSFER CHARACTERS
015 17 0      1832          BFA   B+,00,00        ONE AT A TIME INTO
015 18 0      1833          SLA - 8               BUFFER AREA
015 19 0      1834          DLB   TEMP,94,00
015 20 0      1835          LSA   0
015 21 0      1836          ADD - MSG
015 22 0      1837          STA - MSG,00
015 23 0      1838          IFL   TEMP,05,02
015 24 0      1839          BUN   C-
015 25 0      1840   *B     BSA   H-,3             PUT SPACE BETWEEN WORDS
015 26 0      1841          IFL   TEMP,05,02
015 27 0      1842          CAD   TEMP3
015 28 0      1843          BUN   E-
015 29 0      1844   *A     IFL   WEMX,04,01
015 30 0      1845          STP 4 9898,0906
015 31 0      1846          BUN 4 9898,MSG
015 32 0      1847   WEMX   BUN   0000            RETURN AND ATTEMPT TO CONTINUE
015 33 0      1848   MSG    LOCN  *+9



015 37 0      1857   LBRT   LOCN  *+300          LIBRARY TABLE
015 38 0      2157   L      CNST  0               LAST OPERAND
015 39 0      2158   K      CNST  0               RUNNING COUNT OF LENGTH FOR SYMBOL
015 40 0      2159   D2D3   HLT   0               STORAGE FOR LENGTH OF SYMBOL
015 41 0      2160   INSTR  HLT   0               CURRENT INSTRUCTION
015 42 0      2161   LL0    HLT   0               STACK TO SEARCH AT LEVEL ZERO
015 43 0      2162   SCNCT  HLT   0               COLUMN COUNT
015 44 0      2163   CHAR   HLT   0               CURRENT CHARACTER BEING SCANED
015 45 0      2164   ZERSS  HLT 2 0
015 46 0      2165          HLT 2 0
015 47 0      2166          HLT 2 0
015 48 0      2167          HLT 2 0
015 49 0      2168          HLT 2 0
```

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015 50 0      2169          HLT 2 0
015 51 0      2170          HLT 2 0
015 52 0      2171          HLT 2 0
015 53 0      2172          HLT 2 0
015 54 0      2173    TEMP3 HLT   0                SHORT TERM STORAGE LOCATION
015 55 0      2174    TEMP  HLT   0                DITTO
015 56 0      2175    EXLBT CNST  $FIX$            TABLE FOR SPECIAL LIBRARY ROUTINES
015 57 0      2176          F244  0,SCRTB+106,0
015 58 0      2177          CNST  $FLOAT$
015 59 0      2178          F244  0,SCRTB+108,0
015 60 0      2179          CNST  $FX*FX$
015 61 0      2180          F244  0,SCRTB+102,0
015 62 0      2181          CNST  $FX*FL$
015 63 0      2182          F244  0,SCRTB+103,0
015 64 0      2183          CNST  $FL*FX$
015 65 0      2184          F244  0,SCRTB+104,0
015 66 0      2185          CNST  $FL*FL$
015 67 0      2186          F244  0,SCRTB+105,0
015 68 0      2187          CNST  $LABLE$
015 69 0      2188          F244  0,SCRTB-9,0
015 70 0      2189          CNST  $MONIT$
015 71 0      2190          F244  0,SCRTB+110,0
015 72 0      2191          CNST  $ERROR$
015 73 0      2192          F244  0,SCRTB+113,0
015 74 0      2193          CNST  $TRACE$
015 75 0      2194          F244  0,SCRTB+114,0
015 76 0      2195          CNST  $RITE$
015 77 0      2196          F244  0,SCRTB+116,0
015 78 0      2197          CNST  $REED$
015 79 0      2198          F244  0,SCRTB+117,0
015 80 0      2199    FUNS  F424  FUNS,0,0          ALL PURPOSE STACK
015 81 0      2200          CNST  20000000000
015 82 0      2201    CRD   LOCN  *+16              INPUT AREA
015 83 0      2217          HLT 2 0
015 84 0      2218    EQTAB LOCN  *+100             EQUIVALENCE TABLE
015 85 0      2318    BUFR  LOCN  *+100             INPUT BUFFER FOR LIBRARY PROCEDURES
015 86 0      2418    IFERR CNST  $-----ERROR(S) WERE FOUND-----$
015 87 0      2424          HLT 2 0
015 88 0      2425          HLT 2 0
015 89 0      2426          HLT 2 0
015 90 0      2427    SYMBL CNST  0,0,0,0,0,0,0,0,0,0       SYMBOL STORAGE AREA
015 91 0      2437    LEVEL HLT   0                LEVEL FOR SEARCHING
```

```
015 94 0     2438   INS    STB    A+,04
015 95 0     2439   AVALE  LDR    AVAIL            INSERT RA(67) INTO ASSOCIATIVE MEMORY
015 96 0     2440          BFR    B+,04,00
015 97 0     2441   *C     LDR -  0
015 98 0     2442          LDB    AVAIL            NORMALLY THIS MEANS ON TOP OF THE
015 99 0     2443          STA -  0,67             STACK NAMED BY THE B REGISTER
016 00 0     2444          CAD -  0
016 01 0     2445          STR -  0,04
016 02 0     2446   *A     STB    *,04
016 03 0     2447          STA    AVAIL,04
016 04 0     2448   INSX   BUN    *
016 05 0     2449   *B     LDR    MAMAX            IF AVAIL STACK IS EMPTY, TRY TO
016 06 0     2450          CFR    SSC,04           INCREASE THE SIZE OF
016 07 0     2451          STR    AVAIL,04         ASSOCIATIVE MEMORY
016 08 0     2452          STR    D+,04
016 09 0     2453          DFL    MAMAX,00,1
016 10 0     2454   *D     CLL    *
016 11 0     2455          BCH    C-
016 12 0     2456   FULL   STP    WEMX             IF NO ROOM IS LEFT, GIVE UP
016 13 0     2457          BUN    WEM
016 14 0     2458          CNST   36264660000      COMPILER CAPACITY EXCEEDED
016 15 0     2459          F424   6200,00,7777


016 18 0     2460   REM    STB    A+,04            REMOVE INFORMATION FROM
016 19 0     2461          LDB -  0                ASSOCIATIVE MEMORY LOCATION IN
016 20 0     2462          CAD -  0                THE STACK NAMED IN RB
016 21 0     2463   REMX   IBB    *,9999           IF THE STACK IS EMPTY, EXIT
016 22 0     2464          IBB    *+1,1
016 23 0     2465          LDR    AVAIL            OTHERWISE MARK LOCATION AVAILABLE
016 24 0     2466          STB    AVAIL,04         FOR FUTURE USE
016 25 0     2467          STR -  0,04
016 26 0     2468   *A     STA    *,04             INCREMENTED EXIT WITH THE REMOVED
016 27 0     2469          LDB    REMX             QUANTITY IN RA
016 28 0     2470          BUN -  1

                           THE SYMBOLIC MEMORY DUMP GENERATOR

016 32 0     2471   KOUNT  HLT    0                STACK COUNTER
016 33 0     2472   COUT   HLT    0                PRESENT LEVEL COUNTER
016 34 0     2473   *T     NOP    SCRTB            LINK TO NEXT ITEM
016 35 0     2474   MONST  LDB    +TBL+1
016 36 0     2475          RTF    TBL,100          SET UP HEADS FOR 301 STACKS
016 37 0     2476          RTF    TBL+100,100
```

```
016 38 0      2477          RTF   TBL+200,100
016 39 0      2478          CAD   SCRTB+113
016 40 0      2479          SRA   4
016 41 0      2480          BFA   J+,51,3
016 42 0      2481          STA   ASSGZ,04        FIX DUMP SO IT CAN FIND
016 43 0      2482          IFL   ASSGZ,04,44
016 44 0      2483          DFL   ASSGZ,12,80
016 45 0      2484          CAD   SCRTB+117
016 46 0      2485          SRA   4
016 47 0      2486          STA   Z1+,04
016 48 0      2487          STA   Z2+,04
016 49 0      2488          STA   Z3+,04
016 50 0      2489          STA   Z4+,04
016 51 0      2490          STA   Z5+,04
016 52 0      2491          STA   Z6+,04
016 53 0      2492          STA   Z7+,04
016 54 0      2493          STA   Z8+,04
016 55 0      2494          STA   Z9+,04
016 56 0      2495          STA   Z10+,04
016 57 0      2496          STA   Z11+,04
016 58 0      2497          STA   Z12+,04
016 59 0      2498          STA   Z13+,04
016 60 0      2499          STA   Z14+,04
016 61 0      2500          STA   Z15+,04
016 62 0      2501          STA   Z16+,04
016 63 0      2502          STA   Z17+,04
016 64 0      2503          STA   Z18+,04
016 65 0      2504          STA   Z19+,04
016 66 0      2505          STA   Z20+,04
016 67 0      2506          STA   Z21+,04
016 68 0      2507          STA   Z22+,04
016 69 0      2508          STA   Z23+,04
016 70 0      2509          STA   Z24+,04
016 71 0      2510          STA   Z25+,04
016 72 0      2511          STA   Z26+,04
016 73 0      2512    *J    NOP   SCRTB           LAST ENTRY FROM SCRAMBLE TABLE
016 74 0      2513          LDR   KOUNT
016 75 0      2514          STR   COUT
016 76 0      2515          CFR   +100,00
016 77 0      2516          BCE   END1            IF EQUAL ALL STACKS IN SCRAMBLE TABLE
016 78 0      2517          LDB   J-              HAVE BEEN PROCESSED
016 79 0      2518          CAD - 0               GET NEXT ENTRY FROM SCRTB
016 80 0      2519          LDB - 0
016 81 0      2520          STB   J-,04           SAVE LINK TO NEXT ENTRY
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016 82 0      2521          DBB   A+,2000          IF LINK IS LESS THAN 2000 END STACK NOW
016 83 0      2522          IFL   KOUNT,00,1       INCREASE STACK COUNT
016 84 0      2523          IFL   T-,04,1
016 85 0      2524          LDR   T-
016 86 0      2525          STR   J-,04            SET UP FOR NEXT STACK
016 87 0      2526          IBB   J-,2000          IF LINK WAS NON-ZERO START NEW STACK
016 88 0      2527          BZA   J-               SKIP TO NEXT STACK IF ZERO
016 89 0      2528    *A    SRA   4                GET SREF IN 04 FIELD
016 90 0      2529          CFA   +2000,04
016 91 0      2530          BCL   J-               IF SREF IS LESS THAN 2000 GET NEXT ONE
016 92 0      2531          STA   SREF,04
016 93 0      2532          SRT   4
016 94 0      2533          LSA   0
016 95 0      2534          ADD   +8
016 96 0      2535          SRA   1
016 97 0      2536          STA   SL               SAVE SYMBOL LENGTH
016 98 0      2537          SLT   19
016 99 0      2538          BPA   *+2
017 00 0      2539          FDV   *                SET OVERFLOW IF A NUMERIC LABEL
017 01 0      2540          LDB   SREF
017 02 0      2541          LDR - 1                GET ACTUAL SYMBOL
017 03 0      2542          CLA
017 04 0      2543          DIV   +99              SCRAMBLE IT
017 05 0      2544          SLT   10
017 06 0      2545          SUB   COUT             COMPUTE LEVEL
017 07 0      2546          STA   LEVEL,00
017 08 0      2547          CAD - 0
017 09 0      2548          BSA   J-,1              SKIP
017 10 0      2549          BSA   J-,3              CALL
017 11 0      2550          BSA   J-,5              BY NAME
017 12 0      2551          BSA   J-,7              THINGS
017 13 0      2552          BSA   J-,9              AND INPUT,OUTPUT,FORMAT   LABELS
017 14 0      2553          BSA   J-,8              AND EXTERNAL PROGRAMS
017 15 0      2554          BFA   B+,11,1          SIMPLE VARIABLES(FIRST 100 STACKS)
017 16 0      2555          IFL   LEVEL,81,1
017 17 0      2556          BFA   B+,11,5          ARRAYS(NEXT 100)
017 18 0      2557          IFL   LEVEL,81,1
017 19 0      2558          BFA   A+,11,9          LABELS(NEXT 100)
017 20 0      2559          IFL   LEVEL,81,1
017 21 0      2560          BFA   B+,11,8          PROCEDURES(ONLY ONE STACK)
017 22 0      2561          BUN   J-               GET NEXT ITEM IF IT IS NONE OF ABOVE

017 25 0      2562    *A    CFA   +2000000,64
```

```
017 26 0      2563          BCL   J-              SKIP SEGMENT NAMES
017 27 0      2564    *B    STB   VL,33           VECTOR LENGTH
017 28 0      2565          IFL   VL,32,04        FOUR IS NORMAL(ARRARYS REQUIRE 6)
017 29 0      2566          STA   VECTR+3         SAVE OPERAND
017 30 0      2567          CAA - 1
017 31 0      2568          LDR - 2               GET SYMBOL
017 32 0      2569          LDB   SL
017 33 0      2570          DBB   *+2,2
017 34 0      2571          CLR                   SYMBOL LENGTH LEQ 5 CHARACTERS
017 35 0      2572          BOF   NUMLB           NUMERIC LABEL
017 36 0      2573          STA   VECTR+1
017 37 0      2574          STR   VECTR+2         SAVE FIRST 10 CHARACTERS OF SYMBOL


017 40 0      2575    RETRN LDR   VECTR+3
017 41 0      2576          CLA
017 42 0      2577          BFR   P+,11,1
017 43 0      2578          BFR   P+,11,9
017 44 0      2579          BFR   *+3,11,5
017 45 0      2580          STA   VECTR+3,89      PROCEDURE  02 FIELD IS LEVEL
017 46 0      2581          BUN   P+
017 47 0      2582          LDB   VECTR+3
017 48 0      2583          IFL   VL,32,2         NEED TWO MORE FOR ARRAYS
017 49 0      2584          LDR - 0
017 50 0      2585          STR   HOLD            SAVE LINK
017 51 0      2586          SRT   4
017 52 0      2587          CAD   VECTR+3
017 53 0      2588          CLL   VECTR+3
017 54 0      2589          CLL   VECTR+4
017 55 0      2590          CLL   VECTR+5
017 56 0      2591          STR   VECTR+3,04      LENGTH
017 57 0      2592          STA   VECTR+5,67      SAVE OPERAND OF ARRAY
017 58 0      2593          CLL   DIM
017 59 0      2594          LDB   HOLD
017 60 0      2595          IBB   C+,9999         LINK ZERO INDICATES WE HAVE LINEAR
017 61 0      2596          BUN   D+                            ARRAY
017 62 0      2597    *A    LDB   HOLD            END OF DIMENSION LIST OF CONSTANTS
017 63 0      2598          IBB   A+,9999         IF LINK IS ZERO
017 64 0      2599    *D    LDR - 1
017 65 0      2600          DLB - 1,64,0
017 66 0      2601          STR   HOLD            SAVE OPERAND OF CONSTANT
017 67 0      2602          CAD - 1
017 68 0      2603          LDB   DIM
017 69 0      2604          STA - DIMS            PUT CONSTANT INTO DIMENSION LIST
```

```
017 70 0     2605          IFL   DIM,00,1        INCREASE DIMENSION COUNT
017 71 0     2606          BUN   A-
017 72 0     2607    *A    LDR   DIMS
017 73 0     2608          STR   VECTR+4         SAVE LENGTH OF A ROW
017 74 0     2609    *B    LDB   DIM
017 75 0     2610          CAD - DIMS-1
017 76 0     2611          ADD   +1
017 77 0     2612          MUL - DIMS-2          CALCULATE ADDRESS OF FIRST
017 78 0     2613          STR - DIMS-2          ELEMENT OF THE ARRAY
017 79 0     2614          DFL   DIM,00,1
017 80 0     2615          DBB   B-,3
017 81 0     2616          CAA   DIMS
017 82 0     2617          ADD   +1
017 83 0     2618          SLA   4
017 84 0     2619          ADA   VECTR+5
017 85 0     2620    *F    STA   VECTR+5,64      STORE ACTUAL ADDRESS
017 86 0     2621          BUN   P+
017 87 0     2622    *C    LDR   VECTR+3         LINEAR ARRAY
017 88 0     2623          STR   VECTR+4         LENGTH OF ROW IS LENGTH OF ARRAY
017 89 0     2624          CAD   VECTR+5
017 90 0     2625          ADD   +10000          ACTUAL ADDRESS IS ONLY 1 GREATER
017 91 0     2626          BUN   F-


017 94 0     2627    *P    CAD   +TBL
017 95 0     2628          ADD   LEVEL
017 96 0     2629          STA   LEVEL          SET UP SEARCH OF PROPER STACK
017 97 0     2630          STA   THROW           (NOTICE EVERY STACK IS INITIALIZED
017 98 0     2631    TLU   LDB   LEVEL          WITH THE SYMBOL 9999999999)
017 99 0     2632          CAD - 0
018 00 0     2633          STA   HOLD            SAVE LINK TO NEXT ITEM
018 01 0     2634          DLB   HOLD,64,0
018 02 0     2635          LDR   VECTR+1
018 03 0     2636          CFR - 0,00            COMPARE FIRST FIVE CHARACTERS
018 04 0     2637          BCL   YES             YES, INSERT IT
018 05 0     2638          BCE   MAYBE           COMPARISON ON NEXT 5 NEEDED
018 06 0     2639    *C    LDR   LEVEL
018 07 0     2640          STR   THROW           LAST OPERAND USED LINKS TO
018 08 0     2641          LDR   HOLD            THE OPERAND TO BE USED
018 09 0     2642          STR   LEVEL
018 10 0     2643          BUN   TLU


018 13 0     2644    YES   LDR   LEVEL
```

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018 14 0    2645          CFR   THROW       IF THEY ARE EQUAL THEN THE SPECIAL
018 15 0    2646          BCE   EH          CASE WHERE THE HEAD OF THE STACK
018 16 0    2647          CAD   LEVEL       IS CHANGED
018 17 0    2648          STA   VECTR,04
018 18 0    2649          STP   GETX        GET NEXT FREE CELLS
018 19 0    2650          BUN   GET
018 20 0    2651          LDB   THROW
018 21 0    2652          STA - 0,04        INSERT NEW OPERAND WITH
018 22 0    2653          ADD   +1          ITS NICE INFORMATION INTO STACK
018 23 0    2654          SLA   4
018 24 0    2655          STA   VECTR,64
018 25 0    2656          LDB   MEM
018 26 0    2657    VL    RTF   VECTR,4     ENTER THE VECTOR INTO THE STACK
018 27 0    2658          STB   MEM
018 28 0    2659          BUN   J-
018 29 0    2660    EH    STP   GETX        GET NEXT FREE CELLS
018 30 0    2661          BUN   GET
018 31 0    2662          ADD   +1
018 32 0    2663          SLA   4
018 33 0    2664          ADD   MEM
018 34 0    2665          LDB   THROW       DO AN INSERT FOR THIS SPECIAL CASE
018 35 0    2666          LDR - 0
018 36 0    2667          STA - 0
018 37 0    2668          STR   VECTR
018 38 0    2669          BUN   VL-1


018 41 0    2670    MAYBE LDR   VECTR+2     COMPARE WITH
018 42 0    2671          CFR - 1,00        NEXT FIVE CHARACTERS
018 43 0    2672          BCH   C-
018 44 0    2673          BUN   YES


018 47 0    2674    NUMLB BZA   A+          CONVERT NUMERIC LABELS
018 48 0    2675          SRT   10          TO ALFANUMERIC FORM
018 49 0    2676          CLL   VECTR+1      WITH LEADING ZEROS
018 50 0    2677          BFR   B+,55,0     SUPPRESSED
018 51 0    2678          STP   SUPX
018 52 0    2679          BUN   SUP
018 53 0    2680          STA   VECTR+1
018 54 0    2681          STP   NSUPX
018 55 0    2682          BUN   NSUP
018 56 0    2683          STA   VECTR+2
018 57 0    2684          BUN   RETRN
```

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018 58 0     2685   *B     SLT   5
018 59 0     2686          STP   SUPX
018 60 0     2687          BUN   SUP
018 61 0     2688          STA   VECTR+2
018 62 0     2689          BUN   RETRN
018 63 0     2690   *A     LDR   +80
018 64 0     2691          BUN   RETRN-2

018 67 0     2692   SUP    SLT   1          CONVERT A 5 DIGIT NUMERIC
018 68 0     2693          BZA   *+2        TO ALFA WITH SUPPRESSION
018 69 0     2694          ADD   +80        OF LEADING ZEROS
018 70 0     2695          IFL   *-1,11,2
018 71 0     2696   SUPX   BOF   *
018 72 0     2697          SLA   1
018 73 0     2698          BUN   SUP

018 76 0     2699   NSUP   SLT   1          CONVERT A 5 DIGIT NUMERIC
018 77 0     2700          ADD   +80        TO ALFA - DO NOT SUPPRESS
018 78 0     2701   NSUPX  BFA   *,11,8     LEADING ZEROS
018 79 0     2702          SLA   1
018 80 0     2703          BUN   NSUP

018 83 0     2704   END1   MLS 4 OT+10      MEMORY DUMP GOES ON ODD LANE
018 84 0     2705          MPF 4 OT,4
018 85 0     2706   *A     LDB   +DUMBS
018 86 0     2707          STP   REMX       ENTRY IN DUMP STACK IS N NNNN LL LINK
018 87 0     2708          BUN   REM        WHERE  NNNN= NUMBER OF ITEMS IN LIST
018 88 0     2709          BUN   ACTUA             LL= LEVEL NUMBER FOR THE
018 89 0     2710          LDB   +SBMUD                 PROCEDURE WHICH CONTAINS
018 90 0     2711          STP   INSX                    THE DUMP LIST
018 91 0     2712          BUN   INS
018 92 0     2713          BUN   A-         INVERT STACK OF NECESSARY DUMPS
018 93 0     2714   ACTUA  LDB   +SBMUD
018 94 0     2715          STP   REMX
018 95 0     2716          BUN   REM
018 96 0     2717          BUN   FIN        END OF DUMPS
018 97 0     2718          CLL   IDEX
018 98 0     2719          STA   HOLD       SAVE DUMP ENTRY
018 99 0     2720          BFA   C+,62,0    IF ZERO - DUMP FOR PROGRAM
019 00 0     2721          SRA   4          IF NON-ZERO
019 01 0     2722          STA   IDEX,02    SAVE LEVEL AND GET ASSOCIATED
```

```
019 02 0      2723          CAD   TBL+300          PROCEDURE NAME
019 03 0      2724    *B    STA   DIM
019 04 0      2725          DLB   DIM,64,0
019 05 0      2726          CAD - 2
019 06 0      2727          CFA   IDEX,02
019 07 0      2728          BCE   A+               PROCEDURE NAME FOUND
019 08 0      2729          LDB   DIM              GET NEXT ITEM FROM PROCEDURE STACK
019 09 0      2730          CAD - 0
019 10 0      2731          BUN   B-
019 11 0      2732    *A    CAD - 0
019 12 0      2733          LDR - 1
019 13 0      2734          STA   J++4,00
019 14 0      2735          STR   J++5,00
019 15 0      2736          LDR   +EN
019 16 0      2737          STR   EM,04
019 17 0      2738          MOW 4 Q+,OT,3
019 18 0      2739    *C    STB   PRSW1,62
019 19 0      2740          STB   PRSW2,62
019 20 0      2741          CAD   HOLD
019 21 0      2742          BFA   *+3,45,0         IF THE DUMP LIST WAS NULL
019 22 0      2743          IFL   PRSW1,62,29      SET SOME SWITCHES SO THAT
019 23 0      2744          IFL   PRSW2,62,29      EVERY TABLE ITEM OUTPUT TO TAPE
019 24 0      2745          IFL   PRSW1,62,1       WILL HAVE A SIGN OF 4
019 25 0      2746          IFL   PRSW2,62,1
019 26 0      2747          DLB   SCRTB+114,64,0
019 27 0      2748          STB   TRCE,04
019 28 0      2749          BUN   END15


019 31 0      2750    LOD3  DEFN  *
019 32 0      2750    *Q    BCS   V+-LOD3+100,9
019 33 0      2751    *Z1   STP   *,2438
019 34 0      2752    *Z2   BUN   *,J+-LOD3+100
019 35 0      2753    *V    NOP   LOD1-100
019 36 0      2754          NOP   1
019 37 0      2755          LDB   *-1-LOD3+100
019 38 0      2756          RTF   *+2-LOD3+100,3
019 39 0      2757          BUN   1
019 40 0      2758          LBC   V--LOD3+100
019 41 0      2759          MRD 4 100,OT,3,BMOD
019 42 0      2760          BUN   100
019 43 0      2761    *J    CNST  $          PROCEDURE
019 44 0      2771
019 45 0      2782                              $
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```
019 46 0      2785          LOCN  *+10


019 49 0      2795    END15 MOW 4 Q+,OT,3
019 50 0      2796          LDB   IDEX                                  DUMP
019 51 0      2797          CAD - TBL+200
019 52 0      2798    *C    STA   HOLD
019 53 0      2799          LDB   HOLD
019 54 0      2800          IBB   END2,9999       END OF THIS LABEL STACK
019 55 0      2801          DLB   HOLD,64,0
019 56 0      2802          CAD - 2               GET OPERAND OF THE LABEL
019 57 0      2803          STB   STOX1,62
019 58 0      2804          BPA   PRSW1           SIGN OF 0 MEANS NOT BEING DUMPED
019 59 0      2805          IFL   STOX1,62,1
019 60 0      2806          BUN   B+
019 61 0      2807    PRSW1 BUN   D+              DUMP HAD A NULL LIST
019 62 0      2808          IFL   STOX1,62,1      SET UP TO MARK ITEM WITH A SIGN OF 4
019 63 0      2809          BUN   B+
019 64 0      2810    *D    IFL   STOX1,62,30     DO NOT MARK FOR DUMPING
019 65 0      2811    *B    CAD - 0
019 66 0      2812          STP   STOXX
019 67 0      2813          BUN   STOX1
019 68 0      2814          CAD - 1
019 69 0      2815          STP   STOXX           ENTER ITEM INTO OUTPUT BUFFER
019 70 0      2816          BUN   STOX1
019 71 0      2817          CAD - 2
019 72 0      2818          STP   STOXX
019 73 0      2819          BUN   STOX1
019 74 0      2820          LDB   HOLD
019 75 0      2821          CAD - 0
019 76 0      2822          BUN   C-


019 79 0      2823    END2  LSA   9               OUTPUT END FLAG
019 80 0      2824          STP   STOXX
019 81 0      2825          BUN   STOX
019 82 0      2826          IFL   *-1,11,5
019 83 0      2827          BOF   END3
019 84 0      2828          LDB   IDEX
019 85 0      2829          CAD - TBL
019 86 0      2830          BUN   C-              PROCESS SIMPLE VARIABLES
```

```
019 91 0      2831   STOX1 BUN    STOX
019 92 0      2832         LSA    4                 MARK ITEM FOR DUMPING
019 93 0      2833   STOX  STA    0                 ENTER ITEM INTO BUFFER
019 94 0      2834         IFL    STOX,02,1
019 95 0      2835         BOF    *+2
019 96 0      2836   STOXX BUN    *                 EXIT LINE
019 97 0      2837         MOW 4  0,OT,1            BUFFER FULL
019 98 0      2838         BUN    STOXX

020 00 0      2839   LOD1  DEFN   *                 THIS PROGRAM IS RELOCATED TO
020 01 0      2839   *Q    NOP 8  J++1              LOCATION 0100 AT OBJECT TIME
020 02 0      2840   *R    CLB 8  I+                AND CAUSES THE PRINTING OF
020 03 0      2841         BUN 8  *+3               THE FOLLOWING LIST
020 04 0      2842   *A    LDB 8  B+
020 05 0      2843         IBB 8  C+,1
020 06 0      2844         MRD 4  0,OT,1
020 07 0      2845         DBB 8  *+1,100           LAST LABEL PASSED WAS L(N)
020 08 0      2846   *C    CAD -  100
020 09 0      2847         STB 8  B+,04
020 10 0      2848         BSA 8  EM,9              LABEL IN PROGRAM  NUMBER OF TIMES
020 11 0      2849         BCS 8  A-,9
020 12 0      2850         IOM 8  EM                                  EXECUTED
020 13 0      2851         BSA 8  EM,4
020 14 0      2852         BUN 8  A-
020 15 0      2853   EM    DEFN   *                        L                N
020 16 0      2853   *D    BUN 8  *+1
020 17 0      2854         NOP 8  I++6              -                -
020 18 0      2855         LDB 8  *-1
020 19 0      2856   ASSGZ RTF 8  NONE,4            VARIABLE IN PROGRAM          VALUE
020 20 0      2857         CAA 8  I++6
020 21 0      2858         ADA 8  I++7                      V                    N
020 22 0      2859         BOF 8  *+1                       -                    -
020 23 0      2860         BZA 8  *+2                       -                    -
020 24 0      2861         BUN 8  EN-2
020 25 0      2862         NOP 8  NONE
020 26 0      2863         LDB 8  *-1
020 27 0      2864         STB 8  ASSGZ,04
020 28 0      2865         BUN 8  D-
020 29 0      2866   *Z3   STP    *,2438
020 30 0      2867   *Z4   BUN    *,I+-LOD1+100
020 31 0      2868   EN    LDB 8  R-                WITH A PROCEDURE THE FIRST
020 32 0      2869         CLL 8  I+-1            MESSAGE IS NOT PRINTED
020 33 0      2870         IFL 8  I+-1,12,20
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```
020 34 0      2871          RTF 8 I+-1,24
020 35 0      2872          DFL 8 B+,04,1
020 36 0      2873          STP 8 D-
020 37 0      2874          BUN 8 A-
020 38 0      2875          BSA 8 V+,9
020 39 0      2876    *Z5   STP   *,2468
020 40 0      2877    *Z6   BUN   *,J+-LOD1+100
020 41 0      2878          DFL 8 B+,04,1
020 42 0      2879          STP 8 D-
020 43 0      2880          BUN 8 A-
020 44 0      2881    *E    STA 8 I++2,00
020 45 0      2882          BSA 8 V+,9
020 46 0      2883          STP 8 D-
020 47 0      2884          BUN 8 A-
020 48 0      2885          STA 8 I++3,00
020 49 0      2886          STP 8 D-
020 50 0      2887          BUN 8 A-
020 51 0      2888          DLB - 100,64,0
020 52 0      2889          CSA - 0
020 53 0      2890          BFA 8 *+2,62,44
020 54 0      2891          CSA - 1
020 55 0      2892          CFA 8 TRCE,04
020 56 0      2893          BCU 8 *+2
020 57 0      2894          IBB 8 *-5,2
020 58 0      2895          SRA   6
020 59 0      2896          ADD 8 D1
020 60 0      2897          STP 8 D-
020 61 0      2898          BUN 8 A1+
020 62 0      2899          STA 8 I++8,08
020 63 0      2900    *Z7   STP   *,2408
020 64 0      2901    *Z8   BUN   *,I+-LOD1+100
020 65 0      2902          STP 8 D-
020 66 0      2903          BUN 8 A-
020 67 0      2904          BUN 8 E-
020 68 0      2905    *V    LDB 8 A9+
020 69 0      2906          CLL 8 J+-1
020 70 0      2907          IFL 8 J+-1,12,20
020 71 0      2908          RTF 8 J+-1,35
020 72 0      2909          STP 8 D-
020 73 0      2910          BUN 8 A-
020 74 0      2911          BSA 8 V+,9
020 75 0      2912    *Z9   STP   *,2468
020 76 0      2913    *Z10  BUN   *,K+-LOD1+100
020 77 0      2914    *Z11  STP   *,2448
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020 78 0      2915    *Z12  BUN    *,J+-LOD1+100
020 79 0      2916          DFL 8 B+,04,1
020 80 0      2917    *C    STP 8 D-
020 81 0      2918          BUN 8 A-
020 82 0      2919          BSA 8 V+,9
020 83 0      2920          STA 8 J++2,00
020 84 0      2921          STP 8 D-
020 85 0      2922          BUN 8 A-
020 86 0      2923          STA 8 J++3,00
020 87 0      2924          STP 8 D-
020 88 0      2925          BUN 8 A-
020 89 0      2926          SRT   10
020 90 0      2927          DLB - 100,64,0
020 91 0      2928    *A9   CLA 8 J+
020 92 0      2929          ADD - 0
020 93 0      2930          BFR 8 F+,21,0
020 94 0      2931          STP 8 D-
020 95 0      2932          BUN 8 A1+
020 96 0      2933          LDB 8 Q-
020 97 0      2934          DBB 8 *+1,9993
020 98 0      2935          RTF 8 S+,3
020 99 0      2936          CLL 8 J++11
021 00 0      2937          IFL 8 J++11,12,20
021 01 0      2938    *Z13  STP   *,2408
021 02 0      2939    *Z14  BUN   *,J+-LOD1+100
021 03 0      2940          BUN 8 C-
021 04 0      2941    *F    SLA   2
021 05 0      2942          STA 8 S++5,02
021 06 0      2943          SRA   2
021 07 0      2944          SLA   2
021 08 0      2945          STP 8 D-
021 09 0      2946          BUN 8 A1+
021 10 0      2947          LDB 8 Q-
021 11 0      2948          DBB 8 *+1,9993
021 12 0      2949          RTF 8 S+,3
021 13 0      2950          IFL 8 J++8,02,03
021 14 0      2951          CAD 8 S++5
021 15 0      2952          LDR 8 S++1
021 16 0      2953          BFR 8 *+2,21,0
021 17 0      2954          SUB 8 S++4
021 18 0      2955          STP 8 D-
021 19 0      2956          BUN 8 A1+
021 20 0      2957          SLT   16
021 21 0      2958          STR 8 J++11,44
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021 22 0      2959          CAD 8 S+
021 23 0      2960          SRA   2
021 24 0      2961          STA 8 J++10,04
021 25 0      2962          IFL 8 J++10,82,23
021 26 0      2963          BUN 8 F--3
021 27 0      2964   *A1    CLL 8 S+
021 28 0      2965          IFL 8 S+,12,20
021 29 0      2966          BPA 8 *+3
021 30 0      2967          IFL 8 S+,82,20
021 31 0      2968          LSA   0
021 32 0      2969          SRT   10
021 33 0      2970   TRCE   CLB
021 34 0      2971   *B     CLA
021 35 0      2972   *Y     SLA   1
021 36 0      2973          ADD 8 S++3
021 37 0      2974          SLT   1
021 38 0      2975          IBB 8 Y-,2000
021 39 0      2976          STA 9 S++1,00
021 40 0      2977          IFL 8 Y-,11,5
021 41 0      2978          BOF 8 D-
021 42 0      2979          IBB 8 B-,1
021 43 0      2980   D1     CNST  10000
021 44 0      2981   *S     CNST  20000000000
021 45 0      2982          CNST  20000000000
021 46 0      2983          CNST  20000000000
021 47 0      2984          CNST  8
021 48 0      2985          CNST  50
021 49 0      2986          CNST  0
021 50 0      2987   *K     CNST  $         VARIABLE IN PROGRAM                    VALUE $
021 51 0      2998          CNST  20000000000
021 52 0      2999   *J     CNST  $         LABEL IN PROGRAM       NUMBER OF TIMES EXECUTE
021 53 0      3009                D$
021 54 0      3010          CNST  20000000000
021 55 0      3011   *I     CNST  $         LAST LABEL PASSED WAS
021 56 0      3021
021 57 0      3032                          $


021 60 0      3035   *V     NOP   Q+-100          THIS PROGRAM READS IN THE
021 61 0      3036          LDB 8 *+2           ARRAY DUMP ROUTINE
021 62 0      3037          RTF 8 *+2,3
021 63 0      3038          BUN   98
021 64 0      3039          LBC 8 *-4
021 65 0      3040          MRD 4 100,1,3,BMOD
```

```
021 66 0      3041    NONE  CNST  $(NONE)
021 67 0      3045        LOCN  LOD1+240



021 71 0      3079    END3  CAD   STOX          DUMP BUFFER(LABELS AND VARIABLES)
021 72 0      3080        BFA   *+2,04,0       IF IT IS NOT EMPTY
021 73 0      3081        MOW 4 0,OT,1
021 74 0      3082        CLR
021 75 0      3083        STR   STOX,04        INITIALIZE STORE ROUTINE
021 76 0      3084        MOW 4 Q+,OT,3
021 77 0      3085        LDB   IDEX
021 78 0      3086        CAD - TBL+100
021 79 0      3087    *C  STA   HOLD
021 80 0      3088        LDB   HOLD
021 81 0      3089        IBB   END4,9999      END OF LIST OF ARRAYS
021 82 0      3090        DLB   HOLD,64,0
021 83 0      3091        CAD - 4
021 84 0      3092        STB   STOX1,62
021 85 0      3093        BPA   PRSW2          ITEM UNMARKES - MARK IT IF PRSW2 IS ON
021 86 0      3094        IFL   STOX1,62,1
021 87 0      3095        BUN   A+
021 88 0      3096    PRSW2 BUN   D+
021 89 0      3097        IFL   STOX1,62,1
021 90 0      3098        BUN   A+
021 91 0      3099    *D  IFL   STOX1,62,30
021 92 0      3100    *A  CAD - 0
021 93 0      3101        STP   STOXX
021 94 0      3102        BUN   STOX1
021 95 0      3103        CAD - 1
021 96 0      3104        STP   STOXX
021 97 0      3105        BUN   STOX1
021 98 0      3106        CAD - 2
021 99 0      3107        STP   STOXX
022 00 0      3108        BUN   STOX1
022 01 0      3109        CAD - 3              OUTPUT ARRAY ITEM TO TAPE
022 02 0      3110        STP   STOXX
022 03 0      3111        BUN   STOX1
022 04 0      3112        CAD - 4
022 05 0      3113        STP   STOXX
022 06 0      3114        BUN   STOX1
022 07 0      3115        LDB   HOLD
022 08 0      3116        CAD - 0
022 09 0      3117        BUN   C-
```

```
022 12 0      3118   END4  LSA   9
022 13 0      3119         STP   STOXX          PUT A END FLAG OUT TO BUFFER
022 14 0      3120         BUN   STOX
022 15 0      3121         CAD   STOX
022 16 0      3122         BFA   *+2,04,0
022 17 0      3123         MOW 4 0,OT,1         DUMP BUFFER IF NOT EMPTY
022 18 0      3124         CLR
022 19 0      3125         STR   STOX,04        INITIALIZE STORE SUBROUTINE
022 20 0      3126         BUN   ACTUA          GET NEXT ITEM FOR SBMUD STACK


022 23 0      3127   LOD2  DEFN  *              THIS PROGRAM IS RELOCATED TO
022 24 0      3127   *Q    CLB 8 J++1           LOCATION 0100 AT OBJECT TIME
022 25 0      3128         BUN 8 *+3            AND CAUSES THE PRINTING OF
022 26 0      3129   *A    LDB 8 B+             THE FOLLOWING LIST
022 27 0      3130         IBB 8 C+,1
022 28 0      3131         MRD 4 0,1,1
022 29 0      3132         DBB 8 *+1,100
022 30 0      3133   *C    CAD - 100
022 31 0      3134         STB 8 B+,04
022 32 0      3135         BSA 8 D+,9           ARRAY  A
022 33 0      3136         BCS 8 A-,9
022 34 0      3137         IOM 8 D+
022 35 0      3138         BSA 8 D+,4           (ELEMENTS OF THE ARRAY PRINTED BY ROW)
022 36 0      3139         BUN 8 A-
022 37 0      3140   *D    BUN 8 *+2
022 38 0      3141         BUN 8 *-1
022 39 0      3142         BSA 8 V+,9
022 40 0      3143         STA 8 I++3,00
022 41 0      3144         STP 8 D-
022 42 0      3145         BUN 8 A-               NOTE THAT A ROW HAS AS MANY ELEMENTS
022 43 0      3146         STA 8 I++4,00        IN IT AS THE LAST INTEGER IN THE
022 44 0      3147   *Z15  STP   *,2468
022 45 0      3148   *Z16  BUN   *,I+-LOD2+100
022 46 0      3149   *Z17  STP   *,2448
022 47 0      3150   *Z18  BUN   *,J+-LOD2+100
022 48 0      3151         STP 8 D-
022 49 0      3152         BUN 8 A-
022 50 0      3153         STA 8 L+
022 51 0      3154         STP 8 D-
022 52 0      3155         BUN 8 A-
022 53 0      3156         CFA 8 S+,00
```

```
022 54 0      3157          BCU 8 *+2
022 55 0      3158          CAD 8 S++1
022 56 0      3159          STA 8 L++1
022 57 0      3160          STA 8 L++2
022 58 0      3161          STP 8 D-
022 59 0      3162          BUN 8 A-
022 60 0      3163          CFA 8 S+,21
022 61 0      3164          SRA   4
022 62 0      3165          STA 8 G+,04
022 63 0      3166    *H    CLL 8 N+
022 64 0      3167          IFL 8 N+,00,21
022 65 0      3168          CAR
022 66 0      3169    *G    ADD   *
022 67 0      3170          CLL 8 J+-1
022 68 0      3171          CLL 8 T+
022 69 0      3172          IFL 8 T+,12,20
022 70 0      3173          BPA 8 *+3
022 71 0      3174          IFL 8 T+,82,20
022 72 0      3175          LSA   0
022 73 0      3176          BCU 8 *+3
022 74 0      3177          SLT   2
022 75 0      3178          STR 8 S++2,02
022 76 0      3179          SRT   10
022 77 0      3180          CLB
022 78 0      3181    *B    CLA
022 79 0      3182    *Y    SLA   1
022 80 0      3183          ADD 8 S++3
022 81 0      3184          SLT   1
022 82 0      3185          IBB 8 Y-,2000
022 83 0      3186          STA 9 T++1,00
022 84 0      3187          IFL 8 Y-,11,5
022 85 0      3188          BOF 8 *+2
022 86 0      3189          IBB 8 B-,1
022 87 0      3190          BCE 8 P+
022 88 0      3191          CLL 8 T++3
022 89 0      3192    *M    LBC 8 N+
022 90 0      3193          LDR 8 T+
022 91 0      3194          STR 9 J++22,04
022 92 0      3195          LDR 8 T++1
022 93 0      3196          STR 9 J++23
022 94 0      3197          LDR 8 T++2
022 95 0      3198          STR 9 J++24
022 96 0      3199          LDR 8 T++3
022 97 0      3200          STR 9 J++25,66
```

```
022 98 0      3201          DLB 8 L++1,04,1
022 99 0      3202          IBB 8 W+,9999
023 00 0      3203          DLB 8 N+,04,3
023 01 0      3204          IBB 8 Y+,9999
023 02 0      3205    *H    DLB 8 L+,04,1
023 03 0      3206          DBB 8 X+,1
023 04 0      3207          LDR 8 O+
023 05 0      3208          BZR 8 E+
023 06 0      3209    *F    STP 8 D-
023 07 0      3210          BUN 8 A-
023 08 0      3211          BUN 8 D-+2
023 09 0      3212    *Z19  DEFN  *
023 10 0      3212    *E    STP   *,2428
023 11 0      3213    *Z20  BUN   *,J+-LOD2+100
023 12 0      3214          LDB 8 Q-
023 13 0      3215          RTF 8 J+,23
023 14 0      3216          BUN 8 F-
023 15 0      3217    *X    CLL 8 O+
023 16 0      3218          IFL 8 G-,04,1
023 17 0      3219          CLA
023 18 0      3220          BUN 8 G-
023 19 0      3221    *Y    DEFN  *
023 20 0      3221    *Z21  STP   *,2408
023 21 0      3222    *Z22  BUN   *,J+-LOD2+100
023 22 0      3223          CLL 8 N+
023 23 0      3224          IFL 8 N+,04,21
023 24 0      3225          LDB 8 Q-
023 25 0      3226          RTF 8 J+,23
023 26 0      3227          STP 8 O+
023 27 0      3228          BUN 8 H-
023 28 0      3229    *Z23  DEFN  *
023 29 0      3229    *W    STP   *,2428
023 30 0      3230    *Z24  BUN   *,J+-LOD2+100
023 31 0      3231          LDR 8 L++2
023 32 0      3232          STR 8 L++1
023 33 0      3233          BUN 8 Y-+2
023 34 0      3234    *P    IFL 8 T+,02,03
023 35 0      3235          STR 8 T++2,04
023 36 0      3236          IFL 8 T++2,82,23
023 37 0      3237          CAD 8 S++2
0V3 38 0      3V38          LDR 8 T++1
0VX X( 0      XVX(          BFR 8 *+2,21,0
05X 70 0      75X0          SUB 8 S++4
023 41 0      3241          BPA 8 *+3
```

```
023 42 0      3242          IFL 8 T++2,02,20
023 43 0      3243          LSA   0
023 44 0      3244          CLR
023 45 0      3245          SRT   1
023 46 0      3246          SLA   1
023 47 0      3247          SLT   7
023 48 0      3248          ADD 8 S++5
023 49 0      3249          STA 8 T++3,00
023 50 0      3250          BUN 8 M-
023 51 0      3251    *O    CNST  0
023 52 0      3252    *T    CNST  20000000000
023 53 0      3253          CNST  20000000000
023 54 0      3254          CNST  20000000000
023 55 0      3255          CNST  20000000000
023 56 0      3256    *S    CNST  1
023 57 0      3257          CNST  9999
023 58 0      3258          CNST  0
023 59 0      3259          CNST  8
023 60 0      3260          CNST  50
023 61 0      3261          CNST  8080000000
023 62 0      3262    *L    CNST  0
023 63 0      3263          CNST  0
023 64 0      3264          CNST  0
023 65 0      3265    *N    CNST  0
023 66 0      3266    *I    CNST  $         ARRAY
023 67 0      3276
023 68 0      3287                          $
023 69 0      3290    *J    CNST  $
023 70 0      3300
023 71 0      3311                          $


023 74 0      3314    *V    NOP   LOD3-100        GET EITHER A PROCEDURE
023 75 0      3315          LDB 8 S-              HEADER OR END OF DUMP
023 76 0      3316          RTF 8 *+2,3           PROGRAM
023 77 0      3317          BUN   1
023 78 0      3318          LBC 8 *-4
023 79 0      3319          MRD 4 100,1,3,BMOD
023 80 0      3320          BUN   100
023 81 0      3321          LOCN  LOD2+240


023 84 0      3367    FIN   MOW 4 Q+,OT,1        OUTPUT END OF DUMP PROGRAM
023 85 0      3368          MRW 4 OT
```

```
023 86 0      3369          CAD   MEM
023 87 0      3370          CFA   +LDBG-1
023 88 0      3371          BCH   A+
023 89 0      3372          BUN   LDBG
023 90 0      3373    *A    CFA   +MEM+302
023 91 0      3374          BCL   A+
023 92 0      3375          BUN   LDBG
023 93 0      3376    *A    MIB 4 *+2,T
023 94 0      3377          BUN   *-1
023 95 0      3378          MRW 4 T
023 96 0      3379          DLB   *,44,0
023 97 0      3380          MPF 4 T,10
023 98 0      3381          DBB   *-1,1100
023 99 0      3382          MPF 4 T,2
024 00 0      3383          LDB   *+1
024 01 0      3384    POSCT NOP   0
024 02 0      3385          IBB   *+3,9999
024 03 0      3386          MPF 4 T,1
024 04 0      3387          BUN   *-2
024 05 0      3388          MRD 4 400,T,10
024 06 0      3389          MRD 4 1400,T,10
024 07 0      3390          MRW 4 T
024 08 0      3391          MIB 4 *+2,T
024 09 0      3392          BUN   *-1
024 10 0      3393          MLS 4 OT
024 11 0      3394          BUN   LDBG


024 14 0      3395    LOD4  DEFN  *
024 15 0      3395    *Q    MRW 4 OT+10
024 16 0      3396          BCS   *+3-LOD4+100,9
024 17 0      3397    *Z25  STP   *,2418
024 18 0      3398    *Z26  BUN   *,J+-LOD4+100
024 19 0      3399          LDR   A+-LOD4+100
024 20 0      3400          STR   MLOAD-1
024 21 0      3401          BUN   MLOAD-1
024 22 0      3402    *A    MNC 4 0,OT,4
024 23 0      3403    *J    CNST  $
024 24 0      3413
024 25 0      3424                          $
024 26 0      3427          LOCN  *+10          SPACE FOR PATCHES


024 29 0      3437    GET   CAD   MEM
```

```
024 30 0      3438          ADD   +7
024 31 0      3439          CFA   +XZERO-1,04
024 32 0      3440          BCH   A+                IS THERE ENOUGH ROOM
024 33 0      3441          CAD   MEM               YES-  USE PRESENT SETTING OF MEM
024 34 0      3442    GETX  BUN   *
024 35 0      3443    *A    CAD   +700              IF NOT SET IT TO 0800
024 36 0      3444          STA   MEM               AND DONT BOTHER CHECKING ANY MORE
024 37 0      3445          BUN   GETX


024 40 0      3446    SBMUD F244  0,SBMUD,0         INVERTED DUMP STACK
024 41 0      3447    FIXUP F424  FIXUP,0,0         FIX-UPS FOR CALLS OF EXT PROGRAMS FROM
                                                    WITHIN SEGMENTS
024 43 0      3448    NN    CNST  99                CONSTANT 99
024 44 0      3449    LCHOD CNST  0
024 45 0      3450    HALT  F424  757,0,7250        O K  HALT
024 46 0      3451    VECTR CNST  0,0,0,0,0,0       STORAGE VECTOR USED BY THE MONSTER
024 47 0      3457    SRERR CNST  21662454159       SEARCH ERROR
024 48 0      3458          CNST  24348004559
024 49 0      3459          CNST  25956590202
024 50 0      3460    CSERR CNST  21643484543       CHECK SUM ERROR
024 51 0      3461          CNST  25200626454
024 52 0      3462          CNST  20045595956
024 53 0      3463          CNST  25902020202
024 54 0      3464    ERFRM FBGR  PRINT,9(T5A),75B
024 55 0      3493    SREF  CNST  0                 SYMBOL REFERENCE ADDRESS - PRESENT ITEM
024 56 0      3494    SL    CNST  0                 SYMBOL LENGTH
024 57 0      3495    HOLD  CNST  0                 SHORT TERM STORAGE LOCATION
024 58 0      3496    THROW CNST  0                 DITTO
024 59 0      3497    NINES CNST  9999999999,9999999999   LARGEST POSSIBLE SYMBOL
                                  ALL 301 STACKS USED BY THE MONSTER ARE INITIALIZED WITH
                                  THIS SYMBOL SO SORTING CAN BE DONE
024 62 0      3499    IDEX  CNST  0                 LEVEL OF PROCEDURE
024 63 0      3500    DIM   CNST  0                 NUMBER OF DIMENSIONS
024 64 0      3501    J     CNST  0                 COUNTER USED IN CONNECTION WITH LBRT
024 65 0      3502    TST   CNST  0                 COUNT OF ROUTINES ASSIGNED INDIREDTLY
024 66 0      3503    ADDIT CNST  0
024 67 0      3504    MADIT CNST  0
024 68 0      3505    DIMS  LOCN  *+20              DIMENSION LIST
024 69 0      3525    LX    LOCN  *+50
024 70 0      3575    MEM   HLT   *+302             NEXT FREE LOCATION
024 71 0      3576    TBL   F244  0,NINES,0         SORTED STACKS SET UP BY THE MONSTER
024 72 0      3577          LOCN  4000
024 73 0      4000          MRW   2,4
```

```
024 74 0      4001   *A     MPF    2,0
024 75 0      4002          DFL    A--1,01,1
024 76 0      4003          BRP    A-
024 77 0      4004          MPF    2,5
024 78 0      4005          MOW    0000,2,3
024 79 0      4006          MOW    700,2,9
024 80 0      4007          MOW    1600,2,0
024 81 0      4008          MOW    2600,2,0
024 82 0      4009          MRW    2
024 83 0      4010          F424   2222,00,2222
024 84 0      4011          LOCN   LX
024 85 0      3525          FINI   2
              3525                 +0000010000
              3526                 +0000000010
              3527                 +0000000040
              3528                 +0000000080
              3529                 +0000000100
              3530                 +0000000700
              3531                 +0525005250
              3532                 +0000000001
              3533                 +0000000011
              3534                 +0011110000
              3535                 $FINIS
              3536                 +1000600000
              3537                 +0000002000
              3538                 +0002000000
              3539                 -0000001111
              3540                 +0000001111
              3541                 +1111110000
              3542                 +0000000023
              3543                 $H
              3544                 +0000545600
              3545                 +0000000007
              3546                 +9669009669
              3547                 $POOL
              3548                 +0034353600
              3549                 +0000000008
              3550                 +9999999999
              3551                 +0000000009
              3552                 +0000000099
              3553                 +0010123536
              3554                 +0000004233
              3555                 +0000002218
              3556                 +0000001103
```

3557	+0000002202
3558	+0000002428
3559	+0000004116
3560	+0000003577
3561	+0000003576
3562	+0000000292
3563	+0000003446
3564	+0000002868
3565	+0000001011
3566	+0000003877
3567	+0000004094

```
.00.0     0000   FLOAT CRB
.00.0     0001   *B    BFA 8 A+,22,00
.00.0     0002         SRA   1
.00.0     0003         IBB 8 B-,1
.00.0     0004   *A    SRT   8
.00.0     0005         CAD 9 C+
.00.0     0006         SLT   8
.00.0     0007         FAD 8 D+
.00.0     0008         LDB 8 FLOAT
.00.0     0009         BUN - 0
.00.0     0010   *C    CNST  58
.00.0     0011               +59
.00.0     0012               +60
.00.0     0013   *D          +5800000000
.00.0     0014         CNST  40000990000
.00.0     0015         CNST  $FLOAT,REAL(INTEGER) $
.00.0     0019         CNST  90000000000
.00.0     0020         FINI  FLOAT
```

```
.00.0     0100   ERROR DEFN  100
.00.0     0000   FIX   CRB
.00.0     0001         SRT   8
.00.0     0002         STA 8 A+,04
.00.0     0003         LDB 8 A+
.00.0     0004   *A    CLA
.00.0     0005         IBB 8 B+,9949
.00.0     0006         DBB 8 C+,10
.00.0     0007         SLT - 11
.00.0     0008   *B    LDB 8 FIX
.00.0     0009         BUN - 0
.00.0     0010   *C    IOM 8 D+
.00.0     0011         LDR 8 $FIX$
.00.0     0012         LDB 8 FIX
.00.0     0013         BUN 6 ERROR
.00.0     0014   *D    CLR
.00.0     0015         BUN 8 B-
.00.0     0016   LOCN  LOCN  *+1
.00.0     0017         CNST  40000990000
.00.0     0018         CNST  $FIX,INTEGER(REAL) ERROR=1 $
.00.0     0024         CNST  90000000000
.00.0     0025         LOCN  LOCN
.00.0     0016         FINI  FIX
            16               $FIX
```

```
.00.0       THE WRITE PROCEDURE
.00.0  0000          REORD
.00.0  0100   ERROR DEFN  100
.01.0  0200   RITE  DEFN  200
.02.0  0000         LOCN  0
.03.0  0125   ZOUT  DEFN  125
.04.0  0126   ALPHA DEFN  126
.05.0  0127   BETA  DEFN  127
.06.0  0128   GAMMA DEFN  128
.07.0  0129   WIDTH DEFN  129
.08.0  0130   OP    DEFN  130
.09.0  0131   DEC   DEFN  131
.10.0  0132   NEXTN DEFN  132
.11.0  0133   DELTA DEFN  133
.12.0  0134   THISN DEFN  134
.13.0  0000   WRITE CNST  0100010000
.14.0  0001         STA 8 FORMT,04
.15.0  0002         LDB 8 *+2
.16.0  0003         RTF 8 SIGN2,1
.17.0  0004         RTF   101,30
.18.0  0005         LDB 8 WRITE
.19.0  0006         STB 8 XIT,04
.20.0  0007         LDR - 9999
.21.0  0008         LSA   9,7557
.22.0  0009         BFR 8 I+,22,00
.23.0  0010         LDB   100
.24.0  0011         STP - 0
.25.0  0012         BFR - 1,22,01
.26.0  0013   *I    STA   NEXTN
.27.0  0014         STB 8 OUT,04
.28.0  0015         LDR   OP
.29.0  0016         BZR 8 OVTST
.30.0  0017         CAD   THISN
.31.0  0018         CLL   DELTA
.32.0  0019         BFR 8 FF,52,46
.33.0  0020         BFR 8 XX,52,67
.34.0  0021         BFR 8 II,52,49
.35.0  0022         BFR 8 SS,52,62
.36.0  0023         BFR 8 AA,52,41
.37.0  0024         BUN 8 ERR
.38.0  0025   AA    LDR 8 NNINE
.39.0  0026   *A    DFL   WIDTH,0,1
.40.0  0027         STP 8 EXIT1
.41.0  0028         BUN 8 SUBR2
```

```
.42.0     0029          CAD    WIDTH
.43.0     0030          BZA 8  CYCLE
.44.0     0031          BFR 8  D+,22,99
.45.0     0032          SLT    10
.46.0     0033          BUN 8  A-
.47.0     0034    OVTST LDB 8  WRITE+1
.48.0     0035          BOF 6  ERROR+21
.49.0     0036    FORMT CAD    9999
.50.0     0037          IFL 8  FORMT,04,1
.51.0     0038          BPA 8  O+
.52.0     0039          LDR 8  NNINE
.53.0     0040          BMA 8  R+
.54.0     0041    *C    BFA 8  FORMT,22,14
.55.0     0042          STP 8  EXIT1
.56.0     0043    NNINE F4248  9900,30,SUBR2
.57.0     0044          BFR 8  FORMT,22,99
.58.0     0045          SLT    10
.59.0     0046          BUN 8  C-
.60.0     0047    BB    CAD    WIDTH
.61.0     0048          ADL    ZOUT
.62.0     0049          ADL    ZOUT
.63.0     0050    CYCLE CAD    OP
.64.0     0051          BFA 8  OVTST,33,00
.65.0     0052    *O    BFA 8  *+2,33,00
.66.0     0053          SUB 8  +0010000000
.67.0     0054          STA    OP
.68.0     0055          STA    DEC,02
.69.0     0056    I2    SRT    2
.70.0     0057          STA    WIDTH,03
.71.0     0058          BFA 8  BB,72,42
.72.0     0059          BFA 8  WW,72,66
.73.0     0060          BFA 8  PP,72,57
.74.0     0061          BFA 8  TT,72,63
.75.0     0062          BFA 8  CC,72,43
.76.0     0063          BFA 8  FORMT,03,00
.77.0     0064    *D    CAD    NEXTN
.78.0     0065          STA    THISN
.79.0     0066          BSA 8  BB,9
.80.0     0067    OUT   BUN    9999
.81.0     0068    *R    LDB 8  FORMT
.82.0     0069          BFA 8  Z+,66,00
.83.0     0070          SLT    3
.84.0     0071          BFR 8  S+,03,00
.85.0     0072    *B    SUB 8  +0010000000
```

```
  .86.0     0073          BFA 8 I9999,33,00
  .87.0     0074          DFL - 9999,63,1
  .88.0     0075   *A     LDR - 9999
  .89.0     0076          STR 8 FORMT,04
  .90.0     0077          BUN 8 FORMT
  .91.0     0078   *S     STA - 9999,33
  .92.0     0079          BUN 8 B-
  .93.0     0080   I9999  CAD - 9999
  .94.0     0081   I03    SRT   3
  .95.0     0082          STA - 9999,66
  .96.0     0083          BUN 8 FORMT
  .97.0     0084   *Z     CAD   NEXTN
  .98.0     0085   XIT    BSA   9999,9
  .99.0     0086          BUN 8 A-
 1.00.0     0087   CC     CWR   124,51
01.01.0     0088   WW     SRT   3
01.02.0     0089          STR 8 *+1,31
01.03.0     0090          F4246 2408,44,0200
 1.04.0     0091          F4246 0101,30,0200
01.05.0     0092   *C     LDB 8 *+2
01.06.0     0093          RTF 8 SIGN2,1
01.07.0     0094          RTF   101,24
 1.08.0     0095          BUN 8 CYCLE
 1.09.0     0096   PP     CWR   124,51
 1.10.0     0097          BUN 8 C-
 1.11.0     0098   TT     BFA 8 A+,03,0
 1.12.0     0099          SPO 8 B+,1
 1.13.0     0100          ADA 8 I9999
 1.14.0     0101          BUN 8 TT
 1.15.0     0102   *B     CNST  21602020202
 1.16.0     0103   *A     CAD   ZOUT
 1.17.0     0104          BZA 8 CYCLE
 1.18.0     0105          ADD 8 I8
 1.19.0     0106          SRT   4
 1.20.0     0107          STR 8 *+1,32
 1.21.0     0108          SPO   101,99
 1.22.0     0109          BUN 8 C-
 1.23.0     0110   II     LDB 8 I10
 1.24.0     0111          BZA 8 Q+
 1.25.0     0112   *C     BFA 8 I51,11,0
 1.26.0     0113   *S     STA   THISN
 1.27.0     0114   I80    CAR   80
 1.28.0     0115   MAJOR  STB   GAMMA
 1.29.0     0116          CLL   ALPHA
```

```
01.30.0     0117          STA   ALPHA,04
01.31.0     0118          STR   BETA
 1.32.0     0119          CAD   THISN
 1.33.0     0120   I10    SRS   10
 1.34.0     0121   I23    LSA   1,23
 1.35.0     0122          ADD   WIDTH
 1.36.0     0123          SUB   GAMMA
 1.37.0     0124          BMA 8 ERR
 1.38.0     0125   H0     ADL   ZOUT
 1.39.0     0126   H50    F424  5000,19,ZOUT
 1.40.0     0127          CAD   THISN
 1.41.0     0128          LDR 8 I20
 1.42.0     0129          STP 8 EXIT1
 1.43.0     0130          BMA 8 SUBR1
 1.44.0     0131          DFL   GAMMA,00,1
 1.45.0     0132          BRP 8 F+
 1.46.0     0133          LDR   BETA
 1.47.0     0134          BZR 8 CYCLE
 1.48.0     0135          LDR 8 I23
 1.49.0     0136          STP 8 EXIT1
 1.50.0     0137          BUN 8 SUBR1
 1.51.0     0138          CAD   BETA
 1.52.0     0139          SUB 8 H50
 1.53.0     0140          LDB 8 I2
 1.54.0     0141          CLL   WIDTH
 1.55.0     0142          IFL   WIDTH,00,3
 1.56.0     0143          BUN 8 S-
 1.57.0     0144   *F     DFL   ALPHA,00,1
 1.58.0     0145          LDR   ALPHA
 1.59.0     0146          BZR 8 H+
 1.60.0     0147          LDR   DELTA
 1.61.0     0148          BZR 8 I+
 1.62.0     0149          DFL   DELTA,00,1
 1.63.0     0150          LDR 8 I80
 1.64.0     0151          BUN 8 SUBR1
 1.65.0     0152   *H     LDR 8 I03
 1.66.0     0153          BUN 8 SUBR1
 1.67.0     0154   *I     CAD   THISN
01.68.0     0155          LDR 8 I8
01.69.0     0156   I1     SLT   1
01.70.0     0157          STA   THISN
01.71.0     0158   SUBR1  SLT   18
01.72.0     0159   SUBR2  SRT   8
01.73.0     0160          LBC   ZOUT
```

```
01.74.0     0161          SLA - 8
01.75.0     0162          DLB   ZOUT,94,0
01.76.0     0163          DBB 8 EXIT1,24
01.77.0     0164    I20   LSA   0,20
01.78.0     0165          ADD - 125
01.79.0     0166          STA - 125,00
 1.80.0     0167          IFL   ZOUT,00,2
 1.81.0     0168    EXIT1 BUN   9999
 1.82.0     0169    *Q    DBB 8 I80,9
 1.83.0     0170    I51   SLA   51
 1.84.0     0171          DBB 8 C-,1
 1.85.0     0172    XX    CLR   7557
 1.86.0     0173    I8    SRT   8
 1.87.0     0174          CFA 8 +50,04
 1.88.0     0175          STR   THISN
 1.89.0     0176          BCL 8 D+
 1.90.0     0177    *E    STA 8 TEMP,04
 1.91.0     0178          DFL 8 TEMP,04,49
 1.92.0     0179          LDB 8 TEMP
 1.93.0     0180          CAD   OP
 1.94.0     0181          SRT   4
 1.95.0     0182          STR 8 B+,42
 1.96.0     0183          CAD 8 TEMP
 1.97.0     0184    TEMP  CLR   9999
 1.98.0     0185    *B    IBB 8 MAJOR,0000
 1.99.0     0186    *D    LSA   0,7557
 2.00.0     0187          SUB 8 +50
02.01.0     0188          STA   DELTA,02
02.02.0     0189          CFR   OP,02
02.03.0     0190          BCE 8 *+3
02.04.0     0191    *F    CAD 8 +50
02.05.0     0192          BUN 8 E-
02.06.0     0193          CAD 8 I51
 2.07.0     0194          STA   THISN,11
 2.08.0     0195          BUN 8 E-
 2.09.0     0196    FF    DFL   WIDTH,03,4
 2.10.0     0197          BRP 8 A+
02.11.0     0198          BUN 8 ERR1
 2.12.0     0199          CAD 8 +5000000000
02.13.0     0200    *A    BZA 8 *-1
02.14.0     0201          CLR   7557
02.15.0     0202          STA 8 H0,22
02.16.0     0203          SRT   8
02.17.0     0204          STR   THISN
```

```
02.18.0     0205          SRS   10
02.19.0     0206          ADD   OP
 2.20.0     0207          EXT 8 I51
 2.21.0     0208          CFA   WIDTH,03
02.22.0     0209          BCL 8 C+
 2.23.0     0210   ERR1   IFL   WIDTH,0,4
 2.24.0     0211   ERR    CAD   WIDTH
02.25.0     0212          ADL   ZOUT
 2.26.0     0213          ADL   ZOUT
 2.27.0     0214          DFL   ZOUT,0,2
 2.28.0     0215          LDR 8 I14
 2.29.0     0216          STP 8 EXIT1
 2.30.0     0217          BUN 8 SUBR1
 2.31.0     0218          BUN 8 CYCLE
 2.32.0     0219   *C     LDR 8 H0
 2.33.0     0220   *E     CAD 8 I1
 2.34.0     0221   *D     LDB   DEC
 2.35.0     0222          IBB 8 MAJOR,1
 2.36.0     0223   SS     CLR   7557
 2.37.0     0224          SRT   8
 2.38.0     0225          STR   THISN
 2.39.0     0226   I14    LSA   0,14
 2.40.0     0227          SUB 8 +50
 2.41.0     0228          CLR   7557
 2.42.0     0229          BMA 8 A+
 2.43.0     0230   *C     CFA   OP,02
 2.44.0     0231          BCH 8 ERR
 2.45.0     0232          ADD 8 I1
 2.46.0     0233          BUN 8 D-
 2.47.0     0234   *A     STA   DELTA,00
 2.48.0     0235          BUN 8 E-
 2.49.0     0236   SIGN2  CNST  20000000000
 2.50.0     0237   LOCN   LOCN  *+3
 2.51.0     0240          CNST  40000990000
 2.52.0     0241          CNST  $WRITE ERROR=1 RITE=2 $
 2.53.0     0246          CNST  90000000000
 2.54.0     0247          LOCN  LOCN
 2.55.0     0237          FINI  WRITE
            0237                +5000000000
            0238                +0010000000
            0239                +0000000050
```

```
.00.0     0000          REORD 0.0
.00.0     0000    READ  F4247 SW,1,*
.01.0     0001          STA 8 X,04
.02.0     0002          STA 8 Y,04
.03.0     0003          IFL 8 Y,04,1
.04.0     0004          STP 8 U
.05.0     0005          BUN 8 X
.06.0     0006          LDB 8 SW
.07.0     0007          CLL - 0
.08.0     0008          CLL 8 S6
.09.0     0009    A     STP 6 0100
.10.0     0010          F4246 0117,30,0100
.11.0     0011          CLL 8 I
.12.0     0012          IFL 8 I,05,2
.13.0     0013          LDB 8 SW
.14.0     0014          IBB 8 B,9999
.15.0     0015          DLB 8 S6,64,0
.16.0     0016          CAD   M+1
.17.0     0017          IBB 8 AC,9999
.18.0     0018    B     DLB 8 I,94,0
.19.0     0019          CAD - M+1
.20.0     0020          LDB 8 I
.21.0     0021          SLA - 0
.22.0     0022          IFL 8 I,05,2
.23.0     0023          LDR 8 S6
.24.0     0024          BFR 8 AD,00,0
.25.0     0025          DBB 8 A,160
.26.0     0026          DLB 8 S6,44,0
.27.0     0027          BFA 8 K,22,13
.28.0     0028          SRA   8
.29.0     0029          SLA - 0
.30.0     0030          ADL 8 N
.31.0     0031          DFL 8 S6,41,2
.32.0     0032          BRP 8 B
.33.0     0033          CAD 8 N
.34.0     0034          STP 8 U
.35.0     0035          BUN 8 X
.36.0     0036    *B    DFL 8 S6,52,12
.37.0     0037          BUN 8 B
.38.0     0038    AD    DBB 8 A,162
.39.0     0039          BFA 8 G,11,8
.40.0     0040          BFA 8 P,22,03
.41.0     0041          BFA 8 Q,22,20
.42.0     0042          BFA 8 Q,22,34
```

```
.43.0     0043          BFA 8 C,22,23
.44.0     0044          BFA 8 CD,22,13
.45.0     0045          BFA 8 A+,22,14
.46.0     0046    O     LDB 8 S3
.47.0     0047          IBB 8 B,9999
.48.0     0048          STP 8 U
.49.0     0049          BUN 8 W
.50.0     0050          BUN 8 B
.51.0     0051    *A    IFL 8 I,94,16
.52.0     0052          BUN 8 O
.53.0     0053    K     CLL 8 S6
.54.0     0054          CAD 8 N
.55.0     0055          STP 8 U
.56.0     0056          IBB 8 X,9992
.57.0     0057          BUN 8 B
.58.0     0058    C     IFL 8 S5,00,1
.59.0     0059          STP 8 U
.60.0     0060          BUN 8 W
.61.0     0061          IFL 8 S2,00,1
.62.0     0062          BUN 8 B
.63.0     0063    Q     IFL 8 S1,00,1
.64.0     0064          BUN 8 B
.65.0     0065    P     LDR 8 T
.66.0     0066          STR 8 D,22
.67.0     0067          IFL 8 S4,00,1
.68.0     0068          BUN 8 B
.69.0     0069    G     SLA 0 1
.70.0     0070          LDR 8 N
.71.0     0071          SLT 0 1
.72.0     0072          STR 8 N
.73.0     0073          DFL 8 D,22,1
.74.0     0074          IFL 8 S3,00,1
.75.0     0075          BUN 8 B
.76.0     0076    W     LDR 8 S2
.77.0     0077          BZR 8 E
.78.0     0078          LDB 8 S1
.79.0     0079          CSU 8 N
.80.0     0080          SLA   8
.81.0     0081          IBB 8 *+2,9999
.82.0     0082          LSA   0
.83.0     0083          SUA 8 F
.84.0     0084          DFL 8 F,12,10
.85.0     0085          BRP 8 X
.86.0     0086          LSA   0
```

```
  .87.0     0087          BUN 8 X
  .88.0     0088    J     LDB 8 S5
  .89.0     0089          DBB 8 L,1
  .90.0     0090    X     STP 0 *
  .91.0     0091    Y     BUN 0 *
  .92.0     0092          BSA 8 Z,9
  .93.0     0093          STB 8 Y,04
  .94.0     0094    V     LDB 8 S
  .95.0     0095          CLL 8 D
  .96.0     0096          RTF 8 D,7
  .97.0     0097    U     BUN 0 *
  .98.0     0098    L     STA 8 F
  .99.0     0099          BUN 8 V
01.00.0     0100    Z     LDB 8 READ
01.01.0     0101          CLL 8 SW
 1.02.0     0102          BUN - 0
 1.03.0     0103    E     CAD 8 N
01.04.0     0104          LDB 8 S4
01.05.0     0105          IBB 8 S,9999
01.06.0     0106          ADD 8 D
01.07.0     0107          FAD 8 D
01.08.0     0108    S     LDB 8 S1
01.09.0     0109          IBB 8 J,9999
01.10.0     0110          LSA 0 1
01.11.0     0111          BUN 8 J
01.12.0     0112    AC    CFA 8 ST1,08
01.13.0     0113          BCU 8 B
01.14.0     0114          LDR   M+2
01.15.0     0115          CFR 8 ST2,00
01.16.0     0116          BCU 8 B
01.17.0     0117          LDB 8 SW
01.18.0     0118          IFL - 0,00,1
01.19.0     0119          BUN 8 Z
01.20.0     0120    CD    LDB 8 S3
01.21.0     0121          IBB 8 B-,9999
01.22.0     0122          DFL 8 I,05,2
01.23.0     0123          BUN 8 O+2
01.24.0     0124    T     CNST  +5800000000
01.25.0     0125    ST1   CNST  $5SENT$
01.26.0     0126    ST2   CNST  $INEL $
01.27.0     0127    R     CNST  +5110000000
01.28.0     0128    SW    HLT 0 0
01.29.0     0129    D     HLT 0 0
 1.30.0     0130    S1    HLT 0 0
```

```
01.31.0     0131   S2     HLT 0 0
01.32.0     0132   S3     HLT 0 0
01.33.0     0133   S4     HLT 0 0
01.34.0     0134   S5     HLT 0 0
01.35.0     0135   N      HLT 0 0
01.36.0     0136   S6     HLT 0 0
01.37.0     0137   F      HLT 0 0
01.38.0     0138   I      HLT 0 0
01.39.0     0100   M      DEFN  100
01.40.0     0139          CNST  40000990000
01.41.0     0140          CNST  $READ REED=1 $
 1.42.0     0143          CNST  90000000000
01.43.0     0144          FINI  1
```

```
.00.0        THE LIBRARY ERROR SUBROUTINE
.00.0   0000  ERROR DEFN  *
.00.0   0000  ERA   STP 8 C+
.00.0   0001        BUN 8 A+
.00.0   0002  MSGA  CNST  $RESULT OUT OF RANGE IN    $
.00.0   0007  ERB   STP 8 C+
.00.0   0008        BUN 8 A+
.00.0   0009  MSGB  CNST  $RESULT UNDEFINED FOR      $
.00.0   0014  ERC   STP 8 C+
.00.0   0015        BUN 8 A+
.00.0   0016  MSGC  CNST  $RESULT ILL-DEFINED FOR    $
.00.0   0021  ERD   CLL 8 OUT+5
.00.0   0022        STP 8 C+
.00.0   0023        BUN 8 A++2
.00.0   0024  Z     CNST  0
.00.0   0025  MSGD  CNST  $ ARITHMETIC OVERFLOW$
.00.0   0029  *A    STR 8 OUT+5
.00.0   0030        CAR
.00.0   0031        STB 8 B+,04
.00.0   0032        LDB 8 OUT1
.00.0   0033  *C    RTF   *,5
.00.0   0034        F4246 1106,44,0100
.00.0   0035        F4246 OUT,30,0100
.00.0   0036  *B    BUN   *
.00.0   0037  OUT   CNST  0,0,0,0,0,0,0,0,0,0,0
.00.0   0048  H     CNST  5000000000
.00.0   0049  B     CNST  0
.00.0   0050  C     CNST  0
.00.0   0051  ONE   CNST  5110000000
.00.0   0052  A     CNST  0
.00.0   0053  OUT1  HLT 8 OUT
.00.0   0054        CNST  40000990000
.00.0   0055        CNST  $ERROR RITE=1 $
.00.0   0058        CNST  90000000000
.00.0   0059        FINI  ERROR
```

```
.00.0     0100   ERROR DEFN  100
.00.0     0000   SQRT  CLB
.00.0     0001         LDB 8 SQRT
.00.0     0002         BZA - 0
.00.0     0003         BMA 8 A+
.00.0     0004         STA 8 A,08
.00.0     0005         STA 8 EXP,23
.00.0     0006         CAD 6 ERROR+48        =5(11)=
.00.0     0007         MUL 8 EXP
.00.0     0008         SUB 8 +2550000000
.00.0     0009         STA 8 EXP,23
.00.0     0010         CFA 8 EXP,31
.00.0     0011         BCE 8 *+3
.00.0     0012         BMA 8 *+2
.00.0     0013         IFL 8 EXP,22,1
.00.0     0014         CAD 8 -4916450338
.00.0     0015         FMU 8 A
.00.0     0016         FAD 8 +5041117101
.00.0     0017         FMU 8 A
.00.0     0018         FAD 8 +5062697923
.00.0     0019         STA 6 ERROR+49        B
.00.0     0020         CAD 8 A
.00.0     0021         FDV 6 ERROR+49        B
.00.0     0022         FAD 6 ERROR+49        B
.00.0     0023         FMU 8 +5050000000
.00.0     0024         STA 6 ERROR+49        B
.00.0     0025         CAD 8 A
.00.0     0026         FDV 6 ERROR+49        B
.00.0     0027         FAD 6 ERROR+49        B
.00.0     0028         ADD 8 EXP
.00.0     0029         BCE 8 B+
.00.0     0030         FMU 8 +5015811388
.00.0     0031         BUN - 0
.00.0     0032   *B    FMU 8 +5050000000
.00.0     0033         BUN - 0
.00.0     0034   *A    LDR 8 $SQRT$
.00.0     0035         BUN 6 ERROR+7
.00.0     0036   A     CNST  5110000000
.00.0     0037   EXP   CNST  0
.00.0     0038   LOCN  LOCN  *+7
.00.0     0045         CNST  40000990000
.00.0     0046         CNST  $SQRT,REAL(REAL) ERROR=1 $
.00.0     0051         CNST  90000000000
.00.0     0052         LOCN  LOCN
```

```
.00.0     0038          FINI   1
            38                 -4916450338
            39                 +5015811388
            40                 +2550000000
            41                 +5050000000
            42                 $SQRT
           043                 +5041117101
           044                 +5062697923
```

```
.00.0     0100   ERROR DEFN  100
.00.0     0000   EXP   CLR
.00.0     0001         LDR 8 EXP2
.00.0     0002         STR 8 E+,04
.00.0     0003         STA 8 EXP,12
.00.0     0004         CFA 8 +5311282665,00
.00.0     0005         BCH 8 B+
.00.0     0006         SLT   2
.00.0     0007         STR 8 *+1,02
.00.0     0008         CLR
.00.0     0009         LDB 8 *-1
.00.0     0010         MUL 8 +4342944819
.00.0     0011         IBB 8 *+3,9949
.00.0     0012         SLT - 1
.00.0     0013         LBC 8 *-1
.00.0     0014         SLT   8
.00.0     0015         STR 8 TS,22
.00.0     0016         IFL 8 TS,22,51
.00.0     0017         SLT   12
.00.0     0018         CLR
.00.0     0019         IBB 8 *+2,10
.00.0     0020         SLT - 1
.00.0     0021         SLT   10
.00.0     0022         STA 6 ERROR+50      C
.00.0     0023         MUL 6 ERROR+50      C
.00.0     0024         STA 6 ERROR+52      A
.00.0     0025         MUL 8 -17159
.00.0     0026         ADD 8 -4893282
.00.0     0027         MUL 6 ERROR+52      A
.00.0     0028         ADD 8 -169203872
.00.0     0029         MUL 6 ERROR+52      A
.00.0     0030         ADD 8 -995711477
.00.0     0031         MUL 6 ERROR+50      C
.00.0     0032         STA 6 ERROR+50      C
.00.0     0033         STA 6 ERROR+49      B
.00.0     0034         CAD 8 +417304
.00.0     0035         MUL 6 ERROR+52      A
.00.0     0036         ADD 8 +35418755
.00.0     0037         MUL 6 ERROR+52      A
.00.0     0038         ADD 8 +529087016
.00.0     0039         MUL 6 ERROR+52      A
.00.0     0040         ADD 8 +864864000
.00.0     0041         ADL 6 ERROR+49      B
.00.0     0042         SUB 6 ERROR+50      C
```

```
.00.0    0043          SRT   3
.00.0    0044          DIV 6 ERROR+49        B
.00.0    0045          ADA 8 TS
.00.0    0046          DFL 8 EXP,12,10
.00.0    0047          LDB 8 EXP
.00.0    0048          BRP 8 A+
.00.0    0049          BUN - 0
.00.0    0050    *A    STA 6 ERROR+50        C
.00.0    0051          CAD 8 +5099999999
.00.0    0052          F4248 9999,41,*
.00.0    0053          FDV 6 ERROR+50        C
.00.0    0054          BUN - 0
.00.0    0055    *B    LDB 8 EXP
.00.0    0056          BMA 8 C+
.00.0    0057    *E    LDR 8 EXP1
.00.0    0058          BUN 6 ERROR
.00.0    0059    *C    CLA
.00.0    0060          BUN - 0
.00.0    0061    TS    CNST  0
.00.0    0062    EXP2  HLT 8 EXP1
.00.0    0063    EXP1  CNST  $EXP$
.00.0    0064    LOCN  LOCN  *+11
.00.0    0075          CNST  40000990000
.00.0    0076          CNST  $EXP,REAL(REAL) ERROR=1 $
.00.0    0081          CNST  90000000000
.00.0    0082          LOCN  LOCN
.00.0    0064          FINI  1
           64                +5099999999
           65                +0035418755 b2
           66                +4342944819
           67                +0000417304 b1
           68                +0864864000 b4
           69                +0529087016 b3
           70                -0169203872 a3
           71                +5311282665
           72                -0000017159 a1
           73                -0004893282 a2
           74                -0995711477 a4
```

```
.00.0     0100    ERROR DEFN  100
.00.0     0000    LOG   CRB
.00.0     0001          BMA 8 F+
.00.0     0002          BZA 8 F+
.00.0     0003          SRT   2
.00.0     0004          STA 8 EXP,42
.00.0     0005          SLT   4
.00.0     0006          CFA 8 CP1+
.00.0     0007          BCL 8 SMALL
.00.0     0008          CFA 8 CP2+
.00.0     0009          BCH 8 SMALL
.00.0     0010          SRT   1
.00.0     0011          ADD 8 +316227766
.00.0     0012          STA 6 ERROR+52
.00.0     0013          SUB 8 +632455532
.00.0     0014    *CP1  F4246 1014,15,ERROR+52
.00.0     0015          STA 6 ERROR+52
.00.0     0016          MUL 6 ERROR+52
.00.0     0017          STA 6 ERROR+49        B
.00.0     0018          MUL 8 +0410597044
.00.0     0019          ADD 8 +0057228327
.00.0     0020          MUL 6 ERROR+49        B
.00.0     0021          ADD 8 +0250341093
.00.0     0022          MUL 6 ERROR+49        B
.00.0     0023          ADD 8 +0282433571
.00.0     0024          MUL 6 ERROR+49        B
.00.0     0025          ADD 8 +0400193033
.00.0     0026          MUL 6 ERROR+49        B
.00.0     0027          ADD 8 +0666661710
.00.0     0028          MUL 6 ERROR+49        B
.00.0     0029          ADD 8 +2000000037
.00.0     0030          MUL 6 ERROR+52
.00.0     0031          ADD 8 +1151292547
.00.0     0032    *A    BFA 8 D+,22,00
.00.0     0033    *CP2  F424  9858,48,1
.00.0     0034          IBB 8 A-,1
.00.0     0035    *D    STA 9 RGN,08
.00.0     0036    *B    CAD 8 EXP
.00.0     0037          FSU 8 +5251000000
.00.0     0038          BCL 8 *+2
.00.0     0039          FAD 6 ERROR+51        =1.0=
.00.0     0040          FMU 8 +5123025851
.00.0     0041          FAD 9 RGN
.00.0     0042          LDB 8 LOG
```

```
.00.0     0043            BUN - 0
.00.0     0044    SMALL   BFA 8 A+,11,1
.00.0     0045            SRT   1
.00.0     0046            SUB 8 +2000000000
.00.0     0047    *A      FAD 8 +1000000000
.00.0     0048            BZA 8 E+
.00.0     0049            STA 6 ERROR+52
.00.0     0050            IFL 6 ERROR+52,22,39
.00.0     0051            CAD 6 ERROR+52
.00.0     0052            FMU 8 -5025000000
.00.0     0053            FAD 8 +5033333333
.00.0     0054            FMU 6 ERROR+52
.00.0     0055            FAD 8 -5050000000
.00.0     0056            FMU 6 ERROR+52
.00.0     0057            FMU 6 ERROR+52
.00.0     0058            FAD 6 ERROR+52
.00.0     0059    *E      STA 8 RGN+3
.00.0     0060            IBB 8 B-,3
.00.0     0061    *F      LDR 8 $LOG$
.00.0     0062            LDB 8 LOG
.00.0     0063            BUN 6 ERROR+7
.00.0     0064    RGN     CNST  4900000000
.00.0     0065                  5000000000
.00.0     0066                  5100000000
.00.0     0067                  0000000000
.00.0     0068    EXP           5200000000
.00.0     0069    LOCN    LOCN  *+18
.00.0     0087            CNST  40000990000
.00.0     0088            CNST  $LOG,REAL(REAL) ERROR=1 $
.00.0     0093            CNST  90000000000
.00.0     0094            LOCN  LOCN
.00.0     0069            FINI  LOG
            69                  +1000000000
            70                  +2000000000
            71                  +5033333333
            72                  +5123025851
            73                  +0316227766
            74                  +0057228327
            75                  +0632455532
            76                  +0400193033
            77                  -5025000000
            78                  $LOG
            79                  +0666661710
            80                  +2000000037
```

81	+0410597044
82	-5050000000
83	+5251000000
84	+0250341093
85	+0282433571
86	+1151292547

```
.00.0     0100   ERROR DEFN  100
.00.0     0200   LOG   DEFN  200
.00.0     0300   EXP   DEFN  300
.00.0     0400   FIX   DEFN  400
.00.0     0000   FLFL  F4247 6,1,0
.00.0     0001         STR 6 ERROR+50       C
.00.0     0002         STB 8 A+,41
.00.0     0003         STA 6 ERROR+52
.00.0     0004         DLB 8 FLFL,44,0
.00.0     0005         BOF 6 ERROR+21
.00.0     0006   *C    LDB 8 FLFL
.00.0     0007         BZA 8 D+
.00.0     0008         BMA 8 E+
.00.0     0009   *F    STP 6 LOG
.00.0     0010         BUN 6 LOG
.00.0     0011         FMU 6 ERROR+50       C
.00.0     0012         BOF 8 G+
.00.0     0013         CFA 8 +5311282665
.00.0     0014         BCH 8 Y+
.00.0     0015         STP 6 EXP
.00.0     0016         BUN 6 EXP
.00.0     0017   *A    LSA   0
.00.0     0018   *Z    LDB 8 FLFL
.00.0     0019         BUN - 0
.00.0     0020   *D    CFR 6 ERROR+24       =0=
.00.0     0021         BCH - 0
.00.0     0022         BUN 8 X+
.00.0     0023   *E    SOH
.00.0     0024         SLT   10
.00.0     0025         STP 6 FIX
.00.0     0026         BUN 6 FIX
.00.0     0027         SOR
.00.0     0028         BZR 8 I+
.00.0     0029   *X    LDB 8 FLFL
.00.0     0030         LDR 8 $FLFL$
.00.0     0031         BUN 6 ERROR+7
.00.0     0032   *I    SLS   10
.00.0     0033         RND
.00.0     0034         SRS   4
.00.0     0035         STA 8 A-,41
.00.0     0036         CAA 6 ERROR+52
.00.0     0037         BUN 8 F-
.00.0     0038   *Y    LDR 8 $FLFL$
.00.0     0039         LDB 8 FLFL
```

```
.00.0     0040          BUN 6 ERROR
.00.0     0041    *G    CAD 6 ERROR+52
.00.0     0042          MUL 6 ERROR+50       C
.00.0     0043          BPA 8 Y-
.00.0     0044          CLA
.00.0     0045          BUN 8 Z-
.00.0     0046    LOCN  LOCN  *+2
.00.0     0048          CNST  40000990000
.00.0     0049          CNST  $FL*FL ERROR=1 LOG=2 EXP=3 FIX=4 $
.00.0     0056          CNST  90000000000
.00.0     0057          LOCN  LOCN
.00.0     0046          FINI  1
            46                $FLFL
           047                +5311282665
```

```
.00.0     0100   ERROR DEFN  100
.00.0     0000   FLFX  F4247 3,01,*
.00.0     0001         DLB 8 *-1,44,0
.00.0     0002         BOF 6 ERROR+21
.00.0     0003         STR 6 ERROR+49       B
.00.0     0004         STA 6 ERROR+52
.00.0     0005         LDB 8 FLFX
.00.0     0006         BZA 8 A+
.00.0     0007         CAD 6 ERROR+51       =1.0=
.00.0     0008         BZR - 0
.00.0     0009         STA 6 ERROR+50       C
.00.0     0010   *B    CAD 6 ERROR+48        =5(11)=
.00.0     0011         MUL 6 ERROR+49       B
.00.0     0012         STA 6 ERROR+49       B
.00.0     0013         BZR 8 C+
.00.0     0014         CAD 6 ERROR+50       C
.00.0     0015         FMU 6 ERROR+52
.00.0     0016         STA 6 ERROR+50       C
.00.0     0017   *C    LDR 6 ERROR+49       B
.00.0     0018         BZR 8 D+
.00.0     0019         CAD 6 ERROR+52
.00.0     0020         FMU 6 ERROR+52
.00.0     0021         STA 6 ERROR+52
.00.0     0022         BUN 8 B-
.00.0     0023   *D    BOF 8 F+
.00.0     0024         BFR 8 E+,12,10
.00.0     0025         BUN - 0
.00.0     0026   *E    CAD 6 ERROR+51       =1.0=
.00.0     0027         FDV 6 ERROR+50       C
.00.0     0028         BUN - 0
.00.0     0029   *A    CFR 6 ERROR+24       =0=
.00.0     0030         BCH - 0
.00.0     0031         LDR 8 $FLFX$
.00.0     0032         BUN 6 ERROR+7
.00.0     0033   *F    CLA
.00.0     0034         BFR - 0,12,10
.00.0     0035         LDR 8 $FLFX$
.00.0     0036         BUN 6 ERROR
.00.0     0037   LOCN  LOCN  *+1
.00.0     0038         CNST  40000990000
.00.0     0039         CNST  $FL*FX ERROR=1 $
.00.0     0042         CNST  90000000000
.00.0     0043         LOCN  LOCN
.00.0     0037         FINI  1
```

```
.00.0   0100   ERROR DEFN  100
.00.0   0000   FXFX  CLB
.00.0   0001         LDB 8 FXFX
.00.0   0002         BZA 8 F+
.00.0   0003         STR 6 ERROR+49       B
.00.0   0004         STA 6 ERROR+52
.00.0   0005         CLL 6 ERROR+50       C
.00.0   0006         IFL 6 ERROR+50,00,1
.00.0   0007   *A    CAD 6 ERROR+48           =5(11)=
.00.0   0008         MUL 6 ERROR+49       B
.00.0   0009         STA 6 ERROR+49       B
.00.0   0010         BZR 8 B+
.00.0   0011         CAD 6 ERROR+50       C
.00.0   0012         MUL 6 ERROR+52
.00.0   0013         STR 6 ERROR+50       C
.00.0   0014         BZA 8 B+
.00.0   0015         BUN 8 A+
.00.0   0016   *B    LDR 6 ERROR+49       B
.00.0   0017         BZR 8 C+
.00.0   0018         CAD 6 ERROR+52
.00.0   0019         MUL 6 ERROR+52
.00.0   0020         STR 6 ERROR+52
.00.0   0021         BZA 8 A-
.00.0   0022   *A    CAD 6 ERROR+49       B
.00.0   0023         BMA 8 E+
.00.0   0024         LDR 8 $FXFX$
.00.0   0025         BUN 6 ERROR
.00.0   0026   *C    CAD 6 ERROR+50       C
.00.0   0027         BFR 8 D+,12,10
.00.0   0028         BUN - 0
.00.0   0029   *D    LDR 8 +1
.00.0   0030         CLA
.00.0   0031         DIV 6 ERROR+50       C
.00.0   0032         BUN - 0
.00.0   0033   *F    CFR 6 ERROR+24       ZERO
.00.0   0034         BCH - 0
.00.0   0035         LDR 8 $FXFX$
.00.0   0036         BUN 6 ERROR+7
.00.0   0037   *E    CLA
.00.0   0038         BUN - 0
.00.0   0039   LOCN  LOCN  *+2
.00.0   0041         CNST  40000990000
.00.0   0042         CNST  $FX*FX ERROR=1 $
.00.0   0045         CNST  90000000000
```

```
.00.0     0046          LOCN  LOCN
.00.0     0039          FINI  FXFX
            39                +0000000001
            40                $FXFX
```

```
.00.0   0100   FLOAT DEFN  100
.00.0   0200   FLFL  DEFN  200
.00.0   0300   ERROR DEFN  300
.00.0   0000   FXFL  CLB
.00.0   0001         LDB 8 FXFL
.00.0   0002         STB 6 FLFL,04
.00.0   0003         STR 6 ERROR+50       C
.00.0   0004         STR 6 ERROR+49       B
.00.0   0005         STP 6 FLOAT
.00.0   0006         BUN 6 FLOAT
.00.0   0007         LDR 6 ERROR+50       C
.00.0   0008         BUN 6 FLFL+2
.00.0   0009         CNST  40000990000
.00.0   0010         CNST  $FX*FL FLOAT=1 FL*FL=2 ERROR=3 $
.00.0   0016         CNST  90000000000
.00.0   0017         FINI  1
```

```
.00.0     0100    ERROR DEFN  100
.00.0     0000    SIN   CRB
.00.0     0001          LDR 8 SIN2
.00.0     0002          STR 8 F+,04
.00.0     0003          CLL 6 ERROR+52
.00.0     0004          FMU 8 +5031830989
.00.0     0005          SLT   2
.00.0     0006          STR 8 EXP,02
.00.0     0007          LDB 8 EXP
.00.0     0008          IBB 8 A+,9949
.00.0     0009          DBB 8 B+,7
.00.0     0010          SLT - 18
.00.0     0011          STA 6 ERROR+52
.00.0     0012          CAD 8 *+1
.00.0     0013          SLT   50
.00.0     0014    *A    SLT   18
.00.0     0015          STA 6 ERROR+50      C
.00.0     0016          FAD 6 ERROR+50      C
.00.0     0017          CFA 6 ERROR+51,00   =1.0=
.00.0     0018          BCL 8 D+
.00.0     0019          LSA   0
.00.0     0020          FSU 8 +5120000000
.00.0     0021          SLT   0
.00.0     0022    *D    STA 6 ERROR+50      C
.00.0     0023          FMU 6 ERROR+50      C
.00.0     0024          STA 6 ERROR+49      B
.00.0     0025          FMU 8 +4715148419
.00.0     0026          FAD 8 -4846737656
.00.0     0027          FMU 6 ERROR+49      B
.00.0     0028          FAD 8 +4979689679
.00.0     0029          FMU 6 ERROR+49      B
.00.0     0030          FAD 8 -5064596371
.00.0     0031          FMU 6 ERROR+49      B
.00.0     0032          FAD 8 +5057079632
.00.0     0033          FMU 6 ERROR+50      C
.00.0     0034          FAD 6 ERROR+50      C
.00.0     0035          STA 6 ERROR+50      C
.00.0     0036          CAD 6 ERROR+48     =5(11)=
.00.0     0037          MUL 6 ERROR+52
.00.0     0038          CAD 6 ERROR+50      C
.00.0     0039          LDB 8 SIN
.00.0     0040          BZR - 0
.00.0     0041          CSU 6 ERROR+50      C
.00.0     0042          BUN - 0
```

$f(z=x^2) = a_1 z^4 - a_2 z^3 + a_3 z^2 - a_4 z + a_5$

```
.00.0      0043   *B     LDB 8 SIN
.00.0      0044   *F     LDR 8 SIN1
.00.0      0045          BUN 6 ERROR+14
.00.0      0046   SIN2   HLT 8 SIN1
.00.0      0047   SIN1   CNST  $SIN$
.00.0      0048   EXP           0
.00.0      0049   LOCN   LOCN  *+7
.00.0      0056          CNST  40000990000
.00.0      0057          CNST  $SIN,REAL(REAL) ERROR=1 $
.00.0      0062          CNST  90000000000
.00.0      0063          LOCN  LOCN
.00.0      0049          FINI  SIN
             49                +5120000000
             50                -5064596371
            051                -4846737656
            052                +4979689679
            053                +5031830989
            -54                +5057079632
             55                +4715148419
```

```
.00.0     0100   SIN    DEFN  100
.00.0     0000   COS    CRB
.00.0     0001          LDR 8 COS
.00.0     0002          STR 6 SIN,04
.00.0     0003          LDR 8 COS2
.00.0     0004          FAD 8 +5078539816
.00.0     0005          FAD 8 +5078539816
.00.0     0006          BUN 6 SIN+2
.00.0     0007   COS2   HLT 8 COS1
.00.0     0008   COS1   CNST  $COS$
.00.0     0009   LOCN   LOCN  *+1
.00.0     0010          CNST  40000990000
.00.0     0011          CNST  $COS,REAL(REAL) SIN=1 $
.00.0     0016          CNST  90000000000
.00.0     0017          LOCN  LOCN
.00.0     0009          FINI  COS
             9                +5078539816
```

```
.00.0     0100   SIN    DEFN  100
.00.0     0200   COS    DEFN  200
.00.0     0300   ERROR  DEFN  300
.00.0     0000   TAN    CRB
.00.0     0001          STA 8 X
.00.0     0002          LDR 8 TAN2
.00.0     0003          STP 6 SIN
.00.0     0004          BUN 6 COS+4
.00.0     0005          BZA 8 A+
.00.0     0006          STA 8 COSX
.00.0     0007          CAD 8 X
.00.0     0008          STP 6 SIN
.00.0     0009          BUN 6 SIN
.00.0     0010          FDV 8 COSX
.00.0     0011          LDB 8 TAN
.00.0     0012          BUN - 0
.00.0     0013   *A     LDR 8 X
.00.0     0014          CFR 8 *+1,22
.00.0     0015          F424- 5700,34,0
.00.0     0016          LDB 8 TAN
.00.0     0017          LDR 8 TAN1
.00.0     0018          BUN 6 ERROR+7
.00.0     0019   X      CNST  0
.00.0     0020   COSX   CNST  0
.00.0     0021   TAN1   CNST  $TAN$
.00.0     0022   TAN2   HLT 8 TAN1
.00.0     0023          CNST  40000990000
.00.0     0024          CNST  $TAN,REAL(REAL) SIN=1 COS=2 ERROR=3 $
.00.0     0031          CNST  90000000000
.00.0     0032          FINI  TAN
```

```
.00.0     0100   ATAN  DEFN  100
.00.0     0200   ROMXX DEFN  200
.00.0     0300   ERROR DEFN  300
.00.0     0000   ASIN  NOP
.00.0     0001         STA 6 ERROR+52
.00.0     0002         LDR 8 ASIN2
.00.0     0003         STP 6 ROMXX
.00.0     0004         BUN 6 ROMXX+4
.00.0     0005         LDB 8 ASIN
.00.0     0006         BZA 6 ROMXX+39
.00.0     0007         STA 6 ERROR+49       B
.00.0     0008         CAD 6 ERROR+52
.00.0     0009         FDV 6 ERROR+49       B
.00.0     0010         BUN 6 ATAN+2
.00.0     0011   ASIN2 HLT 8 ASIN1
.00.0     0012   ASIN1 CNST  $ASIN$
.00.0     0013         CNST  40000990000
.00.0     0014         CNST  $ARCSIN,REAL(REAL) ARCTAN=1 ROMXX=2 ERROR=3 $
.00.0     0023         CNST  90000000000
.00.0     0024         FINI  ASIN
```

```
.00.0     0100   ATAN   DEFN  100
.00.0     0200   ROMXX  DEFN  200
.00.0     0300   ERROR  DEFN  300
.00.0     0000   ACOS   NOP
.00.0     0001          STA 6 ERROR+52
.00.0     0002          LDB 8 ACOS
.00.0     0003          BZA 6 ROMXX+39
.00.0     0004          LDR 8 ACOS2
.00.0     0005          STP 6 ROMXX
.00.0     0006          BUN 6 ROMXX+4
.00.0     0007          FDV 6 ERROR+52
.00.0     0008          STP 6 ATAN
.00.0     0009          BUN 6 ATAN
.00.0     0010          LDB 8 ACOS
.00.0     0011          LDR 6 ERROR+52
.00.0     0012          SLT   0
.00.0     0013          BPA - 0
.00.0     0014          FAD 8 +5131415927
.00.0     0015          BUN - 0
.00.0     0016   ACOS2  HLT 8 ACOS1
.00.0     0017   ACOS1  CNST  $ACOS$
.00.0     0018   X      CNST  0
.00.0     0019   LOCN   LOCN  *+1
.00.0     0020          CNST  40000990000
.00.0     0021          CNST  $ARCCOS,REAL(REAL) ARCTAN=1 ROMXX=2 ERROR=3 $
.00.0     0030          CNST  90000000000
.00.0     0031          LOCN  LOCN
.00.0     0019          FINI  ACOS
            19                +5131415927
```

```
.00.0     0100    ERROR DEFN  100
.00.0     0000    ATAN  CRB
.00.0     0001          LDB 8 ATAN
.00.0     0002          CFA 6 ERROR+51,00    =1.0=
.00.0     0003          STA 6 ERROR+52
.00.0     0004          STB 8 C+,44
.00.0     0005          BCL 8 B+
.00.0     0006          DFL 8 C+,44,1
.00.0     0007          F4248 5010,10,+5099999999
.00.0     0008          FDV 6 ERROR+52
.00.0     0009    *B    CFA 8 *-2,00
.00.0     0010          BCL 8 A+
.00.0     0011          SLA   2
.00.0     0012          STA 6 ERROR+52
.00.0     0013          MUL 6 ERROR+52
.00.0     0014          STA 6 ERROR+49       B
.00.0     0015          MUL 8 +0049017591
.00.0     0016          ADD 8 +0565030980
.00.0     0017          MUL 6 ERROR+49       B
.00.0     0018          ADD 8 +1453567135
.00.0     0019          MUL 6 ERROR+49       B
.00.0     0020          ADD 8 +1000000000
.00.0     0021          STA 6 ERROR+50       C
.00.0     0022          CAD 8 +0008561189
.00.0     0023          MUL 6 ERROR+49       B
.00.0     0024          ADD 8 +0280504541
.00.0     0025          MUL 6 ERROR+49       B
.00.0     0026          ADD 8 +1120234014
.00.0     0027          MUL 6 ERROR+49       B
.00.0     0028          ADD 8 +1000000000
.00.0     0029          MUL 6 ERROR+52
.00.0     0030          SRT   2
.00.0     0031          DIV 6 ERROR+50       C
.00.0     0032          STA 6 ERROR+50       C
.00.0     0033          IFL 6 ERROR+50,11,5
.00.0     0034          CAD 6 ERROR+50       C
.00.0     0035    *C    IBB - 0,0
.00.0     0036          CAD 8 +5115707963
.00.0     0037          LDR 6 ERROR+52
.00.0     0038          SLT   0
.00.0     0039          FSU 6 ERROR+50       C
.00.0     0040          BUN - 1
.00.0     0041    *A    STA 6 ERROR+52
.00.0     0042          FMU 6 ERROR+52
```

```
.00.0     0043          STA 6 ERROR+49       B
.00.0     0044          FMU 8 -5014281428C1
.00.0     0045          FAD 8 +5020000000C2
.00.0     0046          FMU 6 ERROR+49       B
.00.0     0047          FSU 8 +5033333333C3
.00.0     0048          FMU 6 ERROR+49       B
.00.0     0049          FMU 6 ERROR+52
.00.0     0050          FAD 6 ERROR+52
.00.0     0051          STA 6 ERROR+50       C
.00.0     0052          BUN 8 C-
.00.0     0053    LOCN  LOCN  *+12
.00.0     0065          CNST  40000990000
.00.0     0066          CNST  $ARCTAN,REAL(REAL) ERROR=1 $
.00.0     0072          CNST  90000000000
.00.0     0073          LOCN  LOCN
.00.0     0053          FINI  ATAN
            53                +1000000000
            54                +5099999999
            55                +5033333333
            56                +5020000000
            57                +0280504541
            58                -5014281428
           059                +1453567135
            60                +0049017591
            61                +0008561189
            62                +1120234014
            63                +0565030980
            64                +5115707963
```

```
.00.0     0100   ERROR DEFN  100
.00.0     0200   SQRT  DEFN  200
.00.0     0000   ROMXX F4247 3,1,0
.00.0     0001         DLB 8 *-1,44,0
.00.0     0002         BOF 6 ERROR+21
.00.0     0003         LDR 8 ROM2
.00.0     0004         STR 8 B+,04
.00.0     0005         CFA 6 ERROR+51,00    =1.0=
.00.0     0006         BCH 8 B+
.00.0     0007         BFA 8 E+,22,51
.00.0     0008         BZA 8 F+
.00.0     0009         STA 6 ERROR+52
.00.0     0010         FMU 6 ERROR+52
.00.0     0011         SLT   2
.00.0     0012         STR 8 E+,02
.00.0     0013         LBC 8 E+
.00.0     0014         SRT - 51
.00.0     0015         SUB 8 +1000000000
.00.0     0016         SLT   10
.00.0     0017         SUB 6 ERROR+48         =5(11)=
.00.0     0018         SUB 6 ERROR+48
.00.0     0019         SLT   10
.00.0     0020         BOF 8 *+2
.00.0     0021         F4248 51,12,+1
.00.0     0022         DLB 8 *-1,44,0
.00.0     0023   *D    BFA 8 C+,11,0
.00.0     0024         STB 8 E+,04
.00.0     0025         LDR 8 E+
.00.0     0026         SLT   18
.00.0     0027   *G    LDB 8 ROMXX
.00.0     0028         BUN 6 SQRT+2
.00.0     0029   *C    SLT   1
.00.0     0030         DBB 8 D-,1
.00.0     0031   *E    LSA   1
.00.0     0032   *F    FAD 6 ERROR+51       =1.0=
.00.0     0033         BUN 8 G-
.00.0     0034   *B    LDR 8 ROM1
.00.0     0035         LDB 8 ROMXX
.00.0     0036         BUN 6 ERROR+7
.00.0     0037   ROM1  CNST  $ROMXX$
.00.0     0038   ROM2  HLT 8 ROM1
.00.0     0039   ROM3  CAD 8 +5115707963
.00.0     0040         LDR 6 ERROR+52
.00.0     0041         BZR - 0
```

```
.00.0      0042            SLT   0
.00.0      0043            BUN - 0
.00.0      0044    LOCN    LOCN  *+3
.00.0      0047            CNST  40000990000
.00.0      0048            CNST  $ROMXX,REAL(REAL) ERROR=1 SQRT=2 $
.00.0      0055            CNST  90000000000
.00.0      0056            LOCN  LOCN
.00.0      0044            FINI  ROMXX
             44                  +1000000000
             45                  +0000000001
             46                  +5115707963
```

```
.00.0     0000   ENTIR CRB
.00.0     0001         CFA 8 +5810000000,22
.00.0     0002         BCH 8 A+
.00.0     0003         SRT   0
.00.0     0004         BPA 8 B+
.00.0     0005         LSA   0
.00.0     0006         FAD 8 +5099999999
.00.0     0007   *B    FAD 8 +5810000000
.00.0     0008         FSU 8 +5810000000
.00.0     0009         SLT   0
.00.0     0010   *A    LDB 8 ENTIR
.00.0     0011         BUN - 0
.00.0     0012   LOCN  LOCN  *+2
.00.0     0014         CNST  40000990000
.00.0     0015         CNST  $ENTIRE,REAL(REAL) $
.00.0     0019         CNST  90000000000
.00.0     0020         LOCN  LOCN
.00.0     0012         FINI  ENTIR
            12               +5099999999
            13               +5810000000
```

```
.00.0       THE LABEL PROCESSING SUBROUTINE
.00.0    0100   ERROR DEFN  100
.00.0    0000   LABEL BCS   *,8
.00.0    0001          LDB 8 NUMLB
.00.0    0002          BOF 6 ERROR+21
.00.0    0003          LDB 8 LABEL
.00.0    0004          DLB - 9998,44,1
.00.0    0005          STB 8 HOLD
.00.0    0006          LDB 8 LABEL
.00.0    0007          DLB - 9999,44,0
.00.0    0008          STA 8 HOLD1
.00.0    0009          CAD - 0
.00.0    0010          STA 6 ERROR+49       B
.00.0    0011          SRT   10
.00.0    0012          STP 8 NUMLX
.00.0    0013          BSA 8 NUMLB,1
.00.0    0014          STA 6 ERROR+44
.00.0    0015          STR 6 ERROR+45
.00.0    0016          CAA 8 HOLD
.00.0    0017          SUB 8 +10000
.00.0    0018          SRT   10
.00.0    0019          STP 8 NUMLX
.00.0    0020          BUN 8 NUMLB
.00.0    0021          STR 6 ERROR+46,08
.00.0    0022   *I     BUN 8 *+1
.00.0    0023          IFL 6 ERROR+46,22,24
.00.0    0024          IFL 6 ERROR+47,22,04
.00.0    0025          IFL 8 I-,04,3
.00.0    0026          BCS 8 PRINT,7
.00.0    0027   EXIT   LDB 8 LABEL
.00.0    0028          CAD 8 HOLD1
.00.0    0029          BUN - 0
.00.0
.00.0    0030   PRINT  LDB 8 *+2
.00.0    0031          RTF 6 ERROR+24,1     ZERO
.00.0    0032          RTF 6 ERROR+37,5
.00.0    0033          STP 6 ERROR+36
.00.0    0034          BUN 6 ERROR+34
.00.0    0035          BUN 8 EXIT
.00.0
.00.0
.00.0    0036   NUMLB  F4248 8001,45,LABEL+3
.00.0    0037          SLA   1
.00.0    0038          SLT   1
```

```
.00.0     0039          SUB 8 +80
.00.0     0040          IFL 8 NUMLB,11,8
.00.0     0041          BOF 8 NUMLB+1
.00.0     0042          IFL 8 *-1,11,5
.00.0     0043          BOF 8 A+
.00.0     0044          STA 6 ERROR+50       C
.00.0     0045          BUN 8 NUMLB
.00.0     0046   *A     SRT   10
.00.0     0047          CAD 6 ERROR+50       C
.00.0     0048   NUMLX  BUN   *
.00.0     0049   LOCN   LOCN  *+4
.00.0     0053          CNST  40000990000
.00.0     0054          CNST  $LABEL ERROR=1 $
.00.0     0057          CNST  90000000000
.00.0     0058          LOCN  LOCN
.00.0     0049          FINI  LABEL
            49   HOLD1
            50   HOLD
            51                +0000010000
            52                +0000000080
```

```
.00.0       THE MONITOR SUBROUTINE
.00.0  0100   ERROR DEFN  100
.00.0  0000   MONTR BCS   *,10
.00.0  0001         STB 6 ERROR+49       B
.00.0  0002         LDB 8 E+
.00.0  0003         BOF 6 ERROR+21
.00.0  0004         STA 6 ERROR+52
.00.0  0005         LDB 8 MONTR
.00.0  0006         DLB - 9999,44,0
.00.0  0007         LDR - 0
.00.0  0008         STR 8 OUT
.00.0  0009         LDB 8 MONTR
.00.0  0010         CLL 8 OUT+3
.00.0  0011         CLL 8 OUT+4
.00.0  0012         STB 8 OUT+1,64
.00.0  0013         CAD - 9997
.00.0  0014         BPA 8 *+2
.00.0  0015         SUB 6 ERROR+49       B
.00.0  0016         STA 8 B+,04
.00.0  0017   *E     CLA 8 MONTR+4
.00.0  0018         LDR - 9998
.00.0  0019         BFR 8 *+3,11,8
.00.0  0020   *B     ADD   *
.00.0  0021         BUN 8 *+2
.00.0  0022         ADD 6 ERROR+52
.00.0  0023         BFR 8 A+,21,0
.00.0  0024         STA 8 OUT+2
.00.0  0025         BPA 8 C+
.00.0  0026         IFL 8 OUT+1,42,20
.00.0  0027   *C     STB 8 F+,04
.00.0  0028         F4246 0504,44,0200
.00.0  0029         F4246 OUT,30,0200
.00.0  0030   *D     CAD 6 ERROR+52
.00.0  0031         LDB 6 ERROR+49       B
.00.0  0032   *F     BUN   *
.00.0  0033         BUN   *
.00.0  0034   *A     SRT   8
.00.0  0035         CLL 8 OUT+2
.00.0  0036         STR 8 OUT+2,88
.00.0  0037         BSA 8 *+2,0
.00.0  0038         IFL 8 OUT+1,42,20
.00.0  0039         LSA   0
.00.0  0040         BFR 8 *+2,88,0
.00.0  0041         SUB 8 +50
```

```
.00.0     0042          IFL 8 OUT+3,02,23
.00.0     0043          IFL 8 OUT+1,62,03
.00.0     0044          STA 8 OUT+4,01
.00.0     0045          SLA   1
.00.0     0046          STA 8 OUT+4,89
.00.0     0047          IFL 8 OUT+4,91,8
.00.0     0048          IFL 8 OUT+4,71,8
.00.0     0049          BUN 8 C-
.00.0     0050    OUT   CNST  0
.00.0     0051          CNST  $=     $
.00.0     0052          CNST  0
.00.0     0053          CNST  0
.00.0     0054          CNST  0
.00.0     0055    LOCN  LOCN  *+1
.00.0     0056          CNST  40000990000
.00.0     0057          CNST  $MONIT ERROR=1 RITE=2 $
.00.0     0062          CNST  90000000000
.00.0     0063          LOCN  LOCN
.00.0     0055          FINI  MONTR
            55                +0000000050
```

```
.00.0     0100   ERROR DEFN  100
.00.0     0000   TRACE BCS   *,9
.00.0     0001         DLB 8 Y+,44,0
.00.0     0002   HOLD  BOF 6 ERROR+21
.00.0     0003   TR1   LDB 8 TRACE
.00.0     0004         STA 8 HOLD0
.00.0     0005         CAD - 9999
.00.0     0006         STA 8 HOLD,44
.00.0     0007         BFA 8 Y+,44,0
.00.0     0008   *A    CAD - 0
.00.0     0009         CFA 8 TR1,04
.00.0     0010         BCU 8 *+2
.00.0     0011         IBB 8 A-,2
.00.0     0012         ADA 8 HOLD
.00.0     0013         ADD 8 +9999000000
.00.0     0014         BOF 8 *+1
.00.0     0015   *Y    F4247 3,44,0
.00.0     0016         BFA   2,44,0
.00.0     0017   *Z    LDB 8 TRACE
.00.0     0018         CAD 8 HOLD0
.00.0     0019         BUN - 0
.00.0     0020   HOLD0 CNST  0
.00.0     0021   LOCN  LOCN  *+1
.00.0     0022         CNST  40000990000
.00.0     0023         CNST  $TRACE ERROR=1 $
.00.0     0026         CNST  90000000000
.00.0     0027         LOCN  LOCN
.00.0     0021         FINI  TRACE
            21               +9999000000
```

```
.00.0     0100   EXP    DEFN  100
.00.0     0200   ERROR  DEFN  200
.00.0     0000   SINH   CLR
.00.0     0001          CFA 6 EXP+71,00
.00.0     0002          BCH 8 C+
.00.0     0003          CFA 8 +5050000000,00
.00.0     0004          BCL 8 A+
.00.0     0005          STP 6 EXP
.00.0     0006          BUN 6 EXP+2
.00.0     0007          STA 6 ERROR+52
.00.0     0008          CSU 6 ERROR+51       =1.0=
.00.0     0009          FDV 6 ERROR+52
.00.0     0010          FAD 6 ERROR+52
.00.0     0011          FMU 8 +5050000000
.00.0     0012   *B     LDB 8 SINH
.00.0     0013          BUN - 0
.00.0     0014   *A     STA 6 ERROR+52
.00.0     0015          FMU 6 ERROR+52
.00.0     0016          STA 6 ERROR+49       B
.00.0     0017          FMU 8 +4719841270
.00.0     0018          FAD 8 +4883333333
.00.0     0019          FMU 6 ERROR+49       B
.00.0     0020          FAD 8 +5016666667
.00.0     0021          FMU 6 ERROR+49       B
.00.0     0022          FMU 6 ERROR+52
.00.0     0023          FAD 6 ERROR+52
.00.0     0024          BUN 8 B-
.00.0     0025   *C     LDB 8 SINH
.00.0     0026          LDR 8 $SINH$
.00.0     0027          BUN 6 ERROR
.00.0     0028   LOCN   LOCN  *+5
.00.0     0033          CNST  40000990000
.00.0     0034          CNST  $SINH,REAL(REAL) EXP=1 ERROR=2 $
.00.0     0040          CNST  90000000000
.00.0     0041          LOCN  LOCN
.00.0     0028          FINI  SINH
            28                $SINH
            29                +4719841270
            30                +4883333333
            31                +5050000000
           032                +5016666667
```

```
.00.0     0100   EXP    DEFN  100
.00.0     0200   ERROR  DEFN  200
.00.0     0000   COSH   NOP
.00.0     0001          LDR 8 COSH2
.00.0     0002          LSA   0
.00.0     0003          STP 6 EXP
.00.0     0004          BUN 6 EXP+2
.00.0     0005          BZA 8 A+
.00.0     0006          STA 6 ERROR+52
.00.0     0007          CAD 6 ERROR+51       =1.0=
.00.0     0008          FDV 6 ERROR+52
.00.0     0009          FAD 6 ERROR+52
.00.0     0010          FMU 8 +5050000000
.00.0     0011   *A     LDB 8 COSH
.00.0     0012          BUN - 0
.00.0     0013   COSH2  HLT 8 COSH1
.00.0     0014   COSH1  CNST  $COSH$
.00.0     0015   LOCN   LOCN  *+1
.00.0     0016          CNST  40000990000
.00.0     0017          CNST  $COSH,REAL(REAL) EXP=1 ERROR=2 $
.00.0     0023          CNST  90000000000
.00.0     0024          LOCN  LOCN
.00.0     0015          FINI  COSH
            15                +5050000000
```

```
.00.0     0100   SINH   DEFN  100
.00.0     0200   COSH   DEFN  200
.00.0     0300   ERROR  DEFN  300
.00.0     0000   TANH   NOP
.00.0     0001          STA 8 X
.00.0     0002          LDR 8 TANH2
.00.0     0003          CFA 8 +5250000000,00
.00.0     0004          BCH 8 B+
.00.0     0005          STP 6 COSH
.00.0     0006          BUN 6 COSH+2
.00.0     0007          STA 8 COSHX
.00.0     0008          BZA 8 A+
.00.0     0009          CAD 8 X
.00.0     0010          STP 6 SINH
.00.0     0011          BUN 6 SINH
.00.0     0012          FDV 8 COSHX
.00.0     0013   *A     LDB 8 TANH
.00.0     0014          BUN - 0
.00.0     0015   *B     CAD 6 ERROR+51       =1.0=
.00.0     0016          LDR 8 X
.00.0     0017          SLT   0
.00.0     0018          BUN 8 A-
.00.0     0019   X      CNST  0
.00.0     0020   COSHX  CNST  0
.00.0     0021   TANH2  HLT 8 TANH1
.00.0     0022   TANH1  CNST  $TANH$
.00.0     0023   LOCN   LOCN  *+1
.00.0     0024          CNST  40000990000
.00.0     0025          CNST  $TANH,REAL(REAL) SINH=1 COSH=2 ERROR=3 $
.00.0     0033          CNST  90000000000
.00.0     0034          LOCN  LOCN
.00.0     0023          FINI  TANH
            23                +5250000000
```

```
.00.0     0100   READ  DEFN  100
.00.0     0000   REED  NOP
.00.0     0001         CRD   0117,1
.00.0     0002         BUN 6 0111
.00.0     0003         CNST  40000990000
.00.0     0004         CNST  $REED READ=1 $
.00.0     0007         CNST  90000000000
.00.0     0008         FINI  REED
```

```
.00.0      0000   RITE  NOP
.00.0      0001         LDB 8 *-1
.00.0      0002         CAD - 9999
.00.0      0003         SRA   6
.00.0      0004         STA 8 A+,04
.00.0      0005         CAD - 9998
.00.0      0006         STA 8 A+,42
.00.0      0007         SRA   8
.00.0      0008         SUB 8 +1
.00.0      0009         ADL 8 A+
.00.0      0010   *A    CWR   0,02,0
.00.0      0011         BUN - 0
.00.0      0012   LOCN  LOCN  *+1
.00.0      0013         CNST  40000990000
.00.0      0014         CNST  $RITE $
.00.0      0015         CNST  90000000000
.00.0      0016         LOCN  LOCN
.00.0      0012         FINI  RITE
             12               +0000000001
```

$$P = (y^2 + ay + y + b)(y^2 + ay + c) + d$$

$$(y^2 + (a+1)y + b)(y^2 + ay + c) + d$$

$$y^4 + (a+1)y^3 + by^2 + ay^3 + (a^2+a)y^2 + aby + cy^2 + (a+1)cy + bc + d$$

$$y^4 + (2a+1)y^3 + (a^2 + a + b + c)y^2 + (ab + ac + c)y + (bc + d)$$

$$\frac{P(x)}{a_4} = x^4 + \frac{a_3}{a_4}x^3 + \frac{a_2}{a_4}x^2 + \frac{a_1}{a_0}x + \frac{a_0}{a_0}$$

$$a_3 = 2a + 1 \qquad a = \frac{a_3 - 1}{2}$$

$$a_2 = a^2 + a + (b + c) \qquad b + ac = a a_2 - a^3 - a^2$$

$$a_1 = ab + ac + c \qquad ab + (a+1)c = a_1$$

$$c = \frac{a_1}{a_0} - a\frac{a_2}{a_4} - a^3 - a^2$$

$$b = \frac{a_2}{a_4} - a^2 - a - c$$

$$d = \frac{a_0}{a_4} - bc$$