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

 101               JOB
 102               CTL   6611
 103               ORG   87                                                        0087
 104     89  X1    DCW   000                                                  3  0089                      4
 105     91        DC    00                                                   2  0091                      4
 106     94  X2    DCW   000                                                  3  0094                      4
 107     96        DC    00                                                   2  0096                      4
 108     99  X3    DCW   000                                                  3  0099                      4
 109    100        DC    0                                                    1  0100                      4
 110        *
 111        * ARITHMETIC INTERPRETER
 112        *
 113        * GENERAL FORM OF INTERPRETED STRING IS
 114        * OPERAND [ OPERATOR OPERAND ... ],
 115        * HOWEVER, IF OPERAND HAS A WORD MARK, IT'S AN OPERATOR,
 116        * USUALLY A FUNCTION CALL.  OPERANDS ARE MACHINE ADDRESSES,
 117        * WITH A TAG IN THE TENS DIGIT TO INDICATE TYPE: A- OR B-
 118        * ZONE ALONE INDICATES INTEGER.  OPERATORS ARE ONE CHARACTER.
 119        *
 120        * TWO ACCUMULATORS IN THE PRINT AREA ARE USED.  THE LOW-ORDER
 121        * DIGIT OF AN OPERAND IS LOADED INTO ACCUMULATOR 1 AT 250; IT
 122        * EXTENDS LEFTWARD  BY THE LENGTH OF THE OPERAND, AND RIGHTWARD
 123        * FROM THE LEFT END BY THE MANTISSA WIDTH.  ACCUMULATOR 2 HAS ITS
 124        * HIGH-ORDER DIGIT AT 280; IT EXTENDS RIGHTWARD BY THE MANTISSA
 125        * WIDTH.
 126        *
 127        * MOSTLY, INDEX REGISTER USAGE IS
 128        * X1 = OPERAND ADDRESS
 129        * X2 = INTERPRETER'S COUNTER, LOW-ORDER DIGIT OF ACCUM 1
 130        * X3 = OPERAND WIDTH
 131        *
 132               ORG   700                                                       0700
 133    700  ARITF  SBR   X2                                                   4  0700  H 094               5
 134    704         SBR   X1-3                                                  4  0704  H 086               5
 135    708         SBR   ERMSI&6     INTERPRETER ADDRESS FOR ERR MSGS          4  0708  H V06               5
 136    712  NXTOP  MCW   2&X2,X1     X1 = OPERAND (RESULT) ADDRESS             7  0712  M 0!2 089           5
 137    719         SAR   SX2A&6      SAVE X2-1                                 4  0719  Q 765               5
 138    723  NXTOP0 SBR   SX2B&6        TWICE                                  4  0723  H S27               5
 139    727         BCE   1206,0&X2,$                                         8  0727  B S06 0!0 $         5
 140    735         SBR   RES&6,0&X1  SAVE X1 (RESULT ADDRESS)                7  0735  H T75 0'0           6
 141    742         CS    303         CLEAR ACCUMUMULATORS                    4  0742  / 303               6
 142    746         CS                                                        1  0746  /                   6
 143    747         CS                                                        1  0747  /                   6
 144    748         LCA   KZ1,280     SET HIGH-ORDER ZERO IN ACCUM 2          7  0748  L W85 280           6
 145    755  NXTOP1 S     X1&2        CLEAR X1                                4  0755  S 091               6
 146    759  SX2A   SBR   X2,0-0      RECOVER X2 = ADDR(OPERAND) - 1          7  0759  H 094 000           6
 147    766         C     4&X2,ASGOP  COMPARE OP TO ASSIGNMENT OP             7  0766  C 0!4 W86           7
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SEQ PG LIN  LABEL   OP    OPERANDS                                    SFX CT  LOCN  INSTRUCTION TYPE  CARD
148    773          MCW   4&X2,SAVOP  SAVE WHATEVER OPERATOR IT IS          7  0773  M 0!4 924           7
149    780          SW    201                                             4  0780  , 201               7
150    784          BL    FUNC        FUNC IF ASSIGNMENT OP .LT. OPERATOR  5  0784  B T05 T            7
151          *
152          * ASSIGNMENT OP GREATER OR EQUAL TO OPERATOR, I.E., OPERATOR IS
153          * BLANK, ., ) LOZENGE, } GROUP MARK, &, $, *, -, /, COMMA, %, #
154          *
155    789          SBR   NXTOP2&6,4&X2  SAVE ADDR OF OPERATOR            7  0789  H 874 0!4           7
156    796          BCE   1199,5&X2,$   NEXT OPERAND $?                   8  0796  B /99 0!5 $        7
157    804          MCW   7&X2,X1     SECOND OPERAND ADDRESS TO X1         7  0804  M 0!7 089          8
158    811          SAR   SX2A&6      SAVE 4&X2                           4  0811  Q 765               8
159    815  TSTZON  BWZ   ARITI,X1-1,K  OPERAND 2 TAG IS B ZONE (INTEGER)? 8  0815  V V30 088 K        8
160    823          BWZ   ARITI,X1-1,S  OPERAND 2 TAG IS A ZONE (INTEGER)? 8  0823  V V30 088 S        8
161    831          SBR   X3,0        LOADER PLUGS MANTISSA WIDTH INTO B   7  0831  H 099 000          8
162    838          CW    IFLAG       INDICATE FLOATING POINT             4  0838  ) W87              8
163    842          MCW   0&X1,EXP1-1   SAVE EXPONENT 1                   7  0842  M 0'0 W82          9
164    849          SAR   X1          SAVE MANTISSA 1 ADDRESS             4  0849  Q 089              9
165    853          MCW   0&X1,250    MANTISSA 1 TO ACCUMULATOR 1          7  0853  M 0'0 250          9
166          * FROM HERE, X2 INDEXES ACCUM 1, FIRST HIGH, THEN LOW DIGIT
167    860          SBR   X2          SET X2 TO ACCUM 1 ADDRESS - OP WIDTH 4  0860  H 094              9
168    864          LCA   KZ1         APPEND A HIGH-ORDER ZERO TO ACCUM 1  4  0864  L W85              9
169    868  NXTOP2  BW    NOSIGN,0-0  WM UNDER OPERATOR?                   8  0868  V 883 000 1        9
170    876          MZ    250,ZAS     SIGN OF OPERAND 1 DETERMINES ZA OR ZS 7  0876  Y 250 '87         10
171    883  NOSIGN  S     KZ1,252&X3  ADD ZEROS BELOW MANTISSA             7  0883  S W85 2E2        10
172    890          C     1&X2,KZ1    COMPARE OPERAND HIGH-ORDER DIGIT TO 0 7  0890  C 0!1 W85        10
173    897          A     X3,X2       X2 NOW AT LOW-ORDER DIGIT OF ACCUM 1 7  0897  A 099 094        10
174    904          BCE   FDIV,SAVOP,/  DIVIDE?                           8  0904  B S33 924 /      10
175    912          BCE   FMPY,SAVOP,*  MULTIPLY?                        8  0912  B S62 924 *      11
176    920          S     SAVOP         TURN IT BACK TO ZA                4  0920  S 924            11
177    924  SAVOP   ZA    ZAS           COPY THIS OP CODE                 4  0924  ? '87            11
178    928          BCE   NMLZ1,280,0   HIGH-ORDER DIGIT OF ACCUM 2 ZERO? 8  0928  B '17 280 0      11
179    936          BE    CLRWK         ACCUM 1 HIGH-ORDER DIGIT IS ZERO  5  0936  B /34 S          11
180    941          S     EXP1-1,EXP2-1  EXP2 IS NOW EXP2 - EXP1          7  0941  S W82 W79       11
181    948          ZA    EXP2,X1&1     MOVE ABS(EXP2-EXP1) TO X1          7  0948  ? W80 090       12
182    955          C     X3,X1  COMPARE MANTISSA WIDTH AND ABS(EXP2-EXP1) 7  0955  C 099 089       12
183    962          BM    E1GTE2,EXP2-1  EXP1 .GT. EXP2                    8  0962  V /65 W79 K     12
184    970          BH    EXDGMW        ABS(EXP2-EXP1) .GT. MANTISSA WIDTH 5  0970  B /88 U          12
185    975          A     EXP2-1,EXP1-1  ADD EXP2-EXP1 TO EXP1             7  0975  A W79 W82       12
186    982          ZA    250,250&X1    SHIFT MANTISSA RIGHT BY EXP2-EXP1   7  0982  ? 250 2V0       13
187    989          ZA    X3&1,X1&1     X1 AND X3 NOW BOTH MANTISSA WIDTH   7  0989  ? 100 090       13
188    996  ADDSUB  MZ    ZAS,0&X2      SIGN OF ACCUM 1 DEPENDS ON OP       7  0996  Y '87 0!0       13
189  1 003          A     279&X1,0&X2   ADD (SUBTRACT) MANTISSAS            7  1003  A 2X9 0!0       13
190          *
191          * RELOCATABLE FUNCTIONS RETURN HERE TOO
192          *
193  1 010  FRET    MZ    0&X2,ZAS                                        7  1010  Y 0!0 '87        13
194          *
195          * NORMALIZE FLOATING-POINT RESULT OF A SINGLE ARITHMETIC
196          * OPERATION; PLACE THE NORMALIZED RESULT IN THE WORKING
197          * ACCUMULATOR.  IF EXPONENT OVERFLOW IS DETECTED, GO TO ERMSG TO
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SEQ PG LIN  LABEL  OP    OPERANDS                                        SFX CT  LOCN  INSTRUCTION TYPE  CARD

198         * PRINT MESSAGE (NOF); THEN GO TO STR99.  IF EXPONENT UNDERFLOW
199         * IS DETECTED, GO TO STRZE.  HERE, THE LOW-ORDER DIGIT OF THE
200         * RESULT IS INDEXED BY X2.
201         *
202         * THE NORMALIZED RESULT IS LEFT IN ACCUM 2.
203         *
204  1 017  NMLZ1  ZA    EXP1-1,EXP2-1                                    7  1017  ? W82 W79          14
205  1 024  NMLZ2  MCW   RM,1&X2    INSERT RM AFTER LOW-ORDER DIGIT       7  1024  M W75 0!1          14
206  1 031         MZ              CHAIN                                 1  1031  Y                  14
207  1 032         MZ                TWO ZEROS                           1  1032  Y                  14
208  1 033         A               AND ADD ANOTHER ONE                   1  1033  A                  14
209  1 034         MN              DECR A AND B (COPIES JUNK TO UNUSED)  1  1034  D                  14
210  1 035         SBR   X1                                              4  1035  H 089              14
211  1 039         S     281&X3    CLEAR ACCUM 2                         4  1039  S 2H1              15
212  1 043  NMLZL  BCE   STRZE,2&X1,'  RECORD MARK INDICATES ZERO RESULT 8  1043  B /42 0'2 '        15
213  1 051         SBR   X1            BUMP X1                           4  1051  H 089              15
214  1 055         BCE   NMLZL,1&X1,0  ZERO MEANS MORE NORMALIZATION NEEDED 8 1055 B '43 0'1 0       15
215  1 063         MCM   1&X1,280      NORMALIZE                         7  1063  P 0'1 280          15
216  1 070         S     X3,X2                                           7  1070  S 099 094          15
217  1 077         CW                  DECREASE AS AND BS TO             1  1077  )                  15
218  1 078         CW                    REFER TO X2 AND X1              1  1078  )                  16
219  1 079         S                   S    X2,X1                        1  1079  S                  16
220  1 080         S     X1,EXP2-1     STORE NORMALIZED EXPONENT         7  1080  S 089 W79          16
221  1 087  ZAS    ZA    279&X3        ZS IF ACCUM 1 NEGATIVE            4  1087  ? 2G9              16
222  1 091         SW                                                    1  1091  ,                  16
223  1 092         BCE   CLRWK,EXP2-3,0                                  8  1092  B /34 W77 0        16
224  1 100         BM    STRZE,EXP2-1  EXPONENT UNDERFLOW                8  1100  V /42 W79 K        16
225  1 108         B     ERMSG         EXPONENT OVERFLOW                 4  1108  B U71              17
226  1 114         DCW   @NOF@                                           3  1114                     17
227         *
228         * EXPONENT OVERFLOW; SET RESULT MAGNITUDE EQUAL TO LARGEST
229         * VALUE POSSIBLE IN FLOATING-POINT NOTATION; SET RESULT SIGN
230         * AS APPROPRIATE.
231         *
232  1 115  STR99  ZA    KM99,EXP2-1   -99 TO EXP2                       7  1115  ? W89 W79          17
233  1 122         MN    KM99,279&X3   ALL 9'S                           7  1122  D W89 2G9          17
234  1 129         MCW                   TO MANTISSA                     1  1129  M                  17
235  1 130         MCW   278&X3              IN ACCUM2                   4  1130  M 2G8              17
236         *
237         * CLEAR ACCUM 1 AFTER AN INDIVIDUAL ARITHMETIC OPERATION
238         *
239  1 134  CLRWK  CS    278                                             4  1134  / 278              17
240  1 138         B     NXTOP1                                          4  1138  B 755              18
241         *
242         * EXPONENT UNDERFLOW, OR RESULT IS ZERO.  SET FLOATING-POINT
243         * RESULT TO ZERO
244         *
245  1 142  STRZE  S     EXP2-1  EXP2 = 0                                4  1142  S W79              18
246  1 146         S     279&X3  ACCUM 2 MANTISSA = 0                    4  1146  S 2G9              18
247  1 150         B     CLRWK                                           4  1150  B /34              18
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SEQ PG LIN  LABEL   OP    OPERANDS                                        SFX CT  LOCN  INSTRUCTION TYPE  CARD

248         *
249         * DIVISION BY ZERO
250         *
251  1 154  DVERR   B     ERMSG                                             4  1154  B U71               18
252  1 160          DCW   @DZE@  DIVIDE BY ZERO MESSAGE                     3  1160                      18
253  1 161          B     STR99  INSERT OVERFLOW EXPONENT                   4  1161  B /15               18
254         *
255         * EXP1 IS GREATER THAN EXP2
256         *
257  1 165  E1GTE2 BH    NMLZ1  ABS(EXP2-EXP1) .GT. MANTISSA WIDTH         5  1165  B '17 U             19
258  1 170          S     X3&1,X1&1  SUBTR MAN. WIDTH FROM ABS(EXP2-EXP1)   7  1170  S 100 090           19
259  1 177          MZ    279&X3,279&X1  MOVE ZONE OVER TO NEW WIDTH         7  1177  Y 2G9 2X9           19
260  1 184          B     ADDSUB  GO ADD (OR SUBTRACT) MANTISSAS            4  1184  B 996               19
261         *
262         * ABS(EXP2-EXP1) .GT. MANTISSA WIDTH
263         *
264  1 188  EXDGMW A     EXP1-1,EXP2-1  RESTORE EXP2                       7  1188  A W82 W79           19
265  1 195          B     CLRWK                                             4  1195  B /34               19
266         *
267  1 199          SBR   X2,5&X2                                           7  1199  H 094 0!5           20
268  1 206          B     0                                                 4  1206  B 000               20
269         *
270  1 210          MN    0&X2                                              4  1210  D 0!0               20
271  1 214          MN                                                      1  1214  D                   20
272  1 215          MN                                                      1  1215  D                   20
273  1 216          MN                                                      1  1216  D                   20
274  1 217          SAR   SX2A&6                                            4  1217  Q 765               20
275  1 221  SX2B    BCE   NXTOP0,0,$                                        8  1221  B 723 000 $         21
276  1 229          B     TSTZON                                            4  1229  B 815               21
277         *
278         * FLOATING-POINT DIVIDE
279         *
280  1 233  FDIV    BE    DVERR     DIVIDE BY ZERO                          5  1233  B /54 S             21
281  1 238          MN    279&X3,1&X2                                       7  1238  D 2G9 0!1           21
282  1 245          MCW                                                     1  1245  M                   21
283  1 246          MN                                                      1  1246  D                   21
284  1 247          D     0&X1,251  DIVIDE MANTISSAS                       7  1247  % 0'0 251           21
285  1 254          ZS    EXP1-1    NEGATE EXPONENT                         4  1254  ! W82               22
286  1 258          B     EXPS      GO ADD EXPONENTS, NORMALIZE, ETC.       4  1258  B S83               22
287         *
288         * FLOATING-POINT MULTIPLY
289         *
290  1 262  FMPY    M     279&X3,251&X3  MULTIPLY MANTISSAS                 7  1262  @ 2G9 2E1           22
291  1 269          SBR   X2,3&X2                                           7  1269  H 094 0!3           22
292  1 276          S     KP2,EXP2-1                                        7  1276  S W90 W79           22
293  1 283  EXPS    A     EXP1-1,EXP2-1  ADD EXPONENTS                     7  1283  A W82 W79           22
294  1 290          MZ    279&X3,*&1  PREPARE TO                           7  1290  Y 2G9 S97           23
295  1 297          ZA    ZAS           SET SIGN OF RESULT                4  1297  ? '87               23
296  1 301          B     NMLZ2       NORMALIZE                           4  1301  B '24               23
297         *
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SEQ PG LIN  LABEL  OP    OPERANDS                                    SFX CT  LOCN  INSTRUCTION TYPE  CARD

298         * ASSIGNMENT OPERATOR IS LESS THAN CURRENT OPERATOR, I.E.,
299         * CURRENT OPERATOR IS ONE OF @, ?, A-I, !, J-R, ', S-Z, 0-9.
300         * IF NOT RECORD MARK, IT'S THE FIRST CHARACTER OF WHAT WOULD
301         * OTHERWISE BE AN OPERAND, SO BUMP THE OPERAND ADDRESS.
302         *
303  1 305  FUNC   BCE   DONE,4&X2,'  DONE (RECORD MARK)?                 8  1305  B T31 0!4 '          23
304  1 313         SBR   SX2A&6,1&X2  BUMP OPERAND ADDR                   7  1313  H 765 0!1           23
305  1 320         C     280,KZ1      HIGH-ORDER ACCUM 2 MANTISSA DIGIT   7  1320  C 280 W85           23
306         * THE LOADER PLUGS THE RELOCATABLE FUNCTION SELECTOR ADDRESS HERE
307  1 327  QFUNCT B     0            GO TO FUNCTION SELECTOR             4  1327  B 000               24
308  1 331  DONE   BCE   RES,280,0    FLOATING-POINT RESULT ZERO?         8  1331  B T69 280 0         24
309  1 339         BW    RES,IFLAG    INTEGER RESULT?                     8  1339  V T69 W87 1         24
310  1 347         BW    FPRES,4&X2   WM UNDER OPERATOR?                 8  1347  V T92 0!4 1         24
311  1 355         SBR   X3,2&X3                                        7  1355  H 099 0?2           24
312  1 362  SEXP2  MCM   EXP2-2,278&X3  MOVE EXP2 TO ACCUM 2             7  1362  P W78 2G8           25
313  1 369  RES    LCA   279&X3,0     STORE ACCUMULATOR TO SAVED B        7  1369  L 2G9 000           25
314  1 376         BW    5&X2,4&X2    RETURN IF DONE (WORD MARK)          8  1376  V 0!5 0!4 1         25
315  1 384         SAR   X2           BUMP X2 TO NEXT OPERAND             4  1384  Q 094               25
316  1 388         B     NXTOP                                           4  1388  B 712               25
317         *
318         * ROUND NONZERO FLOATING-POINT RESULT
319         *
320  1 392  FPRES  A     KP5,278&X3   ROUND MANTISSA                      7  1392  A W91 2G8           25
321  1 399         BWZ   CARRY,280,S  CARRY IN ACCUM 2 INDICATED BY A-ZONE? 8  1399  V U18 280 S         26
322  1 407  CPZONE MZ    279&X3,277&X3  MOVE ZONE FROM EXPONENT TO MANTISSA 7  1407  Y 2G9 2G7           26
323  1 414         B     SEXP2                                           4  1414  B T62               26
324  1 418  CARRY  A     KP1,EXP2-1   BUMP EXPONENT                      7  1418  A W92 W79           26
325  1 425         BCE   FOVFL,EXP2-3,1  OVERFLOW?                      8  1425  B U48 W77 1         26
326  1 433         S     279&X3       CLEAR MANTISSA                     4  1433  S 2G9               26
327  1 437         LCA   K1B-1,280      AND PUT 1 IN ITS HIGH-ORDER DIGIT 7  1437  L W93 280           27
328  1 444         B     CPZONE                                          4  1444  B U07               27
329         *
330         * FLOATING-POINT OVERFLOW -- HIGH-ORDER DIGIT OF EXP2 IS 1
331         *
332  1 448  FOVFL  MN    KM99,279&X3  99 TO                              7  1448  D W89 2G9           27
333  1 455         MCW                  EXPONENT                         1  1455  M                   27
334  1 456         MCW   278&X3       ALL 9S TO MANTISSA                 4  1456  M 2G8               27
335  1 460         S     KP1,EXP2-1                                      7  1460  S W92 W79           27
336  1 467         B     CPZONE                                          4  1467  B U07               27
337         *
338         * PRINT APPROPRIATE ERROR MESSAGES, WHICH INCLUDES A MNEMONIC
339         * THREE-CHARACTER CODE AND THE DISPLAY ADDRESS IN THE GENERATED
340         * PROCEDURE OF THE SOURCE PROGRAM STATEMENT BEING EXECUTED.  THIS
341         * SUBROUTINE IS USED TO RECORD CIRCUMSTANCES, OCCURRING DURING
342         * ARITHMETIC OPERATIONS, WHICH MAY AFFECT THE CALCULATION
343         * ADVERSELY.
344         *
345  1 471  ERMSG  SBR   ERSVX&6    SAVE RETURN ADDRESS                   4  1471  H U92               28
346  1 475         CS    202&X3                                          4  1475  / 2?2               28
347  1 479         SBR   ERSX3&6,0&X3  SAVE X3                           7  1479  H V25 0?0           28
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SEQ PG LIN  LABEL   OP    OPERANDS                                        SFX CT  LOCN  INSTRUCTION TYPE  CARD
348  1 486  ERSVX   SBR   X3,0       RETURN ADDRESS TO X3                    7  1486  H 099 000           28
349  1 493          MCW   2&X3,212   MNEMONIC TO PRINT AREA                  7  1493  M 0?2 212           28
350  1 500  ERMSI   SBR   217,0      INTERPRETER ADDRESS TO PRINT AREA       7  1500  H 217 000           28
351  1 507          W                                                       1  1507  2                   28
352  1 508          SW    201                                               4  1508  , 201               29
353  1 512          SBR   ERMSGX&3,3&X3  RETURN ADDRESS TO EXIT             7  1512  H V29 0?3           29
354  1 519  ERSX3   SBR   X3,0       RESTORE X3                              7  1519  H 099 000           29
355  1 526  ERMSGX  B     0                                                 4  1526  B 000               29
356          *
357          * OPERAND TENS DIGIT HAS A OR B BUT NOT AB ZONE (INTEGER ARITH.)
358          *
359  1 530  ARITI   SBR   X3,0          LOADER PUTS INTEGER SIZE IN B       7  1530  H 099 000           29
360  1 537          SW    IFLAG         INDICATE INTEGER                    4  1537  , W87               29
361  1 541          MCS   0&X1,250      OPERAND TO ACCUMULATOR 1            7  1541  Z 0'0 250           30
362  1 548          BCE   XDIV,SAVOP,/  DIVIDE?                           8  1548  B W23 924 /         30
363  1 556          BCE   XMPY,SAVOP,*  MULTIPLY?                         8  1556  B V98 924 *         30
364  1 564          BM    XSUB,SAVOP    SUBTRACT?                         8  1564  V V87 924 K         30
365  1 572          A     0&X1,279&X3   ADD OPERAND TO ACCUMULATOR 2        7  1572  A 0'0 2G9           30
366  1 579  XSIGN   ZA    279&X3        PUT A SIGN ON THE ACCUMULATOR       4  1579  ? 2G9               31
367  1 583          B     CLRWK                                             4  1583  B /34               31
368  1 587  XSUB    S     0&X1,279&X3   SUBTRACT OPERAND FROM ACCUMULATOR 2  7  1587  S 0'0 2G9           31
369  1 594          B     XSIGN                                             4  1594  B V79               31
370  1 598  XMPY    LCA   0&X1,250      MOVE OPERAND TO ACCUMULATOR 1       7  1598  L 0'0 250           31
371  1 605          M     279&X3,251&X3                                     7  1605  @ 2G9 2E1           31
372  1 612          MCW   251&X3,279&X3                                     7  1612  M 2E1 2G9           32
373  1 619          B     CLRWK                                             4  1619  B /34               32
374  1 623  XDIV    BCE   DVERR,250,    DIVIDE BY ZERO?                     8  1623  B /54 250           32
375  1 631          MCW   0&X1,250&X3                                       7  1631  M 0'0 2E0           32
376  1 638          MN                                                      1  1638  D                   32
377  1 639          SBR   MOVEQ&3       STORE ADDR TO MOVE TO ACCUM 2       4  1639  H W64               32
378  1 643          LCA   279&X3                                           4  1643  L 2G9               32
379  1 647          ZA    279&X3,250&X3                                     7  1647  ? 2G9 2E0           33
380  1 654          D     0&X1,251                                          7  1654  % 0'0 251           33
381  1 661  MOVEQ   MCW   249,279&X3                                       7  1661  M 249 2G9           33
382  1 668          B     CLRWK                                             4  1668  B /34               33
383          *
384          * DATA
385          *
386  1 674          DCW   000     CHAINED TO RM                           3  1674                      33
387  1 675  RM      DCW   @'@                                             1  1675                      33
388  1 676          DCW   0                                               1  1676                      33
389  1 680  EXP2    DCW   @000'@  EXPONENT OF ACCUM 2, AND ZERO AND RM    4  1680                      34
390  1 683  EXP1    DCW   000     EXPONENT OF ACCUM 1, AND ZERO           3  1683                      34
391  1 684          DCW   8                                               1  1684                      34
392  1 685  KZ1     DCW   0                                               1  1685                      34
393  1 686  ASGOP   DCW   @#@     ASSIGNMENT OPERATOR                     1  1686                      34
394  1 687  IFLAG   DCW   #1      WORD MARK INDICATES INTEGER              1  1687                      34
395  1 689  KM99    DCW   -99     USED FOR OVERFLOW                       2  1689                      34
396  1 690  KP2     DCW   &2                                              1  1690                      35
397  1 691  KP5     DCW   &5                                              1  1691                      35
```

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

398  1 692  KP1    DCW   &1                                            1  1692                      35
399  1 694  K1B    DCW   @1 @                                         2  1694                      35
400  1 695         DCW   0                                             1  1695                      35
401  1 696         DC    @"@     GROUP MARK                            1  1696             GMARK    35
402                END                                                      / 000 080
```

| SYMBOL | ADDRESS | SYMBOL | ADDRESS | SYMBOL | ADDRESS | SYMBOL | ADDRESS | SYMBOL | ADDRESS | SYMBOL | ADDRESS | SYMBOL | ADDRESS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ADDSUB | 996 | ARITF | 700 | ARITI | 1530 | ASGOP | 1686 | CARRY | 1418 | CLRWK | 1134 | CPZONE | 1407 |
| DONE | 1331 | DVERR | 1154 | E1GTE2 | 1165 | ERMSG | 1471 | ERMSGX | 1526 | ERMSI | 1500 | ERSVX | 1486 |
| ERSX3 | 1519 | EXDGMW | 1188 | EXP1 | 1683 | EXP2 | 1680 | EXPS | 1283 | FDIV | 1233 | FMPY | 1262 |
| FOVFL | 1448 | FPRES | 1392 | FRET | 1010 | FUNC | 1305 | IFLAG | 1687 | K1B | 1694 | KM99 | 1689 |
| KP1 | 1692 | KP2 | 1690 | KP5 | 1691 | KZ1 | 1685 | MOVEQ | 1661 | NMLZ1 | 1017 | NMLZ2 | 1024 |
| NMLZL | 1043 | NOSIGN | 883 | NXTOP | 712 | NXTOP0 | 723 | NXTOP1 | 755 | NXTOP2 | 868 | QFUNCT | 1327 |
| RES | 1369 | RM | 1675 | SAVOP | 924 | SEXP2 | 1362 | STR99 | 1115 | STRZE | 1142 | SX2A | 759 |
| SX2B | 1221 | TSTZON | 815 | X1 | 89 | X2 | 94 | X3 | 99 | XDIV | 1623 | XMPY | 1598 |
| XSIGN | 1579 | XSUB | 1587 | ZAS | 1087 | | | | | | | | |