STORAGE ALLOCATION.

ADDRESS	LENGTH	BINARY CONTROL CARDS.	
0	754	IDENT	P.SYSTM
754		END	

ENTRY POINTS.

P.GETB	7+	P.CLOSE	300+	P.CLOCK	354+
P.PUTB	32+	P.GETS	335+	P.DATE	361+
P.GETC	52+	P.PUTS	341+	P.MSG	367+
P.PUTC	124+	P.RESET	307+	P.INIT	420+
P.GETLN	112+	P.REWRT	321+	P.SABRT	571+
P.PUTLN	145+	P.RWRTS	331+	P.NEW	407+
P.OPEN	253+	P.TIME	364+	P.DISP	415+

EXTERNAL SYMBOLS.

P.MAIN

```
                   IDENT     P.SYSTM




          *  AUTHORS     H. SANDMAYR
          *              N. WIRTH        E.T.H.
          *                 CLAUSIUSSTR. 55
          *                 8006  ZURICH       SWITZERLAND









                   ENTRY    P.GETB,P.PUTB,P.GETC,P.PUTC
                   ENTRY    P.GETLN,P.PUTLN
                   ENTRY    P.OPEN,P.CLOSE
                   ENTRY    P.GETS,P.PUTS,P.RESET,P.REWRT,P.RWRTS
                   ENTRY    P.TIME,P.CLOCK,P.DATE,P.MSG,P.INIT,P.SABRT
                   ENTRY    P.NEW,P.DISP

                   EXT       P.MAIN







          * EFET FORMAT:
          *
          *          -13   LINE COUNTER               )
          *          -12   CHAR BUFFER (10 WORDS)     )  FOR CHAR FILES ONLY
          *           -2   SENTINEL                   )
          *           -1   POINTER TO BUFFER ELEMENT
          *     EFET       DISP (BITS 51-59), LRL (BITS 0-17)
          *                   LRL= PASCAL LOGICAL RECORD LENGTH
          *           +1   LFN  BITS 18-59), CODE/STATUS (BITS 0-17)
          *           +2   FIRST
          *           +3   IN
          *           +4   OUT
          *           +5   LIMIT
          *
          *
          *  DISPOSITION FORMAT (6 BITS)
          *          59   EOF FOR NON-SEG. FILES, EOS FOR SEG. FILES
          *          58   EOF
          *          57   0= NON SEG, 1=SEGMENTED
          *          55   0= WORDFILE, 1= CHARFILE
          *       51-53   DISPOSITION, 0= LOCAL, 1= READ ONLY, 3= READ/WRITE
          *
```

```
                                       XJMTR     MACRO     I,J                                      XJMODS      1
                                       +         SA.I      B1                                       XJMODS      2
                                                 NZ        X.I,*                                    XJMODS      3
                                                 SA.J      B1                                       XJMODS      4
                                                 XJ                                                 XJMODS      5
                                                 ENDM                                               XJMODS      6
 3                                     IXX*X     OPDEF     I,J,K                                    IMULT       1
                                                 DX.I      X.J*X.K                                  IMULT       2
                                                 ENDM                                               IMULT       3
          0  00000000000000000000      P.PPREQ   DATA      0                                        SYS        60
                                       *         SA5       EFET+1                                   SYS        61
                                       *         SX0       3L/PP-PROG/                              SYS        62
                                       *         SX6       REQUEST CODE                             SYS        63
          1  43452                               MX4       42                                       SYS        64
                  11454                          BX4       X5*X4                                    SYS        65
                       12664                     BX6       X6+X4          LFN+CODE                  SYS        66
                            54650                SA6       A5                                       SYS        67
          2  20052                               LX0       42                                       SYS        68
                  74650                          SX6       A5                                       SYS        69
                       12606                     BX6       X0+X6          NAME+ADR                  SYS        70
                            43001                MX0       1                                        SYS        71
          3  20051                               LX0       41                                       SYS        72
                  12606                          BX6       X0+X6          +RECALL BIT               SYS        73
          4  56410                               XJMTR      4,6                                     XJMODS      7
          6  0400000000 +                        EQ        P.PPREQ                                  SYS        77
```

```
     7  00000000000000000000   P.GETB  DATA  0
                                  *      SA1   EFET
    10  0331000030 +                     NG    X1,EOFERR
                  5031000004             SA3   A1+4              X3= OUT
    11  73110                            SX1   X1                X1= LRL
             36731                       IX7   X3+X1             OUT+LRL
                  55711                  SA7   A1-B1             P
                       54730             SA7   A3
    12  54431                            SA4   A3+B1             X4=LIMIT
             73440                       SX4   X4
                  13074                  BX0   X7-X4
    13  0310000015 +                     NZ    X0,GB2
                  5041000002             SA4   A1+2              X4= FIRST
    14  73740                            SX7   X4
             54730                       SA7   A3                X7= OUT
                  55711                  SA7   A1-B1             P
    15  55231                    GB2     SA2   A3-B1             IN
             37027                       IX0   X2-X7             IN-OUT
                  0330000007 +           NG    X0,P.GETB         RETURN, IF IN LT OUT
    16  37001                            IX0   X0-X1             (IN-OUT)-LRL
             0320000007 +                PL    X0,P.GETB         RETURN, IF (IN-OUT) GE LRL
                       54511             SA5   A1+B1             LFN
    17  7100000030                       SX0   30B
                  11005                  BX0   X0*X5
                       13650             BX6   X5-X0
    20  20067                            LX0   55
             0320000025 +                PL    X0,GB5
                       54650             SA6   A5
    21  54210                            SA2   A1
             20202                       LX2   2
                  0332000023 +           NG    X2,GB4            JUMP IF SEGMENTED
    22  20001                            LX0   1
             21001                       AX0   1
    23  20272                    GB4     LX2   58
             12602                       BX6   X0+X2
                  54610                  SA6   A1
    24  0336000007 +                     NG    X6,P.GETB         EOF EXIT
    25  7100031117               GB5     SX0   3LCIO
                  7160000012             SX6   12B
    26  0100000000 +                     RJ    P.PPREQ
    27  0400000015 +                     EQ    GB2

    30  5110000007 +             EOFERR  SA1    P.GETB
                  7100000722 +           SX0    EOFMSG
    31  0400000571 +                     EQ     P.SABRT
```

```
     32  00000000000000000000      P.PUTB   DATA     0                                                SYS    125
                                 * P.PUTB IS SUPPOSED NOT TO CHANGE A0                                SYS    126
                                 *          SA1      EFET                                             SYS    127
     33  0321000050 +                       PL       X1,WRERR1          NOT EOS/EOF                   SYS    128
                    5021000003              SA2      A1+3               X2=IN                         SYS    129
     34  73110                              SX1      X1                 X1=LRL                        SYS    130
              54321                         SA3      A2+B1              X3=OUT                        SYS    131
                   36721                    IX7      X2+X1                                            SYS    132
                        54431               SA4      A3+B1                                            SYS    133
     35  73440                              SX4      X4                 X4=LIMIT                      SYS    134
              13074                         BX0      X7-X4                                            SYS    135
                   0310000037 +             NZ       X0,PB1                                           SYS    136
     36  55521                              SA5      A2-B1              X5=...., FIRST                SYS    137
              73750                         SX7      X5                                               SYS    138
     37  55711                     PB1      SA7      A1-B1              P                             SYS    139
              54720                         SA7      A2                 IN                            SYS    140
                   37237                    IX2      X3-X7              OUT-IN                        SYS    141
     40  0332000042 +                       NG       X2,PB2             JUMP IF OUT LT IN             SYS    142
                   37012                    IX0      X1-X2              LRL-(OUT-IN)                  SYS    143
     41  0330000032 +                       NG       X0,P.PUTB          JUMP IF (OUT-IN) GT LRL       SYS    144
                   0400000045 +             EQ       PB3                                              SYS    145
                                 *                                                                    SYS    146
     42  36071                     PB2      IX0      X7+X1              IN+LRL                        SYS    147
              37004                         IX0      X0-X4              (IN+LRL)-LIMIT                SYS    148
                   0310000032 +             NZ       X0,P.PUTB                                        SYS    149
     43  55521                              SA5      A2-B1                                            SYS    150
              73550                         SX5      X5                 X5= FIRST                     SYS    151
                   37035                    IX0      X3-X5              OUT-FIRST                     SYS    152
     44  0310000032 +                       NZ       X0,P.PUTB                                        SYS    153
     45  5051000001                PB3      SA5      A1+1               WRITE BUFFER, LFN             SYS    154
                   7100031117               SX0      3LCIO                                            SYS    155
     46  7160000016                         SX6      16B                                              SYS    156
                   0100000000 +             RJ       P.PPREQ            WRITE REQ                     SYS    157
     47  0400000032 +                       EQ       P.PUTB                                           SYS    158
                                                                                                      SYS    159
     50  5110000032 +              WRERR1   SA1       P.PUTB                                          SYS    160
                   7100000725 +             SX0       WRMSG                                           SYS    161
     51  0400000571 +                       EQ        P.SABRT                                         SYS    162
```

```
      52  00000000000000000000     P.GETC  DATA    0                 GET FOR TEXTFILES                  SYS         164
                                   *       SA1     EFET-1                                               SYS         165
      53  0331000060 +                     NG      X1,GC1                                               SYS         166
                    53211                  SA2     X1+B1                                                OPT6600B      1
                         73611             SX6     X1+B1                                                SYS         167
      54  54610                            SA6     A1                                                   SYS         168
               0322000052 +                PL      X2,P.GETC                                            SYS         170
      55  0302000060 +                     ZR      X2,GC1                                               SYS         171
                    12662                  BX6     X6+X2                                                SYS         172
                         54610             SA6     A1                SET EOLN BIT                       SYS         173
      56  7160000055                       SX6     55B                                                  SYS         174
                    54620                  SA6     A2                SET BUFFER ELEMENT TO BLANK        SYS         175
      57  0400000052 +                     EQ      P.GETC                                               SYS         176
                                                                                                        SYS         177
      60  54111                    GC1     SA1     A1+B1             CHAR BUF EMPTY                     SYS         178
               0100000007 +                RJ      P.GETB                                               SYS         179
      61  54210                            SA2     A1                                                   SYS         180
               55121                       SA1     A2-B1             P                                  SYS         181
                    0332000102 +           NG      X2,GC4            EOF/S                              SYS         182
      62  53210                            SA2     X1                                                   SYS         183
               43066                       MX0     54                                                   SYS         184
                    0302000107 +           ZR      X2,GC5                                               SYS         185
      63  20206                    GC2     LX2     6                 UNPACK                             SYS         186
               15620                       BX6     -X0*X2                                               SYS         187
                    5061777764             SA6     A1-11                                                SYS         188
                                                                                                        OPT6600B      2
                                 3         DUP     3,6                                                  OPT6600B      3
                                           LX2     6                                                    OPT6600B      4
                                           BX7     -X0*X2                                               OPT6600B      5
                                           SA7     A6+B1                                                OPT6600B      6
                                           LX2     6                                                    OPT6600B      7
                                           BX6     -X0*X2                                               OPT6600B      8
                                           SA6     A7+B1                                                OPT6600B      9
                                                                                                        OPT6600B     10
                    20206                  LX2     6                                                    OPT6600B     11
                         15720             BX7     -X0*X2                                               OPT6600B     12
      71  54761                            SA7     A6+B1                                                OPT6600B     13
               43614                       MX6     12                                                   SYS         193
                    11662                  BX6     X6*X2                                                SYS         194
      72  0306000076 +                     ZR      X6,GC3                                               SYS         195
                                                                                                        OPT6600B     14
                    20206                  LX2     6                                                    OPT6600B     15
                         15620             BX6     -X0*X2                                               OPT6600B     16
      73  54671                            SA6     A7+B1                                                OPT6600B     17
               20206                       LX2     6                                                    OPT6600B     18
                    15720                  BX7     -X0*X2                                               OPT6600B     19
                         54761             SA7     A6+B1                                                OPT6600B     20
      74  7061777764                       SX6     A1-11                                                SYS         200
                    54610                  SA6     A1                P                                  SYS         201
      75  0400000052 +                     EQ      P.GETC                                               SYS         202
                                                                                                        SYS         203
      76  54270                    GC3     SA2     A7                EOL                                OPT6600B     21
               0312000100 +                NZ      X2,GC31                                              SYS         205
      77  55221                    +       SA2     A2-B1                                                SYS         206
               0302000077 +                ZR      X2,*                                                 SYS         207
     100  43601                    GC31    MX6     1                                                    SYS         208
               54621                       SA6     A2+B1             SET EOL-SENTINEL                   SYS         209
```

```
               7061777764          SX6    A1-11                              SYS    210
   101  54610                      SA6    A1         P                       SYS    211
            0400000052 +           EQ     P.GETC                             SYS    212
                                                                             SYS    213
   102  76600                GC4   SX6    B0         EOF                     SYS    214
            5061777775             SA6    A1-2       CLEAR CHAR BUF          SYS    215
                    11             DUP    9,1                                SYS    216
                                   SA6    A6-B1                              SYS    217
   105  74660                      SX6    A6                                 SYS    218
            43001                  MX0    1                                  SYS    219
               12660               BX6    X6+X0                              SYS    220
                  54610            SA6    A1                                 SYS    221
   106  0400000052 +               EQ     P.GETC                             SYS    222
                                                                             SYS    223
   107  0332000063 +         GC5   NG     X2,GC2                             SYS    224
               7160000055          SX6    1R                                 SYS    225
   110  5061777764                 SA6    A1-11      SET BUFFER ELEMENT TO BLANK SYS 226
               74060               SX0    A6                                 SYS    227
                  43601            MX6    1                                  SYS    228
   111  12660                      BX6    X6+X0                              SYS    229
            54610                  SA6    A1         SET EOLN BIT            SYS    230
               0400000052 +        EQ     P.GETC                             SYS    231
```

```
  112  00000000000000000000      P.GETLN  DATA     0                                    SYS       233
                                *        SA1      EFET-1                               SYS       234
  113  0331000122 +                      NG       X1,GL4                               SYS       235
                 6271000001              SB7      X1+1                                 SYS       236
  114  56270                      GL1     SA2      B7                                   SYS       237
            66771                        SB7      B7+B1                                SYS       238
                 0322000114 +            PL       X2,GL1                               SYS       239
  115  0312000121 +                      NZ       X2,GL3        EOL FOUND IN SAME WORD SYS       240
                                                                                       SYS       241
  116  54111                      GL2     SA1      A1+B1                                SYS       242
            0100000007 +                 RJ       P.GETB                               SYS       243
  117  55111                             SA1      A1-B1         P                      SYS       244
            53210                        SA2      X1                                   SYS       245
                 43060                   MX0      48                                   SYS       246
                      15220              BX2      -X0*X2                               SYS       247
  120  0312000116 +                      NZ       X2,GL2                               SYS       248
                                                                                       SYS       249
  121  43601                      GL3     MX6      1                                    SYS       250
            54610                        SA6      A1                                   SYS       251
                 54160                   SA1      A6                                   SYS       252
  122  0100000052 +               GL4     RJ       P.GETC                               SYS       253
  123  0400000112 +                      EQ       P.GETLN                              SYS       254
```

```
 124  00000000000000000000        P.PUTC  DATA    0                  PUT FOR TEXTFILES                   SYS        256
                                *         SA1     EFET-1             UPON EXIT: A1 = EFET - 1            SYS        257
 125  0321000143 +                        PL      X1,WRERR2                                              SYS        258
                  53211                   SA2     X1+B1                                                  OPT6600B    22
                           76610          SX6     B1                                                     OPT6600B    23
 126  36616                               IX6     X1+X6                                                  OPT6600B    24
           54610                          SA6     A1                                                     OPT6600B    25
                  0322000124 +            PL      X2,P.PUTC                                              SYS        263
                                                                                                         OPT6600B    26
                                *         CHARACTER BUFFER FULL, PACK AND WRITE WORD.                    OPT6600B    27
                                                                                                         OPT6600B    28
 127  5021777764                          SA2     A1-11              CHARACTERS 1,2,3,4                  OPT6600B    29
                  5031777765              SA3     A1-10                                                  OPT6600B    30
 130  5041777766                          SA4     A1-9                                                   OPT6600B    31
                  5051777767              SA5     A1-8                                                   OPT6600B    32
 131  6170000004                          SB7     4                  BIAS TO NEXT CHARACTERS             OPT6600B    33
                                                                                                         OPT6600B    34
                  20206                   LX2     6                  PACK 1,2                            OPT6600B    35
                           12623          BX6     X2+X3                                                  OPT6600B    36
 132  54227                               SA2     A2+B7              CHARACTERS 5,6                      OPT6600B    37
           54337                          SA3     A3+B7                                                  OPT6600B    38
                                                                                                         OPT6600B    39
                  20406                   LX4     6                  PACK 3,4                            OPT6600B    40
                           12745          BX7     X4+X5                                                  OPT6600B    41
 133  20660                               LX6     8*6                POSITION (1,2)                      OPT6600B    42
           54447                          SA4     A4+B7              CHARACTERS 7,8                      OPT6600B    43
                  54557                   SA5     A5+B7                                                  OPT6600B    44
                                                                                                         OPT6600B    45
                           20206          LX2     6                  PACK 5,6                            OPT6600B    46
 134  12023                               BX0     X2+X3                                                  OPT6600B    47
           20744                          LX7     6*6                POSITION (3,4)                      OPT6600B    48
                  54227                   SA2     A2+B7              CHARACTERS 9,10                     OPT6600B    49
                           54337          SA3     A3+B7                                                  OPT6600B    50
 135  20406                               LX4     6                  PACK 7,8                            OPT6600B    51
           12445                          BX4     X4+X5                                                  OPT6600B    52
                  20030                   LX0     4*6                POSITION (5,6)                      OPT6600B    53
                                                                                                         OPT6600B    54
                           36667          IX6     X6+X7              PACK (1,2),(3,4)                    OPT6600B    55
 136  20414                               LX4     2*6                POSITION (7,8)                      OPT6600B    56
           12004                          BX0     X0+X4              PACK (5,6),(7,8)                    OPT6600B    57
                                                                                                         OPT6600B    58
                  20206                   LX2     6                  POSITION 9                          OPT6600B    59
                           36660          IX6     X6+X0              PACK (1,2,3,4),(5,6,7,8)            OPT6600B    60
 137  12223                               BX2     X2+X3              PACK 9,10                           OPT6600B    61
           36662                          IX6     X6+X2              PACK (1,2,3,4,5,6,7,8),(9,10)       OPT6600B    62
                                                                                                         OPT6600B    63
                  5021000004              SA2     A1+4               IN                                  SYS        272
 140  53620                               SA6     X2                                                     SYS        273
           54111                          SA1     A1+B1                                                  SYS        274
                  0100000032 +            RJ      P.PUTB                                                 SYS        275
 141  55111                               SA1     A1-B1                                                  SYS        276
           7061777764                     SX6     A1-11                                                  SYS        277
                           43001          MX0     1                                                      SYS        278
 142  12660                               BX6     X6+X0                                                  SYS        279
           54610                          SA6     A1                 P                                   SYS        280
                  0400000124 +            EQ      P.PUTC                                                 SYS        281
                                                                                                         SYS        282
```

```
     143  5110000124 +           WRERR2   SA1      P.PUTC                                  SYS      283
                    7100000725 +          SX0      WRMSG                                   SYS      284
     144  0400000571 +                    EQ       P.SABRT                                 SYS      285
```

```
 145  00000000000000000000       P.PUTLN  DATA    0                UPON EXIT: A1 = EFET - 1             SYS    287
                                *        SA1     EFET-1           AT LINE END, A BLANK IS APPENDED     SYS    288
 146  0321000171 +                       PL      X1,WRERR4                                             SYS    289
                6071777764               SB7     A1-11            1. IF LAST CHAR WAS COLON            SYS    290
 147  63310                              SB3     X1               2. IF NO OF CHARS IS 9, 19, 29, ...  SYS    291
           76600                         SX6     B0                                                    SYS    292
                0437000162 +             EQ      B3,B7,PL5        EMPTY                                SYS    293
 150  43066                     PL1      MX0     54                                                    SYS    294
           20606                         LX6     6                PACK                                 SYS    295
                56270                    SA2     B7                                                    SYS    296
                     66771               SB7     B7+B1                                                 SYS    297
 151  15220                              BX2     -X0*X2                                                SYS    298
           12662                         BX6     X6+X2                                                 SYS    299
                0773000150 +             LT      B7,B3,PL1                                             SYS    300
 152  7100000055                         SX0     55B                                                   SYS    301
                0312000154 +             NZ      X2,PL2                                                SYS    302
 153  20606                              LX6     6                                                     SYS    303
           12660                         BX6     X6+X0            APPEND A BLANK AFTER COLON           SYS    304
                66771                    SB7     B7+B1                                                 SYS    305
 154  6031777775                PL2      SB3     A1-2                                                  SYS    306
                0773000161 +             LT      B7,B3,PL4                                             SYS    307
 155  0737000156 +                       LT      B3,B7,PL3                                             SYS    308
                20606                    LX6     6                                                     SYS    309
                     12660               BX6     X6+X0            APPEND A BLANK IN POSITION 10        SYS    310
 156  5021000004                PL3      SA2     A1+4             IN                                   SYS    311
                53620                    SA6     X2                                                    SYS    312
                     54111               SA1     A1+B1                                                 SYS    313
 157  0100000032 +                       RJ      P.PUTB                                                SYS    314
 160  55111                              SA1     A1-B1                                                 SYS    315
           76600                         SX6     B0                                                    SYS    316
                0400000162 +             EQ      PL5                                                   SYS    317
                                                                                                       SYS    318
 161  20606                     PL4      LX6     6                LEFT ADJUST                          SYS    319
           66771                         SB7     B7+B1                                                 SYS    320
                0637000161 +             GE      B3,B7,PL4                                             SYS    321
 162  5021000004                PL5      SA2     A1+4             IN                                   SYS    322
                53620                    SA6     X2                                                    SYS    323
                     54111               SA1     A1+B1                                                 SYS    324
 163  0100000032 +                       RJ      P.PUTB                                                SYS    325
 164  55111                              SA1     A1-B1                                                 SYS    326
           7061777764                    SX6     A1-11                                                 SYS    327
                     43001               MX0     1                                                     SYS    328
 165  12660                              BX6     X6+X0                                                 SYS    329
           54610                         SA6     A1                                                    SYS    330
                5031777763               SA3     A1-12            LNCNT                                SYS    331
 166  0303000170 +                       ZR      X3,LINERR                                             SYS    332
                7273777776               SX7     X3-1                                                  SYS    333
 167  54730                              SA7     A3                                                    SYS    334
           0400000145 +                  EQ      P.PUTLN                                               SYS    335
                                                                                                       SYS    336
 170  7100000717 +              LINERR   SX0     LINEMSG                                               SYS    337
                0400000172 +             EQ      PUTLERR                                               SYS    338
                                                                                                       SYS    339
 171  7100000725 +              WRERR4   SX0     WRMSG                                                 SYS    340
 172  5110000145 +              PUTLERR  SA1     P.PUTLN                                               SYS    341
                0400000571 +             EQ      P.SABRT                                               SYS    342
```

```
  173  00000000000000000000    SETWR   DATA   0         SET EFET TO WRITE STATUS
                                *      SA1    EFET
  174  5021000002                      SA2    A1+2      FIRST
                 73620                 SX6    X2
                      54621            SA6    A2+B1     IN = FIRST
  175  54661                           SA6    A6+B1     OUT = FIRST
            43702                      MX7    2
                 12771                 BX7    X7+X1
                      54710            SA7    A1
  176  20704                           LX7    4
            0327000202 +               PL     X7,SW2    JUMP IF BINARY
                      76600            SX6    B0
  177  6170777765                      SB7    -10
                 7021777775            SX2    A1-2
  200  53627                   SW1     SA6    X2+B7     CLEAR BUFFER
            66771                      SB7    B7+B1
                 0570000200 +          NE     B7,B0,SW1
  201  43001                           MX0    1
            7061777763                 SX6    A1-12
                      12660            BX6    X6+X0
  202  5061777776              SW2     SA6    A1-1      P
                 0400000173 +          EQ     SETWR

  203  00000000000000000000    SETRD   DATA   0         SET EFET TO READ STATUS AND LOAD BUFF
                                *      SA1    EFET
  204  73610                           SX6    X1        LRL
            5021000002                 SA2    A1+2      FIRST
                      73720            SX7    X2
  205  36667                           IX6    X6+X7
            54621                      SA6    A2+B1     IN = FIRST+LRL
                 54761                 SA7    A6+B1     OUT = FIRST
                      43602            MX6    2
  206  15616                           BX6    -X6*X1
            54610                      SA6    A1
                 10166                 BX1    X6
                      20604            LX6    4
  207  0326000212 +                    PL     X6,SR1
                 7061777774            SX6    A1-3      LAST CHAR
  210  55611                           SA6    A1-B1     P
            54160                      SA1    A6
                 0100000052 +          RJ     P.GETC
  211  54111                           SA1    A1+B1
            0400000203 +               EQ     SETRD

  212  0100000007 +            SR1     RJ     P.GETB
  213  0400000203 +                    EQ     SETRD
```

```
 214  00000000000000000000      CLEAR    DATA     0          CLEAR FILE BUFFER
                               *        SA1      EFET
 215  10011                             BX0      X1
          20004                         LX0      4
              0320000222 +              PL       X0,CL1     JUMP IF BIN
 216  55211                             SA2      A1-B1      P
          73220                         SX2      X2
              7001777763                SX0      A1-12
 217  37020                             IX0      X2-X0
          0300000222 +                  ZR       X0,CL1
                  55111                 SA1      A1-B1
 220  0100000145 +              CL0     RJ       P.PUTLN    CLEAR CHAR BUF
 221  54111                             SA1      A1+B1
 222  5051000001                CL1     SA5      A1+1
              7160000026                SX6      26B
 223  7100031117                        SX0      3LCIO
              0100000000 +              RJ       P.FPREQ
 224  0400000214 +                      EQ       CLEAR

 225  00000000000000000000      CCLEAR   DATA     0          CLEAR BUFF IF EOF AND BUFF NOT EMPTY
                               *        SA1      EFET
 226  0321000225 +                      PL       X1,CCLEAR  EXIT IF NOT EOF/S
              10011                     BX0      X1
                  20004                 LX0      4
 227  0320000232 +                      PL       X0,CLR0    JUMP IF NOT CHARFILE
              55211                     SA2      A1-B1      P
                  73220                 SX2      X2
 230  7001777763                        SX0      A1-12      TOP
              37020                     IX0      X2-X0
 231  0310000234 +                      NZ       X0,CLR1    JUMP IF NOT EMPTY
 232  5021000003                CLR0    SA2      A1+3       IN
              54321                     SA3      A2+B1      OUT
                  13023                 BX0      X2-X3
 233  0300000225 +                      ZR       X0,CCLEAR  EXIT IF EMPTY

 234  0100000214 +              CLR1    RJ       CLEAR
 235  0400000225 +                      EQ       CCLEAR
```

```
  236  00000000000000000000    SKIP    DATA     0             SKIP LOGICAL RECORDS         SYS        429
                               *       SA1      EFET                                       SYS        430
                               *       SX2      I                                          SYS        431
  237  7100000020                      SX0      20B                                        SYS        432
                 0331000241 +          NG       X1,SK1        EOS                          SYS        433
  240  54511                           SA5      A1+B1         STATUS                       SYS        434
            11005                      BX0      X0*X5                                      SYS        435
                 13650                 BX6      X5-X0                                      SYS        436
                      54650            SA6      A5            RESET EOF/EOR                SYS        437
                                                                                           SYS        438
  241  0332000250 +            SK1     NG       X2,SK3                                     SYS        439
                 0302000250 +          ZR       X2,SK3                                     SYS        440
  242  7160000242                      SX6      242B          SKIPF                        SYS        441
                 0300000244 +          ZR       X0,SK2                                     SYS        442
  243  7222777776                      SX2      X2-1                                       SYS        443
                 0302000236 +          ZR       X2,SKIP                                    SYS        444
                                                                                           SYS        445
  244  7100031117              SK2     SX0      3LCIO                                      SYS        446
                 20244                 LX2      36                                         SYS        447
                      12002            BX0      X0+X2                                      SYS        448
  245  54511                           SA5      A1+B1         LFN (+STATUS)                SYS        449
            0100000000 +               RJ       P.PPREQ                                    SYS        450
  246  54550                           SA5      A5            (LFN+) STATUS                SYS        451
            7100000030                 SX0      30B                                        SYS        452
                      15650            BX6      -X0*X5        CLEAR EOR/EOF-BITS           SYS        453
  247  54650                           SA6      A5                                         SYS        454
            0400000236 +               EQ       SKIP                                       SYS        455
                                                                                           SYS        456
  250  20101                   SK3     LX1      1                                          UPDATE7    178
            13000                      BX0      X0-X0                                      UPDATE7    179
                 7160000642            SX6      642B          SKIPB                        UPDATE7    180
  251  0331000252 +                    NG       X1,SK4                                     UPDATE7    181
                 7100000001            SX0      1                                          UPDATE7    182
  252  37202                   SK4     IX2      X0-X2                                      UPDATE7    183
            20173                      LX1      59            RESET X1                     UPDATE8     16
                 0400000244 +          EQ       SK2                                        SYS        460
```

```
 253  00000000000000000000          P.OPEN   DATA   0            CALLED TO INITIALISE EXTENDED FET      SYS   462
                                      *      SA0    EFET                                                SYS   463
                                      *      SX1    DISP                                                SYS   464
                                      *      SA2    LFN                                                 SYS   465
                                      *      SX3    BUFLGTH                                             SYS   466
                                      *      SX6    RECORDLGTH                                          SYS   467
                                      *      SX7    BUFADR                                              SYS   468
 254  55701                                  SA7    A0-B1        P                                      SYS   469
           5070000002                        SA7    A0+2         FIRST                                  SYS   470
                     54771                   SA7    A7+B1        IN                                     SYS   471
 255  54771                                  SA7    A7+B1        OUT                                    SYS   472
           36773                             IX7    X7+X3                                               SYS   473
                43052                        MX0    42                                                  SYS   474
                     54771                   SA7    A7+B1                                               SYS   475
 256  11702                                  BX7    X0*X2                                               SYS   476
           54701                             SA7    A0+B1        LFN                                    SYS   477
                7100000600                   SX0    600B         EOF/EOS BITS                           SYS   478
 257  12110                                  BX1    X1+X0                                               SYS   479
           20167                             LX1    55                                                  SYS   480
                0321000265 +                 PL     X1,OPN2      JUMP IF NOT CHAR                       SYS   481
 260  43774                                  MX7    60           -0                                     SYS   482
           5070777775                        SA7    A0-2                                                SYS   483
                     43773                   MX7    59           -1                                     SYS   484
 261  5070777762                             SA7    A0-13        LINE COUNT                             SYS   485
                74771                        SX7    A7+B1                                               SYS   486
                     43001                   MX0    1                                                   SYS   487
 262  12770                                  BX7    X7+X0                                               SYS   488
           55701                             SA7    A0-B1        P                                      SYS   489
                76700                        SX7    B0           CLEAR BUFFER                           SYS   490
 263  6170777765                             SB7    -10                                                 SYS   491
                75271                        SX2    A7-B1                                               SYS   492
 264  53727                         OPN1     SA7    X2+B7                                               SYS   493
           66771                             SB7    B7+B1                                               SYS   494
                0570000264 +                 NE     B7,B0,OPN1                                          SYS   495
 265  20170                         OPN2     LX1    56                                                  SYS   496
           12661                             BX6    X6+X1                                               SYS   497
                54600                        SA6    A0           EFET                                   SYS   498
                     20106                   LX1    6                                                   SYS   499
 266  21171                                  AX1    57                                                  SYS   500
           0301000253 +                      ZR     X1,P.OPEN    LOCAL                                  SYS   501
                     54501                   SA5    A0+B1        LFN                                    SYS   502
 267  5120000660 +                           SA2    INP                                                 SYS   503
                37252                        IX2    X5-X2                                               SYS   504
 270  0302000275 +                           ZR     X2,OPN3                                             SYS   505
                5120000661 +                 SA2    OUTP                                                SYS   506
 271  37225                                  IX2    X2-X5                                               SYS   507
           0302000253 +                      ZR     X2,P.OPEN    LFN = OUTPUT                           SYS   508
                     20101                   LX1    1                                                   SYS   509
 272  7261000100                             SX6    X1+100B                                             SYS   510
                7100172005                   SX0    3LOPE                                               SYS   511
 273  0100000000 +                           RJ     P.PPREQ                                             SYS   512
 274  0400000253 +                           EQ     P.OPEN                                              SYS   513
                                                                                                        SYS   514
 275  43001                         OPN3     MX0    1            LFN = INPUT                            SYS   515
           20072                             LX0    58                                                  SYS   516
                12660                        BX6    X6+X0                                               SYS   517
                     54660                   SA6    A6           EFET                                   SYS   518
```

```
 276  54160                           SA1    A6
           76210                      SX2    B1
                0100000335 +          RJ     P.GETS
 277  0400000253 +                    EQ     P.OPEN

 300  00000000000000000000   P.CLOSE  DATA   0              CALLED AT BLOCK EXIT
                            *         SA1    EFET
 301  10011                           BXO    X1
           20010                      LXO    8
                0330000305 +          NG     X0,CLS1
 302  7160000172                      SX6    172B
                5051000001            SA5    A1+1
 303  7100031417                      SXO    3LCLO
                0100000000 +          RJ     P.PPREQ
 304  0400000300 +                    EQ     P.CLOSE
 305  0100000225 +           CLS1     RJ     CCLEAR
 306  0400000300 +                    EQ     P.CLOSE
```

```
     307  00000000000000000000  P.RESET  DATA  0                                    SYS
                              *          SA1   EFET                                 SYS
     310  5120000660 +                   SA2   INP                                  SYS
                    54311                SA3   A1+B1                                SYS
                         43052           MX0   42                                   SYS
     311  11003                          BX0   X0*X3                                SYS
               13202                     BX2   X0-X2                                SYS
                    0302000307 +         ZR    X2,P.RESET                           SYS
     312  54221                          SA2   A2+B1                                SYS
               13202                     BX2   X0-X2                                SYS
                    0302000307 +         ZR    X2,P.RESET                           SYS
     313  0100000225 +                   RJ    CCLEAR                               SYS
     314  5051000001                     SA5   A1+1                                 SYS
                    7160000052           SX6   52B                                  SYS
     315  7100031117                     SX0   3LCIO                                SYS
                    0100000000 +         RJ    P.PPREQ       REWIND                 SYS
     316  54511                          SA5   A1+B1         STATUS                 SYS
               7100000030                SX0   30B                                  SYS
                         15650           BX6   -X0*X5        CLEAR EOR/EOF-BITS     SYS
     317  54650                          SA6   A5                                   SYS
               0100000203 +              RJ    SETRD         SET FET TO READ STATUS SYS
     320  0400000307 +                   EQ    P.RESET                              SYS
                                                                                    SYS
     321  00000000000000000000  P.REWRT  DATA  0                                    SYS
                              *          SA1   EFET                                 SYS
     322  54511                          SA5   A1+B1                                SYS
               5120000660 +              SA2   INP                                  SYS
                         43052           MX0   42                                   SYS
     323  11005                          BX0   X0*X5                                SYS
               13202                     BX2   X0-X2                                SYS
                    0302000321 +         ZR    X2,P.REWRT                           SYS
     324  54221                          SA2   A2+B1                                SYS
               13202                     BX2   X0-X2                                SYS
                    0302000321 +         ZR    X2,P.REWRT                           SYS
     325  7160000052                     SX6   52B                                  SYS
                    7100031117           SX0   3LCIO                                SYS
     326  0100000000 +                   RJ    P.PPREQ       REWIND                 SYS
     327  0100000173 +                   RJ    SETWR                                SYS
     330  0400000321 +                   EQ    P.REWRT                              SYS
                                                                                    SYS
     331  00000000000000000000  P.RWRTS  DATA  0                                    SYS
                              *          SA1   EFET                                 SYS
                              *          SX2   I                                    SYS
     332  0100000236 +                   RJ    SKIP                                 SYS
     333  0100000173 +                   RJ    SETWR                                SYS
     334  0400000331 +                   EQ    P.RWRTS                              SYS
                                                                                    SYS
     335  00000000000000000000  P.GETS   DATA  0                                    SYS
                              *          SA1   EFET                                 SYS
                              *          SX2   I                                    SYS
     336  0100000236 +                   RJ    SKIP                                 SYS
     337  0100000203 +                   RJ    SETRD                                SYS
     340  0400000335 +                   EQ    P.GETS                               SYS
                                                                                    SYS
     341  00000000000000000000  P.PUTS   DATA  0                                    SYS
                              *          SA1   EFET                                 SYS
     342  0321000344 +                   PL    X1,WRERR3                            SYS
```

```
              0100000214 +                 RJ     CLEAR                              SYS      594
     343  0400000341 +                     EQ     P.PUTS                             SYS      595
                                                                                     SYS      596
     344  5110000341 +            WRERR3   SA1    P.PUTS                             SYS      597
              7100000725 +                 SX0    WRMSG                              SYS      598
     345  0400000571 +                     EQ     P.SABRT                            SYS      599
```

```
    346  00000000000000000000        TIMEREQ  DATA      0                                                    SYS       602
                                     *        SX2       I                                                    SYS       603
                                     *  I= 0    X6 := CLOCK (MSEC)                                           SYS       604
                                     *     1    X6 := DATE                                                   SYS       605
                                     *     2    X6 := TIME (ALFA)                                            SYS       606
                                     *                                                                       SYS       607
    347  76700                                SX7       B0                                                   SYS       608
              5170000650 +                    SA7       TIME.ANS          CLEAR ANSWER WORD                  SYS       609
                        20230                 LX2       24                                                   SYS       610
    350  5130000647 +                         SA3       TIME.REQ                                             SYS       611
                   12632                      BX6       X3+X2                                                SYS       612
    351  56210                                XJMTR     2,6                                                  XJMODS      8
    353  54270                                SA2       A7                                                   SYS       616
              10622                           BX6       X2                                                   SYS       617
                   0400000346 +               EQ        TIMEREQ                                              SYS       618
                                                                                                             SYS       619
    354  00000000000000000000        P.CLOCK  DATA      0                                                    SYS       620
    355  76200                                SX2       B0                                                   SYS       621
              0100000346 +                    RJ        TIMEREQ                                              SYS       622
    356  43230                                MX2       24                                                   SYS       623
              15662                           BX6       -X2*X6            MASK OUT TIMELIMIT                 SYS       624
                   43260                      MX2       48                                                   SYS       625
                        15262                 BX2       -X2*X6            SEC                                SYS       626
    357  21614                                AX6       12                MSEC                               SYS       627
              7100001750                      SX0       1000                                                 SYS       628
                        42606                 DX6       X0*X6                                                SYS1        1
    360  36662                                IX6       X6+X2                                                SYS       630
              0400000354 +                    EQ        P.CLOCK                                              SYS       631
                                                                                                             SYS       632
    361  00000000000000000000        P.DATE   DATA      0                                                    SYS       633
                                     *        SX1       VARADDR                                              SYS       634
    362  76210                                SX2       B1                                                   SYS       635
              0100000346 +                    RJ        TIMEREQ                                              SYS       636
    363  53610                                SA6       X1                                                   SYS       637
              0400000361 +                    EQ        P.DATE                                               SYS       638
                                                                                                             SYS       639
    364  00000000000000000000        P.TIME   DATA      0                                                    SYS       640
                                     *        SX1       VARADDR                                              SYS       641
    365  76211                                SX2       B1+B1                                                SYS       642
              0100000346 +                    RJ        TIMEREQ                                              SYS       643
    366  53610                                SA6       X1                                                   SYS       644
              0400000364 +                    EQ        P.TIME                                               SYS       645
```

```
 367  00000000000000000000      P.MSG   DATA     0                                  SYS      647
                                  *     SX1      ADDR MSG                           SYS      648
                                  *     SX2      LENGTH OF MSG (CHAR)               SYS      649
 370  53110                             SA1      X1                                 SYS      650
           14222                        BX2      -X2                                SYS      651
                7202000050              SX0      X2+40                              SYS      652
 371  0320000372 +                      PL       X0,MSG1                            SYS      653
                7120777727              SX2      -40                                SYS      654
 372  10611                     MSG1    BX6      X1                                 SYS      655
           5160000653 +                 SA6      MSGB                               SYS      656
 373  7222000012                MSG2    SX2      X2+10                              SYS      657
                0322000376 +            PL       X2,MSG3                            SYS      658
 374  54111                             SA1      A1+B1                              SYS      659
           10611                        BX6      X1                                 SYS      660
                54661                   SA6      A6+B1                              SYS      661
 375  0400000373 +                      EQ       MSG2                               SYS      662
                                                                                    SYS      663
 376  0302000401 +              MSG3    ZR       X2,MSG4                            SYS      664
                20201                   LX2      1                                  SYS      665
                     10022              BX0      X2                                 SYS      666
 377  20001                             LX0      1                                  SYS      667
           36202                        IX2      X0+X2                              SYS      668
                6272777703              SB7      X2-60           X2 < 0             SYS      669
 400  43001                             MX0      1                                  SYS      670
           22070                        LX0      B7,X0                              SYS      671
                11660                   BX6      X6*X0                              SYS      672
                     54660              SA6      A6                                 SYS      673
 401  76600                     MSG4    SX6      B0                                 SYS      674
           54661                        SA6      A6+B1                              SYS      675
                5110000652 +            SA1      MSGP                               SYS      676
 402  43036                             MX0      30                                 SYS      677
           11610                        BX6      X1*X0                              SYS      678
                54610                   SA6      A1                                 SYS      679
 403  5110000651 +                      SA1      MESS.REQ                           SYS      680
                10611                   BX6      X1                                 SYS      681
 404  56110                             XJMTR    1,6                                XJMODS     9
 406  0400000367 +                      EQ       P.MSG                              SYS      685
```

```
 407  00000000000000000000       P.NEW    DATA      0                                     SYS       687
                                  *        SX1       ADDR. OF POINTER                      SYS       688
                                  *        SB7       SIZE IN WORDS                         SYS       689
 410  67447                                SB4       B4-B7                                 SYS       690
           76640                           SX6       B4                                    SYS       691
                6174777633                 SB7       B4-100                                SYS       692
 411  0667000413 +                         GE        B6,B7,OVLERR                          SYS       693
                53610                      SA6       X1                                    SYS       694
 412  0400000407 +                         EQ        P.NEW                                 SYS       695
                                  *                                                        SYS       696
 413  5110000407 +                OVLERR   SA1       P.NEW                                 SYS       697
                7100000707 +               SX0       OVFLMSG                               SYS       698
 414  0400000571 +                         EQ        P.SABRT                               SYS       699
                                                                                           SYS       700
                                                                                           SYS       701
                                                                                           SYS       702
 415  00000000000000000000       P.DISP   DATA      0                                     SYS       703
                                  *        SX1       ADDR. OF POINTER                      SYS       704
                                  *        SB7       SIZE IN WORDS                         SYS       705
 416  7160377777                           SX6       NIL                                   SYS       706
                53610                      SA6       X1                                    SYS       707
 417  0400000415 +                         EQ        P.DISP                                SYS       708
                                                                                           SYS       709
                                                                                           SYS       710
```

```
                                 * P.INIT INITIALIZES B1,B2,B4,B5 AND STARTS RPV                 SYS       713
                                 * B7 = NUMBER OF FORMAL PARAMETERS                              SYS       714
                                 * MEMORY REQUEST ISSUED SO B4 SET TO FL EVEN AFTER OVERLAY      OVERLAY     5
                                 * OR SEGMENT LOAD.                                              OVERLAY     6
                                 *                                                               SYS       715
   420  00000000000000000000     P.INIT   DATA   0                                               SYS       716
   421  6110000001                        SB1    1                                               SYS       717
              13666                       BX6    X6-X6         INITIALIZE                        UPDAT10    36
   422  5160000057                        SA6    57B           TRAP LOCATION                     UPDAT10    37
              5160000457 +                SA6    MEMSTA        CLEAR FL RETURN WORD              OVERLAY     7
   423  76770                             SX7    B7            SAVE B7                           OVERLAY     8
          5170000460 +                    SA7    TEMPB7                                          OVERLAY     9
   424  7170150515                        SX7    3RMEM         ISSUE MEMORY REQUEST              OVERLAY    10
              74160                       SX1    A6                                              OVERLAY    11
                  27707                   PX7    X7                                              OVERLAY    12
   425  20752                             LX7    42D                                             OVERLAY    13
          12771                           BX7    X7+X1                                           OVERLAY    14
   426  56110                             XJMTR  1,7                                             OVERLAY    15
   430  5110000460 +                      SA1    TEMPB7        RESTORE B7                        OVERLAY    16
              63710                       SB7    X1                                              OVERLAY    17
                  54160                   SA1    A6            SET FL IN A0                      OVERLAY    18
   431  21136                             AX1    30D                                             OVERLAY    19
          53010                           SA0    X1                                              OVERLAY    20
              5110000065                  SA1    65B                                             UPDATE1    12
   432  63510                             SB5    X1                                              UPDATE1    13
          66250                           SB2    B5                                              UPDATE1    14
              64400                       SB4    A0                                              UPDATE1    15
                  56621                   SA6    B2+B1         CLEAR FORTRAN-ROUTINE FLAG        UPDATE1    16
   433  5110777774 X                      SA1    P.MAIN-3                                        UPDATE1    17
              53612                       SA6    B2+X1         MARK OUTPUT NOT OPENED            UPDATE1    18
   434  5110000064                        SA1    64B                                             SYS       718
              63310                       SB3    X1                                              SYS       719
   435  0773000455 +                      LT     B7,B3,PARERR                                    SYS       721
              43060                       MX0    48                                              SYS       722
   436  0473000440 +                      EQ     B7,B3,P.INIT2                                   SYS       723
   437  56671                    P.INIT1  SA6    B7+B1                                           SYS       724
          67771                           SB7    B7-B1                                           SYS       725
              0737000437 +                GT     B7,B3,P.INIT1                                   SYS       726
   440  0470000442 +             P.INIT2  EQ     B7,B0,P.INIT3                                   SYS       727
              56171                       SA1    B7+B1                                           SYS       728
                  11701                   BX7    X0*X1                                           SYS       729
   441  54710                             SA7    A1                                              SYS       730
          67771                           SB7    B7-B1                                           SYS       731
              0707000440 +                GT     B7,B0,P.INIT2                                   SYS       732
   442  5110000576 +             P.INIT3  SA1    ERRVECT       TRANSFER ERROR ENTRIES TO 46B-53B UPDATE1    19
              10611                       BX6    X1                                              SYS       741
   443  5160000046                        SA6    46B                                             SYS       742
              6170000005                  SB7    5                                               SYS       743
   444  54111                    P.INIT4  SA1    A1+B1                                           SYS       744
          10611                           BX6    X1                                              SYS       745
              54661                       SA6    A6+B1                                           SYS       746
                  67771                   SB7    B7-B1                                           SYS       747
   445  0707000444 +                      GT     B7,B0,P.INIT4                                   SYS       748
              76150                       SX1    B5                                              UPDATE21   29
   446  0100000510 +                      RJ     BINDISP                                         UPDATE21   30
   447  7100000733 +                      SX0    FLMSG                                           UPDATE21   31
              53601                       SA6    X0+B1                                           UPDATE21   32
```

```
     450  0100000461 +                  RJ      MESS                                     UPDATE21   33
     451  5110000646 +                  SA1     RPVREQ                                   SYS       749
                     10611              BX6     X1                                       SYS       750
     452  56110                         XJMTR   1,6                                      XJMODS     10
     454  0400000420 +                  EQ      P.INIT                                   SYS       754
                             *                                                           SYS       755
     455  7100000712 +       PARERR     SX0     PARMSG                                   SYS       756
                     5100000003         SA0     3                                        SYS       757
     456  0400000604 +                  EQ      P.ABRT                                   SYS       758
                                                                                         SYS       759
                                                                                         SYS       760
                          457 +  ENDSR  EQU     *+1                                      SYS       761
     457                    1    MEMSTA BSS     1                                        OVERLAY    21
     460                    1    TEMPB7 BSS     1                                        OVERLAY    22
```

```
                                   * MESS (ISSUES MESSAGE REQUEST WITHOUT AUTO-RECALL).                       SYS      764
                                   * UPON ENTRY, X0= POINTER TO MESSAGE                                       SYS      765
                                   * USES A2,A6, X0,X2,X6.                                                    SYS      766
  461  00000000000000000000         MESS     DATA     0                                                    SYS      767
  462  7160152307                           SX6      3LMSG                                                SYS      768
                 20652                      LX6      42                                                   SYS      769
                      12660                 BX6      X6+X0          COMBINE WITH MSG-ADDRESS              SYS      770
  463  56210                                XJMTR    2,6                                                  XJMODS    11
  465  0400000461 +                         EQ       MESS                                                 SYS      774
                                                                                                          SYS      775
                                                                                                          SYS      776
                                                                                                          SYS      777
                                   * PROCHED SEARCHES THE ENTRYPOINT OF THE PASCAL PROCEDURE CORRESPONDING    SYS      778
                                   * TO THE STACKSEGMENT INDICATED BY B7.                                     SYS      779
                                   * UPON ENTRY: B7 = POINTER TO STACK SEGMENT DESCRIPTOR                     SYS      780
                                   * UPON EXIT:  X2 = POINTER TO ENTRYPOINT.                                  SYS      781
                                   *    REGISTERS A2,X2,X3,X4 ARE MODIFIED.                                   SYS      782
                                   *                                                                          SYS      783
  466  00000000000000000000         PROCHED  DATA     0                                                    SYS      784
  467  7120000000 X                         SX2      P.MAIN                                               SYS      785
                 0472000466 +               EQ       B7,B2,PROCHED     JUMP IF MAIN                       SYS      786
  470  56271                                SA2      B7+B1          SEGMENTDESCRIPTOR.RA                  SYS      787
            5222777776                      SA2      X2-1           FIND PROCEDURE CALL TO GET FIRST ADDR SYS      788
                      20217                 LX2      15             OF PROCEDURE                          SYS      789
  471  7130077777                           SX3      77777B                                               SYS      790
  472  20255                        PH1      LX2      45                                                   SYS      791
            11423                           BX4      X2*X3                                                SYS      792
                 7244731777                 SX4      X4-46000B                                            SYS      793
  473  0304000472 +                         ZR       X4,PH1                                               SYS      794
                 73220                      SX2      X2             X2=0 IFF PROCEDURE FORMAL             UPDATE7   185
  474  0312000466 +                         NZ       X2,PROCHED                                           UPDATE7   186
                 56251                      SA2      B5+B1                                                UPDATE7   187
                      21244                 AX2      36                                                   UPDATE7   188
  475  73220                                SX2      X2                                                   UPDATE7   189
            0400000466 +                    EQ       PROCHED                                              SYS      796
                                                                                                          SYS      797
                                                                                                          SYS      798
                                   * RELADDR CONVERTS AN ABSOLUTE ADDRESS POINTING INTO A PASCAL PROCEDURE    SYS      799
                                   *  TO A RELATIVE ADDRESS CORRESPONDING TO A LISTING.                       SYS      800
                                   * UPON ENTRY: X1= ABSOLUTE ADDR.; B7= POINTER TO CORR. STACKSEGM. DESCR.   SYS      801
                                   * RESULT IN:  X1                                                           SYS      802
                                   *    REGISTERS A2,X2,X3,X4    ARE MODIFIED.                                SYS      803
  476  00000000000000000000         RELADDR  DATA     0                                                    SYS      804
  477  0100000466 +                         RJ       PROCHED                                              SYS      805
  500  37312                                IX3      X1-X2                                                SYS      806
            5242777776                      SA4      X2-1                                                 SYS      807
                      20436                 LX4      30                                                   SYS      808
  501  73440                                SX4      X4             REL. ADDR. OF PROCEDURE IN MODULE     SYS      809
            36134                           IX1      X3+X4                                                SYS      810
                 0400000476 +               EQ       RELADDR                                              SYS      811
                                                                                                          SYS      812
                                                                                                          SYS      813
                                   * RPVOUT DEACTIVATES RPV.                                                  SYS      814
                                   *  USES X5,X6.                                                             SYS      815
  502  00000000000000000000         RPVOUT   DATA     0                                                    SYS      816
  503  76600                                SX6      B0                                                   SYS      817
            5160000525 +                    SA6      RPVTAB                                               SYS      818
```

```
                      43603                    MX6      3
     504  20633                                LX6      27
               5150000646 +                    SA5      RPVREQ
                      15656                    BX6      -X6*X5
     505  5160000001                           SA6      1
     506  5150000001          +                SA5      1
                    0315000506 +               NZ       X5,*
     507  0400000502 +                         EQ       RPVOUT



                                 * BINDISP TRANSFORMS BIN. ADDR (IN X1) INTO DISPLAYCODE (IN X6).
                                 * X0,X1 REMAIN UNCHANGED
                                 *
     510  00000000000000000000  BINDISP  DATA     0
     511  6170000006                     SB7      6
                    6130000033                  SB3      33B
     512  76600                         SX6      B0
               43271                    MX2      57
     513  15312                  BD1    BX3      -X2*X1
               73333                    SX3      X3+B3
                    12663               BX6      X6+X3
                         20665          LX6      54
     514  20171                         LX1      57
               67771                    SB7      B7-B1
                    0570000513 +        NE       B7,BD1
     515  20122                         LX1      18
               0400000510 +             EQ       BINDISP



                                 * FPADDR TESTS WHETHER ERROR ADDR (IN X1) POINTS INTO SYSTEM PROCEDURE.
                                 * IF SO, IT DELIVERS THE RETURN ADDR TO THE PASCAL-SEGMENT (IN X1).
                                 *
     516  00000000000000000000  FPADDR   DATA     0
     517  5120000735 +          FP1      SA2      P.SIEVE
                    73110                SX1      X1
                         73520           SX5      X2
     520  37315                          IX3      X1-X5
               0333000516 +              NG       X3,FPADDR        JUMP IF ADDR BEFOR FIRST SYSTEM ROUTI
     521  73420                 FP2      SX4      X2
               21236                     AX2      30
                    0312000523 +         NZ       X2,FP3
     522  5022000001                     SA2      A2+1
                    0302000516 +         ZR       X2,FPADDR
     523  37312                 FP3      IX3      X1-X2
               73330                     SX3      X3
                    0323000521 +         PL       X3,FP2
     524  53140                          SA1      X4
               20136                     LX1      30
                    0400000517 +         EQ       FP1              RET.ADDR. MAY POINT INTO SYS. PROC
```

```
 525  00000000000000000000       RPVTAB   DATA    0
 526                    20                BSS     16
                                 * ENTRYPOINT WHEN ERROR DETECTED BY SCOPE
                                 *  FIND ADDRESS
 546  6110000001                          SB1     1
                5110000525 +              SA1     RPVTAB
 547  7201777775                          SX0     X1-2            X1:= ERROR-2
                20130                     LX1     24              ADDRESS FROM XJ PACKAGE
 550  0310000554 +                        NZ      X0,F.AD1
                56500                     SA5     B0
                          20514           LX5     12
 551  73650                               SX6     X5
           5110000662 +                   SA1     MODEMSG
                          36661           IX6     X6+X1
 552  54610                               SA6     A1
           74010                          SX0     A1
                0100000461 +              RJ      MESS
 553  20522                               LX5     18              ADDRESS FROM RA+0
           73150                          SX1     X5
 554  5120000065                 F.AD1    SA2     65B
                63220                     SB2     X2              B2 MAY BE MODIFIED
                          56221           SA2     B2+B1
 555  0332000561 +                        NG      X2,TRIGERR      ERROR IN TRIGON. STANDARD FUNCTION
                0312000562 +              NZ      X2,FORERR       JUMP IF ERROR IN FORTRAN SEGMENT
 556  0100000516 +                        RJ      FPADDR
                                 * X1= ABSOLUTE ADDRESS OF ERROR OR RETURNADDR. FROM STANDARD I/O ROUTINE
                                 * FIND REL. ADDR.
 557  73110                               SX1     X1
           66750                          SB7     B5
                0100000476 +              RJ      RELADDR         X1:= REL. ERROR ADDR.
 560  0400000607 +                        EQ      DYADDR
                                 *
 561  14122                      TRIGERR  BX1     -X2             X1:= REL. RETURNADDR.
           0400000607 +                   EQ      DYADDR
                                 *
 562  0100000510 +               FORERR   RJ      BINDISP
 563  7110000671 +                        SX1     FORMSG
                53211                     SA2     X1+B1
                          43044           MX0     36
 564  15220                               BX2     -X0*X2
           12662                          BX6     X6+X2
                54620                     SA6     A2
 565  7120000050                          SX2     40
                0100000367 +              RJ      P.MSG
                                 * RESET B-REGISTERS
 566  56220                               SA2     B2
           63620                          SB6     X2
                21222                     AX2     18
                          63520           SB5     X2
 567  21222                               AX2     18
           63420                          SB4     X2
                56121                     SA1     B2+B1           REL ERROR ADDR FROM FORCALL
                          76600           SX6     B0
 570  54610                               SA6     A1              CLEAR FORCALL
           0400000607 +                   EQ      DYADDR
```

```
                                       * ENTRYPOINT WHEN ERROR DETECTED BY SYSTEM-ROUTINE OR STANDARD FUNCT.   SYS
                                       *  X1= EEQ  RAE, X0= POINTER TO MSG.                                     SYS
   571  0100000502 +                   P.SABRT  RJ      RPVOUT                                                  SYS
   572  20136                                   LX1     30                                                      SYS
               73110                            SX1     X1                                                      SYS
                    0100000461 +                RJ      MESS                                                    SYS
   573  67701                                   SB7     -B1                                                     SYS
               0100000516 +                     RJ      FPADDR          FIND RETURNADDR TO PASCAL-SEGMENT       SYS
   574  73117                                   SX1     X1+B7                                                   SYS
               66750                            SB7     B5                                                      SYS
                    0100000476 +                RJ      RELADDR                                                 SYS
   575  0400000607 +                            EQ      DYADDR                                                  SYS
                                                                                                                SYS
                                                                                                                SYS
                                       * ENTRYPOINTS WHEN ERROR DETECTED BY PASCAL.                             SYS
                                       * A0 CONTAINS RELATIVE ERRORADDR.                                        SYS
                                       * P.INIT TRANSFERS THESE ENTRIES TO LOCATIONS 46B-53B. THE OVERLAY-LOADE SYS
                                       *  IS NOT ABLE TO LOAD INTO THESE LOCATIONS.                             SYS
   576  7100000676 +                   ERRVECT  SX0     ASSMSG                                                  SYS
                    0400000604 +                EQ      P.ABRT                                                  SYS
   577  7100000701 +                            SX0     INDXMSG                                                 SYS
                    0400000604 +                EQ      P.ABRT                                                  SYS
   600  7100000705 +                            SX0     DIVMSG                                                  SYS
                    0400000604 +                EQ      P.ABRT                                                  SYS
   601  7100000707 +                            SX0     OVFLMSG                                                 SYS
                    0400000604 +                EQ      P.ABRT                                                  SYS
   602  7100000716 +                            SX0     STOPMSG                                                 SYS
                    0400000604 +                EQ      P.ABRT                                                  SYS
   603  7100000731 +                            SX0     INTOVFL         INTEGER OVERFLOW IN PACK OPERATION      SYS
                    0400000604 +                EQ      P.ABRT                                                  SYS
   604  0100000502 +                   P.ABRT   RJ      RPVOUT                                                  SYS
   605  0100000461 +                            RJ      MESS                                                    SYS
   606  74100                                   SX1     A0                                                      SYS
               0400000607 +                     EQ      DYADDR                                                  SYS
```

```
                                             * COMMON END OF ERROR ENTRIES                                   SYS       962
                                             *                                                               SYS       963
                                             * WRITE REL. ERROR ADDR. (IN X1) INTO DAYFILE                   SYS       964
     607  10600                               DYADDR   BX6      X0           SAVE ADDRESS OF ERROR MESSAGE   PRERRMS     1
               5166000003                              SA6      B6+3                                         PRERRMS     2
     610  7100000664 +                                 SX0      NADDMSG                                      PRERRMS     3
                    0100000510 +                       RJ       BINDISP                                      SYS       966
     611  53201                                        SA2      X0+B1                                        SYS       967
               43344                                   MX3      36                                           SYS       968
                    15323                              BX3      -X3*X2                                       SYS       969
                         12663                         BX6      X6+X3                                        SYS       970
     612  54620                                        SA6      A2                                           SYS       971
               66750                                   SB7      B5                                           SYS       972
                    0100000466 +                       RJ       PROCHED                                      SYS       973
     613  5222777775                                   SA2      X2-2                                         SYS       974
                    10622                              BX6      X2           NAME OF LAST ACTIVATED PASCAL PROC  SYS   975
     614  5260000003                                   SA6      X0+3                                         SYS       976
                    0100000461 +                       RJ       MESS         IN DAYFILE                      SYS       977
                                             *                                                               SYS       978
                                             * CLEAR OUTBUF IF NECESSARY.                                    SYS       979
                                             * OPEN NEW RECORD IN FILE OUTPUT                                SYS       980
     615  10611                                        BX6      X1                                           SYS       981
               5160000653 +                            SA6      ERRADDR                                      SYS       982
     616  5110777774 X                                 SA1      P.MAIN-3                                     SYS       983
                    53112                              SA1      X1+B2          A1 = ADDR EFET OUTPUT         SYS       984
                         55211                         SA2      A1-B1                                        SYS       985
     617  0301000643 +                                 ZR       X1,ABTRQ       FILE OUTPUT NOT OPENED        SYS       986
                    0332000622 +                       NG       X2,WEOR                                      SYS       987
     620  0100000173 +                                 RJ       SETWR        DEFINE STATE OF OUTPUT-EFET     SYS       988
     621  54110                                        SA1      A1                                           SYS       989
     622  0100000341 +                        WEOR     RJ       P.PUTS                                       SYS       990
     623  5120000057                                   SA2      57B          DECIDE WHETHER TRAP DESIRED     UPDAT10    38
                    0302000630 +                       ZR       X2,NOTRAP                                    UPDAT10    39
     624  63720                                        SB7      X2           TRAP ENTRY                      UPDAT10    40
               20252                                   LX2      42                                           UPDAT10    41
                    63320                              SB3      X2           STATIC LINK                     UPDAT10    42
     625  0435000627 +                       +         EQ       B3,B5,*+2                                    UPDAT10    43
                    66650                              SB6      B5           ADJUST B5 AND B6                UPDAT10    44
                         56251                         SA2      B5+B1                                        UPDAT10    45
     626  20252                                        LX2      42                                           UPDAT10    46
               63520                                   SB5      X2                                           UPDAT10    47
                    0400000625 +                       EQ       *-1                                          UPDAT10    48
     627  0277000000                         +         JP       B7           JUMP TO TRAP LABEL              UPDAT10    49
     630  5120777774 X                        NOTRAP   SA2      P.MAIN-3                                     UPDAT10    50
               20236                                   LX2      30                                           SYS       992
                         63720                         SB7      X2           ADDR OF PMD IF AVAILABLE        SYS       993
     631  0470000643 +                                 EQ       B7,ABTRQ                                     SYS       994
                    21236                              AX2      30                                           SYS       995
                         10622                         BX6      X2           CLEAR PMD ADDR TO AVOID SECOND CALL  SYS  996
     632  54620                                        SA6      A2           OF PMD IN CASE OF STACKOVERFLOW.  SYS     997
               77601                                   SX6      -B1                                          SYS       998
                    5061777762                         SA6      A1-13        CLEAR LINECOUNT                 SYS       999
     633  6144000144                                   SB4      B4+100       TO PREVENT STACK OVERFLOW IN PMD  UPDATE4   5
                                             * SET UP PARAMETERS FOR PMD.                                    SYS      1000
                    7100000000 X                       SX0      P.MAIN                                       SYS      1001
     634  5110000653 +                                 SA1      ERRADDR                                      SYS      1002
                    76220                              SX2      B2                                           SYS      1003
```

```
                     76350           SX3      B5                                  SYS       1004
     635   76600                     SX6      B0                                  SYS       1005
                5166000004           SA6      B6+4       ADDR OF STOR[0]          PRERRMS      4
                     10600           BX6      X0                                  SYS       1007
     636   54661                     SA6      A6+B1                               SYS       1008
                10611                BX6      X1                                  SYS       1009
                     54661           SA6      A6+B1                               SYS       1010
                     10622           BX6      X2                                  SYS       1011
     637   54661                     SA6      A6+B1                               SYS       1012
                10633                BX6      X3                                  SYS       1013
                     54661           SA6      A6+B1                               SYS       1014
     640   7170000641 +              SX7      RETPMD     RETURN ADDR              SYS       1015
                0277000000           JP       B7                                  SYS       1016
     641   5110777774 X     RETPMD   SA1      P.MAIN-3                            SYS       1017
                53112                SA1      X1+B2                               SYS       1018
     642   0100000341 +              RJ       P.PUTS     CLEAR OUTBUF             SYS       1019
                           *                                                      SYS       1020
                           * ABORT REQUEST                                        SYS       1021
     643   5110000645 +     ABTRQ    SA1      ABTREQ                              SYS       1022
                     10611           BX6      X1                                  SYS       1023
                     56610           SA6      B1                                  SYS       1024
     644   0000000000                PS                                           SYS       1025
```

```
                                                                                          SYS       1027
     645  01022400000000000000        ABTREQ     VFD    18/3LABT,6/0,36/0                 SYS       1028
     646  22202620002700000525 +      RPVREQ     VFD    18/3LRPV,2/1,16/27B,6/0,18/RPVTAB SYS       1029
     647  24111500000000000650 +      TIME.REQ   VFD    18/3LTIM,42/TIME.ANS              SYS       1030
     650  00000000000000000000        TIME.ANS   DATA   0                                 SYS       1031
     651  15230720000000000652 +      MESS.REQ   VFD    18/3LMSG,2/1,40/MSGP              SYS       1032
     652  0000000653 +                MSGP       VFD    30/MSGB,30/0                      SYS       1033
                    0000000000
     653                       5      MSGB       BSS    5                                 SYS       1034
                                                                                          SYS       1035
                             653 +    ERRADDR    EQU    MSGB                              SYS       1036
                                                                                          SYS       1037
     660  11162025240000000000        INP        DATA   5LINPUT                           SYS       1038
     661  17252420252400000000        OUTP       DATA   6LOUTPUT                          SYS       1039
                          377777      NIL        EQU    377777B                           SYS       1040
                                                                                          SYS       1041
     662  47551517040555545533        MODEMSG    DIS    ,≡* MODE = 0≡                     SYS       1042
     664  47550124550104042255        NADDMSG    DIS    ,≡* AT ADDR ...... IN PROCEDURE (ACTUAL N)≡  SYS  1043
     671  47550124550104042255        FORMSG     DIS    ,≡* AT ADDR ...... IN FORTRAN PROC CALLED≡   SYS  1044
     676  47552601142505551725        ASSMSG     DIS    ,≡* VALUE OUT OF RANGE≡        C1           SYS  1045
     701  47551116040530551722        INDXMSG    DIS    ,≡* INDEX OR CASE VAR OUT OF RANGE≡      C2  SYS  1046
     705  47550411261123111716        DIVMSG     DIS    ,≡* DIVISION BY ZERO≡                        SYS  1047
     707  47552225162411150555        OVFLMSG    DIS    ,≡* RUNTIME STACK OVERFLOW≡    C4            SYS  1048
     712  47552417175515011631        PARMSG     DIS    ,≡* TOO MANY PROGRAM PARAMETERS≡             SYS  1049
     716  47551001142400000000        STOPMSG    DIS    ,≡* HALT≡                         UPDATE21    34
     717  47551411160514111511        LINEMSG    DIS    ,.* LINELIMIT EXCEEDED.           SYS       1051
     722  47552422110504552417        EOFMSG     DIS    ,.* TRIED TO READ PAST EOS/EOF.   SYS       1052
     725  47552422110504552417        WRMSG      DIS    ,≡* TRIED TO WRITE WHILE NOT EOS/EOF≡        SYS  1053
     731  47551116240507052255        INTOVFL    DIS    ,≡* INTEGER OVERFLOW≡             SYS       1054
     733  46551417010455061455        FLMSG      DIS    ,≡- LOAD FL ......≡               UPDATE21    35
                                                                                          SYS       1055
     735  0000000007 +                P.SIEVE    VFD    30/P.GETB,30/P.PPREQ              SYS       1056
                    0000000000 +
     736  0000000052 +                           VFD    30/P.GETC,30/P.PUTB               SYS       1057
                    0000000032 +
     737  0000000124 +                           VFD    30/P.PUTC,30/P.GETLN              UPDATE7    190
                    0000000112 +
     740  0000000173 +                           VFD    30/SETWR,30/P.PUTLN               UPDATE7    191
                    0000000145 +
     741  0000000214 +                           VFD    30/CLEAR,30/SETRD                 SYS       1059
                    0000000203 +
     742  0000000236 +                           VFD    30/SKIP,30/CCLEAR                 SYS       1060
                    0000000225 +
     743  0000000300 +                           VFD    30/P.CLOSE,30/P.OPEN              SYS       1061
                    0000000253 +
     744  0000000321 +                           VFD    30/P.REWRT,30/P.RESET             SYS       1062
                    0000000307 +
     745  0000000335 +                           VFD    30/P.GETS,30/P.RWRTS              SYS       1063
                    0000000331 +
     746  0000000346 +                           VFD    30/TIMEREQ,30/P.PUTS              SYS       1064
                    0000000341 +
     747  0000000361 +                           VFD    30/P.DATE,30/P.CLOCK              SYS       1065
                    0000000354 +
     750  0000000367 +                           VFD    30/P.MSG,30/P.TIME                SYS       1066
                    0000000364 +
     751  0000000415 +                           VFD    30/P.DISP,30/P.NEW                SYS       1067
                    0000000407 +
```

```
   752  00000000000000000457 +        VFD       60/ENDSR                                           SYS      1068
   753  00000000000000000000          DATA      0                         TERMINATES P.SIEVE       SYS      1069
                                                                                                   SYS      1070
   754                                END                                                          SYS      1071

                    46600B CM  STORAGE USED           1210 STATEMENTS       133 SYMBOLS
                               MODEL 73 ASSEMBLY     7.061 SECONDS          439 REFERENCES
```

```
ERROR DIRECTORY.

      3 TYPE ERROR               DUPLICATE MACRO DEFINITION.  NEW ONE OVERRIDES.
             OCCURRED ON PAGES          3
```

SYMBOLIC REFERENCE TABLE.

ABTREQ	645	PROGRAM*	29/19	30/02 L					
ABTRQ	643	PROGRAM*	28/27	28/47	29/19 L				
ASSMSG	676	PROGRAM*	27/19	30/20 L					
BD1	513	PROGRAM*	25/20 L	25/26					
BINDISP	510	PROGRAM*	22/55	25/15 L	25/28	26/36	28/07		
CCLEAR	225	PROGRAM*	13/20 L	13/22	13/34	13/37	16/16	17/12	30/43
CLEAR	214	PROGRAM*	13/01 L	13/18	13/36	18/01	30/40		
CLR0	232	PROGRAM*	13/25	13/31 L					
CLR1	234	PROGRAM*	13/30	13/36 L					
CLS1	305	PROGRAM*	16/10	16/16 L					
CL0	220	PROGRAM*	13/12 L						
CL1	222	PROGRAM*	13/05	13/10	13/14 L				
DIVMSG	705	PROGRAM*	27/23	30/22 L					
DYADDR	607	PROGRAM*	26/31	26/34	26/55	27/12	27/34	28/04 L	
ENDSR	457	PROGRAM*	23/12 D	31/01					
EOFERR	30	PROGRAM*	4/03	4/43 L					
EOFMSG	722	PROGRAM*	4/44	30/27 L					
ERRADDR	653	PROGRAM*	28/23 S	28/56	30/11 D				
ERRVECT	576	PROGRAM*	22/45	27/19 L					
FLMSG	733	PROGRAM*	22/56	30/30 L					
FORERR	562	PROGRAM*	26/24	26/36 L					
FORMSG	671	PROGRAM*	26/37	30/19 L					
FPADDR	516	PROGRAM*	25/35 L	25/40	25/45	26/25	27/08		
FP1	517	PROGRAM*	25/36 L	25/51					
FP2	521	PROGRAM*	25/41 L	25/48					
FP3	523	PROGRAM*	25/43	25/46 L					
F.AD1	554	PROGRAM*	26/09	26/20 L					
GB2	15	PROGRAM*	4/12	4/17 L	4/41				
GB4	23	PROGRAM*	4/31	4/34 L					
GB5	25	PROGRAM*	4/27	4/38 L					
GC1	60	PROGRAM*	6/03	6/08	6/15 L				
GC2	63	PROGRAM*	6/23 L	7/15					
GC3	76	PROGRAM*	6/40	6/52 L					
GC31	100	PROGRAM*	6/53	6/56 L					
GC4	102	PROGRAM*	6/19	7/05 L					
GC5	107	PROGRAM*	6/22	7/15 L					
GL1	114	PROGRAM*	8/05 L	8/07					
GL2	116	PROGRAM*	8/10 L	8/16					
GL3	121	PROGRAM*	8/08	8/18 L					
GL4	122	PROGRAM*	8/03	8/21 L					
INDXMSG	701	PROGRAM*	27/21	30/21 L					
INP	660	PROGRAM*	15/42	17/03	17/27	30/13 L			
INTOVFL	731	PROGRAM*	27/29	30/29 L					
LINEMSG	717	PROGRAM*	11/51	30/26 L					
LINERR	170	PROGRAM*	11/46	11/51 L					
MEMSTA	457	PROGRAM*	22/10 S	23/13 L					
MESS	461	PROGRAM*	23/01	24/04 L	24/09	26/17	27/06	27/32	28/18
MESS.REQ	651	PROGRAM*	20/34	30/06 L					
MODEMSG	662	PROGRAM*	26/13	30/17 L					
MSGB	653	PROGRAM*	20/10 S	30/07	30/09 L	30/11			
MSGP	652	PROGRAM*	20/30	30/06	30/07 L				
MSG1	372	PROGRAM*	20/07	20/09 L					
MSG2	373	PROGRAM*	20/11 L	20/16					
MSG3	376	PROGRAM*	20/12	20/18 L					
MSG4	401	PROGRAM*	20/18	20/28 L					
NADDMSG	664	PROGRAM*	28/06	30/18 L					
NIL	377777		21/20	30/15 D					

SYMBOLIC REFERENCE TABLE.

NOTRAP	630	PROGRAM*	28/33	28/44 L						
OPN1	264	PROGRAM*	15/32 L	15/34						
OPN2	265	PROGRAM*	15/20	15/35 L						
OPN3	275	PROGRAM*	15/44	15/54 L						
OUTP	661	PROGRAM*	15/45	30/14 L						
OVFLMSG	707	PROGRAM*	21/12	27/25	30/23 L					
OVLERR	413	PROGRAM*	21/07	21/11 L						
PARERR	455	PROGRAM*	22/33	23/07 L						
PARMSG	712	PROGRAM*	23/07	30/24 L						
PB1	37	PROGRAM*	5/12	5/15 L						
PB2	42	PROGRAM*	5/18	5/23 L						
PB3	45	PROGRAM*	5/21	5/30 L						
PH1	472	PROGRAM*	24/26 L	24/29						
PL1	150	PROGRAM*	11/08 L	11/14						
PL2	154	PROGRAM*	11/16	11/20 L						
PL3	156	PROGRAM*	11/22	11/25 L						
PL4	161	PROGRAM*	11/21	11/33 L	11/35					
PL5	162	PROGRAM*	11/07	11/31	11/36 L					
PROCHED	466	PROGRAM*	24/19 L	24/21	24/31	24/35	24/44	28/14		
PUTLERR	172	PROGRAM*	11/52	11/55 L						
P.ABRT	604	PROGRAM*	23/09	27/20	27/22	27/24	27/26	27/28	27/30	27/31 L
P.CLOCK	354	PROGRAM*	2/24 E	19/17 L	19/28	30/53				
P.CLOSE	300	PROGRAM*	2/22 E	16/06 L	16/15	16/17	30/44			
P.DATE	361	PROGRAM*	2/24 E	19/30 L	19/35	30/52				
P.DISP	415	PROGRAM*	2/25 E	21/17 L	21/22	30/56				
P.GETB	7	PROGRAM*	2/20 E	4/19	4/37	6/16	12/45			
			4/01 L	4/21	4/43	8/11	30/32			
P.GETC	52	PROGRAM*	2/20 E	6/07	6/50	7/13	8/21	30/34		
			6/01 L	6/13	7/03	7/22	12/41			
P.GETLN	112	PROGRAM*	2/21 E	8/01 L	8/22	30/37				
P.GETS	335	PROGRAM*	2/23 E	16/03	17/48 L	17/53	30/48			
P.INIT	420	PROGRAM*	2/24 E	22/06 L	23/05					
P.INIT1	437	PROGRAM*	22/36 L	22/38						
P.INIT2	440	PROGRAM*	22/35	22/39 L	22/44					
P.INIT3	442	PROGRAM*	22/39	22/45 L						
P.INIT4	444	PROGRAM*	22/49 L	22/53						
P.MAIN	0	EXTERNAL*	2/27 X	22/29	24/20	28/24	28/44	28/55	29/14	
P.MSG	367	PROGRAM*	2/24 E	20/01 L	20/37	26/44	30/54			
P.NEW	407	PROGRAM*	2/25 E	21/01 L	21/09	21/11	30/57			
P.OPEN	253	PROGRAM*	2/22 E	15/01 L	15/40	15/47	15/52	16/04	30/45	
P.PPREQ	0	PROGRAM*	3/10 L	4/40	13/17	15/51	17/16	30/33		
			3/25	5/33	14/22	16/14	17/37			
P.PUTB	32	PROGRAM*	2/20 E	5/20	5/29	5/36	11/28	30/35		
			5/01 L	5/25	5/34	9/50	11/39			
P.PUTC	124	PROGRAM*	2/20 E	9/01 L	9/08	9/56	10/01	30/36		
P.PUTLN	145	PROGRAM*	2/21 E	11/01 L	11/49	11/55	13/12	30/39		
P.PUTS	341	PROGRAM*	2/23 E	17/55 L	18/02	18/04	28/31	29/16	30/51	
P.RESET	307	PROGRAM*	2/23 E	17/01 L	17/08	17/11	17/22	30/47		
P.REWRT	321	PROGRAM*	2/23 E	17/24 L	17/31	17/34	17/39	30/46		
P.RWRTS	331	PROGRAM*	2/23 E	17/41 L	17/46	30/49				
P.SABRT	571	PROGRAM*	2/24 E	4/45	5/38	10/03	11/56	18/06	21/13	27/03 L
P.SIEVE	735	PROGRAM*	25/36	30/32 L						
P.TIME	364	PROGRAM*	2/24 E	19/37 L	19/42	30/55				
RELADDR	476	PROGRAM*	24/43 L	24/50	26/30	27/11				
RETPMD	641	PROGRAM*	29/12	29/14 L						
RPVOUT	502	PROGRAM*	24/55 L	25/08	27/03	27/31				
RPVREQ	646	PROGRAM*	23/02	25/03	30/03 L					

RPVTAB	525	PROGRAM*	24/57 S	26/01 L	26/06	30/03		
SETRD	203	PROGRAM*	12/24 L	12/43	12/46	17/21	17/52	30/41
SETWR	173	PROGRAM*	12/01 L	12/22	17/38	17/45	28/29	30/38
SKIP	236	PROGRAM*	14/01 L	14/16	14/27	17/44	17/51	30/42
SK1	241	PROGRAM*	14/05	14/11 L				
SK2	244	PROGRAM*	14/14	14/18 L	14/36			
SK3	250	PROGRAM*	14/11	14/12	14/29 L			
SK4	252	PROGRAM*	14/32	14/34 L				
SR1	212	PROGRAM*	12/37	12/45 L				
STOPMSG	716	PROGRAM*	27/27	30/25 L				
SW1	200	PROGRAM*	12/15 L	12/17				
SW2	202	PROGRAM*	12/11	12/21 L				
TEMPB7	460	PROGRAM*	22/12 S	22/19	23/14 L			
TIMEREQ	346	PROGRAM*	19/01 L	19/15	19/19	19/33	19/40	30/50
TIME.ANS	650	PROGRAM*	19/08 S	30/04	30/05 L			
TIME.REQ	647	PROGRAM*	19/10	30/04 L				
TRIGERR	561	PROGRAM*	26/23	26/33 L				
WEOR	622	PROGRAM*	28/28	28/31 L				
WRERR1	50	PROGRAM*	5/04	5/36 L				
WRERR2	143	PROGRAM*	9/03	10/01 L				
WRERR3	344	PROGRAM*	17/57	18/04 L				
WRERR4	171	PROGRAM*	11/03	11/54 L				
WRMSG	725	PROGRAM*	5/37	10/02	11/54	18/05	30/28 L	

```
000006 (*$T-,P-,X0,E+,U+    H. SANDMAYR *)                                      PMD          2
000006 PROGRAM DUMMY(OUTPUT);                                                   PMD          3
000235   TYPE VTYP= (INT,REL,ALF,BOOL,CH,PTR,STR1,STR2,STR3);                   PMD          4
000235        BIT6= 0..77B; BIT12= 0..7777B; BIT15= 0..77777B;                  PMD          5
000235        BIT18= 0..777777B; BIT45= 0..777777777777777B;                    PMD          6
000235        RTYPES= RECORD CASE  VTYP OF                                      PMD          7
000235                    INT: (IVAL: INTEGER);                                 PMD          8
000235                    REL: (RVAL: REAL);                                    PMD          9
000235                    ALF: (NAME: ALFA);                                    PMD         10
000235                   BOOL: (BVAL: BOOLEAN);                                 PMD         11
000235                     CH: (CVAL: CHAR);                                    PMD         12
000235                    PTR: (PVAL: ↑INTEGER);                                PMD         13
000235                   STR1: (STRUCT1: PACKED RECORD F11: BIT45; F12: BIT15   PMD         14
000235                                   END);                                  PMD         15
000235                   STR2: (STRUCT2: PACKED RECORD F21: BIT12; F22: BIT18;  PMD         16
000235                                                 F23: BIT12; F24: BIT18   PMD         17
000235                                   END);                                  PMD         18
000235                   STR3: (STRUCT3: PACKED RECORD F31: BIT6;               PMD         19
000235                                    F32: BIT18; F33: BIT18; F34: BIT18    UPDATE7    192
000235                                    (*TO AVOID REVERSING*)                UPDATE7    193
000235                                   END)                                   PMD         21
000235              END;                                                        PMD         22
000235      GLOBARR = ARRAY[0..77777B] OF RTYPES;                               PMD         23
000235                                                                          PMD         24
000003 PROCEDURE PASCPMD(VAR EMSG,STOR:GLOBARR; MAIN,ADDR,B2,NB5:INTEGER) ;     PRERRMS      5
000011   VAR XVAR,XPROG,NXPROG,B5,NADDR,VARTYP,I,J,K : INTEGER ;                PRERRMS      6
000022       TYPES: RTYPES;                                                     PMD         27
000023 BEGIN                                                                    PMD         28
000023   WITH TYPES,STRUCT1,STRUCT2 DO                                          PMD         29
000006   BEGIN                                                                  PMD         30
000006     IF NB5<>B2 THEN                                                      PMD         31
000007     BEGIN NADDR:= STOR[NB5+1].STRUCT2.F24-1; TYPES:= STOR[NADDR];        PMD         32
000013       WHILE F12 = 46000B DO IVAL:= F11;                                  PMD         33
000017       NXPROG:= F24;                                                      PMD         34
000020       IF NXPROG = 0 THEN (*FORMAT PROCEDURE*)                            UPDATE7    194
000021         NXPROG := STOR[NB5+1].STRUCT3.F32 ;                              UPDATE7    195
000024     END ELSE NXPROG:= MAIN;                                              PMD         35
000027     WRITELN(≡1  PROGRAM TERMINATED AT: ≡, ADDR: 6 OCT, ≡ IN ≡:4,         PMD         36
000045             STOR[NXPROG-2].NAME);                                        PMD         37
000055     WRITE( ≡ ≡ ) ;  I := 0 ;  EMSG[ 0 ].NAME[ 1 ] := ≡ ≡ ;               PRERRMS      7
000063     WHILE NOT ( ( EMSG[ I ].NAME[ 9 ] = CHR( 00B ) ) AND                 PRERRMS      8
000066               ( EMSG[ I ].NAME[ 10 ] = CHR( 00B ) ) ) DO                 PRERRMS      9
000072     BEGIN  WRITE( EMSG[ I ].NAME ) ;  I := I+1 ;  END ;                  PRERRMS     10
000101     J := 8 ;                                                             PRERRMS     11
000102     WHILE ( EMSG[ I ].NAME[ J ] = CHR( 00B ) ) AND ( J > 1 ) DO          PRERRMS     12
000111       J := J-1 ;                                                         PRERRMS     13
000112     IF ( EMSG[ I ].NAME[ J ] <> CHR( 00B ) ) THEN                        PRERRMS     14
000116       FOR K := 1 TO J DO WRITE( EMSG[ I ].NAME[ K ] ) ;                  PRERRMS     15
000131     WRITELN ;  EMSG[ 0 ].NAME[ 1 ] := ≡*≡ ;                              PRERRMS     16
000135     REPEAT XPROG:= NXPROG; B5:= NB5;                                     PMD         38
000137       IF B5 <> B2 THEN  (*FIND ENTRYPOINT OF CALLING PROCEDURE*)         PMD         39
000140       BEGIN NB5:= STOR[B5+1].STRUCT3.F33; ADDR:= NADDR;                  PMD         40
000144         IF NB5 <> B2 THEN                                                PMD         41
000144         BEGIN  NADDR:= STOR[NB5+1].STRUCT2.F24-1; TYPES:= STOR[NADDR];   PMD         42
000150           WHILE F12 = 46000B DO IVAL:= F11;                              PMD         43
000154           NXPROG:= F24;                                                  PMD         44
```

```
000155          IF NXPROG = 0 THEN (*FORMAL PROCEDURE*)                    UPDATE7   196
000156            NXPROG := STOR[NB5+1].STRUCT3.F32 ;                      UPDATE7   197
000161        END ELSE NXPROG:= MAIN;                                      PMD        45
000163        ADDR:= ADDR - NXPROG + STOR[NXPROG-1].STRUCT2.F22;           PMD        46
000167      END;                                                           PMD        47
000167      TYPES := STOR[XPROG-1];                                        PMD        48
000172      IF F21 < 3 THEN  (* PROGRAM NOT LISTED 3 TIMES *)              PMD        49
000174      BEGIN F21:= F21+1; STOR[XPROG-1]:= TYPES; XVAR := F12 + XPROG - 3; PMD    50
000200        WRITELN; WRITELN; WRITE(STOR[XPROG-2].NAME:11);              PMD        51
000210        IF B2 <> B5 THEN  (* WRITE LOCATION OF PROC. CALL *)         PMD        52
000212        BEGIN WRITE(≡   AT: ≡, ADDR: 6 OCT, STOR[NXPROG-2].NAME:11); PMD        53
000231          XVAR:= XVAR+1;                                             PMD        54
000233        END;                                                         PMD        55
000233        WRITELN; WRITELN;                                            PMD        56
000235        WHILE STOR[XVAR].IVAL <> 0 DO                                PMD        57
000240        (* WRITE NAME AND VALUE OF VARIABLE *)                       PMD        58
000240        BEGIN WRITE(STOR[XVAR].NAME:13, ≡ = ≡); XVAR:= XVAR+1;       PMD        59
000253          TYPES:= STOR[XVAR]; XVAR:= XVAR+1; VARTYP:= F23;           PMD        60
000256          TYPES:= STOR[F24+B5];                                      PMD        61
000260          IF ODD(VARTYP) THEN TYPES:= STOR[IVAL];                    PMD        62
000263          VARTYP:= VARTYP DIV 2;                                     PMD        63
000265          CASE VARTYP OF                                             PMD        64
000266             2: (*REAL*)          WRITE(RVAL);                       PMD        65
000273           5,1: (*INTEGER,SCALAR*)          WRITE(IVAL);             PMD        66
000300             3: (*CHAR*)          IF (ORD(CVAL)>=100B) OR (ORD(CVAL)<0)  PMD    67
000302                                    THEN WRITE(≡<UNDEF.>≡:10)        PMD        68
000307                                    ELSE WRITE(CVAL);                PMD        69
000313             4: (*BOOLEAN*)       IF BVAL THEN WRITE(≡      TRUE≡)   PMD        70
000321                                          ELSE WRITE(≡     FALSE≡);  PMD        71
000330             6: (*ALFA*)          WRITE(NAME);                       PMD        72
000336             7: (*POINTER*)       IF PVAL=NIL THEN WRITE(≡ NIL≡)     PMD        73
000345                                          ELSE WRITE(IVAL: 6 OCT)    PMD        74
000352          END;                                                       PMD        75
000362          WRITELN                                                    PMD        76
000362        END;                                                         PMD        77
000364      END;                                                           PMD        78
000364    UNTIL B2 = B5                                                    PMD        79
000354  END                                                                PMD        80
000366 END (* PMD *);                                                      PMD        81
000404                                                                     PMD        82
000404 (*$X0,T-,U+,P-,E+  WIRTH/JENSEN *)                                  TEN         2
000003 FUNCTION TEN(E: INTEGER): REAL;  (*  = 10**E, 0<E<322 *)            TEN         3
000004     VAR I: INTEGER; T: REAL;                                        TEN         4
000006 BEGIN I := 0; T := 1.0;                                             TEN         5
000010     REPEAT IF ODD(E) THEN                                           TEN         6
000012        CASE I OF                                                    TEN         7
000013         0: T := T * 1.0E1;                                          TEN         8
000015         1: T := T * 1.0E2;                                          TEN         9
000017         2: T := T * 1.0E4;                                          TEN        10
000021         3: T := T * 1.0E8;                                          TEN        11
000023         4: T := T * 1.0E16;                                         TEN        12
000025         5: T := T * 1.0E32;                                         TEN        13
000027         6: T := T * 1.0E64;                                         TEN        14
000031         7: T := T * 1.0E128;                                        TEN        15
000033         8: T := T * 1.0E256                                         TEN        16
000033        END ;                                                        TEN        17
```

```
000046         E := E DIV 2; I := I+1                                            TEN           18
000050      UNTIL E = 0;                                                        TEN           19
000052      TEN := T                                                            TEN           20
000052 END (* TEN *);                                                           TEN           21
000071                                                                          TEN           22
000071 (*$T-,X0,E+,U+,P- READ REAL NUMBERS.  WIRTH/JENSEN*)                     UPDATE8       17
000071                                                                          RDR            3
000003 PROCEDURE RDR(VAR F: TEXT; VAR X: REAL);                                 RDR            4
000005    (* READ REAL NUMBERS IN ≡FREE FORMAT≡ *)                              RDR            5
000005    CONST T48 = 281474976710656;                                          RDR            6
000005       LIMIT  =  56294995342131;                                          RDR            7
000005       Z = 27;      (* ORD(≡0≡) *)                                        RDR            8
000005       LIM1 = 322;     (* MAXIMUM EXPONENT *)                             RDR            9
000005       LIM2 = -292;    (* MINIMUM EXPONENT *)                             RDR           10
000005    TYPE POSINT = 0..323;                                                 RDR           11
000005    VAR CH: CHAR; Y: REAL; A,I,E: INTEGER;                                RDR           12
000012       S,SS: BOOLEAN;    (* SIGNS *)                                      RDR           13
000014                                                                          RDR           14
000014                                                                          RDR           15
000003    FUNCTION TEN(E: POSINT) : REAL;  (*  = 10**E, 0<E<322 *)  EXTERN;     RDR           16
000004 BEGIN                                                                    RDR           17
000014    (*SKIP LEADING BLANKS*)                                               RDR           22
000014    WHILE F↑ = ≡ ≡ DO GET( F ) ;                                          UPDAT10       51
000013       CH := F↑;                                                          RDR           26
000014       IF CH = ≡-≡ THEN                                                   RDR           27
000016          BEGIN S := TRUE; GET(F); CH := F↑                               RDR           28
000021          END ELSE                                                        RDR           29
000023          BEGIN S := FALSE;                                               RDR           30
000024             IF CH = ≡+≡ THEN                                             RDR           31
000026             BEGIN GET(F); CH := F↑                                       RDR           32
000030             END                                                          RDR           33
000031          END ;                                                           RDR           34
000031       IF NOT(CH IN [≡0≡..≡9≡]) THEN                                      RDR           35
000034       BEGIN MESSAGE(≡**DIGIT EXPECTED0≡); HALT;                          RDR           36
000036       END;                                                               RDR           37
000035       A := 0; E := 0;                                                    RDR           38
000040       REPEAT IF A < LIMIT THEN A := 10*A + ORD(CH)-Z ELSE E := E+1;      RDR           39
000050          GET(F); CH := F↑                                                RDR           40
000053       UNTIL NOT(CH IN [≡0≡..≡9≡]);                                       RDR           41
000056       IF CH = ≡.≡ THEN                                                   RDR           42
000060       BEGIN (* READ FRACTION *) GET(F); CH := F↑;                        RDR           43
000063          WHILE CH IN [≡0≡..≡9≡] DO                                       RDR           44
000066          BEGIN IF A < LIMIT THEN                                         RDR           45
000070                BEGIN A := 10*A + ORD(CH)-Z; E := E-1                     RDR           46
000072                END ;                                                     RDR           47
000074             GET(F); CH := F↑                                             RDR           48
000077          END                                                             RDR           49
000100       END ;                                                              RDR           50
000101       IF CH = ≡E≡ THEN                                                   RDR           51
000103       BEGIN (* READ SCALE FACTOR *) GET(F); CH := F↑;                    RDR           52
000107          I := 0;                                                         RDR           53
000110          IF CH = ≡-≡ THEN                                                RDR           54
000112          BEGIN SS := TRUE; GET(F); CH := F↑                              RDR           55
000115          END ELSE                                                        RDR           56
000117          BEGIN SS := FALSE; IF CH = ≡+≡ THEN                             RDR           57
000122             BEGIN GET(F); CH := F↑                                       RDR           58
```

```
000124            END                                                                     RDR       59
000125         END ;                                                                      RDR       60
000125         IF CH IN [ ≡0≡..≡9≡ ] THEN                                                 UPDATE6   28
000130         BEGIN  I := ORD( CH )-Z ;  GET( F ) ;  CH := F↑ ;                          UPDATE6   29
000135            WHILE CH IN [ ≡0≡..≡9≡ ] DO                                             UPDATE6   30
000140            BEGIN  IF I < LIMIT THEN I := 10*I+ORD( CH )-Z ;                        UPDATE6   31
000144               GET( F ) ;  CH := F↑ ;                                               UPDATE6   32
000150            END ;                                                                   UPDATE6   33
000151        END ELSE                                                                    UPDATE6   34
000152        BEGIN  MESSAGE( ≡**DIGIT EXPECTED≡ ) ;  HALT ;  END ;                       UPDATE6   35
000155         IF SS THEN E := E-I ELSE E := E+I;                                         RDR       65
000162      END ;                                                                         RDR       66
000152      IF E < LIM2 THEN                                                              RDR       67
000164         BEGIN A := 0; E := 0                                                       RDR       68
000165         END ELSE                                                                   RDR       69
000166      IF E > LIM1 THEN                                                              RDR       70
000170      BEGIN MESSAGE(≡**NUMBER TOO LARGE≡); HALT END;                                RDR       71
000172      (* 0 < A < 2**49 *)                                                           RDR       72
000172      IF A >= T48 THEN Y := ((A+1) DIV 2) * 2.0 ELSE Y := A;                        RDR       73
000201      IF S THEN Y := -Y;                                                            RDR       74
000204      IF E < 0 THEN X := Y/TEN(-E) ELSE                                             RDR       75
000213      IF E <> 0 THEN X := Y*TEN(E) ELSE X := Y;                                     RDR       76
000224      WHILE ( F↑ = ≡ ≡ ) AND NOT EOF( F ) DO GET( F )                               UPDAT10   52
000232 END (* RDR *);                                                                     RDR       78
000247                                                                                    RDR       79
000247 (*$T-,X0,E+,U+,P- WRITE REAL NUMBERS.  WIRTH/JENSEN*)                              UPDATE8   18
000247                                                                                    WRE        3
000003 PROCEDURE WRE(VAR F:TEXT; X: REAL; N: INTEGER);                                    WRE        4
000006    (* WRITE REAL NUMBER X IN N CHARACTERS *)                                       WRE        5
000006    CONST T48 = 281474976710656; (* 2**48 *)                                        WRE        6
000006          Z = 27;        (* ORD(≡0≡) *)                                             WRE        8
000006    TYPE POSINT = 0..323;                                                           WRE        9
000006    VAR C,D,E,E0,E1,E2,I: INTEGER;                                                  WRE       10
000015                                                                                    WRE       11
000003    FUNCTION TEN(E: POSINT): REAL;   (* 10**E, 0<E<322 *)                           WRE       12
000004      EXTERN;                                                                       WRE       13
000004 BEGIN (* AT LEAST 10 CHARACTERS NEEDED: B+9.9E+999 *)                              WRE       14
000015    IF UNDEFINED(X) THEN                                                            WRE       15
000011    BEGIN  REPEAT F↑ := ≡ ≡; PUT( F ); N := N-1; UNTIL N <= 1;                      UPDATE6   36
000017       F↑:=≡U≡; PUT(F)                                                              WRE       17
000023    END ELSE                                                                        WRE       18
000024    IF X=0 THEN                                                                     WRE       19
000026    BEGIN  REPEAT F↑ := ≡ ≡; PUT( F ); N := N-1; UNTIL N <= 1;                      UPDATE6   37
000034       F↑ := ≡0≡; PUT(F)                                                            WRE       23
000040    END ELSE                                                                        WRE       24
000041    BEGIN                                                                           WRE       25
000041       IF N <= 10 THEN N := 3 ELSE N := N-7;                                        WRE       26
000045       REPEAT F↑ := ≡ ≡; PUT(F);  N := N-1                                          WRE       27
000051       UNTIL N <= 15 ;                                                              UPDATE6   38
000054       BEGIN (* TEST SIGN, THEN OBTAIN EXPONENT *)                                  WRE       30
000054          IF X < 0 THEN                                                             WRE       31
000056             BEGIN F↑ := ≡-≡;  PUT(F);  X := -X                                     WRE       32
000061             END ELSE BEGIN  F↑ := ≡ ≡; PUT(F)  END;                                WRE       33
000067          E := EXPO( X ) ;                                                          UPDATE5   57
000071          IF E >= 0 THEN                                                            UPDATE5   58
000072             BEGIN  E := E*77 DIV 256 + 1 ;  X := X/TEN( E ) ;                      UPDATE5   59
```

```
000100              IF X >= 1.0 THEN                                             UPDATE5    60
000102                 BEGIN X := X/10.0 ;   E := E+1 ;                          UPDATE5    61
000104                 END ;                                                     UPDATE5    62
000104           END  ELSE                                                       UPDATE5    63
000105           BEGIN  E := ( E+1 )*77 DIV 256 ;   X := TEN( -E )*X ;           UPDATE5    64
000114              IF X < 0.1 THEN                                              UPDATE5    65
000116                 BEGIN  X := 10.0*X ;   E := D-1 ;                         UPDATE5    66
000120                 END ;                                                     UPDATE5    67
000120           END ;                                                           UPDATE5    68
000120        (* 0.1 <= X < 1.0 *)                                               WRE        41
000120        CASE N OF        (* ROUNDING *)                                    WRE        42
000122          2: X := X+0.5E-2;                                                WRE        43
000124          3: X := X+0.5E-3;                                                WRE        44
000126          4: X := X+0.5E-4;                                                WRE        45
000130          5: X := X+0.5E-5;                                                WRE        46
000132          6: X := X+0.5E-6;                                                WRE        47
000134          7: X := X+0.5E-7;                                                WRE        48
000136          8: X := X+0.5E-8;                                                WRE        49
000140          9: X := X+0.5E-9;                                                WRE        50
000142         10: X := X+0.5E-10;                                               WRE        51
000144         11: X := X+0.5E-11;                                               WRE        52
000146         12: X := X+0.5E-12;                                               WRE        53
000150         13: X := X+0.5E-13;                                               WRE        54
000152         14: X := X+0.5E-14 ;                                              UPDATE6    39
000154         15: X := X+0.5E-15                                                UPDATE6    40
000154        END;                                                               WRE        56
000174        IF X >= 1.0 THEN                                                   WRE        57
000176           BEGIN X := X * 0.1; E := E+1                                    WRE        58
000177           END ;                                                           WRE        59
000201        C := TRUNC( X,48 ) ;                                               UPDATE6    41
000204        C := 10*C; D := C DIV T48;                                         WRE        61
000207        F↑ := CHR(D+Z); PUT(F);                                            WRE        62
000212        F↑ := ≡.≡; PUT(F);                                                 WRE        63
000216        FOR I := 2 TO N DO                                                 WRE        64
000220        BEGIN C := (C - D*T48) * 10; D := C DIV T48;                       WRE        65
000226           F↑ := CHR(D+Z); PUT(F)                                          WRE        66
000231        END ;                                                              WRE        67
000234        F↑ := ≡E≡;  PUT(F);   E := E-1;                                    WRE        68
000242        IF E < 0 THEN                                                      WRE        69
000243           BEGIN F↑ := ≡-≡; PUT(F); E := -E;                               WRE        70
000250           END ELSE BEGIN F↑ := ≡+≡; PUT(F) END;                           WRE        71
000254        E1 := E * 205 DIV 2048; E2 := E - 10*E1;                           WRE        72
000261        E0 := E1 * 205 DIV 2048; E1 := E1 - 10*E0;                         WRE        73
000265        F↑ := CHR(E0+Z); PUT(F);                                           WRE        74
000270        F↑ := CHR(E1+Z); PUT(F);                                           WRE        75
000274        F↑ := CHR(E2+Z); PUT(F)                                            WRE        76
000300     END                                                                   WRE        77
000300   END                                                                     WRE        78
000300 END (* WRE *) ;                                                           WRE        79
000325                                                                           WRE        80
000325 (*$T-,X0,E+,U+,P- WRITE INTEGERS.  WIRTH/JENSEN*)                         UPDATE8    19
000325                                                                           WRI         3
000003 PROCEDURE WRI(VAR F: TEXT; X,N: INTEGER);                                 WRI         4
000006   CONST Z = 27;    (* ORD(≡0≡) *)                                         WRI         5
000006         LIMIT = 281474976710656; (* 2**48 *)                              WRI         6
000006   VAR I,Q: INTEGER;  S: BOOLEAN;                                          WRI         7
```

```
000011          D: ARRAY [1..16] OF CHAR;                                       WRI           8
000031 BEGIN (* WRITE X IN DECIMAL FORM WITH N CHARACTERS *)                   WRI           9
000031     IF X >= 0 THEN S := FALSE ELSE                                      WRI          10
000011        BEGIN S := TRUE; X := -X                                         WRI          11
000012        END ;                                                            WRI          12
000013     IF X >= LIMIT THEN                                                  WRI          13
000015     BEGIN WHILE N > 1 DO                                                WRI          14
000017           BEGIN F↑ := ≡ ≡; PUT(F); N := N-1                             WRI          15
000022           END ;                                                         WRI          16
000024        F↑ := ≡U≡; PUT(F)                                                WRI          17
000030     END ELSE                                                            WRI          18
000031     BEGIN (* DECIMAL DECOMPOSITION *)  I := 0;                          WRI          19
000032        REPEAT I := I+1; Q := X DIV 10;                                  WRI          20
000037           D[I] := CHR((X - 10*Q) + Z); X := Q                           WRI          21
000042        UNTIL X = 0;                                                     WRI          22
000043        IF S THEN BEGIN  I := I+1; D[I] := ≡-≡  END;                     WRI          23
000046        WHILE N > I DO                                                   WRI          24
000050           BEGIN F↑ := ≡ ≡; PUT(F); N := N-1                             WRI          25
000054           END ;                                                         WRI          26
000056        REPEAT  F↑ := D[I]; PUT(F); I := I-1                             WRI          27
000063        UNTIL I = 0                                                      WRI          28
000065     END                                                                 WRI          29
000066 END (* WRI *);                                                          WRI          30
000073                                                                         WRI          31
000073 (*$T-,X0,E+,U+,P- READ INTEGERS.  WIRTH/JENSEN*)                        UPDATE8      20
000073                                                                         RDI           3
000003 PROCEDURE RDI(VAR F: TEXT; VAR X: INTEGER);                             RDI           4
000005 (* READ INTEGER IN ≡FREE FORMAT≡ *)                                     RDI           5
000005     CONST Z = 27;    (* ORD(≡0≡) *)                                     RDI           6
000005           LIM1 = 28147497671066;  (* 2**48 / 10 +1 *)                   RDI           7
000005           LIM2 = 281474976710655; (* 2**48 - 1 *)                       RDI           8
000005     VAR CH: CHAR;                                                       RDI           9
000006        A: INTEGER; S: BOOLEAN;                                          RDI          10
000010 BEGIN                                                                   RDI          11
000010     (*SKIP LEADING BLANKS*)                                             RDI          16
000010     WHILE F↑ = ≡ ≡ DO GET( F ) ;                                        UPDAT10      53
000013        CH := F↑;                                                        RDI          20
000014        IF CH = ≡-≡ THEN                                                 RDI          21
000016           BEGIN S := TRUE; GET(F); CH := F↑;                            RDI          22
000022           END ELSE                                                      RDI          23
000023           BEGIN S := FALSE;                                             RDI          24
000024              IF CH = ≡+≡ THEN                                           RDI          25
000026              BEGIN GET(F); CH := F↑                                     RDI          26
000030              END                                                        RDI          27
000031           END ;                                                         RDI          28
000031        IF NOT (CH IN [≡0≡..≡9≡]) THEN                                   RDI          29
000034        BEGIN                                                            RDI          30
000034           MESSAGE(≡**DIGIT EXPECTED≡); HALT;                            RDI          31
000036        END;                                                             RDI          32
000036        A := 0;                                                          RDI          33
000037        REPEAT IF A < LIM1 THEN A := 10*A + ORD(CH)-Z                    RDI          34
000043               ELSE                                                      RDI          35
000044               BEGIN                                                     RDI          36
000044                  MESSAGE(≡**INTEGER TOO LARGE≡); HALT;                  RDI          37
000047               END;                                                      RDI          38
000047           GET(F); CH := F↑                                              RDI          39
```

```
000052          UNTIL NOT (CH IN [≡0≡..≡9≡]);                                    RDI        40
000055          IF A >= LIM2 THEN BEGIN MESSAGE(≡**INTEGER TOO LARGE≡); HALT     RDI        41
000060                                END;                                      RDI        42
000061          IF S THEN X := -A ELSE X := A ;                                  UPDAT10    54
000066          WHILE ( F↑ = ≡ ≡ ) AND NOT EOF( F ) DO GET( F )                  UPDAT10    55
000074 END (* RDI *);                                                            RDI        45
000110                                                                           RDI        46
000110 (*$T-,X0,E+,U+,P- WRITE BOOLEANS.  JENSEN*)                               UPDATE8    21
000110                                                                           WRB         3
000003 PROCEDURE WRB(VAR F: TEXT; B: BOOLEAN; N: INTEGER);                       WRB         4
000006 BEGIN                                                                     WRB         5
000006     WHILE N>5 DO                                                          WRB         6
000010        BEGIN  N := N-1; F↑ := ≡ ≡; PUT(F)                                 WRB         7
000014        END;                                                               WRB         8
000015     IF B THEN                                                             WRB         9
000016     BEGIN  F↑ := ≡ ≡; PUT(F);                                             WRB        10
000021            F↑ := ≡T≡; PUT(F);                                             WRB        11
000025            F↑ := ≡R≡; PUT(F);                                             WRB        12
000031            F↑ := ≡U≡; PUT(F);                                             WRB        13
000035            F↑ := ≡E≡; PUT(F)                                              WRB        14
000041     END ELSE                                                              WRB        15
000042     BEGIN  F↑ := ≡F≡; PUT(F);                                             WRB        16
000046            F↑ := ≡A≡; PUT(F);                                             WRB        17
000051            F↑ := ≡L≡; PUT(F);                                             WRB        18
000055            F↑ := ≡S≡; PUT(F);                                             WRB        19
000061            F↑ := ≡E≡; PUT(F)                                              WRB        20
000065     END                                                                   WRB        21
000065 END (* WRB *);                                                            WRB        22
000071                                                                           WRB        23
000071 (*$T-,X0,E+,U+,P- WRITE FIXED-POINT NUMBERS.  WIRTH/JENSEN*)              UPDATE8    22
000071                                                                           WRF         3
000003 PROCEDURE WRF(VAR F:TEXT; X: REAL; M,N: INTEGER);                         WRF         4
000007     (* WRITE REAL NUMBER X IN FIXED-POINT FORMAT;                         WRF         5
000007      M CHARACTERS, N AFTER THE ≡.≡ *)                                     WRF         6
000007     CONST T48 = 281474976710656; (* 2**48 *)                              WRF         7
000007           Z = 27;       (* ORD(≡0≡) *)                                    WRF         9
000007     TYPE POSINT = 0..323;                                                 WRF        10
000007     VAR C,D,E,R,K2,K3,I: INTEGER;                                         WRF        11
000016         SIGN: CHAR;                                                       WRF        12
000017                                                                           WRF        13
000003     FUNCTION TEN(E: POSINT): REAL;    (* 10**E, 0<E<322 *)                WRF        14
000004       EXTERN;                                                             WRF        15
000004 BEGIN                                                                     WRF        16
000017     IF UNDEFINED(X) THEN                                                  WRF        17
000011     BEGIN  REPEAT F↑ := ≡ ≡; PUT( F ); M := M-1; UNTIL M <= 1 ;           UPDATE6    42
000017      F↑ := ≡U≡ ;  PUT( F )                                                UPDATE8    23
000023     END ELSE                                                              WRF        20
000024     BEGIN                                                                 WRF        21
000024        (* X = 0: A SPECIAL CASE *)                                        WRF        22
000024        IF X=0 THEN                                                        WRF        23
000026        BEGIN  REPEAT  F↑ := ≡ ≡; PUT(F); M := M-1 UNTIL M<=1;             WRF        24
000034               F↑ := ≡0≡; PUT(F)                                           WRF        25
000040        END ELSE                                                           WRF        26
000041        BEGIN (* CHECK SIGN AND DETERMINE SCALE FACTOR *)                  WRF        27
000041           IF X<0 THEN                                                     WRF        28
000043           BEGIN SIGN := ≡-≡; X := -X                                      WRF        29
```

```
000044        END ELSE SIGN := ≡ ≡;                                               WRF          30
000046        E := EXPO( X ) ;                                                    UPDATE5      69
000050        IF E >= 0 THEN                                                      UPDATE5      70
000051           BEGIN  E := E*77 DIV 256 + 1 ;   X := X/TEN( E ) ;               UPDATE5      71
000057              IF X >=1.0 THEN                                               UPDATE5      72
000061                 BEGIN  X := X/10.0 ;   E := E+1 ;                          UPDATE5      73
000063                 END ;                                                      UPDATE5      74
000063           END  ELSE                                                        UPDATE5      75
000064           BEGIN  E := ( E+1 )*77 DIV 256 ;   X := TEN( -E )*X ;            UPDATE5      76
000073                 IF X < 0.1 THEN                                            UPDATE5      77
000075                 BEGIN  X := 10.0*X ;   E := E-1 ;                          UPDATE5      78
000077                 END ;                                                      UPDATE5      79
000077           END ;                                                            UPDATE5      80
000077        (* 0.1 <= X < 1/0 *)                                                WRF          38
000077        IF N < 0 THEN N := 0 ;   R := N+E ;                                 UPDATE6      43
000103        IF R >= 0 THEN                                                      UPDATE6      44
000104        IF R < 16 THEN                                                      UPDATE6      45
000105        CASE R OF        (* ROUNDING *)                                     WRF          41
000106         0: X := X+0.5 ;                                                    UPDATE6      46
000111          1: X := X+0.5E-1;                                                 WRF          42
000114          2: X := X+0.5E-2;                                                 WRF          43
000117          3: X := X+0.5E-3;                                                 WRF          44
000122          4: X := X+0.5E-4;                                                 WRF          45
000125          5: X := X+0.5E-5;                                                 WRF          46
000130          6: X := X+0.5E-6;                                                 WRF          47
000133          7: X := X+0.5E-7;                                                 WRF          48
000136          8: X := X+0.5E-8;                                                 WRF          49
000141          9: X := X+0.5E-9;                                                 WRF          50
000144         10: X := X+0.5E-10;                                                WRF          51
000147         11: X := X+0.5E-11;                                                WRF          52
000152         12: X := X+0.5E-12;                                                WRF          53
000155         13: X := X+0.5E-13 ;                                               UPDATE6      47
000160         14: X := X+0.5E-14 ;                                               UPDATE6      48
000163         15: X := X+0.5E-15                                                 UPDATE6      49
000153        END ;                                                               UPDATE6      50
000206        IF X >= 1.0 THEN                                                    WRF          56
000210           BEGIN X := X * 0.1; E := E+1                                     WRF          57
000211           END ;                                                            WRF          58
000213        IF E>0 THEN                                                         WRF          59
000215        BEGIN M := M-N-E-2;   K2 := E;   K3 := 0                              WRF          60
000220        END ELSE                                                            WRF          61
000221        BEGIN M := M-N-3;   K2 := 0;                                        WRF          62
000224           IF N+E >= 0 THEN K3 := -E ELSE K3 := N;                          WRF          63
000227           N := N-K3                                                        WRF          64
000227        END;                                                                WRF          65
000231        (* M BLANKS, SIGN, K2 DIGITS, ≡.≡, K3 ZEROES, N DIGITS *)           WRF          67
000231        WHILE M > 0 DO                                                      UPDATE7     198
000233           BEGIN F↑ := ≡ ≡; PUT(F); M := M-1 ; END ;                        UPDATE7     199
000240        F↑ := SIGN; PUT(F);                                                 WRF          70
000244        C := TRUNC( X,48 ) ;   D := 0 ;                                     UPDATE6      51
000250        IF K2=0 THEN BEGIN F↑ := ≡0≡; PUT(F) END ELSE                       WRF          72
000255           REPEAT C := (C - D*T48) * 10;                                    WRF          73
000260                  D := C DIV T48;                                           WRF          74
000261                F↑ := CHR(D+Z); PUT(F);   K2 := K2-1                        WRF          75
000265           UNTIL K2=0;                                                      WRF          76
000270        F↑ := ≡.≡; PUT(F);                                                  WRF          77
```

```
000274          WHILE K3<>0 DO
000276             BEGIN F↑ := ≡0≡; PUT(F); K3 := K3-1
000301             END;
000303          WHILE N<>0 DO
000305          BEGIN C := (C - D*T48) * 10;
000310                D := C DIV T48;
000311                F↑ := CHR(D+Z); PUT(F); N := N-1
000314          END
000316       END
000316    END
000316 END (* WR *);
000345
000345 (*$T+,X0,E+,U+,P- WRITE CHAR.  JENSEN*)
000345
000003 PROCEDURE WRC(VAR F:TEXT; CH:CHAR; N:INTEGER);
000006 BEGIN
000006    WHILE N>1 DO
000010       BEGIN  N := N-1; F↑ := ≡ ≡; PUT(F)
000014       END;
000015    F↑ := CH; PUT(F)
000023 END (* WRC *);
000027
000027 BEGIN  (* DUMMY *)  END.
```

ADDR	1/25	1/38	1/52	2*2/04	2/11					
ALFA	1/09									
ALF	1/03	1/09								
A	3/16	3/36	3*3/37	3/43	2*3/44	4/14	3*4/19	6/33	6/50	3*6/51
	7/02	2*7/04								
BIT12	1/04	1/15	1/16							
BIT15	1/04	1/13								
BIT18	1/05	1/15	1/16	3*1/19						
BIT45	1/05	1/13								
BIT6	1/04	1/18								
BOOLEAN	1/10	3/17	5/56	6/33	7/10					
BOOL	1/03	1/10								
BVAL	1/10	2/28								
B2	1/25	1/31	1/51	1/53	2/10	2/37				
B5	1/26	1/50	1/51	1/52	2/10	2/19	2/37			
B	7/10	7/15								
CHAR	1/11	3/16	6/01	6/32	7/39	9/15				
CHR	1/41	1/42	1/45	1/47	5/32	5/36	5/44	5/45	5/46	6/14
	8/54	9/07								
CH	1/03	1/11	3/16	3/24	3/25	3/26	3/29	3/30	3/33	3/37
	3/38	3/39	3/40	3/41	3/42	3/44	3/46	3/49	3/50	3/52
	3/53	3/55	3/56	4/03	2*4/04	4/05	4/06	4/07	6/32	6/37
	6/38	6/39	6/42	6/43	6/46	6/51	6/56	7/01	9/15	9/20
CVAL	1/11	2*2/25	2/27							
C	4/33	5/30	3*5/31	3*5/35	7/38	8/50	2*8/52	8/53	2*9/05	9/06
DUMMY	1/02									
D	4/33	5/07	5/31	5/32	2*5/35	5/36	6/01	6/14	6/16	6/20
	7/38	8/50	8/52	8/53	8/54	9/05	9/06	9/07		
EMSG	1/25	1/40	1/41	1/42	1/43	1/45	1/47	1/48	1/49	
EOF	4/23	7/05								
EXPO	4/54	8/02								
EXTERN	3/20	4/36	7/42							
E0	4/33	2*5/43	5/44							
E1	4/33	2*5/42	3*5/43	5/45						
E2	4/33	5/42	5/46							
E	2/42	2/45	2*3/01	3/02	3/16	3/20	3/36	2*3/37	2*3/44	4*4/11
	4/13	4/14	4/16	2*4/21	2*4/22	4/33	4/35	4/54	4/55	3*4/56
	2*5/02	3*5/05	5/07	2*5/28	2*5/38	5/39	2*5/40	2*5/42	7/38	7/41
	8/02	8/03	3*8/04	2*8/06	3*8/09	2*8/11	8/15	2*8/37	8/39	2*8/40
	2*8/43									
FALSE	3/28	3/55	6/03	6/41						
F11	1/13	1/33	1/55							
F12	1/13	1/33	1/55	2/08						
F21	1/15	2/07	2*2/08							
F22	1/15	2/04								
F23	1/16	2/18								
F24	1/16	1/32	1/34	1/54	1/56	2/19				
F31	1/18									
F32	1/19	1/36	2/02							
F33	1/19	1/52								
F34	1/19									
F	3/08	2*3/23	3/24	2*3/26	2*3/30	2*3/38	2*3/41	2*3/46	2*3/50	2*3/53
	2*3/56	2*4/04	2*4/07	3*4/23	4/28	2*4/39	2*4/40	2*4/43	2*4/44	2*4/48
	2*4/52	2*4/53	2*5/32	2*5/33	2*5/36	2*5/38	2*5/40	2*5/41	2*5/44	2*5/45
	2*5/46	5/53	2*6/08	2*6/10	2*6/18	2*6/20	6/27	2*6/36	6/37	2*6/39
	2*6/43	2*6/56	3*7/05	7/10	2*7/13	2*7/16	2*7/17	2*7/18	2*7/19	2*7/20

	2*7/22	2*7/23	2*7/24	2*7/25	2*7/26	7/32	2*7/45	2*7/46	2*7/51	2*7/52
	2*8/48	2*8/49	2*8/51	2*8/54	2*8/56	2*9/02	2*9/07	9/15	2*9/18	2*9/20
GET	3/23	3/26	3/30	3/38	3/41	3/46	3/50	3/53	3/56	4/04
	4/07	4/23	6/36	6/39	6/43	6/56	7/05			
GLOBARR	1/23	1/25								
HALT	3/34	4/10	4/17	6/48	6/54	7/02				
INTEGER	1/07	1/12	1/25	1/26	2/42	2/43	3/16	4/28	4/33	5/53
	5/56	6/27	6/33	7/10	7/32	7/38	9/15			
INT	1/03	1/07								
IVAL	1/07	1/33	1/55	2/15	2/20	2/24	2/32			
I	1/26	1/40	1/41	1/42	3*1/43	1/45	1/47	1/48	2/43	2/44
	2/46	2*3/01	3/16	3/51	4/04	3*4/06	2*4/11	4/33	5/34	5/56
	6/12	2*6/13	6/14	3*6/16	6/17	3*6/20	6/21	7/38		
J	1/26	1/44	2*1/45	2*1/46	1/47	1/48				
K2	7/38	8/40	8/42	8/51	2*8/54	8/55				
K3	7/38	8/40	2*8/43	8/44	9/01	2*9/02				
K	1/26	2*1/48								
LIMIT	3/11	3/37	3/43	4/06	5/55	6/06				
LIM1	3/13	4/16	6/30	6/51						
LIM2	3/14	4/13	6/31	7/02						
MAIN	1/25	1/37	2/03							
MESSAGE	3/34	4/10	4/17	6/48	6/54	7/02				
M	7/32	3*7/45	3*7/51	2*8/40	2*8/42	8/47	2*8/48			
NADDR	1/26	2*1/32	1/52	2*1/54						
NAME	1/09	1/39	1/40	1/41	1/42	1/43	1/45	1/47	1/48	1/49
	2/09	2/11	2/17	2/30						
NB5	1/25	1/31	1/32	1/36	1/50	1/52	1/53	1/54	2/02	
NIL	2/31									
NXPROG	1/26	1/34	1/35	1/36	1/37	1/39	1/50	1/56	2/01	2/02
	2/03	2*2/04	2/11							
N	4/28	3*4/39	3*4/43	4*4/47	2*4/48	4/49	5/11	5/34	5/53	6/07
	2*6/08	6/17	2*6/18	7/10	7/12	2*7/13	7/32	3*8/15	8/40	8/42
	2*8/43	2*8/44	9/04	2*9/07	9/15	9/17	2*9/18			
OCT	1/38	2/11	2/32							
ODD	2/20	2/45								
ORD	2*2/25	3/37	3/44	4/04	4/06	6/51				
OUTPUT	1/02									
PASCPMD	1/25									
POSINT	3/15	3/20	4/32	4/35	7/37	7/41				
PTR	1/03	1/12								
PUT	4/39	4/40	4/43	4/44	4/48	4/52	4/53	5/32	5/33	5/36
	5/38	5/40	5/41	5/44	5/45	5/46	6/08	6/10	6/18	6/20
	7/13	7/16	7/17	7/18	7/19	7/20	7/22	7/23	7/24	7/25
	7/26	7/45	7/46	7/51	7/52	8/48	8/49	8/51	8/54	8/56
	9/02	9/07	9/18	9/20						
PVAL	1/12	2/31								
Q	5/56	6/13	2*6/14							
RDI	6/27									
RDR	3/08									
REAL	1/08	2/42	2/43	3/08	3/16	3/20	4/28	4/35	7/32	7/41
REL	1/03	1/08								
RTYPES	1/06	1/23	1/27							
RVAL	1/08	2/23								
R	7/38	8/15	8/16	8/17	8/18					
SIGN	7/39	7/56	8/01	8/49						
SS	3/17	3/53	3/55	4/11						

STOR	1/25	2*1/32	1/36	1/39	1/52	2*1/54	2/02	2/04	2/06	2/08
	2/09	2/11	2/15	2/17	2/18	2/19	2/20			
STRUCT1	1/13	1/29								
STRUCT2	1/15	1/29	1/32	1/54	2/04					
STRUCT3	1/18	1/36	1/52	2/02						
STR1	1/03	1/13								
STR2	1/03	1/15								
STR3	1/03	1/18								
S	3/17	3/26	3/28	4/20	5/56	6/03	6/04	6/16	6/33	6/39
	6/41	7/04								
TEN	2/42	3/03	3/20	4/21	4/22	4/35	4/56	5/05	7/41	8/04
	8/09									
TEXT	3/08	4/28	5/53	6/27	7/10	7/32	9/15			
TRUE	3/26	3/53	6/04	6/39						
TRUNC	5/30	8/50								
TYPES	1/27	1/29	1/32	1/54	2/06	2/08	2/18	2/19	2/20	
T48	3/10	4/19	4/30	5/31	2*5/35	7/35	8/52	8/53	9/05	9/06
T	2/43	2/44	2*2/47	2*2/48	2*2/49	2*2/50	2*2/51	2*2/52	2*2/53	2*2/54
	2*2/55	3/03								
UNDEFINED	4/38	7/44								
VARTYP	1/26	2/18	2/20	2*2/21	2/22					
VTYP	1/03	1/06								
WRB	7/10									
WRC	9/15									
WRE	4/28									
WRF	7/32									
WRITELN	1/38	1/49	2*2/09	2*2/14	2/34					
WRITE	1/40	1/43	1/48	2/09	2/11	2/17	2/23	2/24	2/26	2/27
	2/28	2/29	2/30	2/31	2/32					
WRI	5/53									
XPROG	1/26	1/50	2/06	2*2/08	2/09					
XVAR	1/26	2/08	2*2/12	2/15	3*2/17	3*2/18				
X	3/08	4/21	2*4/22	4/28	4/38	4/42	4/51	2*4/52	4/54	2*4/56
	5/01	2*5/02	2*5/05	5/06	2*5/07	2*5/12	2*5/13	2*5/14	2*5/15	2*5/16
	2*5/17	2*5/18	2*5/19	2*5/20	2*5/21	2*5/22	2*5/23	2*5/24	2*5/25	5/27
	2*5/28	5/30	5/53	6/03	2*6/04	6/06	6/13	2*6/14	6/15	6/27
	2*7/04	7/32	7/44	7/50	7/55	2*7/56	8/02	2*8/04	8/05	2*8/06
	2*8/09	8/10	2*8/11	2*8/19	2*8/20	2*8/21	2*8/22	2*8/23	2*8/24	2*8/25
	2*8/26	2*8/27	2*8/28	2*8/29	2*8/30	2*8/31	2*8/32	2*8/33	2*8/34	8/36
	2*8/37	8/50								
Y	3/16	2*4/19	2*4/20	4/21	2*4/22					
Z	3/12	3/37	3/44	4/04	4/06	4/31	5/32	5/36	5/44	5/45
	5/46	5/54	6/14	6/29	6/51	7/36	8/54	9/07		

114 IDENTIFIERS 1085 OCCURRENCES

```
STORAGE ALLOCATION.

                ADDRESS    LENGTH              BINARY CONTROL  CARDS.

                      0        26              IDENT   WRO                JENSEN
                     26                        END

                                        ENTRY POINTS.

                                        WRO                3+

                                        EXTERNAL  SYMBOLS.

                                        F.PUTC
```

```
                                             IDENT  WRO             JENSEN

                                             ENTRY  WRO
                                             EXT    P.PUTC

      0                      1     SVCNT     BSS    1
      1                      1     BCNT      BSS    1
      2                      1     RETADDR   BSS    1

      3  5170000002 +              WRO       SA7    RETADDR         SAVE RETURN ADDRESS
                   5126000005                SA2    B6+5            FETCH FIELD LENGTH
      4  0302000005 +                        ZR     X2,H1
                   0322000006 +              PL     X2,H2           IF <= 0 SET TO 20
      5  7120000024                H1        SX2    20
      6                            H2        BSS    0

                                   * X2 = ACTUAL FIELD LENGTH

      6  22012                               LX0    B1,X2
              36202                          IX2    X0+X2           X2 := 3*X2 = NO OF BITS TO
                   7272777703                SX7    X2-60                BE TRANSLATED
      7  0337000015 +                        NG     X7,OCT1         PRECEDING BLANKS
                   0307000015 +              ZR     X7,OCT1

     10  5170000001 +              OCT0      SA7    BCNT            SAVE NO OF BLANKS
                   7160000055                SX6    1R
     11  5116000003                          SA1    B6+3            FETCH FILE ADDRESS
                   5211000014                SA1    X1+12           FETCH PPTR
     12  53610                               SA6    X1
              0100000000 X                   RJ     P.PUTC
     13  5110000001 +                        SA1    BCNT
                   7271777774                SX7    X1-3
     14  0317000010 +                        NZ     X7,OCT0
                   7120000074                SX2    60

     15  5116000004                OCT1      SA1    B6+4            FETCH VALUE TO BE OUTPUT
                   6232777774                SB3    X2-3
     16  23131                               AX1    B3,X1
              43071                          MX0    57
                   15010                     BX0    -X0*X1
     17  7260000033                          SX6    X0+33B          X6 = OCTAL DIGIT
                   76730                     SX7    B3
     20  5170000000 +                        SA7    SVCNT           SAVE COUNT
                   5116000003                SA1    B6+3            FETCH FILE ADDRESS
     21  5211000014                          SA1    X1+12           FETCH PPTR
                   53610                     SA6    X1
     22  0100000000 X                        RJ     P.PUTC
     23  5120000000 +                        SA2    SVCNT
                   0312000015 +              NZ     X2,OCT1
     24  5110000002 +                        SA1    RETADDR         FETCH RETURN ADDRESS
                   63710                     SB7    X1
     25  0277000000                          JP     B7
     26                                      END

              47400B CM   STORAGE USED            53 STATEMENTS          9 SYMBOLS
                          MODEL 73 ASSEMBLY     0.643 SECONDS           24 REFERENCES
```

```
SYMBOLIC REFERENCE TABLE.

BCNT           1      PROGRAM*        2/07 L    2/25 S    2/31
H1             5      PROGRAM*        2/12      2/14 L
H2             6      PROGRAM*        2/13      2/15 L
OCT0          10      PROGRAM*        2/25 L    2/33
OCT1          15      PROGRAM*        2/22      2/23      2/36 L    2/49
P.PUTC         0      EXTERNAL*       2/04 X    2/30      2/47
RETADDR        2      PROGRAM*        2/08 L    2/10 S    2/50
SVCNT          0      PROGRAM*        2/06 L    2/43 S    2/48
WRO            3      PROGRAM*        2/03 E    2/10 L
```

```
STORAGE ALLOCATION.

             ADDRESS   LENGTH              BINARY CONTROL CARDS.

                   0       27              IDENT   WRH
                  27                       END

                                     ENTRY POINTS.

                                     WRH                3+

                                     EXTERNAL SYMBOLS.

                                     P.PUTC
```

```
                                                                                WRO    55
                                       IDENT   WRH                              WRH     2
                                                                                WRH     3
                                       ENTRY   WRH                              WRH     4
                                       EXT     P.PUTC                           WRH     5
                                                                                WRH     6
   0                  1     SVCNT      BSS     1                                WRH     7
   1                  1     BCNT       BSS     1                                WRH     8
   2                  1     RETADDR    BSS     1                                WRH     9
                                                                                WRH    10
   3  5170000002 +          WRH        SA7     RETADDR      SAVE RETURN ADDRESS WRH    11
            5126000005                 SA2     B6+5         FETCH FIELD LENGTH  WRH    12
   4  0302000005 +                     ZR      X2,H1                            WRH    13
            0322000006 +               PL      X2,H2        IF .LE. 0 SET TO 15 WRH    14
   5  7120000017            H1         SX2     15                               WRH    15
   6                        H2         BSS     0                                WRH    16
                                                                                WRH    17
                            * X2 = ACTUAL FIELD LENGTH                          WRH    18
                                                                                WRH    19
   6  22012                            LX0     B1,X2                            WRH    20
         36200                         IX2     X0+X0        X2 := 4*X2 = NO. OF BITS TO  WRH    21
            7272777703                 SX7     X2-60                BE TRANSLATED        WRH    22
   7  0337000015 +                     NG      X7,OCT1      PRECEDING BLANKS    WRH    23
            0307000015 +               ZR      X7,OCT1                          WRH    24
                                                                                WRH    25
  10  5170000001 +          OCT0       SA7     BCNT         SAVE NO OF BLANKS   WRH    26
            7160000055                 SX6     1R                               WRH    27
  11  5116000003                       SA1     B6+3         FETCH FILE ADDRESS  WRH    28
            5211000014                 SA1     X1+12        FETCH PPTR          WRH    29
  12  53610                            SA6     X1                               WRH    30
         0100000000 X                  RJ      P.PUTC                           WRH    31
  13  5110000001 +                     SA1     BCNT                             WRH    32
            7271777773                 SX7     X1-4                             WRH    33
  14  0317000010 +                     NZ      X7,OCT0                          WRH    34
            7120000074                 SX2     60                               WRH    35
                                                                                WRH    36
  15  5116000004            OCT1       SA1     B6+4         FETCH VALUE TO BE OUTPUT  WRH    37
            6232777773                 SB3     X2-4                             WRH    38
  16  23131                            AX1     B3,X1                            WRH    39
         43070                         MX0     56                               WRH    40
            15010                      BX0     -X0*X1                           WRH    41
                 76730                 SX7     B3                               WRH    42
  17  7260000033                       SX6     X0+1R0       X6 = POSSIBLE HEX DIGIT  WRH    43
            7200777765                 SX0     X0-10                            WRH    44
  20  0330000021 +        +            NG      X0,*+1       IF HEX DIGIT 0-9    WRH    45
            7260000001    -            SX6     X0+1RA       IF HEX DIGIT A-F    WRH    46
  21  76730                            SX7     B3                               WRH    47
         5170000000 +                  SA7     SVCNT        SAVE COUNT          WRH    48
  22  5116000003                       SA1     B6+3         FETCH FILE ADDRESS  WRH    49
            5211000014                 SA1     X1+12        FETCH PPTR          WRH    50
  23  53610                            SA6     X1                               WRH    51
         0100000000 X                  RJ      P.PUTC                           WRH    52
  24  5120000000 +                     SA2     SVCNT                            WRH    53
            0312000015 +               NZ      X2,OCT1                          WRH    54
  25  5110000002 +                     SA1     RETADDR      FETCH RETURN ADDRESS  WRH    55
         63710                         SB7     X1                               WRH    56
  26  0277000000                       JP      B7                               WRH    57
```

```
      27                           END                                                  WRH        58

                 47400B CM   STORAGE USED             58 STATEMENTS          9 SYMBOLS
                             MODEL 73 ASSEMBLY     0.666 SECONDS            24 REFERENCES
```

SYMBOLIC REFERENCE TABLE.

BCNT	1	PROGRAM*	2/08 L	2/26 S	2/32	
H1	5	PROGRAM*	2/13	2/15 L		
H2	6	PROGRAM*	2/14	2/16 L		
OCTO	10	PROGRAM*	2/26 L	2/34		
OCT1	15	PROGRAM*	2/23	2/24	2/37 L	2/54
P.PUTC	0	EXTERNAL*	2/05 X	2/31	2/52	
RETADDR	2	PROGRAM*	2/09 L	2/11 S	2/55	
SVCNT	0	PROGRAM*	2/07 L	2/48 S	2/53	
WRH	3	PROGRAM*	2/04 E	2/11 L		

```
OVL                                                                     COMPASS 3.75286.     11/02/75  15.47.30.       PAGE      1
STORAGE ALLOCATION.

            ADDRESS   LENGTH             BINARY CONTROL  CARDS.

                  0        23             IDENT   OVL
                 23                       END

                                 ENTRY POINTS.

                                 OVL              0+

                                 EXTERNAL  SYMBOLS.

                                 P.MSG
```

MOORE BUSINESS FORMS, INC. F   FORM 1413   PRINTED IN U.S.A   22

```
                                          IDENT  OVL
                                          ENTRY  OVL
     0                            OVL     BSS    0B
     0  5110000064                        SA1    64B          SET FILE NAME IN LDR TABLE
                  43052                   MX0    42D
                      11501               BX6    X0*X1
     1  5160000015 +                      SA6    OVLA
                  7170000041              SX7    41B          SET BITS 41,36 (V,E) FOR OVERLAY LOAD
     2  20744                             LX7    36D-0D
              5170000016 +                SA7    OVLA+1
     3  5150000067                        SA5    67B          CLEAR LDR COMPLETE BIT
                  43701                   MX7    1
                      20736               LX7    29D-59D
     4  15757                             BX7    -X7*X5
              54750                       SA7    A5
                  5110000017 +            SA1    OVLB         LDR REQUEST WORD
     5  10611                             BX6    X1
              0400000007 +                EQ     OVL2         SKIP RECALL SETUP FIRST TIME
     6  7160220314                OVL1    SX6    3RRCL        SET UP FOR PERIODIC RECALL
                  20652                   LX6    42D
     7  56110                     OVL2    SA1    B1
              0311000007 +                NZ     X1,*         IF PREVIOUS REQUEST UNANSWERED
                      56610               SA6    B1
    10  0130000000                        XJ
    11  54550                             SA5    A5           CHECK LDR COMLETE BIT
              20536                       LX5    59D-29D
                  0325000006 +            PL     X5,OVL1      IF LDR NOT COMPLETE
    12  7110000020 +                      SX1    OVLC         ISSUE DAYFILE MESSAGE
                  7120000036              SX2    OVLD*10D
    13  0100000000 X                      RJ     =XP.MSG
    14  7100000014 +                      SX0    *            ISSUE ABORT REQUEST
                  0400000052              EQ     52B
    15                        2   OVLA    BSSZ   2            LDR PARAMETER TABLE
    17  14042600000000000015 +    OVLB    VFD    18D/3LLDV,24D/0,18D/OVLA  LDR REQUEST WORD
    20  47550601240114551726      OVLC    DATA   C+* FATAL OVERLAY LOAD ERROR.+
                              3   OVLD    EQU    *-OVLC
    23                                    END

                 47400B CM  STORAGE USED          48 STATEMENTS        8 SYMBOLS
                            MODEL 73 ASSEMBLY      0.571 SECONDS         18 REFERENCES
```

SYMBOLIC REFERENCE TABLE.

```
OVL         0    PROGRAM*    2/02 E   2/04 L
OVLA       15    PROGRAM*    2/08 S   2/12 S   2/43 L   2/44
OVLB       17    PROGRAM*    2/20     2/44 L
OVLC       20    PROGRAM*    2/36     2/45 L   2/46
OVLD        3                2/37     2/46 D
OVL1        6    PROGRAM*    2/24 L   2/34
OVL2        7    PROGRAM*    2/22     2/27 L
P.MSG       0    EXTERNAL*   2/38
```

```
STORAGE ALLOCATION.

          ADDRESS   LENGTH            BINARY CONTROL CARDS.

                0       42            IDENT   WRS                JENSEN
               42                     END

                           ENTRY POINTS.

                           WRS                 6+

                           EXTERNAL SYMBOLS.

                           P.PUTC
```

```
                                      IDENT  WRS               JENSEN

                                      ENTRY  WRS
                                      EXT    P.PUTC

     0                    1  SVADR    BSS    1
     1                    1  TCNT     BSS    1
     2                    1  SVAL     BSS    1
     3                    1  SVCNT    BSS    1
     4                    1  BCNT     BSS    1
     5                    1  RETADDR  BSS    1

     6  5170000005 +         WRS      SA7    RETADDR           SAVE RETURN ADDRESS
                  5126000005          SA2    B6+5              FETCH FIELD LENGTH
     7  54321                         SA3    A2+B1             FETCH LENGTH OF STRING
             0332000011 +             NG     X2,S6             IF  <= 0 USE LENGTH OF STRING
    10  0312000012 +                  NZ     X2,S7
    11  10233                S6       BX2    X3
    12                       S7       BSS    0
    12  5116000004                    SA1    B6+4
                  10611               BX6    X1
    13  5160000000 +                  SA6    SVADR             SAVE ADR OF CURRENT POS IN STRING

                  37723               IX7    X2-X3
    14  0337000023 +                  NG     X7,S1
                  0307000023 +        ZR     X7,S1             PRECEDING BLANKS

    15  10633                         BX6    X3
             5160000001 +             SA6    TCNT              SAVE TOTAL COUNT OF STRING CHAR
    16  5170000004 +         S0       SA7    BCNT              SAVE NO OF BLANKS
                  7160000055          SX6    1R                BLANK
    17  5116000003                    SA1    B6+3              FETCH FILE ADDRESS
                  5211000014          SA1    X1+12             FETCH CURRENT POSITION IN BUFFER
    20  53610                         SA6    X1
             0100000000 X             RJ     P.PUTC
    21  5110000004 +                  SA1    BCNT
                  7271777776          SX7    X1-1
    22  0317000016 +                  NZ     X7,S0
                  5120000001 +        SA2    TCNT

                         * X2 = NO OF CHARACTERS OF THE STRING TO BE PRINTED

    23  6130000012           S1       SB3    10                REPEAT <PROCESS NEW WORD>
                  6272777765          SB7    X2-10
    24  0670000025 +                  GE     B7,S2             LAST TIME THRU THE LOOP
                  63320               SB3    X2
                     66700            SB7    B0                SET TOTAL LEFT TO 0
    25  5110000000 +         S2       SA1    SVADR             ADDR(CURRENT WORD)
                  7261000001          SX6    X1+1              ADR(NEXT WORD)
    26  5160000000 +                  SA6    SVADR             SAVE
                  53110               SA1    X1                CURRENT VALUE
                     76670            SX6    B7
    27  5160000001 +                  SA6    TCNT              SAVE

                         * B3 = NO OF CHERACTERS TO BE PRINTED THIS TIME

    30  76730                S3       SX7    B3                REPEAT <PRINT CHARACTER>
```

```
        5170000003 +             SA7   SVCNT          SAVE
                  43066          MX0   54
    31  20106                    LX1   6
        15610                    BX6   -X0*X1         GET CHARACTER
           10711                 BX7   X1
    32  5170000002 +             SA7   SVAL           SAVE SHIFTED WORD
           5116000003            SA1   B6+3           FETCH FILE ADDRESS
    33  5211000014               SA1   X1+12
           53610                 SA6   X1
    34  0100000000 X             RJ    P.PUTC
    35  5110000003 +        S5   SA1   SVCNT
           6231777776            SB3   X1-1
    36  5110000002 +             SA1   SVAL
           0503000030 +          NE    B0,B3,S3       UNTIL <END OF CURRENT WORD>

    37  5120000001 +             SA2   TCNT
           0312000023 +          NZ    X2,S1          UNTIL <ALL CHARS HAVE BEEN PRINTED>

    40  5110000005 +             SA1   RETADDR
           63710                 SB7   X1
    41  0277000000               JP    B7
    42                           END

             47400B CM  STORAGE USED          79 STATEMENTS        15 SYMBOLS
                        MODEL 73 ASSEMBLY  0.867 SECONDS           41 REFERENCES
```

SYMBOLIC REFERENCE TABLE.

BCNT	4	PROGRAM*	2/10 L	2/30 S	2/36		
P.PUTC	0	EXTERNAL*	2/04 X	2/35	3/10		
RETADDR	5	PROGRAM*	2/11 L	2/13 S	3/19		
SVADR	0	PROGRAM*	2/06 L	2/22 S	2/48	2/50 S	
SVAL	2	PROGRAM*	2/08 L	3/06 S	3/13		
SVCNT	3	PROGRAM*	2/09 L	3/01 S	3/11		
S0	16	PROGRAM*	2/30 L	2/38			
S1	23	PROGRAM*	2/25	2/26	2/43 L	3/17	
S2	25	PROGRAM*	2/45	2/48 L			
S3	30	PROGRAM*	2/57 L	3/14			
S5	35	PROGRAM*	3/11 L				
S6	11	PROGRAM*	2/16	2/18 L			
S7	12	PROGRAM*	2/17	2/19 L			
TCNT	1	PROGRAM*	2/07 L	2/29 S	2/39	2/53 S	3/16
WRS	6	PROGRAM*	2/03 E	2/13 L			

```
STORAGE ALLOCATION.

            ADDRESS    LENGTH               BINARY CONTROL CARDS.

                  0        63               IDENT     P.SINCO
                 63                         END

                                  ENTRY POINTS.

                                  P.SINCO           0+

                                  EXTERNAL  SYMBOLS.

                                  P.SABRT
```

```
                                                                                                WRS       81
                                            IDENT     P.SINCO                                   SIN        2
                                            ENTRY     P.SINCO                                   SIN        3
                                            EXT       P.SABRT                                   SIN        4
                                                                                                SIN        5
      0  00000000000000000000    P.SINCO    DATA      0                                         SIN        6
      1  5120000043 +                       SA2       TWOPI      ASSUME ARGUMENT IN X1, B3=0 FOR SIN,  SIN  7
                   0351000030 +             OR        X1,ERR2                   B3=1 FOR COS.   SIN        8
      2  0371000030 +                       ID        X1,ERR2                                   SIN        9
                   40712                    FX7       X1*X2      .N = ARG*2/PI                  SIN       10
                             43000          MX0       0                                         SIN       11
                                       *    SB1       1                                         SIN       12
      3  27200                              PX2       X0         .                              SIN       13
              30427                         FX4       X2+X7      .                              SIN       14
                   32627                    DX6       X2+X7      .                              SIN       15
                             34046          RX0       X4+X6      .ROUNDED N IN X0               SIN       16
      4  24370                              NX3       B7,X0      .NORMALIZE N FOR RANGE REDUCTION  SIN    17
              13620                         BX6       X2-X0      .N IN INTEGER FORMAT           SIN       18
                   36026                    IX0       X2+X6      .MAKE INTEGER POSITIVE         SIN       19
                             54221          SA2       A2+B1      .PI/2-U                        SIN       20
      5  0470000031 +                       EQ        B7,B0,ERR1 .JUMP IF ARG TOO LARGE         SIN       21
                   40732                    FX7       X3*X2      .N*(PI/2-U)U = H1              SIN       22
                             54421          SA4       A2+B1      .PI/2-L                        SIN       23
      6  0306000012 +                       ZR        X6,NRR     .N=0, NO RANGE REDUCTION NECESSARY  SIN  24
                   31617                    FX6       X1-X7      .(ARG-H1)U                     SIN       25
                             42523          DX5       X2*X3      .N*(PI/2-U)L = H2              SIN       26
      7  33217                              DX2       X1-X7      .(ARG-H1)L                     SIN       27
              24606                         NX6       B0,X6      .                              SIN       28
                   40743                    FX7       X4*X3      .N*(PI/2-L)U                   SIN       29
                             31225          FX2       X2-X5      .                              SIN       30
     10  76330                              SX3       B3         .K TO X3                       SIN       31
              31227                         FX2       X2-X7      .LOW ORDER TERMS               SIN       32
                   36003                    IX0       X0+X3      .N + K                         SIN       33
                             43572          MX5       58         .                              SIN       34
     11  15705                              BX7       -X5*X0     . K = (N+K)MOD4                SIN       35
              34662                         RX6       X6+X2      .FINAL REDUCED ARG= X          SIN       36
                   63370                    SB3       X7         . K BACK TO B3                 SIN       37
                             24106          NX1       B0,X6      .   NORMALIZED                 SIN       38
     12  76630                   NRR        SX6       B3         .K TO X6                       SIN       39
              40011                         FX0       X1*X1      .Z=X*X                         SIN       40
                   20673                    LX6       59         .K = 0,2 USE SINE EVALUATION   SIN       41
     13  0326000021 +                       PL        X6,SINE    .                              SIN       42
                   54141                    SA1       A4+B1      .C5                            SIN       43
                             40700          FX7       X0*X0      .Z**2                          SIN       44
     14  54211                              SA2       A1+B1      .C6                            SIN       45
              40401                         FX4       X0*X1      .C5*Z                          SIN       46
                   40527                    FX5       X2*X7      .C6*Z**2                       SIN       47
                             54321          SA3       A2+B1      .C4                            SIN       48
     15  30643                              FX6       X4+X3      .C5*Z+C4                       SIN       49
              54431                         SA4       A3+B1      .C3                            SIN       50
                   40140                    FX1       X4*X0      .C3*Z                          SIN       51
                             30665          FX6       X6+X5      .C6*Z*Z+C5*Z+C4 = ( 1 )        SIN       52
     16  40267                              FX2       X6*X7      .( 1 )*Z**2                    SIN       53
              54341                         SA3       A4+B1      .C2                            SIN       54
                   30613                    FX6       X1+X3      .C3*Z + C2                     SIN       55
                             54431          SA4       A3+B1      .C1                            SIN       56
     17  30626                              FX6       X2+X6      .( 1 )Z**2+C3*Z+C2 = ( 2 )     SIN       57
```

```
              40004                    FX0     X0*X4           .C1*Z                            SIN        58
                   54541               SA5     A4+B1           .C0                              SIN        59
                        40767          FX7     X6*X7           .( 2 )*Z**2                      SIN        60
         20   30670                    FX6     X7+X0           .( 2 )Z**2 + C1*Z                SIN        61
              34065                    RX0     X6+X5           .C3 + REST OF SERIES             SIN        62
                   0200000026 +        JP      CONT            .DONE WITH COSINE SERIES         SIN        63
         21   5130000055 +    SINE     SA3     S5              .S5                              SIN        64
                   40630               FX6     X3*X0           .S5*Z                            SIN        65
                        54231          SA2     A3+B1           .S4                              SIN        66
         22   40700                    FX7     X0*X0           .Z**2                            SIN        67
              30526                    FX5     X2+X6           .S5*Z+S4                         SIN        68
                   54321               SA3     A2+B1           .S3                              SIN        69
                        54231          SA2     A3+B1           .S2                              SIN        70
         23   40657                    FX6     X5*X7           .(S5*Z+S4)*Z**2                  SIN        71
              40430                    FX4     X3*X0           .S3*Z                            SIN        72
                   30562               FX5     X6+X2           .(S5*Z+S4)Z**2 + S2              SIN        73
                        54221          SA2     A2+B1           .S1                              SIN        74
         24   30554                    FX5     X5+X4           .(S5*Z+S4)Z**2+S2+S3*Z = ( 3)    SIN        75
              40757                    FX7     X5*X7           .( 3 )*Z**2                      SIN        76
                   40020               FX0     X2*X0           .S1*Z                            SIN        77
                        54321          SA3     A2+B1           .S0                              SIN        78
         25   30407                    FX4     X0+X7           .                                SIN        79
              34543                    RX5     X4+X3           .                                SIN        80
                   41015               RX0     X1*X5           .FINAL SINE TERM                 SIN        81
         26   77313           CONT     SX3     B1-B3           .1-K                             SIN        82
              21302                    AX3     2               .SIGN(1-K)                       SIN        83
                   13603               BX6     X0-X3                                            SIN        84
         27   0400000000 +             EQ      P.SINCO                                          SIN        85
                                                                                                SIN        86
         30   7100000036 +    ERR2     SX0     MESG2                                            SIN        87
                   0400000032 +        EQ      ERR                                              SIN        88
         31   7100000033 +    ERR1     SX0     MESG1                                            SIN        89
         32   5110000000 +    ERR      SA1     P.SINCO                                          SIN        90
                   0400000000 X        EQ      P.SABRT                                          SIN        91
                                                                                                SIN        92
         33   47550122075517065523   MESG1   DIS     ,≡* ARG OF SIN/COS TOO LARGE≡               SIN        93
         36   47551116061116112405   MESG2   DIS     ,≡* INFINITE OR INDEF ARGUMENT OF SIN/COS≡  SIN        94
         43   17175057460333447104   TWOPI   DATA    17175057460333447104B      2/PI             SIN        95
         44   17206220773250420550   DCSC1   DATA    17206220773250420550B      PI/2             SIN        96
         45   16406043230461461213   DCSC2   DATA    16406043230461461213B     5.3903028581581E-15   SIN        97
         46   61053301014524016617   C5      DATA    61053301014524016617B    -2.7555218727710E-07   SIN        98
         47   16634334143344163607   C6      DATA    16634334143344163607B     2.0629106347664E-09   SIN        99
         50   17006400637375136457   C4      DATA    17006400637375136457B     2.4801578467325E-05   SIN       100
         51   60712237223723423125   C3      DATA    60712237223723423125B    -1.3888888869816E-03   SIN       101
         52   17135252525252523467   C2      DATA    17135252525252523467B     4.1666666666470E-02   SIN       102
         53   60610000000000000004   C1      DATA    60610000000000000004B    -4.9999999999999E-01   SIN       103
         54   17177777777777777777   C0      DATA    17177777777777777777B     9.9999999999999E-01   SIN       104
         55   61111270663112476351   S5      DATA    61111270663112476351B    -2.4732072095246E-08   SIN       105
         56   16755616534201617573   S4      DATA    16755616534201617573B     2.7554856450988E-06   SIN       106
         57   60741377140534357734   S3      DATA    60741377140534357734B    -1.9841260735379E-04   SIN       107
         60   17114210421041004142   S2      DATA    17114210421041004142B     8.3333333169602E-03   SIN       108
         61   60622525252525255342   S1      DATA    60622525252525255342B    -1.6666666666540E-01   SIN       109
         62   17177777777777777770   S0      DATA    17177777777777777770B     9.9999999999997E-01   SIN       110
         63                                  END                                                 SIN       111

                   47500B CM  STORAGE USED          111 STATEMENTS        26 SYMBOLS
                              MODEL 73 ASSEMBLY    1.178 SECONDS          41 REFERENCES
```

SYMBOLIC REFERENCE TABLE.

CONT	26	PROGRAM*	3/06	3/25 L		
C0	54	PROGRAM*	3/47 L			
C1	53	PROGRAM*	3/46 L			
C2	52	PROGRAM*	3/45 L			
C3	51	PROGRAM*	3/44 L			
C4	50	PROGRAM*	3/43 L			
C5	46	PROGRAM*	3/41 L			
C6	47	PROGRAM*	3/42 L			
DCSC1	44	PROGRAM*	3/39 L			
DCSC2	45	PROGRAM*	3/40 L			
ERR	32	PROGRAM*	3/31	3/33 L		
ERR1	31	PROGRAM*	2/21	3/32 L		
ERR2	30	PROGRAM*	2/08	2/09	3/30 L	
MESG1	33	PROGRAM*	3/32	3/36 L		
MESG2	36	PROGRAM*	3/30	3/37 L		
NRR	12	PROGRAM*	2/24	2/39 L		
P.SABRT	0	EXTERNAL*	2/04 X	3/34		
P.SINCO	0	PROGRAM*	2/03 E	2/06 L	3/28	3/33
SINE	21	PROGRAM*	2/42	3/07 L		
S0	62	PROGRAM*	3/53 L			
S1	61	PROGRAM*	3/52 L			
S2	60	PROGRAM*	3/51 L			
S3	57	PROGRAM*	3/50 L			
S4	56	PROGRAM*	3/49 L			
S5	55	PROGRAM*	3/07	3/48 L		
TWOPI	43	PROGRAM*	2/07	3/38 L		

```
STORAGE ALLOCATION.

        ADDRESS   LENGTH              BINARY CONTROL CARDS.

              0       46              IDENT     P.EXP
             46                       END

                             ENTRY POINTS.

                             P.EXP             0+

                             EXTERNAL SYMBOLS.

                             F.SABRT
```

```
                                             IDENT   P.EXP                                               EXP        2
                                             ENTRY   P.EXP                                               EXP        3
                                             EXT     P.SABRT                                             EXP        4
                                                                                                         EXP        5
     0  00000000000000000000      P.EXP      DATA    0             ARGUMENT X IN X1                      EXP        6
     1  0351000023 +                         OR      X1,ERR2       TEST FOR BAD ARG                      EXP        7
                  0371000023 +               ID      X1,ERR2                                             EXP        8
     2  5130000034 +                         SA3     XMAX                                                EXP        9
                                  *          SB1     1                                                   EXP       10
                  54531                      SA5     A3+B1         GET XMIN                              EXP       11
                        31731                FX7     X3-X1         XMAX-X                                EXP       12
     3  54251                                SA2     A5+B1         GET LOG2(E)                           EXP       13
            31315                            FX3     X1-X5         X-XMIN                                EXP       14
                  43000                      MX0     0                                                   EXP       15
                        27400                PX4     X0                                                  EXP       16
     4  13773                                BX7     X7-X3         SIGN OF (XMAX-X)*(X-XMIN)             EXP       17
            40621                            FX6     X2*X1         X*LOG2(E)                             EXP       18
                  0337000021 +               NG      X7,EXTR       TEST FOR ARG OUT OF (XMIN,XMAX) RANGE EXP       19
     5  30746                                FX7     X4+X6                                               EXP       20
            32646                            DX6     X4+X6                                               EXP       21
                  34776                      RX7     X7+X6         .N IS NOW INTEGER WITH A 2000 EXPON   EXP       22
                        24677                NX6     B7,X7         .NORMALIZE N FOR RANGE REDUCTION      EXP       23
     6  54421                                SA4     A2+B1         .LN(2) UPPER                          EXP       24
            54541                            SA5     A4+B1         .LN(2) LOWER                          EXP       25
                  40064                      FX0     X6*X4         .N*LN(2) UPPER                        EXP       26
                        40365                FX3     X6*X5         .N*LN(2) LOWER                        EXP       27
     7  31610                                FX6     X1-X0         .                                     EXP       28
            24206                            NX2     B0,X6         .                                     EXP       29
                  33110                      DX1     X1-X0         .                                     EXP       30
                        31313                FX3     X1-X3         .                                     EXP       31
    10  30123                                FX1     X2+X3                                               EXP       32
            24001                            NX0     B0,X1         .FINAL VALUE OF X                     EXP       33
                  63770                      SB7     X7            .PICK UP N                            EXP       34
                        41700                RX7     X0*X0         .Z=X**2                               EXP       35
    11  54151                                SA1     A5+B1         .C1=420.0                             EXP       36
            54211                            SA2     A1+B1         .C0=15120.0                           EXP       37
                  40617                      FX6     X1*X7         .C1*Z                                 EXP       38
                        40577                FX5     X7*X7         .Z**2                                 EXP       39
    12  34362                                RX3     X6+X2         .C1*Z + C0                            EXP       40
            54121                            SA1     A2+B1         .C3=28.0                              EXP       41
                  40617                      FX6     X1*X7         .C3*Z                                 EXP       42
                        34335                RX3     X3+X5         .C1*Z + C0 + Z*Z = B                  EXP       43
    13  54211                                SA2     A1+B1         .C4=2520.0                            EXP       44
            40503                            FX5     X0*X3         .X*B                                  EXP       45
                  34262                      RX2     X6+X2         .C4 + C3*Z = T                        EXP       46
                        40472                FX4     X7*X2         .Z*T                                  EXP       47
    14  30133                                FX1     X3+X3         .2*B                                  EXP       48
            35615                            RX6     X1-X5         .2*B - X*B                            EXP       49
                  34164                      RX1     X6+X4         .Z*T + 2*B - X*B = DENOM              EXP       50
                        24101                NX1     B0,X1                                               EXP       51
    15  45701                                RX7     X0/X1         .TERM1 = X/DENOM                      EXP       52
            35454                            RX4     X5-X4         .X*B - Z*T = TERM2                    EXP       53
                  41574                      RX5     X7*X4         .Q = TERM1*TERM2                      EXP       54
                        54121                SA1     A2+B1         .LOAD 1.0                             EXP       55
    16  30210                                FX2     X1+X0         .1.0+X                                EXP       56
            32310                            DX3     X1+X0                                               EXP       57
                  24202                      NX2     B0,X2                                               EXP       58
```

```
                  30425           FX4     X2+X5          .1.0+X+Q
 17   32725                       DX7     X2+X5
           34737                  RX7     X3+X7
                34647             RX6     X4+X7
                     26736        UX7     B3,X6
 20   66773                       SB7     B7+B3
           27676                  PX6     B7,X6
                0400000000 +      EQ      P.EXP

 21   76600               EXTR    SX6     B0
           0333000000 +           NG      X3,P.EXP       RETURN WITH ZERO IF X < XMIN
 22   7100000025 +                SX0     MESG1
                0400000024 +      EQ      ER
 23   7100000030 +        ERR2    SX0     MESG2
 24   5110000000 +        ER      SA1     P.EXP
                0400000000 X      EQ      P.SABRT

 25   47550122075517065505 MESG1  DIS     ,=* ARG OF EXP TOO LARGE=
 30   47551116061116112405 MESG2  DIS     ,=* INFINITE OR INDEF ARGUMENT OF EXP=
 34   17315626534121727024 XMAX   DATA    741.67
 35   60462560560507534121 XMIN   DATA    -675.82
 36   17205612507312256030 LOG2E  DATA    17205612507312256030B    1/LN(2)
 37   17175427102775750000 LOG2U  DATA    17175427102775750000B    LN(2)
 40   16530717363257117073 LOG2L  DATA    16530717363257117073B    LN(2)
 41   17306440000000000000 C1     DATA    420.0
 42   17357304000000000000 C0     DATA    15120.0
 43   17247000000000000000 C3     DATA    28.0
 44   17334730000000000000 C4     DATA    2520.0
 45   17204000000000000000 ONE    DATA    1.0
 46                               END

              47400B CM  STORAGE USED          87 STATEMENTS        17 SYMBOLS
                         MODEL 73 ASSEMBLY    0.981 SECONDS         29 REFERENCES
```

SYMBOLIC REFERENCE TABLE.

C0	42	PROGRAM*	3/26 L				
C1	41	PROGRAM*	3/25 L				
C3	43	PROGRAM*	3/27 L				
C4	44	PROGRAM*	3/28 L				
ER	24	PROGRAM*	3/13	3/15 L			
ERR2	23	PROGRAM*	2/06	2/07	3/14 L		
EXTR	21	PROGRAM*	2/18	3/10 L			
LOG2E	36	PROGRAM*	3/22 L				
LOG2L	40	PROGRAM*	3/24 L				
LOG2U	37	PROGRAM*	3/23 L				
MESG1	25	PROGRAM*	3/12	3/18 L			
MESG2	30	PROGRAM*	3/14	3/19 L			
ONE	45	PROGRAM*	3/29 L				
P.EXP	0	PROGRAM*	2/02 E	2/05 L	3/08	3/11	3/15
P.SABRT	0	EXTERNAL*	2/03 X	3/16			
XMAX	34	PROGRAM*	2/08	3/20 L			
XMIN	35	PROGRAM*	3/21 L				

```
P.LN                                                             COMPASS 3.75286.      11/02/75  15.47.37.       PAGE      1
STORAGE ALLOCATION.

          ADDRESS   LENGTH              BINARY CONTROL CARDS.

                0       52              IDENT     P.LN
               52                       END


                              ENTRY POINTS.

                              P.LN             0+


                              EXTERNAL SYMBOLS.

                              P.SABRT
```

MOORE BUSINESS FORMS, INC. FORM 1413 PRINTED IN U.S.A.

```
                                              IDENT     P.LN
                                              ENTRY     P.LN
                                              EXT       P.SABRT

      0  00000000000000000000      P.LN       DATA      0                 ASSUME ARGUMENT X IN X1
      1  0301000022 +                         ZR        X1,ERR1
                   0351000024 +               OR        X1,ERR3
      2  0371000024 +                         ID        X1,ERR3
                   0331000023 +               NG        X1,ERR2
      3  6130777720                           SB3       -47               .TRY K=- 47
                                   *          SB1       1
                   5120000040 +               SA2       SQ2               . 1.414...*2+47
      4  26771                                UX7       B7,X1             .
              37672                           IX6       X7-X2             .
                   0336000005 +               NG        X6,GL             .
      5  67331                                SB3       B3-B1             .K = -48
      6  27737                     GL         PX7       B3,X7             .W = 2*K*C
              54521                           SA5       A2+B1             .1.0
                   31075                      FX0       X7-X5             .(W-1.0)
                        24200                 NX2       B0,X0
      7  33075                                DX0       X7-X5
              34020                           RX0       X2+X0
                   34275                      RX2       X7+X5
                        45002                 RX0       X0/X2             .(W-1.0)/(W+1.0) = T
     10  40700                                FX7       X0*X0             .Z=T*T
              54151                           SA1       A5+B1             .D0
                   54211                      SA2       A1+B1             .D1
                        54321                 SA3       A2+B1             .D2
     11  40672                                FX6       X7*X2             .Z*D1
              40577                           FX5       X7*X7             .Z*Z
                   30116                      FX1       X1+X6             .D0 + Z*D1
                        40653                 FX6       X5*X3             .D2*Z*Z
     12  40457                                FX4       X5*X7             .Z**3
              54231                           SA2       A3+B1             .D3
                   30116                      FX1       X1+X6             .D0 + D1*Z + D2*Z*Z
                        40342                 FX3       X4*X2             .D3*Z**3
     13  30113                                FX1       X1+X3             .TOTAL DENOMINATOR
              24401                           NX4       B0,X1
                   44604                      FX6       X0/X4
                        54221                 SA2       A2+B1             .C1
     14  54121                                SA1       A2+B1             .C2
              40772                           FX7       X7*X2             .C1*Z
                   40515                      FX5       X1*X5             .C2*Z**2
                        30333                 FX3       X3+X3             .2*C3*Z**3
     15  30000                                FX0       X0+X0             .2*T
              30473                           FX4       X7+X3             .C1*Z+2*C3*Z**3
                   77373                      SX3       B7-B3
                        30445                 FX4       X4+X5             .C1*Z+C2*Z**2+2*C3*Z**3
     16  27103                                PX1       X3
              40764                           FX7       X6*X4             .FINAL TERM OF Q
                   24501                      NX5       B0,X1
                        54311                 SA3       A1+B1             .LN(2.0)
     17  54231                                SA2       A3+B1
              40653                           FX6       X5*X3
                   31407                      FX4       X0-X7             .2*T-Q
                        40152                 FX1       X5*X2
     20  33507                                DX5       X0-X7
```

```
           24404                            NX4    B0,X4                                                 LN       59
                34545                       RX5    X4+X5                                                 LN       60
                     34551                  RX5    X5+X1                                                 LN       61
   21   34556                               RX5    X5+X6                                                 LN       62
           24605                            NX6    B0,X5                                                 LN       63
                0400000000 +                EQ     P.LN                                                  LN       64
                                                                                                         LN       65
   22   7100000026 +              ERR1      SX0    MESG1                                                 LN       66
                0400000025 +                EQ     ER                                                    LN       67
   23   7100000031 +              ERR2      SX0    MESG2                                                 LN       68
                0400000025 +                EQ     ER                                                    LN       69
   24   7100000034 +              ERR3      SX0    MESG3                                                 LN       70
   25   5110000000 +              ER        SA1    P.LN                                                  LN       71
                0400000000 X                EQ     P.SABRT                                               LN       72
                                                                                                         LN       73
   26   47553205221755012207      MESG1     DIS    ,≡* ZERO ARGUMENT OF LN≡                              LN       74
   31   47551605070124112605      MESG2     DIS    ,≡* NEGATIVE ARGUMENT OF LN≡                          LN       75
   34   47551116061116112405      MESG3     DIS    ,≡* INFINITE OR INDEF ARGUMENT OF LN≡                 LN       76
   40   00005520236314774736      SQ2       DATA   552023631477 4736B                                    LN       77
   41   17204000000000000000      ONE       DATA   1.0                                                   LN       78
   42   17355046600000000000      D0        DATA   10395.0                                               LN       79
   43   60421030456556304033      D1        DATA   60421030456556304033B     4.7788376999535E+03         LN       80
   44   17344525326347004201      D2        DATA   17344525326347004201B                                 LN       81
   45   60500631226367554427      D3        DATA   -230.41913039398 0937                                 LN       82
   46   60431166777777776772      C1        DATA   60431166777777776772B    -6.9300000000150E+03         LN       83
   47   17345152701555267627      C2        DATA   17345152701555267627B     5.3337566937178E+03         LN       84
   50   17175427102775750000      LOGE2     DATA   17175427102775750000B     LN(2)                       LN       85
   51   16530717363257110000                DATA   16530717363257110000B     LN(2)                       LN       86
   52                                       END                                                          LN       87

                      47400B CM  STORAGE USED          86 STATEMENTS        19 SYMBOLS
                                 MODEL 73 ASSEMBLY      0.933 SECONDS        34 REFERENCES
```

```
SYMBOLIC REFERENCE TABLE.

C1            46      PROGRAM*        3/25 L
C2            47      PROGRAM*        3/26 L
D0            42      PROGRAM*        3/21 L
D1            43      PROGRAM*        3/22 L
D2            44      PROGRAM*        3/23 L
D3            45      PROGRAM*        3/24 L
ER            25      PROGRAM*        3/09       3/11       3/13 L
ERR1          22      PROGRAM*        2/06       3/08 L
ERR2          23      PROGRAM*        2/09       3/10 L
ERR3          24      PROGRAM*        2/07       2/08       3/12 L
GL             6      PROGRAM*        2/15       2/17 L
LOGE2         50      PROGRAM*        3/27 L
MESG1         26      PROGRAM*        3/08       3/16 L
MESG2         31      PROGRAM*        3/10       3/17 L
MESG3         34      PROGRAM*        3/12       3/18 L
ONE           41      PROGRAM*        3/20 L
P.LN           0      PROGRAM*        2/02 E     2/05 L     3/06       3/13
P.SABRT        0      EXTERNAL*       2/03 X     3/14
SQ2           40      PROGRAM*        2/12       3/19 L
```

```
STORAGE ALLOCATION.

          ADDRESS   LENGTH            BINARY CONTROL CARDS.

                0       36            IDENT     P.SQRT
               36                     END

                              ENTRY POINTS.

                              P.SQRT             0+

                              EXTERNAL  SYMBOLS.

                              P.SABRT
```

```
                                              IDENT    P.SQRT
                                              ENTRY    P.SQRT
                                              EXT      P.SABRT

    0  00000000000000000000      P.SQRT       DATA     0                   ARGUMENT X IN X1
    1  0301000015 +                           ZR       X1,ZERO
                 0331000016 +                 NG       X1,ERR1
    2  0351000017 +                           OR       X1,ERR2
                 0371000017 +                 ID       X1,ERR2
                                      *       SB1      1
    3  6170777717                             SB7      -48
                 5150000030 +                 SA5      CA                  .LOAD CA
    4  27771                                  PX7      B7,X1               .W*2(-48)
            54451                             SA4      A5+B1               .LOAD CB
                 40057                        FX0      X5*X7               .CA*W
                      26531                   UX5      B3,X1               .PICK OFF N-48 AND COEFFICIENT OF W
    5  77337                                  SX3      B3-B7               .N-48 -(-48) = N = 2*K + R
            30240                             FX2      X4+X0               .CA*W + CB = INITIAL GUESS
                 23613                        AX6      X3,B1               .K = N DIV 2
                      37536                   IX5      X3-X6               .N-K
    6  40422                                  FX4      X2*X2               .B*B
            37356                             IX3      X5-X6               .N-K-K = R
                 5253000034 +                 SA5      X3+TWOR             LOAD 2.**(R/2)*2(-1)
    7  63760                                  SB7      X6                  .B7 = K
            30047                             FX0      X4+X7               .B*B + W
                 40320                        FX3      X2*X0               .B*(B*B + W) = DENOM
                      26635                   UX6      B3,X5               .
   10  66773                                  SB7      B7+B3               .INCORP K INTO EXPONENT OF 2**(R/2)*2
            27676                             PX6      B7,X6               . 2(K)*2(R/2)*2(-1)
                 24303                        NX3      B0,X3
                      44263                   FX2      X6/X3               .(2(K)*2(R/2)*2(-1) )/DENOM = TERM1
   11  40500                                  FX5      X0*X0               .(B*B + W)**2
            30777                             FX7      X7+X7               .2*W
                 30777                        FX7      X7+X7               .4*W
                      40374                   FX3      X7*X4               .4*W*B*B
   12  30735                                  FX7      X3+X5               .NUM = (B*B+W)**2 + 4*W*B*B
            40072                             FX0      X7*X2               .TERM1*NUM = 2*U
                 54541                        SA5      A4+B1               .LOAD .25
                      24000                   NX0      B0,X0
   13  44210                                  FX2      X1/X0               .ARG/(2*U)
            40350                             FX3      X5*X0               . .25*(2*U)
                 30623                        FX6      X2+X3               .SUM OF ABOVE = SQRT(ARG)
   14  0400000000 +                           EQ       P.SQRT

   15  76600                     ZERO         SX6      B0
            0400000000 +                      EQ       P.SQRT
   16  7100000021 +              ERR1         SX0      MESG1
                 0400000020 +                 EQ       ERR
   17  7100000024 +              ERR2         SX0      MESG2
   20  5110000000 +              ERR          SA1      P.SQRT
                 0400000000 X                 EQ       P.SABRT

   21  47551605070124112605      MESG1        DIS      ,Ξ* NEGATIVE ARGUMENT OF SQRTΞ
   24  47551116061116112405      MESG2        DIS      ,Ξ* INFINITE OR INDEF ARGUMENT OF SQRTΞ
   30  17174537303145255371      CA           DATA     .585786437
   31  17166564544315122611      CB           DATA     .4204951288
   32  17164000000000000001      QUART        DATA     17164000000000000001B
```

```
    33  17165520236314774504              DATA      .353553390593                        UPDATE6    52
    34  17174000000000000000    TWOR      DATA      .5                                   SQRT       59
    35  17175520236314774504              DATA      .707106781186                        SQRT       60
    36                                    END                                            SQRT       61

              47400B CM   STORAGE USED           61 STATEMENTS       12 SYMBOLS
                          MODEL 73 ASSEMBLY   0.749 SECONDS          26 REFERENCES
```

SYMBOLIC REFERENCE TABLE.

CA	30	PROGRAM*	2/12	2/55 L			
CB	31	PROGRAM*	2/56 L				
ERR	20	PROGRAM*	2/48	2/50 L			
ERR1	16	PROGRAM*	2/07	2/47 L			
ERR2	17	PROGRAM*	2/08	2/09	2/49 L		
MESG1	21	PROGRAM*	2/47	2/53 L			
MESG2	24	PROGRAM*	2/49	2/54 L			
P.SABRT	0	EXTERNAL*	2/03 X	2/51			
P.SQRT	0	PROGRAM*	2/02 E	2/05 L	2/43	2/46	2/50
QUART	32	PROGRAM*	2/57 L				
TWOR	34	PROGRAM*	2/23	3/02 L			
ZERO	15	PROGRAM*	2/06	2/45 L			

```
STORAGE ALLOCATION.

     ADDRESS   LENGTH             BINARY CONTROL CARDS.

           0       70             IDENT     P.ATAN
          70                      END

                            ENTRY POINTS.

                            P.ATAN         0+

                            EXTERNAL SYMBOLS.

                            P.SABRT
```

```
                                          IDENT    P.ATAN                                    ATAN       2
                                          ENTRY    P.ATAN                                    ATAN       3
                                          EXT      P.SABRT                                   ATAN       4
                                                                                             ATAN       5
      0  00000000000000000000   P.ATAN    DATA     0              ARGUMENT X IN X1           ATAN       6
      1  0351000033 +                     OR       X1,ERR1        TEST FOR BAD ARG           ATAN       7
                   5140000043 +           SA4      TANP1          LOAD TAN(PI/16)            ATAN       8
      2  0371000033 +                     ID       X1,ERR1                                   ATAN       9
                             *            SB1      1                                         ATAN      10
                   5120000042 +           SA2      ONE                                       ATAN      11
      3  10011                            BX0      X1                                        ATAN      12
              21173                       AX1      59                                        ATAN      13
                   6271777777             SB7      X1+777777B     SAVE SIGN IN B7            ATAN      14
      4  13310                            BX3      X1-X0          X3  =  ABS(ARG)            ATAN      15
      5  31732                  AT1       FX7       X3-X2         .X-1                       UPDATE3   19
              54541                       SA5      A4+B1          .SQ2-1= .414.....          ATAN      17
                   0327000016 +           PL       X7,LARG        .GO TO LARG IF X .GE. 1.0  ATAN      18
      6  37734                            IX7      X3-X4          .X-TAN(PI/16)              ATAN      19
              31635                       FX6      X3-X5          .X-(SQ2-1)                 ATAN      20
                   66300                  SB3      B0             .FLAG = 0                  ATAN      21
                        54551             SA5      A5+B1          .LOAD TAN(3PI/16)          ATAN      22
      7  0337000021 +                     NG       X7,NRR         .IF X .LT. TAN(PI/16)      ATAN      23
                   0326000012 +           PL       X6,T2                                     ATAN      24
     10  40734                  T1        FX7      X3*X4          .X*TAN(PI/16)              ATAN      25
              35634                       RX6      X3-X4          .X-TAN(PI/16)              ATAN      26
                   66310                  SB3      B1             .FLAG = 1                  ATAN      27
                        24006             NX0      B0,X6                                     ATAN      28
     11  34727                            RX7      X2+X7          . 1.0 + X*TAN(PI/16)       ATAN      29
              45307                       RX3      X0/X7          .DIVIDE TO GET R           ATAN      30
                   0200000021 +           JP       NRR                                       ATAN      31
     12  40735                  T2        FX7      X3*X5          .X*TAN(3PI/16)             ATAN      32
              35635                       RX6      X3-X5          .X-TAN(3PI/16)             ATAN      33
                   66311                  SB3      B1+B1          .FLAG=2                    ATAN      34
                        24006             NX0      B0,X6                                     ATAN      35
     13  34727                            RX7      X2+X7          .1.0 + X*TAN(3PI/16)       ATAN      36
              45307                       RX3      X0/X7          .DIVIDE TO GET R           ATAN      37
                   0200000021 +           JP       NRR                                       ATAN      38
     14  40734                  T4        FX7      X3*X4          .X*TAN(PI/16)              ATAN      39
              30034                       FX0      X3+X4          .X+TAN(PI/16)              ATAN      40
                   66333                  SB3      B3+B3          .FLAG = 4                  ATAN      41
                        31672             FX6      X7-X2          .X*TAN(PI/16) - 1.0        ATAN      42
     15  24506                            NX5      B0,X6          .                          ATAN      43
              44350                       FX3      X5/X0          .R                         ATAN      44
                   0200000021 +           JP       NRR            .                          ATAN      45
     16  55121                  LARG      SA1      A2-B1          .SQ2+1= 2.1414.....        ATAN      46
              54551                       SA5      A5+B1          .TAN(3PI/16)               ATAN      47
                   31031                  FX0      X3-X1          .X-(SQ2+1)                 ATAN      48
                        66311             SB3      B1+B1          .                          ATAN      49
     17  0320000014 +           T3        PL       X0,T4          .                          ATAN      50
                   40735                  FX7      X3*X5          .X*TAN(3PI/16)             ATAN      51
                        34035             RX0      X3+X5          .                          ATAN      52
     20  35672                            RX6      X7-X2          .X*TAN(3PI/16) - 1.0       ATAN      53
              24506                       NX5      B0,X6          .                          ATAN      54
                   45350                  RX3      X5/X0          .R                         ATAN      55
                        66331             SB3      B3+B1          .FLAG = 3                  ATAN      56
     21  41033                  NRR       RX0      X3*X3          .Z = R*R                   ATAN      57
              54151                       SA1      A5+B1          .DB3                       ATAN      58
```

```
              54211                  SA2    A1+B1        .DB2                         ATAN    59
                    40700            FX7    X0*X0        .Z**2                        ATAN    60
 22  40610                           FX6    X1*X0        .DB3*Z                       ATAN    61
         30562                       FX5    X6+X2        .(DB3*Z+DB2)                 ATAN    62
              54421                  SA4    A2+B1        .DB1                         ATAN    63
                    40140            FX1    X4*X0        .DB1*Z                       ATAN    64
 23  40257                           FX2    X5*X7        .  (   )*Z**2                ATAN    65
         54541                       SA5    A4+B1        .DB0                         ATAN    66
              30621                  FX6    X2+X1                                     ATAN    67
                    30165            FX1    X6+X5        .TOTAL DENOMINATOR           ATAN    68
 24  45631                           RX6    X3/X1        .R/DENOM                     ATAN    69
         54251                       SA2    A5+B1        .DA3                         ATAN    70
              40520                  FX5    X2*X0        .DA3*Z                       ATAN    71
                    54121            SA1    A2+B1        .DA2                         ATAN    72
 25  54411                           SA4    A1+B1        .DA1                         ATAN    73
         30251                       FX2    X5+X1        .(DA3*Z+DA2) = ( 2)          ATAN    74
              40772                  FX7    X7*X2        .( 2)*Z**2                   ATAN    75
                    40040            FX0    X4*X0        . DA1*Z                      ATAN    76
 26  54141                           SA1    A4+B1        .DA0                         ATAN    77
         30270                       FX2    X7+X0        .( 2)*Z**2 + DA1*Z           ATAN    78
              30212                  FX2    X1+X2        .DA0 + ABOVE                 ATAN    79
                    41762            RX7    X6*X2        .REST OF SERIES              ATAN    80
 27  35237                           RX2    X3-X7        .ATAN(R)                     ATAN    81
         5143000056 +                SA4    CORO+B3      .LOAD CORRECTION TERM 1      ATAN    82
 30  5014000005                      SA1    A4+5         .LOAD CORRECTION TERM 2      ATAN    83
              24202                  NX2    B0,X2        .                            ATAN    84
                    34524            RX5    X2+X4        .                            ATAN    85
 31  24405                           NX4    B0,X5        .                            ATAN    86
         34541                       RX5    X4+X1        .                            ATAN    87
              24305                  NX3    B0,X5        .                            ATAN    88
                    77270            SX2    B7-B0                                     ATAN    89
 32  13632                           BX6    X3-X2        .SIGN(ARG)*ATAN(ABS(ARG)  )  ATAN    90
         0400000000 +                EQ     P.ATAN                                    ATAN    91
                                                                                      ATAN    92
 33  7100000035 +           ERR1     SX0    MESG1                                     ATAN    93
              5110000000 +           SA1    P.ATAN                                    ATAN    94
 34  0400000000 X                    EQ     P.SABRT                                   ATAN    95
                                                                                      ATAN    96
 35  47551116061116112405   MESG1    DIS    ,≡* INFINITE OR INDEF ARGUMENT OF ATAN≡   ATAN    97
 41  17214650116717422377   SQ2PI    DATA   2.414213                                  ATAN    98
 42  17204000000000000000   ONE      DATA   1.0                                       ATAN    99
 43  17156272765700524613   TANP1    DATA   17156272765700524613B                     ATAN   100
 44  17166501167174223766   SQ2M1    DATA   .414213                                   ATAN   101
 45  17175260670125337715   TAN3P    DATA   17175260670125337715B                     ATAN   102
 46  17355170257740451612   DB3      DATA   17355170257740451612B                     ATAN   103
 47  17405760164664461126   DB2      DATA   17405760164664461126B                     ATAN   104
 50  17416476573535613424   DB1      DATA   17416476573535613424B                     ATAN   105
 51  17414077370000000000   DB0      DATA   17414077370000000000B                     ATAN   106
 52  17354115643217650102   DA3      DATA   17354115643217650102B                     ATAN   107
 53  17375417632175023115   DA2      DATA   17375417632175023115B                     ATAN   108
 54  17375377237777777770   DA1      DATA   17375377237777777770B                     ATAN   109
 55  16507544514504101314   DA0      DATA   16507544514504101314B                     ATAN   110
 56  00000000000000000000   CORO     DATA   0.0                                       ATAN   111
 57  16366000000000000000            DATA   16366000000000000000B                     ATAN   112
 60  17156220773250420550            DATA   17156220773250420550B                     ATAN   113
 61  17167665172122524702            DATA   17167665172122524702B                     ATAN   114
 62  17175376673723356473            DATA   17175376673723356473B                     ATAN   115
```

```
      63  00000000000000000000             DATA      0.0                                             ATAN        116
      64  17156220773250420550             DATA      17156220773250420550B                           ATAN        117
      65  17166220773250420551             DATA      17166220773250420551B                           ATAN        118
      66  17167665172122524703             DATA      17167665172122524703B                           ATAN        119
      67  17175376673723356474             DATA      17175376673723356474B                           ATAN        120
      70                                   END                                                       ATAN        121

                     46400B CM   STORAGE USED           120 STATEMENTS        25 SYMBOLS
                                 MODEL 73 ASSEMBLY    1.139 SECONDS           42 REFERENCES
```

SYMBOLIC REFERENCE TABLE.

AT1	5	PROGRAM*	2/15 L				
CORO	56	PROGRAM*	3/24	3/53 L			
DA0	55	PROGRAM*	3/52 L				
DA1	54	PROGRAM*	3/51 L				
DA2	53	PROGRAM*	3/50 L				
DA3	52	PROGRAM*	3/49 L				
DB0	51	PROGRAM*	3/48 L				
DB1	50	PROGRAM*	3/47 L				
DB2	47	PROGRAM*	3/46 L				
DB3	46	PROGRAM*	3/45 L				
ERR1	33	PROGRAM*	2/06	2/08	3/35 L		
LARG	16	PROGRAM*	2/17	2/45 L			
MESG1	35	PROGRAM*	3/35	3/39 L			
NRR	21	PROGRAM*	2/22	2/30	2/37	2/44	2/56 L
ONE	42	PROGRAM*	2/10	3/41 L			
P.ATAN	0	PROGRAM*	2/02 E	2/05 L	3/33	3/36	
P.SABRT	0	EXTERNAL*	2/03 X	3/37			
SQ2M1	44	PROGRAM*	3/43 L				
SQ2PI	41	PROGRAM*	3/40 L				
TANP1	43	PROGRAM*	2/07	3/42 L			
TAN3P	45	PROGRAM*	3/44 L				
T1	10	PROGRAM*	2/24 L				
T2	12	PROGRAM*	2/23	2/31 L			
T3	17	PROGRAM*	2/49 L				
T4	14	PROGRAM*	2/38 L	2/49			

```
000006 PROGRAM COMPXREF( DUMMY1,OUTPUT,DUMMY2,XREFFIL ) ;
000235 (*$T- COMPILE WITHOUT RUN-TIME TESTS*)
000235 (*$P- COMPILE WITHOUT PMD INFORMATION*)
000235 TYPE
000235      SETOFERR = SET OF 0..49 ;
000235 VAR
000235       XREFFIL : SEGMENTED FILE OF PACKED RECORD
000235          LNO : 0..99 ;  PNO : 0..999 ;
000235          CASE ERRORREF : BOOLEAN OF
000235          FALSE:( AVAL : ALFA ) ;
000235          TRUE:( ENO : 0..400 ) ;
000235       END ;
000451       DUMMY1,DUMMY2 : FILE OF INTEGER ;
001077       LDATE,LTIME,LISTNAME : ALFA ;
001102       PAGECOUNT : INTEGER ;
001103       ERRORS : BOOLEAN ;
001104
001104
000003 PROCEDURE ER000TO049( FI : INTEGER ) ;
000004
000004 CONST
000004      LLO = 000 ;
000004      LHI = 049 ;
000004
000004 VAR
000004      LI : INTEGER ;
000005      LSET : SETOFERR ;
000006
000006 BEGIN
000006      LI := FI ;  LSET := [ 001..021 ] ;  (*001..021*)
000010      IF NOT ( LI-LLO IN LSET ) THEN
000012      BEGIN
000012           WRITE( LI : 5,≡:  ≡ ) ;
000023           WRITE( ≡UNDEFINED ERROR NUMBER.≡ ) ;
000030      END
000030      ELSE
000031      BEGIN
000031           WRITE( LI : 5,≡:  ≡ ) ;
000042           CASE LI-LLO OF
000044 (*001*)   001: WRITE( ≡ERROR IN SIMPLE TYPE.≡ ) ;
000052 (*002*)   002: WRITE( ≡IDENTIFIER EXPECTED.≡ ) ;
000060 (*003*)   003: WRITE( ≡≡≡PROGRAM≡≡ EXPECTED.≡ ) ;
000066 (*004*)   004: WRITE( ≡≡≡)≡≡ EXPECTED.≡ ) ;
000074 (*005*)   005: WRITE( ≡≡≡:≡≡ EXPECTED.≡ ) ;
000102 (*006*)   006: WRITE( ≡ILLEGAL SYMBOL.≡ ) ;
000110 (*007*)   007: WRITE( ≡ERROR IN PARAMETER LIST.≡ ) ;
000116 (*008*)   008: WRITE( ≡≡≡OF≡≡ EXPECTED.≡ ) ;
000124 (*009*)   009: WRITE( ≡≡≡(≡≡ EXPECTED.≡ ) ;
000132 (*010*)   010: WRITE( ≡ERROR IN TYPE.≡ ) ;
000140 (*011*)   011: WRITE( ≡≡≡[≡≡ EXPECTED.≡ ) ;
000146 (*012*)   012: WRITE( ≡≡≡]≡≡ EXPECTED.≡ ) ;
000154 (*013*)   013: WRITE( ≡≡≡END≡≡ EXPECTED.≡ ) ;
000162 (*014*)   014: WRITE( ≡≡≡;≡≡ EXPECTED.≡ ) ;
000170 (*015*)   015: WRITE( ≡INTEGER EXPECTED.≡ ) ;
000176 (*016*)   016: WRITE( ≡≡≡=≡≡ EXPECTED.≡ ) ;
000204 (*017*)   017: WRITE( ≡≡≡BEGIN≡≡ EXPECTED.≡ ) ;
```

```
000212 (*018*)    018: WRITE( ≡ERROR IN DECLARATION PART.≡ ) ;            COMPXREF   59
000220 (*019*)    019: WRITE( ≡ERROR IN FIELD-LIST.≡ ) ;                  COMPXREF   60
000226 (*020*)    020: WRITE( ≡≡≡,≡≡ EXPECTED.≡ ) ;                       COMPXREF   61
000234 (*021*)    021: WRITE( ≡≡≡*≡≡ EXPECTED.≡ ) ;                       COMPXREF   62
000242            END ;                                                   COMPXREF   63
000267        END ;                                                       COMPXREF   64
000267 END ;                                                              COMPXREF   65
000355                                                                    COMPXREF   66
000355                                                                    COMPXREF   67
000003 PROCEDURE ER050TO099( FI : INTEGER ) ;                             COMPXREF   68
000004                                                                    COMPXREF   69
000004 CONST                                                              COMPXREF   70
000004        LLO = 50 ;                                                  COMPXREF   71
000004        LHI = 99 ;                                                  COMPXREF   72
000004                                                                    COMPXREF   73
000004 VAR                                                                COMPXREF   74
000004        LI : INTEGER ;                                              COMPXREF   75
000005        LSET : SETOFERR ;                                           COMPXREF   76
000006                                                                    COMPXREF   77
000006 BEGIN                                                              COMPXREF   78
000006        LI := FI ;  LSET := [ 000..009 ] ;   (*050..059*)           COMPXREF   79
000010        IF NOT ( LI-LLO IN LSET ) THEN                              COMPXREF   80
000012        BEGIN                                                       COMPXREF   81
000012            WRITE( LI : 5,≡:  ≡ ) ;                                 COMPXREF   82
000023            WRITE( ≡UNDEFINED ERROR NUMBER.≡ ) ;                    COMPXREF   83
000030        END                                                         COMPXREF   84
000030        ELSE                                                        COMPXREF   85
000031        BEGIN                                                       COMPXREF   86
000031            WRITE( LI : 5,≡:  ≡ ) ;                                 COMPXREF   87
000042            CASE LI-LLO OF                                          COMPXREF   88
000044 (*050*)    000: WRITE( ≡ERROR IN CONSTANT.≡ ) ;                    COMPXREF   89
000052 (*051*)    001: WRITE( ≡≡≡:=≡≡ EXPECTED.≡ ) ;                      COMPXREF   90
000060 (*052*)    002: WRITE( ≡≡≡THEN≡≡ EXPECTED.≡ ) ;                    COMPXREF   91
000066 (*053*)    003: WRITE( ≡≡≡UNTIL≡≡ EXPECTED.≡ ) ;                   COMPXREF   92
000074 (*054*)    004: WRITE( ≡≡≡DO≡≡ EXPECTED.≡ ) ;                      COMPXREF   93
000102 (*055*)    005: WRITE( ≡≡≡TO≡≡/≡≡DOWNTO≡≡ EXPECTED.≡ ) ;           COMPXREF   94
000110 (*056*)    006: WRITE( ≡≡≡IF≡≡ EXPECTED.≡ ) ;                      COMPXREF   95
000116 (*057*)    007: WRITE( ≡≡≡FILE≡≡ EXPECTED.≡ ) ;                    COMPXREF   96
000124 (*058*)    008: WRITE( ≡ERROR IN FACTOR.≡ ) ;                      COMPXREF   97
000132 (*059*)    009: WRITE( ≡ERROR IN VARIABLE.≡ ) ;                    COMPXREF   98
000140            END ;                                                   COMPXREF   99
000152        END ;                                                       COMPXREF  100
000152 END ;                                                              COMPXREF  101
000207                                                                    COMPXREF  102
000207                                                                    COMPXREF  103
000003 PROCEDURE ER100TO149( FI : INTEGER ) ;                             COMPXREF  104
000004                                                                    COMPXREF  105
000004 CONST                                                              COMPXREF  106
000004        LLO = 100 ;                                                 COMPXREF  107
000004        LHI = 149 ;                                                 COMPXREF  108
000004                                                                    COMPXREF  109
000004 VAR                                                                COMPXREF  110
000004        LI : INTEGER ;                                              COMPXREF  111
000005        LSET : SETOFERR ;                                           COMPXREF  112
000006                                                                    COMPXREF  113
000006 BEGIN                                                              COMPXREF  114
```

```
000006       LI := FI ;  LSET := [ 001..049 ] ;   (*101..149*)                    COMPXREF  115
000010       IF NOT ( LI-LLO IN LSET ) THEN                                        COMPXREF  116
000012       BEGIN                                                                 COMPXREF  117
000012            WRITE( LI : 5,≡:   ≡ ) ;                                         COMPXREF  118
000023            WRITE( ≡UNDEFINED ERROR NUMBER.≡ ) ;                             COMPXREF  119
000030       END                                                                   COMPXREF  120
000030       ELSE                                                                  COMPXREF  121
000031       BEGIN                                                                 COMPXREF  122
000031            WRITE( LI : 5,≡:   ≡ ) ;                                         COMPXREF  123
000042            CASE LI-LLO OF                                                   COMPXREF  124
000044 (*101*)    001: WRITE( ≡IDENTIFIER DECLARED TWICE.≡ ) ;                     COMPXREF  125
000052 (*102*)    002: WRITE( ≡LOW BOUND EXCEEDS HIGH BOUND.≡ ) ;                  COMPXREF  126
000060 (*103*)    003: WRITE( ≡IDENTIFIER IS NOT OF APPROPRIATE CLASS.≡ ) ;        COMPXREF  127
000066 (*104*)    004: WRITE( ≡IDENTIFIER NOT DECLARED.≡ ) ;                       COMPXREF  128
000074 (*105*)    005: WRITE( ≡SIGN NOT ALLOWED.≡ ) ;                              COMPXREF  129
000102 (*106*)    006: WRITE( ≡NUMBER EXPECTED.≡ ) ;                               COMPXREF  130
000110 (*107*)    007: WRITE( ≡INCOMPATIBLE SUBRANGE TYPE.≡ ) ;                    COMPXREF  131
000116 (*108*)    008: WRITE( ≡FILE NOT ALLOWED HERE.≡ ) ;                         COMPXREF  132
000124 (*109*)    009: WRITE( ≡TYPE MUST NOT BE REAL.≡ ) ;                         COMPXREF  133
000132 (*110*)    010: WRITE( ≡TAGFIELD TYPE MUST BE SCALAR OR SUBRANGE.≡ ) ;      COMPXREF  134
000140 (*111*)    011: WRITE( ≡INCOMPATIBLE WITH TAGFIELD TYPE.≡ ) ;               COMPXREF  135
000146 (*112*)    012: WRITE( ≡INDEX TYPE MUST NOT BE REAL.≡ ) ;                   COMPXREF  136
000154 (*113*)    013: WRITE( ≡INDEX TYPE MUST BE SCALAR OR SUBRANGE.≡ ) ;         COMPXREF  137
000162 (*114*)    014: WRITE( ≡BASE TYPE MUST NOT BE REAL.≡ ) ;                    COMPXREF  138
000170 (*115*)    015: WRITE( ≡BASE TYPE MUST BE SCALAR OR SUBRANGE.≡ ) ;          COMPXREF  139
000176 (*116*)    016: WRITE( ≡ERROR IN TYPE OF STANDARD PROCEDURE PARAMETER.≡     COMPXREF  140
000176                       ) ;                                                   COMPXREF  141
000204 (*117*)    017: WRITE( ≡UNSATISFIED FORWARD REFERENCE.≡ ) ;                 COMPXREF  142
000212 (*118*)    018: WRITE( ≡FORWARD REFERENCE TYPE IDENTIFIER IN VARIABLE ≡,    COMPXREF  143
000217                       ≡DECLARATION.≡ ) ;                                    COMPXREF  144
000225 (*119*)    019: WRITE( ≡FORWARD DECLARED; REPETITION OF PARAMETER LIST ≡,   COMPXREF  145
000232                       ≡NOT ALLOWED.≡ ) ;                                    COMPXREF  146
000240 (*120*)    020: WRITE( ≡FUNCTION RESULT TYPE MUST BE SCALAR, SUBRANGE ≡,    COMPXREF  147
000245                       ≡OR POINTER.≡ ) ;                                     COMPXREF  148
000253 (*121*)    021: WRITE( ≡FILE VALUE PARAMETER NOT ALLOWED.≡ ) ;              COMPXREF  149
000261 (*122*)    022: WRITE( ≡FORWARD DECLARED FUNCTION; REPETITION OF ≡,         COMPXREF  150
000266                       ≡RESULT TYPE NOT ALLOWED.≡ ) ;                        COMPXREF  151
000274 (*123*)    023: WRITE( ≡MISSING RESULT TYPE IN FUNCTION DECLARATION.≡       COMPXREF  152
000274                       ) ;                                                   COMPXREF  153
000302 (*124*)    024: WRITE( ≡F-FORMAT FOR REAL ONLY.≡ ) ;                        COMPXREF  154
000310 (*125*)    025: WRITE( ≡ERROR IN TYPE OF STANDARD FUNCTION PARAMETER.≡      COMPXREF  155
000310                       ) ;                                                   COMPXREF  156
000316 (*126*)    026: WRITE( ≡NUMBER OF PARAMETERS DOES NOT AGREE WITH ≡,         COMPXREF  157
000323                       ≡DECLARATION.≡ ) ;                                    COMPXREF  158
000331 (*127*)    027: WRITE( ≡ILLEGAL PARAMETER SUBSTITUTION.≡ ) ;                COMPXREF  159
000337 (*128*)    028: WRITE( ≡RESULT TYPE OF PARAMETER FUNCTION DOES NOT ≡,       COMPXREF  160
000344                       ≡AGREE WITH DECLARATION.≡ ) ;                         COMPXREF  161
000352 (*129*)    029: WRITE( ≡TYPE CONFLICT OF OPERANDS.≡ ) ;                     COMPXREF  162
000360 (*130*)    030: WRITE( ≡EXPRESSION IS NOT OF SET TYPE.≡ ) ;                 COMPXREF  163
000366 (*131*)    031: WRITE( ≡TESTS ON EQUALITY ALLOWED ONLY.≡ ) ;                COMPXREF  164
000374 (*132*)    032: WRITE( ≡STRICT INCLUSION NOT ALLOWED.≡ ) ;                  COMPXREF  165
000402 (*133*)    033: WRITE( ≡FILE COMPARISION NOT ALLOWED.≡ ) ;                  COMPXREF  166
000410 (*134*)    034: WRITE( ≡ILLEGAL TYPE OF OPERAND(S).≡ ) ;                    COMPXREF  167
000416 (*135*)    035: WRITE( ≡TYPE OF OPERAND MUST BE BOOLEAN.≡ ) ;               COMPXREF  168
000424 (*136*)    036: WRITE( ≡SET ELEMENT TYPE MUST BE SCALAR OR SUBRANGE.≡       COMPXREF  169
000424                       ) ;                                                   COMPXREF  170
```

```
000432 (*137*)     037: WRITE( ≡SET ELEMENT TYPES NOT COMPATIBLE.≡ ) ;               COMPXREF
000440 (*138*)     038: WRITE( ≡TYPE OF VARIABLE IS NOT ARRAY.≡ ) ;                  COMPXREF
000446 (*139*)     039: WRITE( ≡INDEX TYPE IS NOT COMPATIBLE WITH ≡,                 COMPXREF
000453                     ≡DECLARATION.≡ ) ;                                        COMPXREF
000461 (*140*)     040: WRITE( ≡TYPE OF VARIABLE IS NOT RECORD.≡ ) ;                 COMPXREF
000467 (*141*)     041: WRITE( ≡TYPE OF VARIABLE MUST BE FILE OR POINTER.≡ ) ;       COMPXREF
000475 (*142*)     042: WRITE( ≡ILLEGAL PARAMETER SUBSTITUTION.≡ ) ;                 COMPXREF
000503 (*143*)     043: WRITE( ≡ILLEGAL TYPE OF LOOP CONTROL VARIABLE.≡ ) ;          COMPXREF
000511 (*144*)     044: WRITE( ≡ILLEGAL TYPE OF EXPRESSION.≡ ) ;                     COMPXREF
000517 (*145*)     045: WRITE( ≡TYPE CONFLICT.≡ ) ;                                  COMPXREF
000525 (*146*)     046: WRITE( ≡ASSIGNMENT OF FILES NOT ALLOWED.≡ ) ;                COMPXREF
000533 (*147*)     047: WRITE( ≡LABEL TYPE INCOMPATIBLE WITH SELECTING ≡,            COMPXREF
000540                     ≡EXPRESSION.≡ ) ;                                         COMPXREF
000546 (*148*)     048: WRITE( ≡SUBRANGE BOUNDS MUST BE SCALAR.≡ ) ;                 COMPXREF
000554 (*149*)     049: WRITE( ≡INDEX TYPE MUST NOT BE INTEGER.≡ ) ;                 COMPXREF
000562             END ;                                                             COMPXREF
000643         END ;                                                                 COMPXREF
000643 END ;                                                                         COMPXREF
001157                                                                               COMPXREF
001157                                                                               COMPXREF
000003 PROCEDURE ER150T0199( FI : INTEGER ) ;                                        COMPXREF
000004                                                                               COMPXREF
000004 CONST                                                                         COMPXREF
000004         LLO = 150 ;                                                           COMPXREF
000004         LHI = 199 ;                                                           COMPXREF
000004                                                                               COMPXREF
000004 VAR                                                                           COMPXREF
000004         LI : INTEGER ;                                                        COMPXREF
000005         LSET : SETOFERR ;                                                     COMPXREF
000006                                                                               COMPXREF
000006 BEGIN                                                                         COMPXREF
000006         LI := FI ;  LSET := [ 000..028 ] ;   (*150..178*)                     COMPXREF
000010         IF NOT ( LI-LLO IN LSET ) THEN                                        COMPXREF
000012         BEGIN                                                                 COMPXREF
000012             WRITE( LI : 5,≡:   ≡ ) ;                                          COMPXREF
000023             WRITE( ≡UNDEFINED ERROR NUMBER.≡ ) ;                              COMPXREF
000030         END                                                                   COMPXREF
000030         ELSE                                                                  COMPXREF
000031         BEGIN                                                                 COMPXREF
000031             WRITE( LI : 5,≡:   ≡ ) ;                                          COMPXREF
000042             CASE LI-LLO OF                                                    COMPXREF
000044 (*150*)     000: WRITE( ≡ASSIGNMENT TO STANDARD FUNCTION IS NOT ALLOWED.≡     COMPXREF
000044                     ) ;                                                       COMPXREF
000052 (*151*)     001: WRITE( ≡ASSIGNMENT TO FORMAL FUNCTION IS NOT ALLOWED.≡       COMPXREF
000052                     ) ;                                                       COMPXREF
000060 (*152*)     002: WRITE( ≡NO SUCH FIELD IN THIS RECORD.≡ ) ;                   COMPXREF
000066 (*153*)     003: WRITE( ≡TYPE ERROR IN READ.≡ ) ;                             COMPXREF
000074 (*154*)     004: WRITE( ≡ACTUAL PARAMETER MUST BE A VARIABLE.≡ ) ;            COMPXREF
000102 (*155*)     005: WRITE( ≡CONTROL VARIABLE MUST NOT BE FORMAL.≡ ) ;            COMPXREF
000110 (*156*)     006: WRITE( ≡MULTIDEFINED CASE LABEL.≡ ) ;                        COMPXREF
000116 (*157*)     007: WRITE( ≡TOO MANY CASES IN CASE STATEMENT.≡ ) ;               COMPXREF
000124 (*158*)     008: WRITE( ≡MISSING CORRESPONDING VARIANT DECLARATION.≡ ) ;      COMPXREF
000132 (*159*)     009: WRITE( ≡REAL OR STRING TAGFIELDS NOT ALLOWED.≡ ) ;           COMPXREF
000140 (*160*)     010: WRITE( ≡PREVIOUS DECLARATION WAS NOT FORWARD.≡ ) ;           COMPXREF
000146 (*161*)     011: WRITE( ≡AGAIN FORWARD DECLARED.≡ ) ;                         COMPXREF
000154 (*162*)     012: WRITE( ≡PARAMETER SIZE MUST BE CONSTANT.≡ ) ;                COMPXREF
```

```
000152 (*163*)     013: WRITE( ≡MISSING VARIANT IN DECLARATION.≡ ) ;
000170 (*164*)     014: WRITE( ≡SUBSTITUTION OF STANDARD PROC/FUNC NOT ALLOWED.≡
000170                     ) ;
000176 (*165*)     015: WRITE( ≡MULTIDEFINED LABEL.≡ ) ;
000204 (*166*)     016: WRITE( ≡MULTIDECLARED LABEL.≡ ) ;
000212 (*167*)     017: WRITE( ≡UNDECLARED LABEL.≡ ) ;
000220 (*168*)     018: WRITE( ≡UNDEFINED LABEL.≡ ) ;
000226 (*169*)     019: WRITE( ≡ERROR IN BASE SET.≡ ) ;
000234 (*170*)     020: WRITE( ≡VALUE PARAMETER EXPECTED.≡ ) ;
000242 (*171*)     021: WRITE( ≡STANDARD FILE WAS REDECLARED.≡ ) ;
000250 (*172*)     022: WRITE( ≡UNDECLARED EXTERNAL FILE.≡ ) ;
000256 (*173*)     023: WRITE( ≡FORTRAN PROCEDURE OR FUNCTION EXPECTED.≡ ) ;
000264 (*174*)     024: WRITE( ≡PASCAL PROCEDURE OR FUNCTION EXPECTED.≡ ) ;
000272 (*175*)     025: WRITE( ≡MISSING FILE ≡≡INPUT≡≡ IN PROGRAM HEADING.≡ ) ;
000300 (*176*)     026: WRITE( ≡MISSING FILE ≡≡OUTPUT≡≡ IN PROGRAM HEADING.≡ ) ;
000306 (*177*)     027: WRITE( ≡ASSIGNMENT TO NON-LOCAL FUNCTION IS NOT ≡,
000313                     ≡ALLOWED.≡ ) ;
000321 (*178*)     028: WRITE( ≡ONLY ONE TRAP LABEL ALLOWED PER LABEL ≡,
000326                     ≡DECLARATION.≡ ) ;
000334             END ;
000371         END ;
000371 END ;
000554
000554
000003 PROCEDURE ER200TO249( FI : INTEGER ) ;
000004
000004 CONST
000004         LLO = 200 ;
000004         LHI = 249 ;
000004
000004 VAR
000004         LI : INTEGER ;
000005         LSET : SETOFERR ;
000006
000006 BEGIN
000006         LI := FI ;  LSET := [ 001..004 ] ;   (*201..204*)
000010         IF NOT ( LI-LLO IN LSET ) THEN
000012         BEGIN
000012             WRITE( LI : 5,≡:   ≡ ) ;
000023             WRITE( ≡UNDEFINED ERROR NUMBER.≡ ) ;
000030         END
000030         ELSE
000031         BEGIN
000031             WRITE( LI : 5,≡:   ≡ ) ;
000042             CASE LI-LLO OF
000044 (*201*)     001: WRITE( ≡ERROR IN REAL CONSTANT: DIGIT EXPECTED.≡ ) ;
000052 (*202*)     002: WRITE( ≡STRING CONSTANT MUST NOT EXCEED SOURCE LINE.≡
000052                     ) ;
000060 (*203*)     003: WRITE( ≡INTEGER CONSTANT EXCEEDS RANGE.≡ ) ;
000066 (*204*)     004: WRITE( ≡8 OR 9 IN OCTAL NUMBER.≡ ) ;
000074             END ;
000100         END ;
000100 END ;
000130
000130
000003 PROCEDURE ER250TO299( FI : INTEGER ) ;
```

```
000004
000004 CONST
000004      LLO = 250 ;
000004      LHI = 299 ;
000004
000004 VAR
000004      LI : INTEGER ;
000005      LSET : SETOFERR ;
000006
000006 BEGIN
000006      LI := FI ;  LSET := [ 000..009 ] ;   (*250..259*)
000010      IF NOT ( LI-LLO IN LSET ) THEN
000012      BEGIN
000012           WRITE( LI : 5,≡:   ≡ ) ;
000023           WRITE( ≡UNDEFINED ERROR NUMBER.≡ ) ;
000030      END
000030      ELSE
000031      BEGIN
000031           WRITE( LI : 5,≡:   ≡ ) ;
000042           CASE LI-LLO OF
000044 (*250*)   000: WRITE( ≡TOO MANY NESTED SCOPES OF IDENTIFIERS.≡ ) ;
000052 (*251*)   001: WRITE( ≡TOO MANY NESTED PROCEDURES AND/OR FUNCTIONS.≡
000052                       ) ;
000060 (*252*)   002: WRITE( ≡TOO MANY FORWARD REFERENCES OF PROCEDURE ≡,
000065                       ≡ENTRIES.≡ ) ;
000073 (*253*)   003: WRITE( ≡PROCEDURE TOO LONG.≡ ) ;
000101 (*254*)   004: WRITE( ≡TOO MANY LONG CONSTANTS IN THIS PROCEDURE.≡ ) ;
000107 (*255*)   005: WRITE( ≡TOO MANY ERRORS ON THIS SOURCE LINE.≡ ) ;
000115 (*256*)   006: WRITE( ≡TOO MANY EXTERNAL REFERENCES.≡ ) ;
000123 (*257*)   007: WRITE( ≡TOO MANY EXTERNALS.≡ ) ;
000131 (*258*)   008: WRITE( ≡TOO MANY LOCAL FILES.≡ ) ;
000137 (*259*)   009: WRITE( ≡EXPRESSION TOO COMPLICATED.≡ ) ;
000145           END ;
000157      END ;
000157 END ;
000234
000234
000003 PROCEDURE ER300TO349( FI : INTEGER ) ;
000004
000004 CONST
000004      LLO = 300 ;
000004      LHI = 349 ;
000004
000004 VAR
000004      LI : INTEGER ;
000005      LSET : SETOFERR ;
000006
000006 BEGIN
000006      LI := FI ;  LSET := [ 000..004 ] ;   (*300..304*)
000010      IF NOT ( LI-LLO IN LSET ) THEN
000012      BEGIN
000012           WRITE( LI : 5,≡:   ≡ ) ;
000023           WRITE( ≡UNDEFINED ERROR NUMBER.≡ ) ;
000030      END
000030      ELSE
000031      BEGIN
```

```
000031              WRITE( LI : 5,≡:  ≡ ) ;                                                     COMPXREF  339
000042              CASE LI-LLO OF                                                              COMPXREF  340
000044 (*300*)      000: WRITE( ≡DIVISION BY ZERO.≡ ) ;                                         COMPXREF  341
000052 (*301*)      001: WRITE( ≡NO CASE PROVIDED FOR THIS VALUE.≡ ) ;                          COMPXREF  342
000060 (*302*)      002: WRITE( ≡INDEX EXPRESSION OUT OF BOUNDS.≡ ) ;                           COMPXREF  343
000066 (*303*)      003: WRITE( ≡VALUE TO BE ASSIGNED IS OUT OF BOUNDS.≡ ) ;                    COMPXREF  344
000074 (*304*)      004: WRITE( ≡ELEMENT EXPRESSION OUT OF RANGE.≡ ) ;                          COMPXREF  345
000102              END ;                                                                       COMPXREF  346
000107          END ;                                                                           COMPXREF  347
000107 END ;                                                                                    COMPXREF  348
000141                                                                                          COMPXREF  349
000141                                                                                          COMPXREF  350
000003 PROCEDURE ER350TO399( FI : INTEGER ) ;                                                   COMPXREF  351
000004                                                                                          COMPXREF  352
000004 CONST                                                                                    COMPXREF  353
000004          LLO = 350 ;                                                                     COMPXREF  354
000004          LHI = 399 ;                                                                     COMPXREF  355
000004                                                                                          COMPXREF  356
000004 VAR                                                                                      COMPXREF  357
000004          LI : INTEGER ;                                                                  COMPXREF  358
000005          LSET : SETOFERR ;                                                               COMPXREF  359
000006                                                                                          COMPXREF  360
000006 BEGIN                                                                                    COMPXREF  361
000006          LI := FI ;  LSET := [ 048..049 ] ;   (*398..399*)                               COMPXREF  362
000010          IF NOT ( LI-LLO IN LSET ) THEN                                                  COMPXREF  363
000012          BEGIN                                                                           COMPXREF  364
000012              WRITE( LI : 5,≡:  ≡ ) ;                                                     COMPXREF  365
000023              WRITE( ≡UNDEFINED ERROR NUMBER.≡ ) ;                                        COMPXREF  366
000030          END                                                                             COMPXREF  367
000030          ELSE                                                                            COMPXREF  368
000031          BEGIN                                                                           COMPXREF  369
000031              WRITE( LI : 5,≡:  ≡ ) ;                                                     COMPXREF  370
000042              CASE LI-LLO OF                                                              COMPXREF  371
000044 (*398*)      048: WRITE( ≡IMPLEMENTATION RESTRICTION.≡ ) ;                               COMPXREF  372
000052 (*399*)      049: WRITE( ≡VARIABLE DIMENSION ARRAYS NO IMPLEMENTED.≡ ) ;                 COMPXREF  373
000060              END ;                                                                       COMPXREF  374
000062          END ;                                                                           COMPXREF  375
000062 END ;                                                                                    COMPXREF  376
000103                                                                                          COMPXREF  377
000103                                                                                          COMPXREF  378
000003 PROCEDURE XREF ;                                                                         COMPXREF  379
000003 (*CROSS REFERENCE GENERATOR FOR PASCAL PROGRAMS.  N.WIRTH, 7.5.74*)                      COMPXREF  380
000003 (*≡QUADRATIC QUOTIENT≡ HASH METHOD*)                                                     COMPXREF  381
000003      LABEL 99;                                                                           COMPXREF  382
000003      CONST P = 1499;            (*SIZE OF HASHTABLE*)                                    COMPXREF  383
000003         LINESPERPAGE = 56 ;                                                              COMPXREF  384
000003         EMPTY = ≡          ≡;                                                            COMPXREF  385
000003      TYPE INDEX = 0..P;                                                                  COMPXREF  386
000003         REF = ↑ITEM;                                                                     COMPXREF  387
000003         WORD = PACKED RECORD                                                             COMPXREF  388
000003                       KEY : ALFA ;                                                       COMPXREF  389
000003                       FIRST, LAST: REF;                                                  COMPXREF  390
000003                       ERRORREF : BOOLEAN ;                                               COMPXREF  391
000003                       FOL: INDEX                                                         COMPXREF  392
000003                END ;                                                                     COMPXREF  393
000003         ITEM = PACKED RECORD                                                             COMPXREF  394
```

```
000003                      NOCC : 0..99 ;
000003                      LNO : 0..99 ;  PNO : 0..999 ;
000003                      NEXT: REF
000003                 END ;
000003        VAR I,TOP: INDEX;       (*TOP OF CHAIN LINKING ALL ENTRIES IN T*)
000005           CTIME : INTEGER ;
000006           LINENO,PAGENO : INTEGER ;
000010           XREFLINES : INTEGER ;
000011           TOV : BOOLEAN ;
000012           C1, C2: INTEGER;    (*FREQUENCY COUNTERS*)
000014           ID: RECORD CASE BOOLEAN OF
000014                    FALSE: (A: ALFA); TRUE: (ORD: INTEGER)
000014              END ;
000015           T: ARRAY [INDEX] OF WORD;          (*HASH TABLE*)
005705           TITLESTR : PACKED ARRAY[ 1..27 ] OF CHAR ;
005710           ERRORTAB : ARRAY[ 0..400 ] OF WORD ;
007352           E1,E2 : INTEGER ;
007354           ERRORNO : INTEGER ;
007355
000003        PROCEDURE CTIMEOUT ;
000003        VAR  CTIMEMSG : PACKED ARRAY[ 1..40 ] OF CHAR ;  I,J : INTEGER ;
000011           BEGIN  CTIMEMSG := ≡-     S.MMM CP SECONDS CROSS REF. TIME    ≡ ;
000012           FOR I := 0 TO 2 DO
000012           BEGIN  J := CTIME ;  CTIME := CTIME DIV 10 ;
000020              CTIMEMSG[ 10-I ] := CHR( ORD( ≡0≡ )+J-10*CTIME ) ;
000033           END ;
000034           I := 4 ;
000035           REPEAT  J := CTIME ;  CTIME := CTIME DIV 10 ;
000042              CTIMEMSG[ 10-I ] := CHR( ORD( ≡0≡ )+J-10*CTIME ) ;
000055              I := I+1 ;
000056           UNTIL ( CTIME = 0 ) OR ( I = 9 ) ;
000061           IF I = 9 THEN CTIMEMSG[ 2 ] := ≡*≡ ;
000065           MESSAGE( CTIMEMSG ) ;
000067        END ;
000077
000003        PROCEDURE XREFNDLN ;
000003        BEGIN
000003           IF XREFLINES >= LINESPERPAGE THEN
000010           BEGIN  XREFLINES := 0 ;  WRITELN ;  PAGECOUNT := PAGECOUNT+1 ;
000014              WRITE( ≡1≡ ) ;
000016              WRITELN( LISTNAME,TITLESTR,≡PASCAL 6000 - 3.4    ≡,
000036                 LDATE,LTIME,≡    PAGE≡,PAGECOUNT : 9 ) ;
000062           END ;
000062           WRITELN ;  XREFLINES := XREFLINES+1 ;
000065        END ;
000074
000003        PROCEDURE SEARCHE ;
000003        VAR  X : REF ;
000004        BEGIN
000004           IF ( ERRORTAB[ ERRORNO ].FIRST = NIL ) THEN
000012           BEGIN  NEW( X ) ;
000013              WITH X↑ DO
000014              BEGIN  LNO := LINENO ;  PNO := PAGENO ;
000021                 NEXT := NIL ;  NOCC := 1 ;
000026              END ;
000026              ERRORTAB[ ERRORNO ].FIRST := X ;
```

```
000032        ERRORTAB[ ERRORNO ].LAST := X ;
000035        E1 := E1+1 ;  E2 := E2+1 ;
000037     END ELSE
000037     BEGIN
000037        IF ( ERRORTAB[ ERRORNO ].LAST↑.PNO = PAGENO ) AND
000043           ( ERRORTAB[ ERRORNO ].LAST↑.LNO = LINENO ) THEN
000051           ERRORTAB[ ERRORNO ].LAST↑.NOCC :=
000053              ERRORTAB[ ERRORNO ].LAST↑.NOCC+1
000054        ELSE
000061        BEGIN  NEW( X ) ;
000063           WITH X↑ DO
000064           BEGIN  LNO := LINENO ;  PNO := PAGENO ;
000071              NEXT := NIL ;  NOCC := 1 ;
000076           END ;
000076           ERRORTAB[ ERRORNO ].LAST↑.NEXT := X ;
000102           ERRORTAB[ ERRORNO ].LAST := X ;
000106        END ;
000106        E2 := E2+1 ;
000110     END ;
000110  END ;
000114
000003  PROCEDURE SEARCH;                                  (*MODULO P HASH SEARCH*)
000003     (*GLOBAL: T, ID, TOP*)
000003  VAR H,D,I: INDEX;
000006     X: REF; F: BOOLEAN;
000010  BEGIN H := (ID.ORD DIV 4096) MOD P;
000013     F := FALSE; D := 1; C2 := C2 + 1;
000015     REPEAT
000016        IF T[H].KEY = ID.A THEN
000022        BEGIN (*FOUND*) F := TRUE;
000023           IF ( T[H].LAST↑.PNO = PAGENO ) AND
000026              ( T[H].LAST↑.LNO = LINENO ) THEN
000034              T[H].LAST↑.NOCC := T[H].LAST↑.NOCC+1
000037           ELSE
000044           BEGIN  NEW( X ) ;
000046              WITH X↑ DO
000050              BEGIN  LNO := LINENO ;  PNO := PAGENO ;
000055                 NEXT := NIL ;  NOCC := 1 ;
000061              END ;
000061              T[H].LAST↑.NEXT := X ;
000065              T[H].LAST := X ;
000071           END ;
000071        END ELSE
000072        IF T[H].KEY = EMPTY THEN
000075        BEGIN (*NEW ENTRY*) F := TRUE; C1 := C1 + 1;
000077           T[H].KEY := ID.A ;  NEW( X ) ;
000102           WITH X↑ DO
000104           BEGIN  LNO := LINENO ;  PNO := PAGENO ;
000111              NEXT := NIL ;  NOCC := 1 ;
000115           END ;
000115           T[H].FIRST := X; T[H].LAST := X;
000124           T[H].FOL := TOP; TOP := H;
000131        END ELSE
000131        BEGIN (*COLLISION*) H := H+D; D := D+2;
000133           IF H >= P THEN H := H - P;
000135           IF D = P THEN
```

```
000137              BEGIN  TOV := TRUE ;  GOTO 99 ;                          COMPXREF  507
000142              END ;                                                    COMPXREF  508
000142          END                                                          COMPXREF  509
000142       UNTIL F                                                         COMPXREF  510
000142    END (*SEARCH*) ;                                                   COMPXREF  511
000150                                                                       COMPXREF  512
000003    PROCEDURE PRINTWORD(W: WORD);                                      COMPXREF  513
000006      CONST  Z = 33B ;                                                 COMPXREF  514
000006       VAR L: INTEGER; X: REF;                                         COMPXREF  515
000010         I,J,RPOS : INTEGER ;   AVAL : ALFA ;                          COMPXREF  516
000014    BEGIN WRITE( ≡ ≡ ) ;                                               COMPXREF  517
000014       IF W.ERRORREF THEN                                              COMPXREF  518
000016       BEGIN  I := W.FOL ;  J := I DIV 50 ;                            COMPXREF  519
000022          CASE J OF                                                    COMPXREF  520
000023          0: ER000TO049( I ) ;                                         COMPXREF  521
000026          1: ER050TO099( I ) ;                                         COMPXREF  522
000031          2: ER100TO149( I ) ;                                         COMPXREF  523
000034          3: ER150TO199( I ) ;                                         COMPXREF  524
000037          4: ER200TO249( I ) ;                                         COMPXREF  525
000042          5: ER250TO299( I ) ;                                         COMPXREF  526
000045          6: ER300TO349( I ) ;                                         COMPXREF  527
000050          7: ER350TO399( I ) ;                                         COMPXREF  528
000053          END ;                                                        COMPXREF  529
000063          XREFNDLN ;  WRITE( ≡ ≡,EMPTY ) ;                             COMPXREF  530
000074       END ELSE                                                        COMPXREF  531
000075       FOR L := 1 TO 10 DO IF W.KEY[ L ] = CHR( 00B ) THEN WRITE( ≡ ≡ )  COMPXREF  532
000106          ELSE WRITE( W.KEY[ L ] ) ;                                   COMPXREF  533
000115       X := W.FIRST; L := 0;                                           COMPXREF  534
000120       REPEAT IF L = 10 THEN                                           COMPXREF  535
000122              BEGIN L := 0;                                            COMPXREF  536
000123                 XREFNDLN ;  WRITE( ≡ ≡,EMPTY ) ;                      COMPXREF  537
000133              END ;                                                    COMPXREF  538
000133         L := L+1 ;  AVAL := EMPTY ;                                   COMPXREF  539
000136         WITH X↑ DO                                                    COMPXREF  540
000137         BEGIN                                                         COMPXREF  541
000137            IF NOCC > 1 THEN RPOS := 10 ELSE RPOS := 9 ;               COMPXREF  542
000143            I := LNO DIV 10 ;                                          COMPXREF  543
000150            AVAL[ RPOS ] := CHR( Z+LNO-10*I ) ;                        COMPXREF  544
000157            AVAL[ RPOS-1 ] := CHR( Z+I ) ;                             COMPXREF  545
000164            AVAL[ RPOS-2 ] := ≡/≡ ;  RPOS := RPOS-3 ;                  COMPXREF  546
000171            I := PNO ;                                                 COMPXREF  547
000172            REPEAT                                                     COMPXREF  548
000172               J := I DIV 10 ;                                         COMPXREF  549
000176               AVAL[ RPOS ] := CHR( Z+I-10*J ) ;                       COMPXREF  550
000204               RPOS := RPOS-1 ;  I := J ;                              COMPXREF  551
000205            UNTIL I = 0 ;                                              COMPXREF  552
000206            IF NOCC > 1 THEN                                           COMPXREF  553
000210            BEGIN                                                      COMPXREF  554
000210               AVAL[ RPOS ] := ≡*≡ ;  RPOS := RPOS-1 ;                 COMPXREF  555
000215               IF NOCC < 10 THEN AVAL[ RPOS ] := CHR( Z+NOCC )         COMPXREF  556
000221               ELSE                                                    COMPXREF  557
000224               BEGIN                                                   COMPXREF  558
000224                  I := NOCC DIV 10 ;                                   COMPXREF  559
000227                  AVAL[ RPOS ] := CHR( Z+NOCC-10*I ) ;                 COMPXREF  560
000236                  AVAL[ RPOS-1 ] := CHR( Z+I ) ;                       COMPXREF  561
000243               END ;                                                   COMPXREF  562
```

```
000243             END ;
000243          END ;
000243          WRITE( AVAL ) ;
000250           X := X↑.NEXT ;
000252        UNTIL X = NIL;
000254        XREFNDLN ;
000255     END (*PRINTWORD*) ;
000262
000003     PROCEDURE PRINTTABLE;
000003        VAR I,J,M: INDEX;
000006     BEGIN I := TOP;
000010        WHILE I <> P DO
000012        BEGIN (*FIND MINIMAL WORD*)
000012           M := I; J := T[I].FOL;
000016           WHILE J <> P DO
000020           BEGIN IF T[J].KEY < T[M].KEY THEN M := J;
000025              J := T[J].FOL
000026           END ;
000031           PRINTWORD(T[M]);
000034           IF M <> I THEN
000036           BEGIN T[M].KEY := T[I].KEY;
000041              T[M].FIRST := T[I].FIRST; T[M].LAST := T[I].LAST
000047           END ;
000053           I := T[I].FOL
000054        END
000057     END (*PRINTTABLE*) ;
000063
000063 BEGIN (*CROSSREF*)
000063     CTIME := CLOCK ;
000007     XREFLINES := 100 ;
000010     TOV := FALSE ;
000010     TOP := P ;
000011     ERRORS := FALSE ;
000012     E1 := 0 ;  E2 := 0 ;
000013     FOR I := 0 TO 400 DO WITH ERRORTAB[ I ] DO
000020     BEGIN  FIRST := NIL ;  FOL := I ;  ERRORREF := TRUE ;
000026     END ;
000030     FOR I := 0 TO P-1 DO WITH T[ I ] DO
000036     BEGIN  KEY := EMPTY ;  ERRORREF := FALSE ;
000041     END ;
000042     C1 := 0; C2 := 0;
000044     LINELIMIT( OUTPUT,-1 ) ;
000045
000045     RESET( XREFFIL ) ;
000046     WHILE NOT EOS( XREFFIL ) DO WITH XREFFIL↑ DO
000050     BEGIN
000050        LINENO := LNO ;  PAGENO := PNO ;
000053        IF LINENO >= LINESPERPAGE THEN
000054        BEGIN  LINENO := 1 ;  PAGENO := PAGENO+1 ;
000056        END
000056        ELSE  LINENO := LINENO+1 ;
000057        IF ERRORREF THEN
000061        BEGIN  ERRORNO := END ;  ERRORS := TRUE ;  SEARCHE ;
000064        END ELSE
000065        BEGIN  ID.A := AVAL ;  I := 10 ;
000067           WHILE ID.A[ I ] = ≡ ≡ DO
```

```
000074           BEGIN  ID.A[ I ] := CHR( 00B ) ;   I := I+1 ;
000100           END ;
000101           SEARCH ;
000103        END ;
000103        GET( XREFFIL ) ;
000104     END ;
000105
000105 99: WHILE NOT EOS( XREFFIL ) DO GET( XREFFIL ) ;
000110     GETSEG( XREFFIL ) ;
000112     WITH XREFFIL↑ DO
000114     BEGIN  LISTNAME := AVAL ;  PAGECOUNT := PNO ;
000116     END ;
000116     GET( XREFFIL ) ;  LDATE := XREFFIL↑.AVAL ;
000121     GET( XREFFIL ) ;  LTIME := XREFFIL↑.AVAL ;
000124     IF ERRORS THEN
000125     BEGIN
000125        TITLESTR := ≡       ERROR DIRECTORY       ≡ ;
000130        XREFNDLN ;
000131        FOR I := 0 TO 400 DO IF ERRORTAB[ I ].FIRST <> NIL THEN
000137           PRINTWORD( ERRORTAB[ I ] ) ;
000143        XREFNDLN ;
000145        WRITELN( ≡ ≡,E1,≡ DISTINCT ERRORS≡,E2,≡ TOTAL ERRORS≡ ) ;
000172        XREFLINES := 100 ;
000173     END ;
000173     IF C1 <> 0 THEN
000175     BEGIN
000175        TITLESTR := ≡   IDENTIFIER CROSS REF.    ≡ ;
000200        XREFNDLN ;  PRINTTABLE ;
000203        XREFNDLN ;
000205        WRITELN( ≡ ≡,C1,≡ IDENTIFIERS≡,C2,≡ OCCURRENCES≡ ) ;
000232        IF TOV THEN
000233        BEGIN
000233           XREFNDLN ;
000235           WRITELN( ≡ ********** XREF TABLE OVERFLOW OCCURED ON PAGE≡,
000242              PAGENO : 4,≡ LINE≡,I : 3,≡ **********≡ ) ;
000265        END ;
000265     END ;
000265     CTIME := CLOCK-CTIME ;  CTIMEOUT ;
000271 END ;
000324
000324 BEGIN
000324        XREF ;
000034        IF ERRORS THEN
000035        BEGIN  MESSAGE( ≡* ERROR(S) IN PASCAL PROGRAM≡ ) ;  HALT ;
000040        END ;
000040 END .
```

ALFA	1/10	1/14	7/51	8/12	10/10					
AVAL	1/10	10/10	10/33	10/38	10/39	10/40	10/44	10/49	10/50	10/54
	10/55	11/03	11/55	12/11	12/13	12/14				
A	8/12	9/29	9/46	11/55	11/56	12/01				
BOOLEAN	1/09	1/16	7/53	8/09	8/11	9/25				
CHAR	8/15	8/21								
CHR	8/25	8/29	10/26	10/38	10/39	10/44	10/50	10/54	10/55	12/01
CLOCK	11/29	12/38								
COMPXREF	1/01									
CTIMEMSG	8/21	8/22	8/25	8/29	8/32	8/33				
CTIMEOUT	8/20	12/38								
CTIME	8/06	3*8/24	8/25	3*8/28	8/29	8/31	11/29	2*12/38		
C1	8/10	2*9/45	11/41	12/25	12/30					
C2	8/10	2*9/27	11/41	12/30						
DUMMY1	1/01	1/13								
DUMMY2	1/01	1/13								
D	9/24	9/27	3*9/54	9/56						
EMPTY	7/47	9/44	10/24	10/31	10/33	11/39				
ENO	1/11	11/53								
EOS	11/45	12/08								
ERRORNO	8/18	8/50	8/56	9/01	9/05	9/06	9/07	9/08	9/15	9/16
	11/53									
ERRORREF	1/09	7/53	10/12	11/36	11/39	11/52				
ERRORS	1/16	11/33	11/53	12/15	12/43					
ERRORTAB	8/16	8/50	8/56	9/01	9/05	9/06	9/07	9/08	9/15	9/16
	11/35	12/19	12/20							
ER000TO049	1/19	10/15								
ER050TO099	2/10	10/16								
ER100TO149	2/46	10/17								
ER150TO199	4/21	10/18								
ER200TO249	5/25	10/19								
ER250TO299	5/56	10/20								
ER300TO349	6/38	10/21								
ER350TO399	7/13	10/22								
E1	8/17	2*9/02	11/34	12/22						
E2	8/17	2*9/02	2*9/18	11/34	12/22					
FALSE	1/10	8/12	9/27	11/31	11/33	11/39				
FIRST	7/52	8/50	8/56	9/51	10/28	2*11/22	11/36	12/19		
FI	1/19	1/30	2/10	2/21	2/46	3/01	4/21	4/32	5/25	5/36
	5/56	6/11	6/38	6/49	7/13	7/24				
FOL	7/54	9/52	10/13	11/14	11/17	11/24	11/36			
F	9/25	9/27	9/30	9/45	10/04					
GETSEG	12/09									
GET	12/05	12/08	12/13	12/14						
HALT	12/44									
H	9/24	9/26	9/29	9/31	9/32	2*9/33	9/40	9/41	9/44	9/46
	2*9/51	2*9/52	2*9/54	3*9/55						
ID	8/11	9/26	9/29	9/46	11/55	11/56	12/01			
INDEX	7/48	7/54	8/05	8/14	9/24	11/10				
INTEGER	1/13	1/15	1/19	1/26	2/10	2/17	2/46	2/53	4/21	4/28
	5/25	5/32	5/56	6/07	6/38	6/45	7/13	7/20	8/06	8/07
	8/08	8/10	8/12	8/17	8/18	8/21	10/09	10/10		
ITEM	7/49	7/56								
I	8/05	8/21	8/23	8/25	8/27	8/29	2*8/30	8/31	8/32	9/24
	10/10	2*10/13	10/15	10/16	10/17	10/18	10/19	10/20	10/21	10/22
	10/37	10/38	10/39	10/41	10/43	10/44	10/45	10/46	10/53	10/54

	10/55	11/10	11/11	11/12	2*11/14	11/20	11/21	2*11/22	2*11/24	2*11/35
	11/36	2*11/38	11/55	11/56	3*12/01	2*12/19	12/20	12/35		
J	8/21	8/24	8/25	8/28	8/29	10/10	10/13	10/14	10/43	10/44
	10/45	11/10	11/14	11/15	2*11/16	2*11/17				
KEY	7/51	9/29	9/44	9/46	10/26	10/27	2*11/16	2*11/21	11/39	
LAST	7/52	9/01	9/05	9/06	9/07	9/08	9/15	9/16	9/31	9/32
	2*9/33	9/40	9/41	9/51	2*11/22					
LDATE	1/14	8/42	12/13							
LHI	1/23	2/14	2/50	4/25	5/29	6/04	6/42	7/17		
LINELIMIT	11/42									
LINENO	8/07	8/53	9/06	9/12	9/32	9/37	9/48	11/47	11/48	11/49
	2*11/51									
LINESPERPA	7/46	8/38	11/48							
LISTNAME	1/14	8/41	12/11							
LI	1/26	1/30	1/31	1/33	1/38	1/39	2/17	2/21	2/22	2/24
	2/29	2/30	2/53	3/01	3/02	3/04	3/09	3/10	4/28	4/32
	4/33	4/35	4/40	4/41	5/32	5/36	5/37	5/39	5/44	5/45
	6/07	6/11	6/12	6/14	6/19	6/20	6/45	6/49	6/50	6/52
	7/01	7/02	7/20	7/24	7/25	7/27	7/32	7/33		
LLO	1/22	1/31	1/39	2/13	2/22	2/30	2/49	3/02	3/10	4/24
	4/33	4/41	5/28	5/37	5/45	6/03	6/12	6/20	6/41	6/50
	7/02	7/16	7/25	7/33						
LNO	1/08	8/02	8/53	9/06	9/12	9/32	9/37	9/48	10/37	10/38
	11/47									
LSET	1/27	1/30	1/31	2/18	2/21	2/22	2/54	3/01	3/02	4/29
	4/32	4/33	5/33	5/36	5/37	6/08	6/11	6/12	6/46	6/49
	6/50	7/21	7/24	7/25						
LTIME	1/14	8/42	12/14							
L	10/09	2*10/26	10/27	10/28	10/29	10/30	2*10/33			
MESSAGE	8/33	12/44								
M	11/10	11/14	2*11/16	11/19	11/20	11/21	2*11/22			
NEW	8/51	9/10	9/35	9/46						
NEXT	8/03	8/54	9/13	9/15	9/38	9/40	9/49	11/04		
NIL	8/50	8/54	9/13	9/38	9/49	11/05	11/36	12/19		
NOCC	8/01	8/54	9/07	9/08	9/13	2*9/33	9/38	9/49	10/36	10/47
	2*10/50	10/53	10/54							
ORD	8/12	8/25	8/29	9/26						
OUTPUT	1/01	11/42								
PAGECOUNT	1/15	2*8/39	8/42	12/11						
PAGENO	8/07	8/53	9/05	9/12	9/31	9/37	9/48	11/47	2*11/49	12/35
PNO	1/08	8/02	8/53	9/05	9/12	9/31	9/37	9/48	10/41	11/47
	12/11									
PRINTTABLE	11/09	12/28								
PRINTWORD	10/07	11/19	12/20							
P	7/45	7/48	9/26	2*9/55	9/56	11/12	11/15	11/32	11/38	
REF	7/49	7/52	8/03	8/48	9/25	10/09				
RESET	11/44									
RPOS	10/10	2*10/36	10/38	10/39	3*10/40	10/44	2*10/45	3*10/49	10/50	10/54
	10/55									
SEARCHE	8/47	11/53								
SEARCH	9/22	12/03								
SETOFERR	1/05	1/27	2/18	2/54	4/29	5/33	6/08	6/46	7/21	
TITLESTR	8/15	8/41	12/17	12/27						
TOP	8/05	2*9/52	11/11	11/32						
TOV	8/09	10/01	11/31	12/31						
TRUE	1/11	8/12	9/30	9/45	10/01	11/36	11/53			

T	8/14	9/29	9/31	9/32	2*9/33	9/40	9/41	9/44	9/46	2*9/51
	9/52	11/14	2*11/16	11/17	11/19	2*11/21	4*11/22	11/24	11/38	
WORD	7/50	8/14	8/16	10/07						
WRITELN	8/39	8/41	8/44	12/22	12/30	12/34				
WRITE	1/33	1/34	1/38	1/40	1/41	1/42	1/43	1/44	1/45	1/46
	1/47	1/48	1/49	1/50	1/51	1/52	1/53	1/54	1/55	1/56
	2/01	2/02	2/03	2/04	2/24	2/25	2/29	2/31	2/32	2/33
	2/34	2/35	2/36	2/37	2/38	2/39	2/40	3/04	3/05	3/09
	3/11	3/12	3/13	3/14	3/15	3/16	3/17	3/18	3/19	3/20
	3/21	3/22	3/23	3/24	3/25	3/26	3/28	3/29	3/31	3/33
	3/35	3/36	3/38	3/40	3/41	3/43	3/45	3/46	3/48	3/49
	3/50	3/51	3/52	3/53	3/54	3/55	4/01	4/02	4/03	4/05
	4/06	4/07	4/08	4/09	4/10	4/11	4/12	4/14	4/15	4/35
	4/36	4/40	4/42	4/44	4/46	4/47	4/48	4/49	4/50	4/51
	4/52	4/53	4/54	4/55	4/56	5/01	5/02	5/04	5/05	5/06
	5/07	5/08	5/09	5/10	5/11	5/12	5/13	5/14	5/15	5/16
	5/18	5/39	5/40	5/44	5/46	5/47	5/49	5/50	6/14	6/15
	6/19	6/21	6/22	6/24	6/26	6/27	6/28	6/29	6/30	6/31
	6/32	6/52	6/53	7/01	7/03	7/04	7/05	7/06	7/07	7/27
	7/28	7/32	7/34	7/35	8/40	10/11	10/24	10/26	10/27	10/31
	11/03									
W	10/07	10/12	10/13	10/26	10/27	10/28				
XREFFIL	1/01	1/07	11/44	2*11/45	12/05	2*12/08	12/09	12/10	2*12/13	2*12/14
XREFLINES	8/08	8/38	8/39	2*8/44	11/30	12/23				
XREFNDLN	8/36	10/24	10/31	11/06	12/18	12/21	12/28	12/29	12/33	
XREF	7/41	12/42								
X	8/48	8/51	8/52	8/56	9/01	9/10	9/11	9/15	9/16	9/25
	9/35	9/36	9/40	9/41	9/46	9/47	2*9/51	10/09	10/28	10/34
	2*11/04	11/05								
Z	10/08	10/38	10/39	10/44	10/50	10/54	10/55			

97 IDENTIFIERS 945 OCCURRENCES

```
****** LIBRARY(RPASLIB,NEW)
                 1  LIBRARY(RPASLIB,NEW)
****** REWIND(LIBBIN)
                 2  REWIND(LIBBIN)
****** ADD(*,LIBBIN)
                 3  ADD(*,LIBBIN)
****** FINISH.
                 4  FINISH.
****** ENDRUN.
                 5  ENDRUN.
```

```
PROCESSING DIRECTIVE NUMBER      1

PROCESSING DIRECTIVE NUMBER      2

PROCESSING DIRECTIVE NUMBER      3

 FOLLOWING PROGRAM ADDED
   PREFIX TABLE INFORMATION
   PROGRAM NAME
        P.SYSTM
   SYSTEM NAME     SCOPE 3.4 11/02/75   15.47.03.     PROCESSOR NAME    COMPASS 3.     75286
   DEPENDENCIES    HARDWARE                         INSTRUCTION
   THIS IS A RELOCATABLE PROGRAM.
   BINARY LENGTH = 1150       AND EXECUTION FIELD LENGTH =   0          (OCTAL).
   ACCESS LEVEL IS   0
   FIELD LENGTH MAY NOT BE INCREASED.
   ENTRY POINTS
         P.CLOCK              P.CLOSE              P.DATE               P.DISP               P.GETB
         P.GETC               P.GETLN              P.GETS               P.INIT               P.MSG
         P.NEW                P.OPEN               P.PUTB               P.PUTC               P.PUTLN
         P.PUTS               P.RESET              P.REWRT              P.RWRTS              P.SABRT
         P.TIME
   EXTERNAL REFERENCES
         P.MAIN

 FOLLOWING PROGRAM ADDED
   PREFIX TABLE INFORMATION
   PROGRAM NAME
        PASCPMD
   SYSTEM NAME     SCOPE   3.411/02/75   15.47.14.     PROCESSOR NAME    PASCAL 2.0     UP10
   DEPENDENCIES    HARDWARE    I                    INSTRUCTION  6   6
   THIS IS A RELOCATABLE PROGRAM.
   BINARY LENGTH = 504        AND EXECUTION FIELD LENGTH =   0          (OCTAL).
   ACCESS LEVEL IS   0
   FIELD LENGTH MAY NOT BE INCREASED.
   ENTRY POINTS
         PASCPMD
   EXTERNAL REFERENCES
         P.PUTC               P.PUTLN              WRE                  WRI                  WRO
         WRS

 FOLLOWING PROGRAM ADDED
   PREFIX TABLE INFORMATION
   PROGRAM NAME
        TEN
   SYSTEM NAME     SCOPE   3.411/02/75   15.47.14.     PROCESSOR NAME    PASCAL 2.0     UP10
   DEPENDENCIES    HARDWARE    I                    INSTRUCTION  6   6
   THIS IS A RELOCATABLE PROGRAM.
   BINARY LENGTH = 107        AND EXECUTION FIELD LENGTH =   0          (OCTAL).
   ACCESS LEVEL IS   0
   FIELD LENGTH MAY NOT BE INCREASED.
   ENTRY POINTS
         TEN
   EXTERNAL REFERENCES
```

```
 FOLLOWING PROGRAM ADDED
   PREFIX TABLE INFORMATION
   PROGRAM NAME
         RDR
   SYSTEM NAME     SCOPE  3.411/02/75   15.47.14.     PROCESSOR NAME    PASCAL 2.0    UP10
   DEPENDENCIES    HARDWARE    I                 INSTRUCTION  6    6
   THIS IS A RELOCATABLE PROGRAM.
   BINARY LENGTH = 322        AND EXECUTION FIELD LENGTH =  0           (OCTAL).
   ACCESS LEVEL IS  0
   FIELD LENGTH MAY NOT BE INCREASED.
   ENTRY POINTS
          RDR
   EXTERNAL REFERENCES
          P.GETC                P.MSG                 TEN

 FOLLOWING PROGRAM ADDED
   PREFIX TABLE INFORMATION
   PROGRAM NAME
         WRE
   SYSTEM NAME     SCOPE  3.411/02/75   15.47.14.     PROCESSOR NAME    PASCAL 2.0    UP10
   DEPENDENCIES    HARDWARE    I                 INSTRUCTION  6    6
   THIS IS A RELOCATABLE PROGRAM.
   BINARY LENGTH = 405        AND EXECUTION FIELD LENGTH =  0           (OCTAL).
   ACCESS LEVEL IS  0
   FIELD LENGTH MAY NOT BE INCREASED.
   ENTRY POINTS
          WRE
   EXTERNAL REFERENCES
          P.PUTC                TEN

 FOLLOWING PROGRAM ADDED
   PREFIX TABLE INFORMATION
   PROGRAM NAME
         WRI
   SYSTEM NAME     SCOPE  3.411/02/75   15.47.14.     PROCESSOR NAME    PASCAL 2.0    UP10
   DEPENDENCIES    HARDWARE    I                 INSTRUCTION  6    6
   THIS IS A RELOCATABLE PROGRAM.
   BINARY LENGTH = 115        AND EXECUTION FIELD LENGTH =  0           (OCTAL).
   ACCESS LEVEL IS  0
   FIELD LENGTH MAY NOT BE INCREASED.
   ENTRY POINTS
          WRI
   EXTERNAL REFERENCES
          P.PUTC

 FOLLOWING PROGRAM ADDED
   PREFIX TABLE INFORMATION
   PROGRAM NAME
         RDI
   SYSTEM NAME     SCOPE  3.411/02/75   15.47.14.     PROCESSOR NAME    PASCAL 2.0    UP10
   DEPENDENCIES    HARDWARE    I                 INSTRUCTION  6    6
   THIS IS A RELOCATABLE PROGRAM.
   BINARY LENGTH = 137        AND EXECUTION FIELD LENGTH =  0           (OCTAL).
   ACCESS LEVEL IS  0
   FIELD LENGTH MAY NOT BE INCREASED.
   ENTRY POINTS
```

```
         RDI
     EXTERNAL REFERENCES
         P.GETC              P.MSG

   FOLLOWING PROGRAM ADDED
     PREFIX TABLE INFORMATION
     PROGRAM NAME
        WRB
     SYSTEM NAME     SCOPE  3.411/02/75   15.47.14.     PROCESSOR NAME    PASCAL 2.0    UP10
     DEPENDENCIES    HARDWARE    I                 INSTRUCTION  6   6
     THIS IS A RELOCATABLE PROGRAM.
     BINARY LENGTH = 117       AND EXECUTION FIELD LENGTH =  0           (OCTAL).
     ACCESS LEVEL IS  0
     FIELD LENGTH MAY NOT BE INCREASED.
     ENTRY POINTS
         WRB
     EXTERNAL REFERENCES
         P.PUTC

   FOLLOWING PROGRAM ADDED
     PREFIX TABLE INFORMATION
     PROGRAM NAME
        WRF
     SYSTEM NAME     SCOPE  3.411/02/75   15.47.14.     PROCESSOR NAME    PASCAL 2.0    UP10
     DEPENDENCIES    HARDWARE    I                 INSTRUCTION  6   6
     THIS IS A RELOCATABLE PROGRAM.
     BINARY LENGTH = 425       AND EXECUTION FIELD LENGTH =  0           (OCTAL).
     ACCESS LEVEL IS  0
     FIELD LENGTH MAY NOT BE INCREASED.
     ENTRY POINTS
         WRF
     EXTERNAL REFERENCES
         P.PUTC              TEN

   FOLLOWING PROGRAM ADDED
     PREFIX TABLE INFORMATION
     PROGRAM NAME
        WRC
     SYSTEM NAME     SCOPE  3.411/02/75   15.47.14.     PROCESSOR NAME    PASCAL 2.0    UP10
     DEPENDENCIES    HARDWARE    I                 INSTRUCTION  6   6
     THIS IS A RELOCATABLE PROGRAM.
     BINARY LENGTH = 44        AND EXECUTION FIELD LENGTH =  0           (OCTAL).
     ACCESS LEVEL IS  0
     FIELD LENGTH MAY NOT BE INCREASED.
     ENTRY POINTS
         WRC
     EXTERNAL REFERENCES
         P.PUTC

   FOLLOWING PROGRAM ADDED
     PREFIX TABLE INFORMATION
     PROGRAM NAME
        WRO
     SYSTEM NAME     SCOPE 3.4 11/02/75   15.47.28.     PROCESSOR NAME    COMPASS 3.    75286
     DEPENDENCIES    HARDWARE                      INSTRUCTION
     THIS IS A RELOCATABLE PROGRAM.
```

```
BINARY LENGTH = 37         AND EXECUTION FIELD LENGTH =  0           (OCTAL).
ACCESS LEVEL IS  0
FIELD LENGTH MAY NOT BE INCREASED.
ENTRY POINTS
      WRO
EXTERNAL REFERENCES
      P.PUTC

FOLLOWING PROGRAM ADDED
  PREFIX TABLE INFORMATION
  PROGRAM NAME
       WRH
  SYSTEM NAME    SCOPE 3.4 11/02/75  15.47.29.    PROCESSOR NAME   COMPASS 3.   75286
  DEPENDENCIES   HARDWARE                    INSTRUCTION
  THIS IS A RELOCATABLE PROGRAM.
  BINARY LENGTH = 40         AND EXECUTION FIELD LENGTH =  0           (OCTAL).
  ACCESS LEVEL IS  0
  FIELD LENGTH MAY NOT BE INCREASED.
  ENTRY POINTS
        WRH
  EXTERNAL REFERENCES
        P.PUTC

FOLLOWING PROGRAM ADDED
  PREFIX TABLE INFORMATION
  PROGRAM NAME
       OVL
  SYSTEM NAME    SCOPE 3.4 11/02/75  15.47.30.    PROCESSOR NAME   COMPASS 3.   75286
  DEPENDENCIES   HARDWARE                    INSTRUCTION
  THIS IS A RELOCATABLE PROGRAM.
  BINARY LENGTH = 41         AND EXECUTION FIELD LENGTH =  0           (OCTAL).
  ACCESS LEVEL IS  0
  FIELD LENGTH MAY NOT BE INCREASED.
  ENTRY POINTS
        OVL
  EXTERNAL REFERENCES
        P.MSG

FOLLOWING PROGRAM ADDED
  PREFIX TABLE INFORMATION
  PROGRAM NAME
       WRS
  SYSTEM NAME    SCOPE 3.4 11/02/75  15.47.31.    PROCESSOR NAME   COMPASS 3.   75286
  DEPENDENCIES   HARDWARE                    INSTRUCTION
  THIS IS A RELOCATABLE PROGRAM.
  BINARY LENGTH = 50         AND EXECUTION FIELD LENGTH =  0           (OCTAL).
  ACCESS LEVEL IS  0
  FIELD LENGTH MAY NOT BE INCREASED.
  ENTRY POINTS
        WRS
  EXTERNAL REFERENCES
        P.PUTC

FOLLOWING PROGRAM ADDED
  PREFIX TABLE INFORMATION
  PROGRAM NAME
```

```
        P.SINCO
    SYSTEM NAME     SCOPE 3.4 11/02/75  15.47.33.    PROCESSOR NAME   COMPASS 3.   75286
    DEPENDENCIES    HARDWARE                  INSTRUCTION
    THIS IS A RELOCATABLE PROGRAM.
    BINARY LENGTH = 103       AND EXECUTION FIELD LENGTH =   0         (OCTAL).
    ACCESS LEVEL IS  0
    FIELD LENGTH MAY NOT BE INCREASED.
    ENTRY POINTS
          P.SINCO
    EXTERNAL REFERENCES
          P.SABRT

  FOLLOWING PROGRAM ADDED
    PREFIX TABLE INFORMATION
    PROGRAM NAME
         P.EXP
    SYSTEM NAME     SCOPE 3.4 11/02/75  15.47.36.    PROCESSOR NAME   COMPASS 3.   75286
    DEPENDENCIES    HARDWARE                  INSTRUCTION
    THIS IS A RELOCATABLE PROGRAM.
    BINARY LENGTH = 64        AND EXECUTION FIELD LENGTH =   0         (OCTAL).
    ACCESS LEVEL IS  0
    FIELD LENGTH MAY NOT BE INCREASED.
    ENTRY POINTS
          P.EXP
    EXTERNAL REFERENCES
          P.SABRT

  FOLLOWING PROGRAM ADDED
    PREFIX TABLE INFORMATION
    PROGRAM NAME
         P.LN
    SYSTEM NAME     SCOPE 3.4 11/02/75  15.47.37.    PROCESSOR NAME   COMPASS 3.   75286
    DEPENDENCIES    HARDWARE                  INSTRUCTION
    THIS IS A RELOCATABLE PROGRAM.
    BINARY LENGTH = 70        AND EXECUTION FIELD LENGTH =   0         (OCTAL).
    ACCESS LEVEL IS  0
    FIELD LENGTH MAY NOT BE INCREASED.
    ENTRY POINTS
          P.LN
    EXTERNAL REFERENCES
          P.SABRT

  FOLLOWING PROGRAM ADDED
    PREFIX TABLE INFORMATION
    PROGRAM NAME
         P.SQRT
    SYSTEM NAME     SCOPE 3.4 11/02/75  15.47.39.    PROCESSOR NAME   COMPASS 3.   75286
    DEPENDENCIES    HARDWARE                  INSTRUCTION
    THIS IS A RELOCATABLE PROGRAM.
    BINARY LENGTH = 52        AND EXECUTION FIELD LENGTH =   0         (OCTAL).
    ACCESS LEVEL IS  0
    FIELD LENGTH MAY NOT BE INCREASED.
    ENTRY POINTS
          P.SQRT
    EXTERNAL REFERENCES
          P.SABRT
```

```
  FOLLOWING PROGRAM ADDED
    PREFIX TABLE INFORMATION
    PROGRAM NAME
         P.ATAN
    SYSTEM NAME      SCOPE 3.4 11/02/75   15.47.40.     PROCESSOR NAME    COMPASS 3.    75286
    DEPENDENCIES     HARDWARE                    INSTRUCTION
    THIS IS A RELOCATABLE PROGRAM.
    BINARY LENGTH = 110       AND EXECUTION FIELD LENGTH =   0           (OCTAL).
    ACCESS LEVEL IS   0
    FIELD LENGTH MAY NOT BE INCREASED.
    ENTRY POINTS
          P.ATAN
    EXTERNAL REFERENCES
          P.SABRT

 PROCESSING DIRECTIVE NUMBER      4

 PROCESSING DIRECTIVE NUMBER      5
```

-------- OVERLAY(RPASCAL,0,0)

FWA OF THE LOAD 101
LWA+1 OF THE LOAD 44424

TRANSFER ADDRESS -- PASCAL 43076

PROGRAM AND BLOCK ASSIGNMENTS.

BLOCK	ADDRESS	LENGTH	FILE	DATE	PROCSSR	VER	LEVEL	HARDWARE	COMMENTS
RPASCAL	101	1	BIN1	11/02/75	COMPASS	3.	75286		RELOCATABLE PASCAL 6000 - 3.4 COMPILER.
PRC0001	102	67	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 WRITEERROR
PRC0002	171	146	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 ENDOFLINE
PRC0003	337	46	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 ERROR
PRC0004	405	13	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 ORDALFA
PRC0006	420	22	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 NEXTCH
PRC0007	442	217	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 OPTIONS
PRC0005	661	741	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 INSYMBOL
PRC0010	1622	57	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 ENTERID
PRC0011	1701	27	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 SEARCHSECT
PRC0012	1730	100	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 SEARCHID
PRC0013	2030	37	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 GETBOUNDS
PRC0014	2067	17	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 SKIP
PRC0016	2106	16	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 NROFBITS
PRC0017	2124	20	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 FULLWORDS
PRC0021	2144	105	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 COMPLISTS
PRC0022	2251	24	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 EQUALBOUND
PRC0020	2275	270	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 COMPTYPES
PRC0023	2565	30	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 STRING
PRC0024	2615	77	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 STRINGTYPE
PRC0025	2714	46	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 CONVERTCST
PRC0026	2762	145	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 CONSTANT
PRC0031	3127	150	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 SUBRANGES
PRC0030	3277	201	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 SIMPLETYPE
PRC0034	3500	41	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 ADJUST
PRC0033	3541	74	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 FIELDADDRE
PRC0032	3635	516	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 FIELDLIST
PRC0027	4353	713	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 TYP
PRC0035	5266	111	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 LABELDECLA
PRC0036	5377	74	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 CONSTDECLA
PRC0037	5473	151	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 TYPEDECLAR
PRC0040	5644	170	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 VARDECLARA
PRC0042	6034	473	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 PARAMETERL
PRC0041	6527	442	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 PROCEDURED
PRC0044	7171	21	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 NOOP
PRC0045	7212	53	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 GEN15
PRC0046	7265	221	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 GEN30
PRC0047	7506	51	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 INS
PRC0050	7557	24	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 LINKOCC
PRC0051	7603	37	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 GEN60
PRC0052	7642	105	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 PMDINFO
PRC0053	7747	33	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 SHORTNAME

BLOCK	ADDRESS	LENGTH	FILE	DATE	PROCSSR	VER	LEVEL	HARDWARE	COMMENTS	
PRC0054	10002	26	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	PFNAME
PRC0055	10030	443	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	LGOHEAD
PRC0056	10473	103	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	LGOTEXT
PRC0057	10576	133	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	LGOEND
PRC0060	10731	40	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	SEARCHEXTI
PRC0061	10771	21	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	RJTOEXT
PRC0062	11012	21	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	RJTORUNEXT
PRC0063	11033	60	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	ENTERCST
PRC0065	11113	313	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	OPENFL
PRC0064	11426	62	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	OPENFILES
PRC0066	11510	30	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	ROTATEX
PRC0067	11540	52	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	DECREFX
PRC0070	11612	74	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	BXIXJ
PRC0071	11706	42	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	CLEARREGS
PRC0072	11750	226	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	SAVEREFXRG
PRC0073	12176	74	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	RELOADREFX
PRC0074	12272	50	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	NEEDB
PRC0075	12342	145	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	NEEDX
PRC0076	12507	75	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	LOADBASE
PRC0077	12604	262	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	LOADADDRES
PRC0100	13066	1201	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	LOAD
PRC0101	14267	1254	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	STORE
PRC0102	15543	104	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	CHECKBNDS
PRC0104	15647	40	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	PACKOFL
PRC0105	15707	35	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	PACKANDNOR
PRC0106	15744	30	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	OPERATION
PRC0107	15774	101	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	EXPREP
PRC0110	16075	170	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	OPTMULT
PRC0112	16265	471	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	ASSIGNTO
PRC0114	16756	167	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	IDADDRESS
PRC0116	17145	24	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	POWEROF2
PRC0115	17171	505	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	INDEXCODE
PRC0113	17676	232	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	SELECTOR
PRC0120	20130	26	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	VARIABLE
PRC0121	20156	235	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	STDFLPROCS
PRC0122	20413	104	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	LINELIMIT
PRC0123	20517	67	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	LOADPPTR
PRC0124	20606	411	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	READ
PRC0126	21217	54	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	DEFLJMP
PRC0125	21273	617	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	WRITE
PRC0127	22112	76	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	MESSAGE
PRC0130	22210	143	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	PAGE
PRC0131	22353	67	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	TIMEDATE
PRC0132	22442	23	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	HALT
PRC0134	22465	123	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	PACKWORD
PRC0133	22610	474	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	PACK
PRC0136	23304	130	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	UNPACKWORD
PRC0135	23434	536	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	UNPACK
PRC0137	24172	205	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	NEWDISPOSE
PRC0140	24377	51	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	RELEASE
PRC0141	24450	130	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	ROUNDF
PRC0142	24600	104	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	ABSF
PRC0143	24704	104	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	SQRF
PRC0144	25010	166	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5	TRUNCF

OVERLAY(RPASCAL,0,0)

BLOCK	ADDRESS	LENGTH	FILE	DATE	PROCSSR	VER	LEVEL	HARDWARE	COMMENTS
PRC0145	25176	127	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 UNDEFINEDP
PRC0146	25325	77	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 ODDP
PRC0147	25424	50	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 ORDF
PRC0150	25474	52	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 CHRF
PRC0151	25546	74	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 PREDSUCCF
PRC0152	25642	137	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 STDFLFUNCS
PRC0153	26001	66	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 CARDF
PRC0154	26067	100	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 EXPOF
PRC0155	26167	67	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 CLOCKF
PRC0156	26256	260	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 STDARITHFU
PRC0157	26536	1426	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 CALLNONSTA
PRC0117	30164	225	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 CALL
PRC0162	30411	70	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 LOOPD
PRC0161	30501	172	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 BOOLOP
PRC0164	30673	46	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 LOADANDCHE
PRC0165	30741	1007	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 FACTOR
PRC0163	31750	1030	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 TERM
PRC0160	33000	462	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 SIMPLEEXPR
PRC0111	33462	1026	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 EXPRESSION
PRC0166	34510	37	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 GENFJMP
PRC0167	34547	36	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 ASSIGNMENT
PRC0170	34605	175	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 GOTOSTATEM
PRC0171	35002	51	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 COMPOUNDST
PRC0172	35053	160	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 IFSTATEMEN
PRC0173	35233	504	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 CASESTATEM
PRC0174	35737	75	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 REPEATSTAT
PRC0175	36034	130	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 WHILESTATE
PRC0176	36164	524	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 FORSTATEME
PRC0177	36710	270	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 WITHSTATEM
PRC0103	37200	243	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 STATEMENT
PRC0043	37443	1031	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 BODY
PRC0015	40474	106	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 BLOCK
PRC0200	40602	300	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 PROGRAMME
PRC0201	41102	157	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 STANDARDNA
PRC0202	41261	245	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 STDTYPENTR
PRC0203	41526	353	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 STDNAMENTR
PRC0204	42101	144	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 ENTERUNDEC
PRC0205	42245	121	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 INITSCALAR
PRC0206	42366	32	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 INITSETS
PRC0210	42420	131	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 RESERVEDWO
PRC0211	42551	106	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 SYMBOLS
PRC0212	42657	44	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 OPERATORS
PRC0207	42723	53	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 INITTABLES
PRC0214	42776	75	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 CTIMEOUT
PASCAL	43073	150	BIN1	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X5 PASCAL
P.SYSTM	43243	754	UL-RPASLIB	11/02/75	COMPASS	3.	75286		
WRI	44217	72	UL-RPASLIB	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E+ P- R- T- U+ X0 WRI
WRO	44311	26	UL-RPASLIB	11/02/75	COMPASS	3.	75286		
OVL	44337	23	UL-RPASLIB	11/02/75	COMPASS	3.	75286		
WRS	44362	42	UL-RPASLIB	11/02/75	COMPASS	3.	75286		
//	44424	0							

ENTRY POINTS.

ENTRY ADDRESS PROGRAM REFERENCES

ENTRY	ADDRESS	PROGRAM	REFERENCES							
PRC0001	104	PRC0001	PRC0002	302						
PRC0002	173	PRC0002	PRC0005	676	1412	1417	1435	1442		
			PASCAL	43201						
PRC0003	341	PRC0003	PRC0005	1005	1027	1035	1057	1100	1140	1225
				1234	1247	1266				
			PRC0010	1645						
			PRC0012	1756	1775					
			PRC0026	2776	3063	3111	3117			
			PRC0031	3165	3214	3224	3232	3242		
			PRC0030	3311	3373	3400	3431	3466		
			PRC0032	3654	3705	3711	3730	3775	4065	4074
				4115	4132	4136	4153	4202	4237	4244
				4254	4314	4322				
			PRC0027	4366	4460	4470	4511	4521	4531	4573
				4601	4614	4622	4764	5032	5044	5055
				5062	5066	5077	5142	5245	5254	
			PRC0035	5304	5336	5347	5355	5373		
			PRC0036	5407	5435	5461	5466			
			PRC0037	5503	5530	5560	5603	5611	5616	
			PRC0040	5701	5710	5730	5766	5774	6004	
			PRC0042	6050	6061	6066	6135	6143	6215	6223
				6250	6255	6263	6272	6334	6342	6371
				6400	6406	6415	6436	6454	6463	
			PRC0041	6606	6715	6726	6751	7003	7017	7026
				7035	7042	7055	7110	7115	7141	7146
			PRC0045	7252						
			PRC0046	7432	7451					
			PRC0051	7633						
			PRC0055	10414	10437					
			PRC0060	10754						
			PRC0065	11144	11202	11273				
			PRC0075	12444						
			PRC0112	16354	16426	16737	16752			
			PRC0114	17105	17114	17121	17126			
			PRC0115	17221						
			PRC0113	17713	17730	17744	17766	20000	20011	20025
				20047	20101	20113				
			PRC0120	20145						
			PRC0121	20170	20235	20264	20320	20325	20342	20376
			PRC0122	20425	20442	20445	20471	20505	20513	
			PRC0124	20657	20716	20732	20770	21061	21154	21161
				21166						
			PRC0125	21342	21347	21354	21524	21557	21567	21617
				21635	21755	22043	22050			
			PRC0127	22124	22167	22203				
			PRC0130	22222	22261	22267	22345			
			PRC0131	22365	22400	22434				
			PRC0133	22622	22665	22670	22676	22712	22763	23043
				23063	23066	23300				
			PRC0135	23446	23535	23540	23546	23614	23617	23622
				23630	23644	24166				

ENTRY	ADDRESS	PROGRAM	REFERENCES							
			PRC0137	24204	24222	24243	24257	24272	24330	24371
			PRC0140	24411	24436	24444				
			PRC0141	24462	24476	24574				
			PRC0142	24612	24672	24700				
			PRC0143	24716	24773	25004				
			PRC0144	25022	25036	25125	25172			
			PRC0145	25210	25244	25321				
			PRC0146	25337	25353	25420				
			PRC0147	25436	25457	25470				
			PRC0150	25506	25531	25542				
			PRC0151	25560	25600	25636				
			PRC0152	25663	25675	25717	25744	25775		
			PRC0153	26013	26027	26063				
			PRC0154	26101	26115	26163				
			PRC0156	26270	26347	26525				
			PRC0157	26647	26661	26714	26721	26736	26744	27045
				27052	27102	27236	27244	27266	27373	27716
			PRC0164	30710						
			PRC0165	30753	31101	31172	31244	31257	31304	31316
				31336	31536	31640	31661	31735		
			PRC0163	32232	32322	32517	32725	32752		
			PRC0160	33067	33252	33411	33436			
			PRC0111	33635	33642	33712	33717	33726	33731	33734
				34165	34477					
			PRC0167	34600						
			PRC0170	34664	34772	34776				
			PRC0171	35017	35035	35046				
			PRC0172	35073	35131					
			PRC0173	35260	35427	35464	35507	35523	35533	35715
				35720	35730					
			PRC0174	35762	36000	36021	36027			
			PRC0175	36062	36117					
			PRC0176	36217	36222	36234	36241	36262	36313	36316
				36341	36464	36467	36500			
			PRC0177	36727	37101	37104	37124			
			PRC0103	37235	37264	37273	37300	37435		
			PRC0043	37601	40165	40202	40217			
			PRC0015	40545	40557	40566				
			PRC0200	40655	40730	41011	41022	41026	41041	41046
				41051	41056	41064				
PRC0004	407	PRC0004	PRC0052	7671						
			PRC0055	10075	10114	10120	10124	10130	10134	10156
				10201	10226	10232	10236	10242	10246	10342
				10401						
			PRC0065	11266	11301					
			PRC0043	37514	37652					
PRC0006	422	PRC0006	PRC0007	452	457	642				
			PRC0005	673	700	705	722	1010	1043	1067
				1110	1123	1126	1133	1146	1207	1230
				1263	1314	1317	1360	1365	1373	1400
				1405	1415	1422	1425	1430	1440	1445
				1450	1456	1463	1470	1475	1502	1511
PRC0007	444	PRC0007	PRC0005	1410	1433					
PRC0005	663	PRC0005	PRC0014	2101						

```
ENTRY        ADDRESS          PROGRAM    REFERENCES

                                          PRC0026      3011     3021     3034     3064     3075     3106
                                          PRC0031      3162
                                          PRC0030      3346     3370     3426     3436
                                          PRC0032      3702     3721     3725     3770     4033     4057     4062
                                                       4133     4150     4230     4234     4242     4307     4331
                                          PRC0027      4427     4465     4475     4503     4524     4527     4606
                                                       4612     4617     4747     5027     5036     5041     5134
                                                       5137
                                          PRC0035      5331     5344     5365     5371
                                          PRC0036      5427     5432     5454
                                          PRC0037      5522     5525     5576
                                          PRC0040      5676     5721     5725     5761
                                          PRC0042      6062     6077     6132     6157     6212     6234     6252
                                                       6276     6331     6353     6357     6366     6430     6446
                                          PRC0041      6712     6777     7023     7040     7103     7106     7135
                                          PRC0113     17732    17775    20013    20044    20106
                                          PRC0120     20142
                                          PRC0121     20166    20326    20373
                                          PRC0122     20423    20455    20510
                                          PRC0124     20640    20723    21142    21151
                                          PRC0125     21322    21413    21507    21542    21620    22025    22040
                                          PRC0127     22122    22200
                                          PRC0130     22220    22342
                                          PRC0131     22363    22431
                                          PRC0133     22620    22673    22760    23275
                                          PRC0135     23444    23543    23625    24163
                                          PRC0137     24202    24246    24366
                                          PRC0140     24407    24441
                                          PRC0141     24460    24571
                                          PRC0142     24610    24675
                                          PRC0143     24714    25001
                                          PRC0144     25020    25064    25167
                                          PRC0145     25206    25316
                                          PRC0146     25335    25415
                                          PRC0147     25434    25465
                                          PRC0150     25504    25537
                                          PRC0151     25556    25633
                                          PRC0152     25652    25660
                                          PRC0153     26011    26060
                                          PRC0154     26077    26160
                                          PRC0156     26266    26522
                                          PRC0157     26655    27074    27370
                                          PRC0165     30771    31031    31041    31051    31065    31067    31076
                                                      31103    31200    31227    31270    31653    31657
                                          PRC0163     31772
                                          PRC0160     33015    33103
                                          PRC0111     33503
                                          PRC0167     34570
                                          PRC0170     34773
                                          PRC0171     35025    35043
                                          PRC0172     35126    35201
                                          PRC0173     35424    35514    35520    35574    35725
                                          PRC0174     35770    36006
                                          PRC0175     36114
```

ENTRY	ADDRESS	PROGRAM	REFERENCES							
			PRC0176	36236	36250	36327	36475			
			PRC0177	36724	37111	37121				
			PRC0103	37265	37270	37311	37324	37330	37334	37340
				37344	37350	37354	37360			
			PRC0043	40173	40214					
			PRC0015	40511	40516	40523	40530	40537	40554	
			PRC0200	40644	40651	40663	40746	40754	41012	41036
				41044						
			PASCAL	43165						
PRC0010	1624	PRC0010	PRC0030	3366						
			PRC0032	3701	4056					
			PRC0036	5444						
			PRC0037	5536						
			PRC0040	5674						
			PRC0042	6126	6206	6325				
			PRC0041	6657						
			PRC0200	40636	40711					
			PRC0203	41545	41560	41573	41606	41621	41634	41652
				41670	41706	41724	41746	42000	42030	42060
PRC0011	1703	PRC0011	PRC0041	6551						
			PRC0113	20021						
PRC0012	1732	PRC0012	PRC0026	3040						
			PRC0030	3435						
			PRC0032	4040	4071					
			PRC0027	4434						
			PRC0042	6240	6363					
			PRC0041	7005						
			PRC0120	20141						
			PRC0157	26677	26702					
			PRC0165	30770						
			PRC0176	36201						
			PRC0177	36723						
			PRC0103	37310						
PRC0013	2032	PRC0013	PRC0022	2261	2264					
			PRC0027	4645	5072					
			PRC0065	11154						
			PRC0112	16345						
			PRC0115	17212						
			PRC0133	22654	23037					
			PRC0135	23504	23610					
			PRC0157	27215						
			PRC0176	36545						
PRC0014	2071	PRC0014	PRC0026	3001	3113	3121				
			PRC0030	3314	3403	3470				
			PRC0032	3657	3714	4000	4077	4141	4317	
			PRC0027	4371	4514	5256				
			PRC0035	5360						
			PRC0036	5412	5464					
			PRC0037	5506	5606					
			PRC0040	5714	5771					
			PRC0042	6054	6072	6147	6227	6267	6346	6412
				6442	6460					
			PRC0041	7031	7120	7144				
			PRC0113	17716	20116					

ENTRY	ADDRESS	PROGRAM	REFERENCES							
			PRC0125	21357	21640					
			PRC0157	26664	27105					
			PRC0165	30756	31740					
			PRC0176	36244	36321	36472				
			PRC0103	37302	37437					
			PRC0015	40547	40570					
			PRC0200	40660	41031	41053	41060			
PRC0016	2110	PRC0016	PRC0024	2645						
			PRC0031	3254	3263					
			PRC0030	3417						
			PRC0027	4423						
PRC0017	2126	PRC0017	PRC0033	3625						
			PRC0027	4655	5153					
			PRC0040	5751						
			PRC0042	6501						
			PRC0041	6675						
			PRC0065	11366						
			PRC0112	16420						
			PRC0115	17246	17575					
			PRC0137	24231	24314	24324				
			PRC0157	27131	27142					
			PRC0043	40011						
PRC0021	2146	PRC0021	PRC0021	2232						
			PRC0020	2461						
PRC0022	2253	PRC0022	PRC0020	2362	2443	2526	2551			
PRC0020	2277	PRC0020	PRC0021	2165	2212					
			PRC0020	2351	2373	2406	2423	2434	2475	2516
				2540						
			PRC0023	2605						
			PRC0025	2741	2751					
			PRC0031	3211						
			PRC0032	4113	4177					
			PRC0027	4566	5210					
			PRC0052	7705	7713	7721	7727			
			PRC0112	16304	16311	16322	16333			
			PRC0113	17753						
			PRC0121	20337						
			PRC0122	20466						
			PRC0124	20742	20754	20762	21036			
			PRC0125	21427	21521	21554	21564	21645	21657	21672
				21704						
			PRC0131	22375						
			PRC0133	22707	23020	23027				
			PRC0135	23571	23600	23641				
			PRC0137	24300						
			PRC0141	24473						
			PRC0142	24623	24631					
			PRC0143	24746	24763					
			PRC0144	25033	25077					
			PRC0145	25227	25241					
			PRC0146	25350						
			PRC0150	25526						
			PRC0151	25575						
			PRC0154	26112						

ENTRY	ADDRESS	PROGRAM	REFERENCES							
			PRC0156	26314	26344					
			PRC0157	26711	27166	27174	27263			
			PRC0165	31114	31254	31313	31636			
			PRC0163	32011	32017	32141	32155	32171	32177	32220
				32253	32267	32303	32311	32331	32337	32526
				32534	32734	32742				
			PRC0160	33026	33034	33136	33154	33164	33201	33214
				33227	33235	33272	33302	33317	33332	33345
				33353	33377	33420	33426			
			PRC0111	33520	33572	33650	33655	33667	33702	33753
			PRC0172	35070						
			PRC0173	35255	35452					
			PRC0174	36016						
			PRC0175	36057						
			PRC0176	36231	36266	36345				
PRC0023	2567	PRC0023	PRC0031	3230						
			PRC0077	12632						
			PRC0100	13106						
			PRC0125	21466	21717					
			PRC0127	22150						
			PRC0137	24265						
			PRC0111	33723						
PRC0024	2617	PRC0024	PRC0026	3016						
			PRC0165	31057						
PRC0025	2716	PRC0025	PRC0100	13116						
PRC0026	2764	PRC0026	PRC0031	3172						
			PRC0030	3456						
			PRC0032	4167						
			PRC0036	5442						
			PRC0137	24253						
			PRC0173	35443						
PRC0031	3131	PRC0031	PRC0030	3445	3461					
PRC0030	3301	PRC0030	PRC0027	4400	4555	5047				
PRC0034	3502	PRC0034	PRC0033	3561	3613					
PRC0033	3543	PRC0033	PRC0032	3747	4127					
PRC0032	3637	PRC0032	PRC0032	4251						
			PRC0027	4776						
PRC0027	4355	PRC0027	PRC0032	3734						
			PRC0027	4625	5145					
			PRC0037	5534						
			PRC0040	5735						
PRC0035	5270	PRC0035	PRC0015	40513						
PRC0036	5401	PRC0036	PRC0015	40520						
PRC0037	5475	PRC0037	PRC0015	40525						
PRC0040	5646	PRC0040	PRC0015	40532						
PRC0042	6036	PRC0042	PRC0041	6756	6767					
PRC0041	6531	PRC0041	PRC0015	40541						
PRC0044	7173	PRC0044	PRC0046	7402	7407					
			PRC0051	7612						
			PRC0056	10502						
			PRC0061	11001	11006					
			PRC0065	11336						
			PRC0112	16535						
			PRC0124	21056						

ENTRY	ADDRESS	PROGRAM	REFERENCES							
			PRC0126	21267						
			PRC0134	22512						
			PRC0133	23166						
			PRC0136	23325						
			PRC0135	24014						
			PRC0145	25306						
			PRC0157	27627	27777	30074				
			PRC0165	31506						
			PRC0111	34201	34422					
			PRC0172	35150	35206	35216				
			PRC0173	35436	35624	35662	35673			
			PRC0174	35750						
			PRC0175	36045	36130					
			PRC0176	36502	36671					
			PRC0103	37213						
			PRC0043	40042	40066	40300				
PRC0045	7214	PRC0045	PRC0046	7352						
			PRC0066	11531						
			PRC0070	11657						
			PRC0072	12042	12112	12150				
			PRC0073	12242	12247					
			PRC0075	12432						
			PRC0076	12535	12552	12565				
			PRC0077	12663	12745	12756	13011	13030		
			PRC0100	13211	13215	13222	13330	13335	13477	13520
				13605	13627	13646	13740	13761	14003	14015
				14024	14031	14036	14071	14107	14114	14124
				14131	14136	14155	14162	14174	14202	14206
				14212	14222	14230	14236	14241		
			PRC0101	14357	14400	14422	14435	14461	14466	14472
				14477	14503	14511	14523	14537	15132	15137
				15226	15241	15311	15331	15356		
			PRC0102	15577	15617	15624	15634			
			PRC0104	15670	15674					
			PRC0105	15733	15737					
			PRC0106	15770						
			PRC0110	16125	16151	16174	16200	16231	16236	16245
				16252						
			PRC0112	16541	16545	16551	16555	16602	16606	16617
				16636	16650	16654	16660	16664	16672	16676
				16707	16713					
			PRC0115	17365	17371	17420	17445	17456	17462	17524
				17537	17563					
			PRC0121	20360						
			PRC0124	21122						
			PRC0125	22007						
			PRC0130	22313	22317	22331				
			PRC0134	22507	22520	22526	22532	22537	22544	22551
				22555	22561	22604				
			PRC0133	22752	23110	23116	23130	23134	23140	23144
				23157	23205	23214	23225	23231	23235	23251
			PRC0136	23344	23350	23354	23361	23367	23373	23400
				23411	23415					
			PRC0135	23704	23733	23742	23755	23764	23775	24001

ENTRY	ADDRESS	PROGRAM	REFERENCES							
				24005	24046	24055	24066	24072	24102	24107
				24113	24136					
			PRC0140	24430						
			PRC0141	24517	24523	24527	24533	24537	24543	24547
				24553						
			PRC0142	24647	24654	24661				
			PRC0143	24753	24770					
			PRC0144	25061	25117	25131	25146	25153		
			PRC0145	25254	25304					
			PRC0146	25370	25375	25401				
			PRC0151	25615	25622					
			PRC0152	25760						
			PRC0153	26050						
			PRC0154	26140						
			PRC0155	26226						
			PRC0156	26355	26363	26374	26450	26454	26474	
			PRC0157	27015	27025	27031	27414	27432	27441	27445
				27451	27457	27467	27511	27515	27527	27533
				27550	27561	27565	27571	27602	27607	27613
				27623	27655	27661	27667	27673	27701	27705
				27711	27733	27743	30031	30035	30041	30056
				30062	30066	30133				
			PRC0162	30435	30442	30451	30457			
			PRC0161	30551	30564	30570	30641	30661		
			PRC0165	31152	31157	31404	31420	31444	31450	31454
				31461	31472	31514	31563	31577	31603	31617
				31674						
			PRC0163	32077	32103	32374	32404	32414	32420	32447
				32456	32465	32471	32502	32506	32567	32574
				32601	32605	32633	32637	32643	32647	32661
				32665	32705	32714				
			PRC0160	33052	33056	33247	33365			
			PRC0111	33601	33617	33623	34105	34120	34133	34142
				34146	34227	34233	34253	34273	34303	34311
				34321	34331	34335	34351	34364	34420	
			PRC0170	34677	34704	34715	34724	34732	34741	34745
				34751						
			PRC0173	35312	35332	35336	35360			
			PRC0176	36431	36516	36524	36610	36616	36623	36644
			PRC0177	37035	37046					
			PRC0043	37673	37676	37701	37704	37707	37712	40046
				40051	40055	40060	40124	40143	40146	40151
				40154	40273	40276	40351	40360	40363	40366
				40371	40374					
PRC0046	7267	PRC0046	PRC0061	11004						
			PRC0062	11023	11027					
			PRC0065	11236	11305	11313	11317	11323	11352	11372
				11407						
			PRC0072	12030	12144					
			PRC0073	12232						
			PRC0077	12625	12704	12714	12764	13004	13021	
			PRC0100	13226	13251	13356	13367	13526	13612	13621
				13637	13767					
			PRC0101	14406	14520	15154	15165	15247	15316	15323

ENTRY	ADDRESS	PROGRAM	REFERENCES							
				15346						
			PRC0102	15556	15640					
			PRC0104	15660	15700					
			PRC0112	16533	16562					
			PRC0115	17306	17414	17520	17557	17633		
			PRC0123	20550	20563	20576				
			PRC0124	21027	21054					
			PRC0126	21237	21254	21264				
			PRC0125	21741						
			PRC0127	22164						
			PRC0130	22307						
			PRC0132	22455	22461					
			PRC0134	22503	22566					
			PRC0133	23164	23221					
			PRC0136	23322	23422					
			PRC0135	24012	24062					
			PRC0137	24344						
			PRC0144	25107						
			PRC0145	25263	25270	25275				
			PRC0154	26145						
			PRC0156	26370	26401					
			PRC0157	26621	26625	26632	26772	27343	27421	27463
				27474	27544	27555	27645	27651	27753	27775
				30052	30072	30113				
			PRC0164	30727	30735					
			PRC0165	31430	31435					
			PRC0111	34177	34373	34400	34406	34412		
			PRC0166	34526	34540					
			PRC0170	34633	34637	34764				
			PRC0172	35143						
			PRC0173	35272	35302	35322	35342	35367	35541	35647
				35653	35660	35671				
			PRC0175	36126						
			PRC0176	36437	36530	36557	36651	36667		
			PRC0177	37042						
			PRC0043	37503	37511	37522	37525	37534	37545	37553
				37556	37562	37630	37641	37646	37660	37663
				37715	37723	37726	37732	40025	40032	40040
				40064	40121	40131	40134	40233	40257	40270
				40303	40346	40355	40377			
PRC0047	7510	PRC0047	PRC0073	12266						
			PRC0172	35155	35213	35223				
			PRC0173	35605	35622	35631	35707			
			PRC0175	36134						
			PRC0176	36675						
			PRC0103	37222	37246					
			PRC0043	40211	40415	40444				
PRC0050	7561	PRC0050	PRC0063	11104						
			PRC0170	34643						
			PRC0173	35544						
PRC0051	7605	PRC0051	PRC0052	7674	7743					
			PRC0043	37516	37654	40431	40453			
PRC0052	7644	PRC0052	PRC0052	7654	7657					
			PRC0043	40451						

ENTRY	ADDRESS	PROGRAM	REFERENCES							
PRC0053	7751	PRC0053	PRC0055	10050	10337					
			PRC0057	10635	10714					
			PRC0065	11263						
PRC0054	10004	PRC0054	PRC0157	26762	27765					
			PRC0043	40316						
PRC0055	10032	PRC0055	PRC0043	40247	40313	40320				
PRC0056	10475	PRC0056	PRC0043	40455						
PRC0057	10600	PRC0057	PRC0043	40457						
PRC0060	10733	PRC0060	PRC0065	11413						
			PRC0121	20366						
			PRC0124	21043	21050	21115	21126	21177		
			PRC0126	21260						
			PRC0125	22002	22013	22061				
			PRC0127	22173						
			PRC0130	22301	22323	22335				
			PRC0131	22417	22424					
			PRC0137	24357						
			PRC0155	26204						
			PRC0156	26407	26414	26421	26426	26433		
			PRC0157	26756	26766	27500	27761	27771		
			PRC0170	34760						
			PRC0043	37500	37537	37633	40236	40262		
PRC0061	10773	PRC0061	PRC0065	11415						
			PRC0121	20370						
			PRC0124	21130	21201					
			PRC0125	22015	22063					
			PRC0127	22175						
			PRC0130	22303	22325	22337				
			PRC0131	22426						
			PRC0137	24361						
			PRC0155	26206						
			PRC0156	26444						
			PRC0157	27641						
			PRC0043	37541	37635	40240	40264			
PRC0062	11014	PRC0062	PRC0157	27636						
PRC0063	11035	PRC0063	PRC0065	11333						
			PRC0077	12636						
			PRC0100	13254						
PRC0065	11115	PRC0065	PRC0065	11141	11167					
			PRC0064	11504						
PRC0064	11430	PRC0064	PRC0064	11440	11443					
			PRC0043	37565	37773					
PRC0066	11512	PRC0066	PRC0101	14577						
			PRC0112	16436						
			PRC0135	24031	24125					
			PRC0157	27155	27401					
			PRC0111	33545	33554					
PRC0067	11542	PRC0067	PRC0070	11662						
			PRC0075	12416	12457					
			PRC0077	12723	12770					
			PRC0100	13452	13505	13566	13772	13775	14041	14066
				14141	14215	14244				
			PRC0101	14411	14414	14506	14542	14723	14774	15010
				15035	15170	15365	15424	15452	15537	

OVERLAY(RPASCAL,0,0)

ENTRY	ADDRESS	PROGRAM	REFERENCES							
			PRC0102	15570	15610	15627	15643			
			PRC0104	15703						
			PRC0105	15723						
			PRC0106	15755	15760					
			PRC0110	16133	16161	16206	16225	16255		
			PRC0112	16701	16716	16721	16724	16727	16732	
			PRC0115	17527	17566					
			PRC0123	20553	20572					
			PRC0124	20747						
			PRC0125	21441						
			PRC0133	22755	23153	23210	23240	23261	23264	
			PRC0135	23707	23767	24116	24141	24144	24147	24152
			PRC0140	24433						
			PRC0141	24556	24561					
			PRC0142	24664						
			PRC0143	24732						
			PRC0144	25046	25122	25156				
			PRC0145	25300						
			PRC0146	25404						
			PRC0151	25625						
			PRC0152	25763						
			PRC0153	26037						
			PRC0154	26125						
			PRC0157	27034	27746					
			PRC0162	30463						
			PRC0161	30573	30664	30667				
			PRC0165	31163	31410	31465	31476	31520	31567	31623
				31700						
			PRC0163	32106	32377	32423	32437	32511	32610	32652
				32710	32717					
			PRC0160	33061						
			PRC0111	33604	33607	34110	34123	34136	34256	34340
				34343	34354	34357	34425	34430		
			PRC0166	34531	34543					
			PRC0173	35345	35350	35363				
			PRC0176	36536	36572	36626	36631			
			PRC0177	37051						
PRC0070	11614	PRC0070	PRC0101	14560						
			PRC0112	16461	16500					
			PRC0121	20351						
			PRC0127	22137						
			PRC0131	22407						
			PRC0137	24340						
			PRC0156	26333						
			PRC0157	27306	30025					
			PRC0176	36302	36377	36661				
			PRC0043	40336						
PRC0071	11710	PRC0071	PRC0112	16734						
			PRC0121	20172	20204	20362				
			PRC0124	21022	21132	21203				
			PRC0126	21247						
			PRC0125	22017	22065					
			PRC0127	22141						
			PRC0130	22224	22236	22275				

ENTRY	ADDRESS	PROGRAM	REFERENCES							
			PRC0131	22411						
			PRC0132	22451						
			PRC0137	24363						
			PRC0155	26200	26232					
			PRC0156	26275	26335	26500				
			PRC0157	27410	30076	30137				
			PRC0170	34614						
			PRC0172	35225						
			PRC0173	35722						
			PRC0174	35746						
			PRC0175	36043						
			PRC0176	36364	36403	36677				
			PRC0103	37211						
			PRC0043	37472	37776	40116	40223	40251	40340	
PRC0072	11752	PRC0072	PRC0155	26176						
			PRC0156	26273						
			PRC0157	26563						
PRC0073	12200	PRC0073	PRC0155	26244						
			PRC0156	26512						
			PRC0157	30152						
PRC0074	12274	PRC0074	PRC0076	12540						
			PRC0077	13014						
			PRC0100	13632	13751					
			PRC0101	14370	15276	15341				
			PRC0112	16526						
			PRC0134	22476						
			PRC0133	22715						
			PRC0136	23315						
			PRC0135	23647						
			PRC0144	25055						
			PRC0154	26134						
			PRC0165	31440	31557					
			PRC0163	32461	32655					
			PRC0111	33575	34172					
			PRC0173	35354						
			PRC0043	40034						
PRC0075	12344	PRC0075	PRC0076	12521						
			PRC0077	12621	12660	12675	12726	12777	13045	13056
			PRC0100	13173	13232	13322	13347	13474	13510	13575
				14000	14020	14063	14120	14146	14165	14257
			PRC0101	14417	14455	14554				
			PRC0102	15573	15613					
			PRC0104	15664						
			PRC0105	15727						
			PRC0106	15764						
			PRC0110	16121	16170	16221				
			PRC0112	16455	16475	16505	16511	16613	16632	
			PRC0115	17302	17360	17452	17513	17533	17627	
			PRC0124	20634	21107	21141				
			PRC0126	21232						
			PRC0125	21316	21734	21774	22030			
			PRC0133	22767	23072	23103	23124			
			PRC0135	23713	23724	23751	24035			
			PRC0141	24507	24513					

ENTRY	ADDRESS	PROGRAM	REFERENCES							
			PRC0142	24643						
			PRC0143	24736						
			PRC0144	25052	25142					
			PRC0145	25250						
			PRC0146	25364						
			PRC0151	25611						
			PRC0152	25754						
			PRC0153	26043						
			PRC0154	26131						
			PRC0155	26222						
			PRC0156	26330	26470					
			PRC0157	26670	26725	26750	27006	27272	27302	27336
				30021	30127					
			PRC0162	30431						
			PRC0161	30560	30603					
			PRC0165	31145	31400	31414	31573			
			PRC0163	32073	32370	32410	32443	32563	32623	32627
			PRC0160	33046						
			PRC0111	33613	34101	34114	34127	34206	34212	34244
				34262	34277	34315	34325			
			PRC0173	35276	35316					
			PRC0176	36277	36373	36507	36604	36637		
			PRC0177	37027						
PRC0076	12511	PRC0076	PRC0077	12710	13025					
			PRC0100	13362	13643					
			PRC0101	15160	15352					
			PRC0123	20557						
			PRC0157	27021	27737					
PRC0077	12606	PRC0077	PRC0112	16447	16467					
			PRC0124	20672	21000	21014				
			PRC0125	21372	21451	21473				
			PRC0127	22134						
			PRC0131	22404						
			PRC0133	22731	22734	23150				
			PRC0135	23663	23666	23760				
			PRC0137	24335						
			PRC0157	27250						
			PRC0111	33532	33536					
			PRC0177	36766						
PRC0100	13070	PRC0100	PRC0101	14317						
			PRC0102	15565	15605					
			PRC0112	16341	16360	16364	16406	16433		
			PRC0114	17003	17033	17063				
			PRC0115	17205	17344					
			PRC0113	20066						
			PRC0121	20310	20346					
			PRC0122	20476						
			PRC0123	20567						
			PRC0124	21004						
			PRC0125	21455	21500	21530	21573			
			PRC0130	22273						
			PRC0133	22740						
			PRC0135	23672	24026	24122				
			PRC0140	24424						

ENTRY	ADDRESS	PROGRAM	REFERENCES						
			PRC0141	24503					
			PRC0142	24637					
			PRC0143	24727					
			PRC0144	25043	25113				
			PRC0145	25220					
			PRC0146	25360					
			PRC0147	25447					
			PRC0150	25517					
			PRC0151	25605					
			PRC0152	25736					
			PRC0153	26034					
			PRC0154	26122					
			PRC0156	26305					
			PRC0157	27070	27152	30013			
			PRC0162	30474					
			PRC0164	30715	30721				
			PRC0165	31141	31353	31366	31546	31667	
			PRC0163	32040	32054	32063	32126	32133	32240	32245
				32345	32542				
			PRC0160	33042	33121	33125	33260	33264	
			PRC0111	33542	33551				
			PRC0166	34534					
			PRC0173	35265					
			PRC0176	36272	36355	36600	36655		
			PRC0043	40333					
PRC0101	14271	PRC0101	PRC0112	16401	16412	16442			
			PRC0122	20502					
			PRC0124	20702	21010	21020			
			PRC0126	21244					
			PRC0125	21402	21461	21504	21534	21577	21745
			PRC0133	23200	23256				
			PRC0157	27330	27351				
			PRC0177	36777	37064				
			PRC0043	37761					
PRC0102	15545	PRC0102	PRC0112	16372					
			PRC0115	17227					
			PRC0157	27222					
			PRC0165	31361	31374	31554			
			PRC0176	36551					
PRC0104	15651	PRC0104	PRC0105	15720					
			PRC0163	32434	32617				
PRC0105	15711	PRC0105	PRC0112	16375					
			PRC0145	25233					
			PRC0156	26320					
			PRC0157	27177					
			PRC0163	32145	32160	32257	32272	32452	
			PRC0160	33205	33217	33323	33335		
			PRC0111	33660	33672				
PRC0106	15746	PRC0106	PRC0115	17312	17350	17637	17653	17667	
			PRC0133	22744					
			PRC0135	23676					
			PRC0163	32067	32205	32227	32317		
			PRC0160	33145	33172	33243	33310	33361	33406
			PRC0111	33764	33772	33777	34040	34045	34052	34154

ENTRY	ADDRESS	PROGRAM	REFERENCES							
				34161						
PRC0107	15776	PRC0107	PRC0115	17266	17467	17543	17613			
			PRC0163	32026	32046	32353	32550			
PRC0110	16077	PRC0110	PRC0115	17275	17475	17551	17622			
			PRC0163	32121	32701					
PRC0112	16267	PRC0112	PRC0124	21104						
			PRC0125	21771						
			PRC0167	34575						
PRC0114	16760	PRC0114	PRC0113	17706						
PRC0116	17147	PRC0116	PRC0115	17354						
PRC0115	17173	PRC0115	PRC0113	17763						
PRC0113	17700	PRC0113	PRC0120	20152						
			PRC0165	31007						
			PRC0167	34560						
			PRC0177	36735						
PRC0120	20132	PRC0120	PRC0121	20202						
			PRC0122	20430						
			PRC0124	20643	20726	21145				
			PRC0130	22234						
			PRC0131	22370						
			PRC0133	22625	23000					
			PRC0135	23551						
			PRC0137	24207						
			PRC0140	24414						
			PRC0152	25655						
PRC0121	20160	PRC0121	PRC0117	30203						
PRC0122	20415	PRC0122	PRC0117	30206						
PRC0123	20521	PRC0123	PRC0124	21071	21173					
			PRC0125	21761	22055					
PRC0124	20610	PRC0124	PRC0117	30211						
PRC0126	21221	PRC0126	PRC0125	21602	21625	21631	21650	21663	21675	21710
				21752						
PRC0125	21275	PRC0125	PRC0117	30214						
PRC0127	22114	PRC0127	PRC0117	30217						
PRC0130	22212	PRC0130	PRC0117	30222						
PRC0131	22355	PRC0131	PRC0117	30225						
PRC0132	22444	PRC0132	PRC0117	30230						
PRC0134	22467	PRC0134	PRC0133	23172	23243					
PRC0133	22612	PRC0133	PRC0117	30233						
PRC0136	23306	PRC0136	PRC0135	24050	24127					
PRC0135	23436	PRC0135	PRC0117	30236						
PRC0137	24174	PRC0137	PRC0117	30241						
PRC0140	24401	PRC0140	PRC0117	30244						
PRC0141	24452	PRC0141	PRC0117	30312						
PRC0142	24602	PRC0142	PRC0117	30323						
PRC0143	24706	PRC0143	PRC0117	30326						
PRC0144	25012	PRC0144	PRC0117	30315						
PRC0145	25200	PRC0145	PRC0117	30307						
PRC0146	25327	PRC0146	PRC0117	30304						
PRC0147	25426	PRC0147	PRC0117	30331						
PRC0150	25476	PRC0150	PRC0117	30334						
PRC0151	25550	PRC0151	PRC0117	30337						
PRC0152	25644	PRC0152	PRC0117	30301						
PRC0153	26003	PRC0153	PRC0117	30342						

ENTRY	ADDRESS	PROGRAM	REFERENCES					
PRC0154	26071	PRC0154	PRC0117	30320				
PRC0155	26171	PRC0155	PRC0117	30345				
PRC0156	26260	PRC0156	PRC0117	30351				
PRC0157	26540	PRC0157	PRC0117	30405				
PRC0117	30166	PRC0117	PRC0165	31013				
			PRC0103	37317				
PRC0162	30413	PRC0162	PRC0161	30512	30517			
PRC0161	30503	PRC0161	PRC0163	32747				
			PRC0160	33433				
PRC0164	30675	PRC0164	PRC0163	32430	32613			
PRC0165	30743	PRC0165	PRC0165	31106				
			PRC0163	31760	31775			
PRC0163	31752	PRC0163	PRC0160	33020	33106			
PRC0160	33002	PRC0160	PRC0111	33472	33505			
PRC0111	33464	PRC0111	PRC0113	17735				
			PRC0121	20332				
			PRC0122	20461				
			PRC0125	21326	21417	21514	21547	22034
			PRC0127	22130				
			PRC0133	22702				
			PRC0135	23452	23634			
			PRC0141	24466				
			PRC0142	24616				
			PRC0143	24722				
			PRC0144	25026	25070			
			PRC0145	25214				
			PRC0146	25343				
			PRC0147	25442				
			PRC0150	25512				
			PRC0151	25564				
			PRC0153	26017				
			PRC0154	26105				
			PRC0156	26301				
			PRC0157	27113				
			PRC0165	31073	31234	31274		
			PRC0167	34573				
			PRC0172	35063				
			PRC0173	35243				
			PRC0174	36011				
			PRC0175	36052				
			PRC0176	36253	36332			
PRC0166	34512	PRC0166	PRC0172	35075				
			PRC0174	36024				
			PRC0175	36064				
PRC0167	34551	PRC0167	PRC0103	37322				
PRC0170	34607	PRC0170	PRC0103	37332				
PRC0171	35004	PRC0171	PRC0103	37326				
PRC0172	35055	PRC0172	PRC0103	37336				
PRC0173	35235	PRC0173	PRC0103	37342				
PRC0174	35741	PRC0174	PRC0103	37352				
PRC0175	36036	PRC0175	PRC0103	37346				
PRC0176	36166	PRC0176	PRC0103	37356				
PRC0177	36712	PRC0177	PRC0103	37362				
PRC0103	37202	PRC0103	PRC0171	35013	35031			

ENTRY	ADDRESS	PROGRAM	REFERENCES							
			PRC0172	35135	35204					
			PRC0173	35527						
			PRC0174	35756	35774					
			PRC0175	36122						
			PRC0176	36575						
			PRC0177	37127						
			PRC0043	40161	40176					
PRC0043	37445	PRC0043	PRC0015	40562						
PRC0015	40476	PRC0015	PRC0041	7132						
			PRC0200	41071						
PRC0200	40604	PRC0200	PASCAL	43170						
PRC0201	41104	PRC0201	PASCAL	43153						
PRC0202	41263	PRC0202	PASCAL	43152						
PRC0203	41530	PRC0203	PASCAL	43154						
PRC0204	42103	PRC0204	PASCAL	43155						
PRC0205	42247	PRC0205	PASCAL	43140						
PRC0206	42370	PRC0206	PASCAL	43141						
PRC0210	42422	PRC0210	PRC0207	42731						
PRC0211	42553	PRC0211	PRC0207	42733						
PRC0212	42661	PRC0212	PRC0207	42735						
PRC0207	42725	PRC0207	PASCAL	43142						
PRC0214	43000	PRC0214	PASCAL	43225						
P.MAIN	43076	PASCAL	P.SYSTM	43676	43732	44061	44073	44076	44104	
PASCAL	43076									
PASCL.A	43202		PRC0002	324						
P.GETB	43252	P.SYSTM								
P.PUTB	43275		PRC0003	375						
			PRC0005	770						
			PRC0055	10045	10055	10076	10115	10121	10125	10131
				10135	10157	10202	10227	10233	10237	10243
				10247	10264	10267	10275	10326	10331	10334
				10343	10346	10354	10357	10366	10402	10411
			PRC0056	10546	10552	10562				
			PRC0057	10617	10650	10664	10700	10707	10723	
			PASCAL	43213	43216	43221				
P.GETC	43315		PRC0006	431						
			PASCAL	43176						
P.GETLN	43355									
P.PUTC	43367		PRC0001	127	134	140				
			PRC0002	207	216	257	265	273		
			PASCAL	43136						
			WRI	44240	44246	44272	44301			
			WRO	44323	44333					
			WRS	44402	44416					
P.PUTLN	43410		PRC0001	163						
			PRC0002	254	255	276	322			
			PRC0037	5633						
			PRC0040	6021						
			PRC0055	10426	10440	10452				
			PRC0043	37616						
			PASCAL	43134	43137					
P.OPEN	43516		PASCAL	43105	43112	43117	43124			
P.CLOSE	43543		PASCAL	43230	43231					
P.RESET	43552		PASCAL	43125						

OVERLAY(RPASCAL,0,0)

ENTRY	ADDRESS	PROGRAM	REFERENCES							
P.REWRT	43564		PASCAL	43127						
P.RWRTS	43574									
P.GETS	43600									
P.PUTS	43604		PRC0057	10724						
			PASCAL	43202	43222	43226	43232			
P.CLOCK	43617		PASCAL	43130	43223					
P.DATE	43624		PASCAL	43132						
P.TIME	43627		PASCAL	43133						
P.MSG	43632		PRC0214	43063						
			OVL	44352						
P.NEW	43652		PRC0005	1277	1337					
			PRC0024	2624	2652					
			PRC0031	3143						
			PRC0030	3331	3351					
			PRC0032	3665	4017	4043	4204			
			PRC0027	4404	4440	4534	5000	5101	5170	
			PRC0035	5312						
			PRC0036	5415						
			PRC0037	5511						
			PRC0040	5655						
			PRC0042	6102	6162	6303				
			PRC0041	6615	6623	7126				
			PRC0050	7566						
			PRC0063	11067						
			PRC0065	11220	11325					
			PRC0100	13125						
			PRC0165	31202						
			PRC0173	35472						
			PRC0200	40615	40670	40736				
			PRC0202	41267	41305	41323	41341	41357	41376	41425
				41454	41474					
			PRC0203	41534	41547	41562	41575	41610	41623	41636
				41654	41672	41710	41732	41761	42010	42040
			PRC0204	42107	42120	42134	42154	42171	42215	
P.DISP	43660									
P.INIT	43663		PASCAL	43076						
P.SABRT	44034									
WRI	44221	WRI	PRC0001	155						
			PRC0002	253						
			PRC0055	10425	10451					
WRO	44314	WRO	PRC0002	263						
OVL	44337	OVL	PASCAL	43227						
WRS	44370	WRS	PRC0001	113						
			PRC0002	214	223	230	235	242	247	321
			PRC0037	5625	5632					
			PRC0040	6013	6020					
			PRC0055	10421	10445					
			PRC0043	37610	37615					

5.027 CP SECONDS 67744B CM STORAGE USED 27 TABLE MOVES

-------- OVERLAY(RPASREF,0,0)

FWA OF THE LOAD 101
LWA+1 OF THE LOAD 6170

TRANSFER ADDRESS -- COMPXRE 5005

PROGRAM AND BLOCK ASSIGNMENTS.

BLOCK	ADDRESS	LENGTH	FILE	DATE	PROCSSR	VER	LEVEL	HARDWARE	COMMENTS	
RPASREF	101	1	BIN2	11/02/75	COMPASS	3.	75286		RELOCATABLE PASCAL 6000 - 3.4 CROSS REF.	
PRC0001	102	354	BIN2	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X4	ER000TO049
PRC0002	456	206	BIN2	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X4	ER050TO099
PRC0003	664	1156	BIN2	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X4	ER100TO149
PRC0004	2042	553	BIN2	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X4	ER150TO199
PRC0005	2615	127	BIN2	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X4	ER200TO249
PRC0006	2744	233	BIN2	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X4	ER250TO299
PRC0007	3177	140	BIN2	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X4	ER300TO349
PRC0010	3337	102	BIN2	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X4	ER350TO399
PRC0012	3441	76	BIN2	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X4	CTIMEOUT
PRC0013	3537	73	BIN2	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X4	XREFNDLN
PRC0014	3632	113	BIN2	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X4	SEARCHE
PRC0015	3745	147	BIN2	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X4	SEARCH
PRC0016	4114	261	BIN2	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X4	PRINTWORD
PRC0017	4375	62	BIN2	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X4	PRINTTABLE
PRC0011	4457	323	BIN2	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X4	XREF
COMPXRE	5002	56	BIN2	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E- P- R- T- U+ X4	COMPXREF
P.SYSTM	5060	754	UL-RPASLIB	11/02/75	COMPASS	3.	75286			
WRI	6034	72	UL-RPASLIB	11/02/75	PASCAL	2.0	UP10	6 6 I	B1 E+ P- R- T- U+ X0	WRI
WRS	6126	42	UL-RPASLIB	11/02/75	COMPASS	3.	75286			
//	6170	0								

ENTRY POINTS.

ENTRY	ADDRESS	PROGRAM	REFERENCES					
PRC0001	104	PRC0001	PRC0016	4140				
PRC0002	460	PRC0002	PRC0016	4143				
PRC0003	666	PRC0003	PRC0016	4146				
PRC0004	2044	PRC0004	PRC0016	4151				
PRC0005	2617	PRC0005	PRC0016	4154				
PRC0006	2746	PRC0006	PRC0016	4157				
PRC0007	3201	PRC0007	PRC0016	4162				
PRC0010	3341	PRC0010	PRC0016	4165				
PRC0012	3443	PRC0012	PRC0011	4747				
PRC0013	3541	PRC0013	PRC0016	4200	4237	4370		
			PRC0011	4607	4623	4657	4663	4713
PRC0014	3634	PRC0014	PRC0011	4542				
PRC0015	3747	PRC0015	PRC0011	4561				
PRC0016	4116	PRC0016	PRC0017	4430				

ENTRY	ADDRESS	PROGRAM	REFERENCES						
			PRC0011	4617					
PRC0017	4377	PRC0017	PRC0011	4661					
PRC0011	4461	PRC0011	COMPXRE	5035					
PASCL.A	4564		PRC0015	4106					
COMPXRE	5005	COMPXRE							
P.MAIN	5005		P.SYSTM	5513	5547	5676	5710	5713	5721
P.GETB	5067	P.SYSTM	PRC0011	4562	4565	4575	4600		
P.PUTB	5112								
P.GETC	5132								
P.GETLN	5172								
P.PUTC	5204		PRC0013	3554					
			PRC0016	4127	4202	4221	4226	4241	
			PRC0011	4625	4665				
			WRI	6055	6063	6107	6116		
			WRS	6146	6162				
P.PUTLN	5225		PRC0013	3550	3620	3621			
			PRC0011	4650	4710	4743			
P.OPEN	5333		COMPXRE	5014	5021	5026	5033		
P.CLOSE	5360		COMPXRE	5042	5043	5044			
P.RESET	5367		PRC0011	4524					
P.REWRT	5401								
P.RWRTS	5411								
P.GETS	5415		PRC0011	4570					
P.PUTS	5421		COMPXRE	5045					
P.CLOCK	5434		PRC0011	4464	4744				
P.DATE	5441								
P.TIME	5444								
P.MSG	5447		PRC0012	3527					
			COMPXRE	5040					
P.NEW	5467		PRC0014	3644	3714				
			PRC0015	4012	4046				
P.DISP	5475								
P.INIT	5500		COMPXRE	5005					
P.SABRT	5651								
WRI	6036	WRI	PRC0001	117	136				
			PRC0002	473	512				
			PRC0003	701	720				
			PRC0004	2057	2076				
			PRC0005	2632	2651				
			PRC0006	2761	3000				
			PRC0007	3214	3233				
			PRC0010	3354	3373				
			PRC0013	3617					
			PRC0011	4631	4642	4671	4702	4724	4735
WRS	6134	WRS	PRC0001	124	131	143	152	160	166	174
				202	210	216	224	232	240	246
				254	262	270	276	304	312	320
				326	334	342				
			PRC0002	500	505	517	526	534	542	550
				556	564	572	600	606	614	
			PRC0003	706	713	725	734	742	750	756
				764	772	1000	1006	1014	1022	1030
				1036	1044	1052	1060	1066	1074	1102
				1107	1115	1122	1130	1135	1143	1151

ENTRY	ADDRESS	PROGRAM REFERENCES							
			1156	1164	1172	1200	1206	1213	1221
			1227	1234	1242	1250	1256	1264	1272
			1300	1306	1314	1322	1330	1336	1343
			1351	1357	1365	1373	1401	1407	1415
			1423	1430	1436	1444			
		PRC0004	2064	2071	2103	2112	2120	2126	2134
			2142	2150	2156	2164	2172	2200	2206
			2214	2222	2230	2236	2244	2252	2260
			2266	2274	2302	2310	2316	2324	2332
			2340	2346	2354	2361	2367	2374	
		PRC0005	2637	2644	2656	2665	2673	2701	2707
		PRC0006	2766	2773	3005	3014	3022	3030	3035
			3043	3051	3057	3065	3073	3101	3107
		PRC0007	3221	3226	3240	3247	3255	3263	3271
			3277						
		PRC0010	3361	3366	3400	3407	3415		
		PRC0013	3561	3567	3574	3601	3606	3613	
		PRC0016	4207	4246	4363				
		PRC0011	4636	4647	4676	4707	4720	4731	4742

.472 CP SECONDS 20466B CM STORAGE USED 5 TABLE MOVES

```
*****     *IDENT  NOTSLIST                                                                  3, 1974, 1975.
*****     *BEFORE  COMP.2                                                                   3, 1974, 1975.
          (*$L- NO LIST DURING TEST COMPILATION*)                                           3, 1974, 1975.


          MODIFICATIONS / CONTROL CARDS


COMP      (*$L- NO LIST DURING TEST COMPILATION*)                      NOTSLIST      1        I
COMP      *WEOR                                                        COMP       6873

SYS       *WEOR                                                        SYS        1072

DUMMY     *WEOR                                                        DUMMY         3

ATAN      *WEOR                                                        ATAN        122

COMPXREF  *WEOR                                                        COMPXREF      2


              CORRECTION IDENTS ARE LISTED IN CHRONOLOGICAL ORDER OF INSERTION

          COMP      SYS       PMD       TEN       RDR       WRE       WRI       RDI
          WRB       WRF       WRC       DUMMY     WRO       WRS       SIN       EXP
          LN        SQRT      ATAN      XREF      DECODE    WRH       OVL       COMPXREF
          UPDATE1   UPDATE21  UPDATE22  UPDATE3   UPDATE4   UPDATE5   UPDATE6   UPDATE7
          UPDATE8   UPDATE9   UPDAT10   SYS1      XJMODS    IMULT     RUNMODS   ORDALFA
          LISTCTRL  CTIME     CROSSREF  SPACERR   OVLAP9    OPT6600A  XTNDPRFX  HEXCON
          HEXOUT    OPT6600B  PERCENTA  PERCENTB  OVERLAY   PRERRMS   OVL1      NOTSLIST


DECKS ARE LISTED IN THE ORDER OF THEIR OCCURRENCE ON A NEW PROGRAM LIBRARY IF ONE IS CREATED BY THIS UPDATE

          YANK$$$   COMP      SYS       PMD       TEN       RDR       WRE       WRI
          RDI       WRB       WRF       WRC       DUMMY     WRO       WRH       OVL
          WRS       SIN       EXP       LN        SQRT      ATAN      XREF      DECODE
          COMPXREF
```

COMP	SYS	PMD	TEN	RDR	WRE	WRI	RDI
WRB	WRF	WRC	DUMMY	WRO	WRH	OVL	WRS
SIN	EXP	LN	SQRT	ATAN	XREF	DECODE	COMPXREF

THIS UPDATE REQUIRED 34100B WORDS OF CORE.

```
                              >>> COST REPORT FOR PASCM7B <<<

                        11/02/75                          15.50.32

       RESOURCE                  BILLING RATE                    UNITS USED          COST

 CENTRAL PROCESSOR         $120.00  /HOUR                   272.780 CP SECONDS      $    9.09
 PERIPHERAL PROCESSOR        40.00  /HOUR                   511.966 PP SECONDS           5.69
 I/O                         60.00  /HOUR                   109.625 IO SECONDS           1.83
 FIELD LENGTH                 6.00  /KILO-WRD-HOUR         9187.048 KILO-WRD-SECS.      15.31
 CARDS READ                  .0007/CARD                         195 CARDS READ            .14
                                                                                     --------
 (BASIC COST EXCLUDES LINES PRINTED, CARDS PUNCHED                     BASIC COST      32.06
   AND PLOTTER TIME CHARGES)

 JOB PRIORITY  3         PRIORITY COST FACTOR  1.00          APPROXIMATE ADJUSTED COST    32.06

                               AS OF LAST ACCOUNT UPDATE, FUNDS LEFT IN ACCOUNT $    249.02

                       ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

                               DUE TO SYSTEM FAILURE, ALL PERMANENT FILES CREATED BETWEEN MIDNIGHT ON
                           10/31 AND 13:30 ON 11/1 HAVE BEEN LOST, AS WELL AS THE EFFECTS OF ANY PURGES,
                           RENAMES, ALTERS AND EXTENDS PERFORMED DURING THE SAME PERIOD.

                             WE ARE TEMPORARLY OUT OF SMALL GRAPH PAPER FOR THE PLOTTER.

                       ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

   11/02/75  UNIV. OF VA. SCOPE 3.4.3     10/10/75   LEVEL 401
 15.42.03.PASCM7B  FROM
 15.42.03.PASCM,B3000JRDS,T1000.FELTS,HOUGH
 15.42.03.PASCAL MASTER UPDATE DECK.
 15.42.07.
 15.42.07.  CREATE LOCAL COPIES OF FILES
 15.42.07.  REQUIRED FROM OLD SYSTEM.
 15.42.07.
 15.42.07.ATTACH,RPASCAL,RPASCAL,ID=B3000J.
 15.42.07.PF CYCLE NO. = 003
 15.42.07.ATTACH,RPASOLD,RPASOLD,ID=B3000J.
 15.42.07.PF CYCLE NO. = 001
 15.42.07.ATTACH,MODS,RPASMOD,ID=B3000J.
 15.42.08.PF CYCLE NO. = 001
 15.42.08.REWIND,RPASCAL,RPASOLD,MODS.
 15.42.08.
 15.42.08.  ASSEMBLE LOADER CONTROL CARDS.
 15.42.08.
 15.42.08.RFL,52000.
 15.42.08.COMPASS,B=LCC1.
 15.42.09. ASSEMBLY COMPLETE.   46400B  CM USED.
 15.42.09.     0.463  CPU SECONDS  ASSEMBLY TIME.
 15.42.09.COMPASS,B=LCC2.
 15.42.10. ASSEMBLY COMPLETE.   46400B  CM USED.
 15.42.10.     0.461  CPU SECONDS  ASSEMBLY TIME.
 15.42.10.
 15.42.11.  CREATE NEWPL AND COMPILE FILE.
 15.42.11.
 15.42.11.REQUEST,RPASNEW,*PF.
 15.42.11.RFL,40000.
 15.42.11.UPDATE,N=RPASNEW,F,P=RPASOLD,W.
 15.42.16.( RPASNEW ASSIGNED TO EST 02 )
```

```
15.42.46.DECK STRUCTURE CHANGED
15.42.52.          11 OVERLAPPING CORRECTIONS
15.42.53. UPDATE COMPLETE.
15.42.53.RETURN,RPASOLD,MODS.
15.42.53.
15.42.53.  SPLIT COMPILE FILE BY ROUTINE.
15.42.53.
15.42.53.RFL,14000.
15.42.53.REWIND,COMPILE,COMP,SYSC,PLIB,CLIB,XREF.
15.42.53.
15.42.53.COPYBR,COMPILE,COMP.
15.43.00.COPYBR,COMPILE,SYSC.
15.43.01.COPYBR,COMPILE,PLIB.
15.43.01.COPYBR,COMPILE,CLIB.
15.43.02.COPYBR,COMPILE,TRASH.
15.43.03.COPYBR,COMPILE,XREF.
15.43.03.REWIND,COMPILE,COMP,SYSC,PLIB,CLIB,XREF.
15.43.03.
15.43.03.RETURN,COMPILE,TRASH.
15.43.03.
15.43.03.  GENERATE RELOCATABLE BINARIES.
15.43.03.
15.43.03.REDUCE,OFF.
15.43.04.RFL,70000.
15.43.04.RPASCAL,COMP,,COMPB.
15.43.07.- LOAD FL 044424
15.46.25.-  103.192 CP SECONDS COMPILATION TIME
15.46.26.- LOAD FL 006170
15.47.02.-   24.031 CP SECONDS CROSS REF. TIME
15.47.03.RFL,52000.
15.47.03.COMPASS,I=SYSC,B=SYSCB.
15.47.11.         1 WARNING MESSAGE IN  P.SYSTM
15.47.12. ASSEMBLY COMPLETE.   46500B  CM USED.
15.47.12.    7.687  CPU SECONDS  ASSEMBLY TIME.
15.47.12.RFL,60000.
15.47.12.RPASCAL,PLIB,,PLIBB.
15.47.14.- LOAD FL 044424
15.47.25.-    6.674 CP SECONDS COMPILATION TIME
15.47.25.- LOAD FL 006170
15.47.27.-    0.971 CP SECONDS CROSS REF. TIME
15.47.27.RFL,52000.
15.47.27.COMPASS,I=CLIB,B=CLIBB.
15.47.43. ASSEMBLY COMPLETE.   47500B  CM USED.
15.47.43.    8.920  CPU SECONDS  ASSEMBLY TIME.
15.47.43.RFL,60000.
15.47.43.RPASCAL,XREF,,XREFB.
15.47.46.- LOAD FL 044424
15.48.01.-    9.449 CP SECONDS COMPILATION TIME
15.48.01.- LOAD FL 006170
15.48.03.-    0.909 CP SECONDS CROSS REF. TIME
15.48.03.REDUCE.
15.48.03.RFL,14000.
15.48.03.RETURN,RPASCAL.
15.48.03.RETURN,COMP,SYSC,PLIB,CLIB,XREF.
15.48.04.
15.48.04.  COMBINE LIBRARY BINARIES AND
15.48.04.  GENERATE LIBRARY.
15.48.04.
15.48.04.REQUEST,LIBBIN,*PF.
15.48.04.REWIND,LIBBIN,SYSCB,PLIBB,CLIBB.
15.48.04.( LIBBIN: ASSIGNED TO EST 01 )
15.48.04.COPYBR,SYSCB,LIBBIN.
15.48.04.COPYBR,PLIBB,LIBBIN,9.
15.48.05.COPYBF,CLIBB,LIBBIN.
15.48.05.EOI ENCOUNTERED AFTER COPY OF FILE
15.48.05.          0. RECORD  9
```

```
15.48.06.REWIND,LIBBIN.
15.48.06.REQUEST,RPASLIB,*PF.
15.48.06.RFL,30000.
15.48.06.EDITLIB,USER.
15.48.06.( RPASLIB ASSIGNED TO EST 01 )
15.48.10.
15.48.10.  COMBINE MAIN PROGRAMS WITH
15.48.10.  LOADER CONTROL CARDS.
15.48.10.
15.48.10.RFL,14000.
15.48.10.REQUEST,BIN1,*PF.
15.48.11.REQUEST,BIN2,*PF.
15.48.11.REWIND,COMPB,XREFB,LCC1,LCC2,BIN1,BIN2.
15.48.11.
15.48.11.( BIN1    ASSIGNED TO EST 01 )
15.48.11.( BIN2    ASSIGNED TO EST 01 )
15.48.11.COPYBR,LCC1,BIN1,2.
15.48.11.COPYBF,COMPB,BIN1.
15.48.18.EOI ENCOUNTERED AFTER COPY OF FILE
15.48.18.         0, RECORD  140
15.48.18.COPYBR,LCC2,BIN2,2.
15.48.19.COPYBF,XREFB,BIN2.
15.48.20.EOI ENCOUNTERED AFTER COPY OF FILE
15.48.20.         0, RECORD  16
15.48.20.RETURN,LCC1,LCC2,COMPB,XREFB.
15.48.20.
15.48.20.  LOAD MAIN PROGRAMS TO PRODUCE
15.48.20.  MAPS AND ABSOLUTE OVERLAYS.
15.48.20.
15.48.20.REQUEST,RPASCAL,*PF.
15.48.20.REQUEST,RPASREF,*PF.
15.48.20.MAP,FULL.
15.48.20.REDUCE,OFF.
15.48.20.RFL,75000.
15.48.20.LDSET,LIB=RPASLIB.
15.48.21.LOAD,BIN1.
15.48.21.NOGO.
15.48.26.( RPASCAL ASSIGNED TO EST 01 )
15.48.30.RFL,30000.
15.48.30.LDSET,LIB=RPASLIB.
15.48.30.LOAD,BIN2.
15.48.31.NOGO.
15.48.32.( RPASREF ASSIGNED TO EST 02 )
15.48.32.REDUCE.
15.48.32.RFL,14000.
15.48.32.MAP,OFF.
15.48.32.
15.48.32.  CREATE NEW SYSTEM.
15.48.32.
15.48.32.REWIND,TRASH,RPASCAL,RPASREF.
15.48.32.COPYBR,RPASCAL,TRASH.
15.48.34.COPYBR,RPASREF,TRASH.
15.48.34.RETURN,RPASREF.
15.48.34.REWIND,RPASCAL,TRASH.
15.48.34.COPYBF,TRASH,RPASCAL.
15.48.35.EOI ENCOUNTERED AFTER COPY OF FILE
15.48.35.         0, RECORD  2
15.48.36.RETURN,TRASH.
15.48.36.REWIND,RPASCAL.
15.48.36.CATALOG,RPASCAL,RPASCAL,ID=B3000J,RP=999
15.48.36.,PW=*---*.
15.48.36.NEWCYCLE CATALOG
15.48.37.CT ID= B3000J   PFN=RPASCAL
15.48.37.CT CY= 004  00000343 PRUS  $0000.35 /DAY.
15.48.37.REWIND,RPASLIB.
```

```
15.48.37.CATALOG,RPASLIB,RPASLIB,ID=B3000J,RP=999
15.48.37.,PW=*---*.
15.48.37.NEWCYCLE CATALOG
15.48.37.CT ID= B3000J    PFN=RPASLIB
15.48.37.CT CY= 004  00000059 PRUS  $0000.10 /DAY.
15.48.37.REWIND,RPASNEW.
15.48.37.CATALOG,RPASNEW,RPASNEW,ID=B3000J,RP=999
15.48.37.,PW=*---*.
15.48.37.NEWCYCLE CATALOG
15.48.38.CT ID= B3000J    PFN=RPASNEW
15.48.38.CT CY= 004  00000731 PRUS  $0000.70 /DAY.
15.48.38.REWIND,BIN1.
15.48.38.CATALOG,BIN1,RPASRBC,ID=B3000J,RP=999,PW
15.48.38.=*---*.
15.48.38.NEWCYCLE CATALOG
15.48.38.CT ID= B3000J    PFN=RPASRBC
15.48.38.CT CY= 003  00000472 PRUS  $0000.45 /DAY.
15.48.38.REWIND,LIBBIN.
15.48.38.CATALOG,LIBBIN,RPASRBL,ID=B3000J,RP=999,
15.48.38.PW=*---*.
15.48.39.NEWCYCLE CATALOG
15.48.39.CT ID= B3000J    PFN=RPASRBL
15.48.39.CT CY= 003  00000053 PRUS  $0000.05 /DAY.
15.48.39.RETURN,RPASCAL,RPASOLD,RPASLIB,LIBBIN.
15.48.40.RETURN,RPASSYS,BIN2,BIN1,MODS,RPASNEW.
15.48.40.
15.48.40.  TEST NEW SYSTEM.
15.48.40.
15.48.40.ATTACH,RPASOLD,RPASNEW,ID=B3000J.
15.48.40.PF CYCLE NO. = 004
15.48.40.ATTACH,RPASCAL,RPASCAL,ID=B3000J.
15.48.41.PF CYCLE NO. = 004
15.48.41.REWIND,COMP.
15.48.41.RFL,40000.
15.48.41.UPDATE,F,P=RPASOLD,D,8,C=COMP.
15.48.55. UPDATE COMPLETE.
15.48.56.RFL,14000.
15.48.56.REWIND,COMP,COMPILE.
15.48.56.COPYCR,COMP,COMPILE.
15.48.59.RETURN,COMP.
15.48.59.REWIND,COMPILE.
15.48.59.REDUCE,OFF.
15.48.59.RFL,70000.
15.48.59.RPASCAL,COMPILE.
15.49.02.- LOAD FL 044424
15.50.26.-    61.128 CP SECONDS COMPILATION TIME
15.50.27.- LOAD FL 006170
15.50.27.-     0.040 CP SECONDS CROSS REF. TIME
15.50.27.BOMBBOMBBOMB.
15.50.27.CONTROL CARD ERROR
15.50.27.EXIT.
15.50.30. SUBACCOUNT FUNDS REMAINING  $ 0.00
15.50.31.EX ID= B3000J    PFN=SASACCOUNTB3000J
15.50.31.EX CY= 001  00001208 PRUS  $0001.10 /DAY.
15.50.32.     STOP
15.50.32.EJ  END OF JOB, **

PRINT COST $014.97  PASCM7B  //// END OF LIST ////  0021388 LINES
```