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

                          1401 FORTRAN  SNAPSHOT ROUTINE                          5059A              PAGE    1

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

 101  1 01          JOB   1401 FORTRAN  SNAPSHOT ROUTINE
 102  1 02          CTL   644 11
 103  1 03          SFX   #                                         #
 104  1 04   XXX    EQU   0                                         #      0000
 105  1 05   XL1    EQU   089                                       #      0089
 106  1 06   XL2    EQU   094                                       #      0094
 107  1 07   XL3    EQU   099                                       #      0099
 108  1 08   PARAMA EQU   686                                       #      0686
 109  1 09          ORG   333                                       #            0333
 110  1 10          SBR   PRTXT&3                                   #   4  0333  H 567                4
 111  1 11          SBR   HLDXT&6                                   #   4  0337  H 408                4
 112  1 12          MCW   @000@,LINCT-2                             #   7  0341  M 661 656            4
 113  1 13          MCW   XL3, HLD32&6                              #   7  0348  M 099 415            4
 114  1 14          MCW   XL1, HLD31&6                              #   7  0355  M 089 422            4
 115  1 15          SBR   XL1, 1                                    #   7  0362  H 089 001            4
 116  1 16          SBR   XL3, 202                                  #   7  0369  H 099 202            5
 117  1 17          CS    332                                       #   4  0376  / 332                5
 118  1 18          CS                                              #   1  0380  /                     5
 119  1 19          NOP   110,210                                   #   7  0381  N 110 210            5
 120  1 20          BSS   ONLY,F                                    #   5  0388  B 621 F              5
 121  1 21          CC    1                                         #   2  0393  F 1                  5
 122  1 22          MCW   094,250                                   #   7  0395  M 094 250            5
 123  1 23   HLDXT  SBR   216,XXX                                   #   7  0402  H 216 000            6
 124  1 24   HLD32  SBR   256,XXX                                   #   7  0409  H 256 000            6
 125  1 25   HLD31  SBR   244,XXX                                   #   7  0416  H 244 000            6
 126  1 26          W                                               #   1  0423  2                    6
 127  1 27          CC    K                                         #   2  0424  F K                  6
 128  1 28          ZA    &2,PGCTR#2                                #   7  0426  ? 662 664            6
 129  1 29   NULINE CS    332                                       #   4  0433  / 332                6
 130  1 30          CS                                              #   1  0437  /                     7
 131  1 31          CC    J                                         #   2  0438  F J                  7
 132  1 32          MCW   LINCT,306                                 #   7  0440  M 658 306            7
 133  1 33          MCW                                             #   1  0447  M                     7
 134  1 34          SBR   MVHED&6                                   #   4  0448  H 465                7
 135  1 35          MCW   @9@, CTR-1                                #   7  0452  M 665 668            7
 136  1 36   MVHED  MCW   CTR-1,XXX                                 #   7  0459  M 668 000            7
 137  1 37          MCW   HEAD                                      #   4  0466  M 651                8
 138  1 38          SBR   MVHED&6                                   #   4  0470  H 465                8
 139  1 39          A     @I0@, CTR#2                               #   7  0474  A 667 669            8
 140  1 40          BWZ   MVHED, CTR-1, 2                           #   8  0481  V 459 668 2          8
 141  1 41          A     &1,LINCT-2                                #   7  0489  A 670 656            8
 142  1 42          W                                               #   1  0496  2                    8
 143  1 43   LOOP   SW    0&X3                                      #   4  0497  , 0?0                8
 144  1 44          MCW   0&X1,0&X3                                 #   7  0501  M 0|0 0?0            9
 145  1 45          BW    CMPAB,0&X1                                #   8  0508  V 520 0|0 1          9
 146  1 46          CW    0&X3                                      #   4  0516  ) 0?0                9
 147  1 47   CMPAB  C     XL1,PARAMA&2                              #   7  0520  C 089 688            9
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SEQ PG LIN  LABEL   OP    OPERANDS                  SFX CT  LOCN  INSTRUCTION TYPE  CARD
148  1 48           BU    CPL                        #   5  0527  B 568 /             9
149  1 49           W                                #   1  0532  2                   9
150  1 50           WM                               #   2  0533  2 )                 9
151  1 51   RSTRX   MCW   HLD31&6,XL1                #   7  0535  M 422 089           10
152  1 52           MCW   HLD32&6,XL3                #   7  0542  M 415 099           10
153  1 53           CS    332                        #   4  0549  / 332               10
154  1 54           CS                               #   1  0553  /                   10
155  1 55           BSS   *&5,G                      #   5  0554  B 563 G             10
156  1 56           B     PRTXT                      #   4  0559  B 564               10
157  1 57           H                                #   1  0563  .                   10
158  1 58   PRTXT   H     0                          #   4  0564  . 000               11
159  1 59   CPL     SBR   XL1, 1&X1                  #   7  0568  H 089 0|1           11
160  1 60           BCE   INC, XL3-2, 2              #   8  0575  B 632 097 2         11
161  1 61           SBR   XL3, 201                   #   7  0583  H 099 201           11
162  1 62           W                                #   1  0590  2                   11
163  1 63           WM                               #   2  0591  2 )                 11
164  1 64           A     &1,PGCTR                   #   7  0593  A 670 664           11
165  1 65           C     PGCTR,&15                  #   7  0600  C 664 672           12
166  1 66           BU    NULINE                     #   5  0607  B 433 /             12
167  1 67           S     PGCTR                      #   4  0612  S 664               12
168  1 68           CCB   NULINE,1                   #   5  0616  F 433 1             12
169  1 69   ONLY    MCW   @EXECUTED@,220             #   7  0621  M 680 220           12
170  1 70           W     RSTRX                      #   4  0628  2 535               12
171  1 71   INC     A     &1,XL3                     #   7  0632  A 670 099           12
172  1 72           B     LOOP                       #   4  0639  B 497               13
173  1 73   HEAD    DCW   @9........@                #   9  0651                       13
174  1 74           DCW   @9-@                       #   2  0653                       13
175  1 75   LINCT   DCW   00000                      #   5  0658                       13
176  1 76           LTORG *                          #          0659
                    DCW   @000@                      #   3  0661           LIT         13
                    DCW   &2                         #   1  0662           LIT         13
               PGCTR# DCW   #02                      #   2  0664           AREA        13
                    DCW   @9@                        #   1  0665           LIT         14
                    DCW   @I0@                       #   2  0667           LIT         14
               CTR  # DCW   #02                      #   2  0669           AREA        14
                    DCW   &1                         #   1  0670           LIT         14
                    DCW   &15                        #   2  0672           LIT         14
                    DCW   @EXECUTED@                 #   8  0680           LIT         14
177  1 77           XFR   0                          #          B 000                15
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SEQ PG LIN  LABEL  OP    OPERANDS                        SFX CT  LOCN  INSTRUCTION TYPE  CARD
178  1 78           JOB   1401 FORTRAN FIXED XLINK ROUTINE  #
179  1 79           ORG   333                               #          0333
180  1 80           H     333                               #   4  0333  . 333              18
181  1 81  START    MCW   86,XL2            X2 FOLLOWS B700  #   7  0337  M 086 094         18
182  1 82           CS    80                                #   4  0344  / 080              18
183  1 83           BCE   ARRAY,0&X2,$                      #   8  0348  B 585 0!0 $        18
184  1 84  CLEAR    CS    000                               #   4  0356  / 000              18
185  1 85           SBR   ADR3                              #   4  0360  H 359              18
186  1 86           C     ADR3,@699@                        #   7  0364  C 359 645          18
187  1 87           BU    CLEAR                             #   5  0371  B 356 /            19
188  1 88           SW    ACCHI-5&X3                        #   4  0376  , 2G4              19
189  1 89           MZ    ACCHI&X3,FIELD                    #   7  0380  Y 2G9 642          19
190  1 90           C     FIELD,ACCHI&X3                    #   7  0387  C 642 2G9          19
191  1 91           BE    CARDS                             #   5  0394  B 603 S            19
192  1 92           BM    GETM,ACCHI&X3                     #   8  0399  V 620 2G9 K        19
193  1 93           MZ    ZERO,ACCHI&X3                     #   7  0407  Y 637 2G9          20
194  1 94           C     699,ACCHI&X3                      #   7  0414  C 699 2G9          20
195  1 95           BE    GETM                              #   5  0421  B 620 S            20
196  1 96           SW    22                                #   4  0426  , 022              20
197  1 97           MCW   GM,22                            #   7  0430  M 680 022          20
198  1 98  SERCH    RT    1,1                               #   8  0437  M %U1 001 R        20
199  1 99           BEF   OUT                               #   5  0445  B 478 K            21
200  2 00           C     10,@LIB@                          #   7  0450  C 010 648          21
201  2 01           BU    SERCH                             #   5  0457  B 437 /            21
202  2 02           C     17,ACCHI&X3                       #   7  0462  C 017 2G9          21
203  2 03           BE    T1                                #   5  0469  B 498 S            21
204  2 54           B     SERCH                             #   4  0474  B 437              21
205  2 05  OUT      NOP   CARDS                             #   4  0478  N 603              21
206  2 06           MCW   333,OUT                           #   7  0482  M 333 478          22
207  2 07           RWD   1                                 #   5  0489  U %U1 R            22
208  2 08           B     SERCH                             #   4  0494  B 437              22
209  2 09  T1       LCA   ZEROS,101                        #   7  0498  L 641 101          22
210  2 10           LCA   ZEROS                             #   4  0505  L 641              22
211  2 11           LCA   ZEROS                             #   4  0509  L 641              22
212  2 12           RTW   1,333                             #   8  0513  L %U1 333 R        22
213  2 13           BER   ERR                               #   5  0521  B 557 L            23
214  2 14           MCW   ZERO,CTRR                        #   7  0526  M 637 641          23
215  2 15           SBR   TPERM-1,T2                       #   7  0533  H 580 540          23
216  2 16  T2       RTW   1,700                             #   8  0540  L %U1 700 R        23
217  2 17           BER   ERR                               #   5  0548  B 557 L            23
218  2 18  TBOOT    B     000                FROM LIBED     #   4  0553  B 000              23
219  2 19  ERR      A     ONE,CTRR                          #   7  0557  A 679 641          24
220  2 20           BCE   TPERM,CTRR,9                      #   8  0564  B 581 641 9        24
221  2 21           BSP   1                                 #   5  0572  U %U1 B            24
222  2 22           B     T1                                #   4  0577  B 498              24
223  2 23  TPERM    H     TPERM                             #   4  0581  . 581              24
224  2 24  ARRAY    MCW   3&X2,ADR3                         #   7  0585  M 0!3 359          24
225  2 25           MZ    ZERO,ADR3-1                       #   7  0592  Y 637 358          25
226  2 26           B     CLEAR                             #   4  0599  B 356              25
227  2 27  CARDS    SW    1                                 #   4  0603  , 001              25
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SEQ PG LIN  LABEL  OP    OPERANDS                                SFX CT  LOCN  INSTRUCTION TYPE  CARD
228  2 28          R                                             #   1  0607  1                    25
229  2 29          BCE   1,1,,                                   #   8  0608  B 001 001 ,          25
230  2 30          B     CARDS                                   #   4  0616  B 603                25
231  2 31  GETM    RWD   1                                       #   5  0620  U %U1 R              25
232  2 32          RTW   1,1                                     #   8  0625  L %U1 001 R          26
233  2 33          B     1        EXECUTE MONITOR PROGRAM        #   4  0633  B 001               26
234  2 34  ADR3    EQU   CLEAR&3                                 #      0359
235  2 35  FIELD   DCW   @0000000@                              #   6  0642                       26
236  2 36  ZEROS   EQU   FIELD-1                                 #      0641
237  2 37  ZERO    EQU   ZEROS-4                                 #      0637
238  2 38  CTRR    EQU   ZEROS                                   #      0641
239  2 39  ACCHI   EQU   279                                     #      0279
240  2 40  ONE     EQU   679                                     #      0679
241  2 41  GM      EQU   680                                     #      0680
242  2 42          LTORG *                                       #           0643
                   DCW   @699@                                   #   3  0645            LIT     26
                   DCW   @LIB@                                   #   3  0648            LIT     26
243  2 43          ORG   679                                     #           0679
244  2 44          DCW   @1}@              GROUP MARK IN 680     #   2  0680                       27
245  2 45          XFR   0                                       #           B 000                 28
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SEQ PG LIN  LABEL  OP    OPERANDS                                          SFX CT  LOCN  INSTRUCTION TYPE  CARD
246  2 46          JOB   1401  FORTRAN ARITH AND RELOCATABLE ROUTINES       #
247  2 47   *
248  2 48          SFX   B                                                 B
249  2 49   *
250  2 50          XINIT XL1,XL2,XL3,,,,XXXX                               B                      MACRO
251          XXX   EQU   0                                                 B       0000           GEN
252          XL1   EQU   089                                               B       0089           GEN
253          089   DCW   000                                               B   3   0089           GEN      31
254          091   DC    00                                                B   2   0091           GEN      31
255          XL2   EQU   094                                               B       0094           GEN
256          094   DCW   000                                               B   3   0094           GEN      31
257          096   DC    00                                                B   2   0096           GEN      31
258          XL3   EQU   099                                               B       0099           GEN
259          099   DCW   000                                               B   3   0099           GEN      31
260          100   DC    0                                                 B   1   0100           GEN      31
261  2 51   *
262  2 52          XNMBR                                                   B                      MACRO
263          X1    EQU   089                                               B       0089           GEN
264          X2    EQU   094                                               B       0094           GEN
265          X3    EQU   099                                               B       0099           GEN
266  2 53   *
267  2 54   WKZON EQU   200                                               B       0200
268  2 55   TOP   EQU   WKZON&1                                           B       0201
269  2 56   SPOT  EQU   WKZON&50                                          B       0250
270  2 57   ACCHI EQU   WKZON&79                                          B       0279
271  2 58   *
272  2 59          ORG   700                                               B             0700
273  2 60   *
274  2 61   *                        ARITHMETIC  ROUTINE  MONITOR
275  2 62   *
276  2 63   ARITF SBR   X2                                                B   4   0700   H 094                32
277  2 64         SBR   086            STORE FIRST LOCATION OF ARITH STRING B   4   0704   H 086                32
278  2 65         SBR   STMNM&6                                            B   4   0708   H V06                32
279  2 66   ARITH MCW   2&X2, X1                                          B   7   0712   M 0!2 089            32
280  2 67         SAR   ALGRT&6                                           B   4   0719   Q 765                32
281  2 68   SBBR1 SBR   BRWHR&6                                           B   4   0723   H S27                32
282  2 69         BCE   STSUB,0&X2,$   CHECK FOR SUBSCRIPTED STORE LOCATION B   8   0727   B S06 0!0 $          32
283  2 70         SBR   OUT2&6,0&X1                                       B   7   0735   H T75 0|0            33
284  2 71         CS    WKZON&103      CLEAR WORK AREA                    B   4   0742   / 303                33
285  2 72         CS                                                      B   1   0746   /                    33
286  2 73         CS                                                      B   1   0747   /                    33
287  2 74         LCA   @0@, ACCHI&1                                      B   7   0748   L W85 280            33
288  2 75   CLRX  S     X1&2                                              B   4   0755   S 091                33
289  2 76   ALGRT SBR   XL2, XXX                                          B   7   0759   H 094 000            33
290  2 77         C     4&X2, @#@                                         B   7   0766   C 0!4 W86            34
291  2 78         MCW   4&X2, SIGNF                                       B   7   0773   M 0!4 924            34
292  2 79         SW    TOP                                               B   4   0780   , 201                34
293  2 80   EXIT  BL    QFUNCT                                            B   5   0784   B T05 T              34
294  2 81         SBR   NGBMP&6,4&X2                                      B   7   0789   H 874 0!4            34
295  2 82         BCE   OPDSC,5&X2,$   CHECK FOR SUBSCRIPTED OPERAND      B   8   0796   B /99 0!5 $          34
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SEQ  PG LIN  LABEL  OP    OPERANDS                                  SFX CT  LOCN  INSTRUCTION TYPE  CARD
296   2 83          MCW   7&X2, XL1                                 B   7   0804  M 0!7 089         35
297   2 84          SAR   ALGRT&6                                   B   4   0811  Q 765            35
298   2 85  SBBR2   BWZ   XSIZE,X1-1,K   BRANCH IF FIXPT COMPUTATION B   8   0815  V V30 088 K      35
299   2 86          BWZ   XSIZE,X1-1,S                              B   8   0823  V V30 088 S      35
300   2 87  *
301   2 88  *                              FLOAT ARITHMETIC
302   2 89  *
303   2 90  FSIZE   SBR   X3,XXX          STORE FLOAT SIZE          B   7   0831  H 099 000        35
304   2 91          CW    FIXSW#1                                   B   4   0838  ) W87            35
305   2 92          MCW   0&X1,EXPB       STORE EXPONENT            B   7   0842  M 0|0 W82        36
306   2 93          SAR   XL1                                       B   4   0849  Q 089            36
307   2 94          MCW   0&X1,SPOT       INITIALIZE WORK AREA      B   7   0853  M 0|0 250        36
308   2 95          SBR   XL2                                       B   4   0860  H 094            36
309   2 96          LCA   @0@                                       B   4   0864  L W85            36
310   2 97  NGBMP   BW    *&8,0                                     B   8   0868  V 883 000 1      36
311   2 98          MZ    SPOT, NSIGN                               B   7   0876  Y 250 |87        37
312   2 99          S     @0@,SPOT&2&X3                             B   7   0883  S W85 2E2        37
313   3 00          C     1&X2, @0@                                 B   7   0890  C 0!1 W85        37
314   3 01          A     XL3, XL2                                  B   7   0897  A 099 094        37
315   3 02          BCE   FDIV,CODE,/     BRANCH FOR DIVISION       B   8   0904  B S33 924 /      37
316   3 03          BCE   FMPY,CODE,*     BRANCH FOR MULTIPLICATION - B  8   0912  B S62 924 *      38
317   3 04  *
318   3 05  *                                   FLOATING ADD / SUBTRACT
319   3 06  *
320   3 07          S     SIGNF                                     B   4   0920  S 924            38
321   3 08  SIGNF   ZA    NSIGN                                     B   4   0924  ? |87            38
322   3 09          BCE   NUVAL,ACCHI&1,0    BR, IF 1ST OPERAND OF COMPUTATION B 8 0928 B |17 280 0 38
323   3 10          BE    CLRWK                                     B   5   0936  B /34 S          38
324   3 11          S     EXPB,EXP                                  B   7   0941  S W82 W79        38
325   3 12          ZA    EXP&1,XL1&1                               B   7   0948  ? W80 090        39
326   3 13          C     XL3,XL1                                   B   7   0955  C 099 089        39
327   3 14          BM    RTN1,EXP                                  B   8   0962  V /65 W79 K      39
328   3 15          BH    CHGEX    BR IF PREV RESULT TO BE RETAINED IN WK ACC  B  5  0970  B /88 U  39
329   3 16          A     EXP,EXPB                                  B   7   0975  A W79 W82        39
330   3 17          ZA    SPOT,SPOT&X1   INITIALIZE WORK AREA       B   7   0982  ? 250 2V0        40
331   3 18          ZA    XL3&1,XL1&1                               B   7   0989  ? 100 090        40
332   3 19  ASCOM   MZ    NSIGN,0&X2                                B   7   0996  Y |87 0!0        40
333   3 20          A     ACCHI&X1,0&X2                             B   7   1003  A 2X9 0!0        40
334   3 21  MVZON   MZ    0&X2,NSIGN                                B   7   1010  Y 0!0 |87        40
335   3 22  NUVAL   ZA    EXPB,EXP                                  B   7   1017  ? W82 W79        41
336   3 23  *
337   3 24  *                                   NORMALIZE
338   3 25  *
339   3 26  NMLZ1   MCW   RCDMK,1&X2                                B   7   1024  M W75 0!1        41
340   3 27          MZ                                            B   1   1031  Y                41
341   3 28          MZ                                            B   1   1032  Y                41
342   3 29          A                                             B   1   1033  A                41
343   3 30          MN                                            B   1   1034  D                41
344   3 31          SBR   XL1                                       B   4   1035  H 089            41
345   3 32          S     ACCHI&2&X3                                B   4   1039  S 2H1            42
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SEQ PG LIN  LABEL  OP    OPERANDS                                        SFX CT  LOCN  INSTRUCTION TYPE  CARD
346  3 33   NLOOP  BCE   STRZE,2&X1,|                                    B   8  1043  B /42 0|2 |          42
347  3 34          SBR   XL1                                             B   4  1051  H 089              42
348  3 35          BCE   NLOOP, 1&X1, 0                                  B   8  1055  B |43 0|1 0         42
349  3 36          MCM   1&X1, ACCHI&1                                   B   7  1063  P 0|1 280          42
350  3 37          S     XL3, XL2                                        B   7  1070  S 099 094          42
351  3 98          CW                                                    B   1  1077  )                  42
352  3 39          CW                                                    B   1  1078  )                  43
353  3 40          S                                                     B   1  1079  S                  43
354  3 41          S     XL1,EXP                                         B   7  1080  S 089 W79          43
355  3 42   NSIGN  ZA    ACCHI&X3       MOVE PROPER SIGN TO WORK ACCUMULATOR B   4  1087  ? 2G9            43
356  3 43          SW                                                    B   1  1091  ,                  43
357  3 44          BCE   CLRWK,EXP-2,0                                   B   8  1092  B /34 W77 0         43
358  3 45          BM    STRZE,EXP      BRANCH ON EXPONENT UNDERFLOW     B   8  1100  V /42 W79 K        43
359  3 46   *
360  3 47   *                    EXPONENT OVERFLOW DUE TO NORMALIZATION
361  3 48   *
362  3 49          B     ERMSG                                           B   4  1108  B U71              44
363  3 50          DCW   @NOF@                                           B   3  1114                     44
364  3 51   *
365  3 52   * STORE  NINES  IN  WORK  ACCUMULATOR  AND  EXP  ON EXPONENT  OVFL
366  3 53   *
367  3 54   STR99  ZA    &99,EXP                                         B   7  1115  ? W89 W79          44
368  3 55          MN    &99,ACCHI&X3                                    B   7  1122  D W89 2G9          44
369  3 56          MCW                                                   B   1  1129  M                  44
370  3 57          MCW   ACCHI-1&X3                                      B   4  1130  M 2G8              44
371  3 58   CLRWK  CS    ACCHI-1                                         B   4  1134  / 278              44
372  3 59          B     CLRX                                            B   4  1138  B 755              45
373  3 60   *
374  3 61   *                        STORE  ZERO  IN  WORK  ACCUMULATOR
375  3 62   *
376  3 63   STRZE  S     EXP                                             B   4  1142  S W79              45
377  3 64          S     ACCHI&X3                                        B   4  1146  S 2G9              45
378  3 65          B     CLRWK                                           B   4  1150  B /34              45
379  3 66   *
380  3 67   *                        DIVISION  BY  ZERO  ATTEMPTED
381  3 68   *
382  3 69   DVERR  B     ERMSG                                           B   4  1154  B U71              45
383  3 70          DCW   @DZE@                                           B   3  1160                     45
384  3 71          B     STR99                                           B   4  1161  B /15              45
385  3 72   *
386  3 73   RTN1   BH    NUVAL          BRANCH TO STORE NEW VALUE IN WK ACC B   5  1165  B |17 U           46
387  3 74          S     XL3&1,XL1&1    INITIALIZE INDEX REGISTERS       B   7  1170  S 100 090          46
388  3 75          MZ    ACCHI&X3,ACCHI&X1   INITIALIZE WORK ACCUMULATOR B   7  1177  Y 2G9 2X9          46
389  3 76          B     ASCOM                                           B   4  1184  B 996              46
390  3 77   *
391  3 78   CHGEX  A     EXPB,EXP                                        B   7  1188  A W82 W79          46
392  3 79          B     CLRWK                                           B   4  1195  B /34              46
393  3 80   *
394  3 81   *                         SUBSCRIPTED  VARIABLES
395  3 32   *
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SEQ PG LIN  LABEL   OP    OPERANDS                                        SFX CT  LOCN  INSTRUCTION TYPE  CARD
396  3 83   OPDSC  SBR   X2,5&X2                                          B   7  1199  H 094 0!5          47
397  3 84   STSUB  B     XXX                                             B   4  1206  B 000             47
398  3 85          MN    0&X2                                            B   4  1210  D 0!0             47
399  3 86          MN                                                    B   1  1214  D                 47
400  3 87          MN                                                    B   1  1215  D                 47
401  3 88          MN                                                    B   1  1216  D                 47
402  3 89          SAR   ALGRT&6                                         B   4  1217  Q 765             47
403  3 90   BRWHR  BCE   SBBR1,XXX,$                                     B   8  1221  B 723 000 $       48
404  3 91          B     SBBR2                                           B   4  1229  B 815            48
405  3 92   *
406  3 93   *                                FLOATING DIVIDE
407  3 94   *
408  3 95   FDIV   BE    DVERR                                           B   5  1233  B /54 S           48
409  3 96          MN    ACCHI&X3, 1&X2                                  B   7  1238  D 2G9 0!1         48
410  3 97          MCW                                                   B   1  1245  M                 48
411  3 98          MN                                                    B   1  1246  D                 48
412  3 99          D     0&X1, SPOT&1                                    B   7  1247  % 0|0 251         48
413  4 00          ZS    EXPB                                            B   4  1254  ! W82            49
414  4 01          B     NDMDV                                           B   4  1258  B S83            49
415  4 02   *
416  4 03   *                              FLOATING MULTIPLY
417  4 04   *
418  4 05   FMPY   M     ACCHI&X3, SPOT&1&X3                             B   7  1262  @ 2G9 2E1         49
419  4 06          SBR   X2,3&X2                                         B   7  1269  H 094 0!3         49
420  4 07          S     &2,EXP                                          B   7  1276  S W90 W79         49
421  4 08   NDMDV  A     EXPB, EXP                                       B   7  1283  A W82 W79         49
422  4 09          MZ    ACCHI&X3, *&1                                   B   7  1290  Y 2G9 S97         50
423  4 10          ZA    NSIGN                                           B   4  1297  ? |87            50
424  4 11          B     NMLZ1                                           B   4  1301  B |24            50
425  4 12   *
426  4 13   *                              EXIT ROUTINE
427  4 14   *
428  4 15   QFUNCT BCE   OUT1,4&X2,|    BR IF CONTENTS OF WK ACC TO BE STORED B   8  1305  B T31 0!4 |      50
429  4 16          SBR   ALGRT&6,1&X2                                    B   7  1313  H 765 0!1         50
430  4 17          C     ACCHI&1,@0@                                     B   7  1320  C 280 W85         50
431  4 18          B     XXX             BRANCH TO FUNCTION SELECTION ROUTINE  B   4  1327  B 000     51
432  4 19   OUT1   BCE   OUT2,ACCHI&1,0                                  B   8  1331  B T69 280 0       51
433  4 20          BW    OUT2,FIXSW                                      B   8  1339  V T69 W87 1       51
434  4 21          BW    FINST,4&X2     BRANCH IF FINAL STORAGE OF COMP  B   8  1347  V T92 0!4 1      51
435  4 22          SBR   X3,2&X3                                        B   7  1355  H 099 0?2         51
436  4 23   MVEXP  MCM   EXP-1,ACCHI-1&X3                               B   7  1362  P W78 2G8         52
437  4 24   OUT2   LCA   ACCHI&X3,XXX                                   B   7  1369  L 2G9 000         52
438  4 25          BW    5&X2,4&X2   BR TO PROG MAINLINE IF END OF ARITH STR  B   8  1376  V 0!5 0!4 1  52
439  4 26          SAR   XL2                                             B   4  1384  Q 094             52
440  4 27          B     ARITH                                           B   4  1388  B 712            52
441  4 28   *
442  4 29   *                ROUNDING  FOR  FINAL  STORAGE
443  4 30   *
444  4 31   FINST  A     &5,ACCHI-1&X3                                   B   7  1392  A W91 2G8         52
445  4 82          BWZ   RDOVF,ACCHI&1,S                                 B   8  1399  V U18 280 S       53
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SEQ PG LIN  LABEL  OP    OPERANDS                                  SFX CT  LOCN  INSTRUCTION TYPE  CARD
446  4 33   ZONMV  MZ    ACCHI&X3,ACCHI-2&X3                        B   7  1407  Y 2G9 2G7          53
447  4 34          B     MVEXP                                      B   4  1414  B T62              53
448  4 35   RDOVF  A     &1,EXP                                     B   7  1418  A W92 W79          53
449  4 36          BCE   NORND,EXP-2,1                            B   8  1425  B U48 W77 1        53
450  4 37          S     ACCHI&X3                                   B   4  1433  S 2G9              53
451  4 38          LCA   @1@,ACCHI&1                              B   7  1437  L W93 280          54
452  4 39          B     ZONMV                                      B   4  1444  B U07              54
453  4 40   *
454  4 41   *              NO  ROUNDING  IF  EXPONENT  OVERFLOW  WOULD  OCCUR
455  4 42   *
456  4 43   NORND  MN    &99,ACCHI&X3                               B   7  1448  D W89 2G9          54
457  4 44          MCW                                             B   1  1455  M                  54
458  4 45          MCW   ACCHI-1&X3                                B   4  1456  M 2G8              54
459  4 46          S     &1,EXP                                     B   7  1460  S W92 W79          54
460  4 47          B     ZONMV                                      B   4  1467  B U07              54
461  4 48   *
462  4 49   *                        PRINT  ERROR  MESSAGE
463  4 50   *
464  4 51   ERMSG  SBR   STRX2&6                                    B   4  1471  H U92              55
465  4 52          CS    TOP&1&X3                                   B   4  1475  / 2?2              55
466  4 53          SBR   RINX2&6,0&X3                             B   7  1479  H V25 0?0          55
467  4 54   STRX2  SBR   X3,XXX                                    B   7  1486  H 099 000          55
468  4 55          MCW   2&X3,TOP&11                              B   7  1493  M 0?2 212          55
469  4 56   STMNM  SBR   TOP&16,XXX                               B   7  1500  H 217 000          55
470  4 57          W                                               B   1  1507  2                  55
471  4 58          SW    TOP                                        B   4  1508  , 201              56
472  4 59          SBR   ERMXT&3,3&X3                             B   7  1512  H V29 0?3          56
473  4 60   RINX2  SBR   X3,XXX                                    B   7  1519  H 099 000          56
474  4 61   ERMXT  B     XXX                                        B   4  1526  B 000              56
475  4 62   *
476  4 63   *                                FIXED POINT ENTRY
477  4 64   *
478  4 65   XSIZE  SBR   X3,XXX         STORE FIX-SIZE             B   7  1530  H 099 000          56
479  4 66          SW    FIXSW                                      B   4  1537  , W87              56
480  4 67   *
481  4 68   FIXPT  MCS   0&X1, SPOT                                 B   7  1541  Z 0|0 250          57
482  4 69          BCE   XDIV, CODE, /                             B   8  1548  B W23 924 /        57
483  4 70          BCE   XMPY, CODE, *                             B   8  1556  B V98 924 *        57
484  4 71   *
485  4 72   *                                FIXED ADD / SUBTRACT
486  4 73   *
487  4 74          BWZ   SUBTR, CODE, K     Q. SUBTRACT            B   8  1564  V V87 924 K        57
488  4 75          A     0&X1, ACCHI&X3                            B   7  1572  A 0|0 2G9          57
489  4 76   ADDRT  ZA    ACCHI&X3                                   B   4  1579  ? 2G9              58
490  4 77          B     CLRWK                                      B   4  1583  B /34              58
491  4 78   *
492  4 79   SUBTR  S     0&X1, ACCHI&X3                            B   7  1587  S 0|0 2G9          58
493  4 80          B     ADDRT                                      B   4  1594  B V79              58
494  4 81   *
495  4 82   *                                FIXED MULTIPLY
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SEQ PG LIN  LABEL   OP     OPERANDS                                SFX CT  LOCN  INSTRUCTION TYPE  CARD
496  4 83   *
497  4 84   XMPY    LCA    0&X1, SPOT                               B  7  1598  L 0|0 250          58
498  4 85           M      ACCHI&X3, SPOT&1&X3                      B  7  1605  @ 2G9 2E1          58
499  4 86           MCW    SPOT&1&X3, ACCHI&X3                      B  7  1612  M 2E1 2G9          59
500  4 87           B      CLRWK                                    B  4  1619  B /34              59
501  4 88   *
502  4 89   *                                FIXED DIVIDE
503  4 90   *
504  4 91   XDIV    BCE    DVERR, SPOT,                             B  8  1623  B /54 250          59
505  4 92           MCW    0&X1,SPOT&X3                             B  7  1631  M 0|0 2E0          59
506  4 93           MN                                              B  1  1638  D                 59
507  4 94           SBR    MVQUT&3                                  B  4  1639  H W64              59
508  4 95           LCA    ACCHI&X3                                 B  4  1643  L 2G9              59
509  4 96           ZA     ACCHI&X3, SPOT&X3                        B  7  1647  ? 2G9 2E0          60
510  4 97           D      0&X1, SPOT&1                             B  7  1654  % 0|0 251          60
511  4 98   MVQUT   MCW    SPOT-1,ACCHI&X3                          B  7  1661  M 249 2G9          60
512  4 99           B      CLRWK                                    B  4  1668  B /34              60
513  5 00   *
514  5 01           DCW    000                                      B  3  1674                    60
515  5 02   RCDMK   DCW    @|@                                      B  1  1675                    60
516  5 03           DCW    0                                        B  1  1676                    60
517  5 04   EXP     DCW    000                                      B  3  1679                    61
518  5 05           DC     @|@                                      B  1  1680                    61
519  5 06   EXPB    DCW    00                                       B  2  1682                    61
520  5 07           DC     0                                        B  1  1683                    61
521  5 08   CODE    EQU    SIGNF                                    B     0924
522  5 09   ZROSW   EQU    *&1                                      B     1684
523  5 10   BASEZ   EQU    *&1                                      B     1684
524  5 11   XPNUM   DCW    @8@                                      B  1  1684                    61
525  5 12           LTORG                                           B        1685
                    DCW    @0@                                      B  1  1685          LIT       61
                    DCW    @#@                                      B  1  1686          LIT       61
               FIXSWB DCW    #01                                      B  1  1687          AREA      61
                    DCW    &99                                      B  2  1689          LIT       61
                    DCW    &2                                       B  1  1690          LIT       62
                    DCW    &5                                       B  1  1691          LIT       62
                    DCW    &1                                       B  1  1692          LIT       62
                    DCW    @1@                                      B  1  1693          LIT       62
526  5 13           DS     1                                        B     1694
527  5 14           DCW    @0@                                      B  1  1695                    63
528  5 15           DC     @}@              SYSTEM GROUP MARK       B  1  1696          GMARK     63
529  5 16           XFR    0                                        B        B 000                64
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SEQ PG LIN  LABEL  OP    OPERANDS                                  SFX CT  LOCN  INSTRUCTION TYPE  CARD
530  5 17          JOB   1401 FORTRAN FUNCTION COMMON DECK          B
531  5 18   *             INSERT BEFORE SIN-COS DECK
532  5 19          ORG   2000                                      B          2000
533  5 20   *
534  5 21   110    DCW   @_____@            ALL 11-7-8             B   5  0110                    67
535  5 22   *
536  5 23   *                        VARIABLE LENGTH DIVIDE
537  5 24   *
538  5 25   DIVID  SBR   DVXT&3                                    B   4  2000  H !46             68
539  5 26          MCW   ACCHI&X3,SPOT                             B   7  2004  M 2G9 250         68
540  5 27          MN                                              B   1  2011  D                68
541  5 28          LCA   &0                                        B   4  2012  L K61            68
542  5 29          S     &0,SPOT-1&X2                              B   7  2016  S K61 2M9        68
543  5 30          D     0&X1,SPOT                                 B   7  2023  % 0|0 250        68
544  5 31          MN    SPOT-1&X2,ACCHI&X3                        B   7  2030  D 2M9 2G9        68
545  5 32          MCW                                             B   1  2037  M                69
546  5 33          MN                                              B   1  2038  D                69
547  5 34          SAR   X1                                        B   4  2039  Q 089            69
548  5 35   DVXT   B     XXX                                       B   4  2043  B 000            69
549  5 36   *
550  5 37   *                        POWER SERIES CALCULATION
551  5 38   *
552  5 39   CALC   SBR   CALXT&3                                   B   4  2047  H J90            69
553  5 40          CW    LOGM1,LOGM2                               B   7  2051  ) J49 J71        69
554  5 41   CALC1  S     TOP&1&X3           CLEAR SERIES ACCUMULATOR B   4  2058  S 2?2            69
555  5 42          CW    ACCHI&1                                   B   4  2062  ) 280            70
556  5 43          CW                                              B   1  2066  )                70
557  5 44          SW                                              B   1  2067  ,                70
558  5 45          S     X2&2                                      B   4  2068  S 096            70
559  5 46          SBR   X2,SPOT                                   B   7  2072  H 094 250        70
560  5 47   CALCL  MCS   SPOT                                      B   4  2079  Z 250            70
561  5 48          SW    0&X1                                      B   4  2083  , 0|0            70
562  5 49          BCE   FINIS,0&X2,                               B   8  2087  B J83 0!0        71
563  5 50          MZ    SPOT&1,1&X2                               B   7  2095  Y 251 0!1        71
564  5 51          A     1&X2,TOP&1&X3      ADD TERM TO SERIES ACCUMULATION B   7  2102  A 0!1 2?2  71
565  5 52          A     DEC,X2&1                                  B   7  2109  A K59 095        71
566  5 53          C     X2,X1                                     B   7  2116  C 094 089        71
567  5 54          BH    FINIS                                     B   5  2123  B J83 U          72
568  5 55          A     UPBY,NCON                                 B   7  2128  A K50 K53        72
569  5 56          A     NCON,NCTR                                 B   7  2135  A K53 K56        72
570  5 57          NOP   XXX,SPOT&1                                B   7  2142  N 000 251        72
571  5 58   LOGM1  ZA                        NORMALLY PART OF NOP   B   1  2149  ?                72
572  5 59          M     ACCHI&X3,SPOT&4&X3                        B   7  2150  @ 2G9 2E4        72
573  5 60          MZ    SPOT&4&X3,SPOT&5                          B   7  2157  Y 2E4 255        73
574  5 61          NOP   SPOT&5,XXX                                B   7  2164  N 255 000        73
575  5 62   LOGM2  ZA                        NORMALLY PART OF NOP   B   1  2171  ?                73
576  5 63          D     NCTR,4&X1                                 B   7  2172  % K56 0|4        73
577  5 64          B     CALCL                                     B   4  2179  B !79            73
578  5 65   FINIS  SW    ACCHI&1                                   B   4  2183  , 280            73
579  5 66   CALXT  B     XXX                                       B   4  2187  B 000            73
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SEQ PG LIN  LABEL  OP    OPERANDS                                SFX CT  LOCN  INSTRUCTION TYPE  CARD
580  5 67   *
581  5 68   STR1   S     ACCHI&X3                                 B   4  2191  S 2G9              74
582  5 69          MN    &1,ACCHI&1                               B   7  2195  D K62 280          74
583  5 70          MZ    TWTCH,ACCHI&X3                           B   7  2202  Y K60 2G9          74
584  5 71          MZ    CALC,TWTCH                               B   7  2209  Y !47 K60         74
585  5 72          ZA    &1,EXP                                   B   7  2216  ? K62 W79         74
586  5 73          B     CLRX                                     B   4  2223  B 755             74
587  5 74   *
588  5 75   *                        COMMON CONSTANTS
589  5 76   *
590  5 77   LN10   EQU   *                                        B      2226
591  5 78          DCW   23025850929940456840179                  B  23  2249                    75
592  5 79   UPBY   DCW   #1                                       B   1  2250                    75
593  5 80   NCON   DCW   #3                                       B   3  2253                    75
594  5 81   NCTR   DCW   #3                                       B   3  2256                    75
595  5 82   DEC    DCW   #3                                       B   3  2259                    75
596  5 83   TWTCH  DCW   @A@                                      B   1  2260                    75
597  5 84   *                              LOADER
                     DCW   &0                                     B   1  2261          LIT       75
                     DCW   &1                                     B   1  2262          LIT       76
598  5 85          EX    DIVID                                    B          B !00               77
599  5 86          END                                            B          / 000 080
```

SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS
ACCHI#	279	ACCHIB	279	ADDRTB	1579	ADR3 #	359	ALGRTB	759	ARITFB	700	ARITHB	712
ARRAY#	585	ASCOMB	996	BASEZB	1684	BRWHRB	1221	CALC B	2047	CALC1B	2058	CALCLB	2079
CALXTB	2187	CARDS#	603	CHGEXB	1188	CLEAR#	356	CLRWKB	1134	CLRX B	755	CMPAB#	520
CODE B	924	CPL #	568	CTR #	669	CTRR #	641	DEC B	2259	DIVIDB	2000	DVERRB	1154
DVXT B	2043	ERMSGB	1471	ERMXTB	1526	ERR #	557	EXIT B	784	EXP B	1679	EXPB B	1682
FDIV B	1233	FIELD#	642	FINISB	2183	FINSTB	1392	FIXPTB	1541	FIXSWB	1687	FMPY B	1262
FSIZEB	831	GETM #	620	GM #	680	HEAD #	651	HLD31#	416	HLD32#	409	HLDXT#	402
INC #	632	LINCT#	658	LN10 B	2226	LOGM1B	2149	LOGM2B	2171	LOOP #	497	MVEXPB	1362
MVHED#	459	MVQUTB	1661	MVZONB	1010	NCON B	2253	NCTR B	2256	NDMDVB	1283	NGBMPB	868
NLOOPB	1043	NMLZ1B	1024	NORNDB	1448	NSIGNB	1087	NULINE	433	NUVALB	1017	ONE #	679
ONLY #	621	OPDSCB	1199	OUT #	478	OUT1 B	1331	OUT2 B	1369	PARAMA	686	PGCTR#	664
PRTXT#	564	QFUNCT	1305	RCDMKB	1675	RDOVFB	1418	RINX2B	1519	RSTRX#	535	RTN1 B	1165
SBBR1B	723	SBBR2B	815	SERCH#	437	SIGNFB	924	SPOT B	250	START#	337	STMNMB	1500
STR1 B	2191	STR99B	1115	STRX2B	1486	STRZEB	1142	STSUBB	1206	SUBTRB	1587	T1 #	498
T2 #	540	TBOOT#	553	TOP B	201	TPERM#	581	TWTCHB	2260	UPBY B	2250	WKZONB	200
X1 B	89	X2 B	94	X3 B	99	XDIV B	1623	XL1 #	89	XL1 B	89	XL2 #	94
XL2 B	94	XL3 #	99	XL3 B	99	XMPY B	1598	XPNUMB	1684	XSIZEB	1530	XXX #	0
XXX B	0	ZERO #	637	ZEROS#	641	ZONMVB	1407	ZROSWB	1684				