```
CRUNCH  00/00/00
ALTER   1,1
ALTER   328
ALTER   373
ALTER   399
ALTER   425,429
ALTER   440,440
ALTER   445
ALTER   488,506
ALTER   519,528
ALTER   530,530
ALTER   532,544
ALTER   551,561
ALTER   723,728
ALTER   741,741
ALTER   777
ALTER   781,782
ALTER   1017,1018
ALTER   1040,1040
ALTER   1057,1057
ALTER   1063,1063
ALTER   1224,1224
ALTER   1314,1314
ALTER   1474
ALTER   1483,1486
ALTER   1487,1488
ALTER   1491,1491
ALTER   1497
ALTER   1545,1549
ALTER   1606,1606
ALTER   1668,1672
ALTER   1720,1720
ALTER   1745,1746
ALTER   1750,1752
ALTER   1873,1879
ALTER   1915,1915
ALTER   1925
ALTER   1964,1964
ALTER   2015,2016
ALTER   2071,2076
ALTER   2697,2697
ALTER   2701,2701
ALTER   2789
ALTER   2797,2797
ALTER   2813,2813
ALTER   3031,3031
ALTER   3165,3385
ALTER   3463,3465
ALTER   3475,3671
ALTER   3676,3731
ALTER   3733,3827
ALTER   3971,3971
ALTER   3973,3979
```

352-35a

```
ALTER   4029,4032
ALTER   4037
ALTER   4048,4048
ALTER   4064,4065
ALTER   4196,4196
ALTER   4382,4382
ALTER   4598,4640
ALTER   5008,5008
ALTER   5015,5015
ALTER   5621,5622
ALTER   5660,5660
ALTER   5662,5662
ALTER   5664,5664
ALTER   5721
ALTER   5739,5739
ALTER   5803,5803
ALTER   5815,5815
ALTER   5822,5822
ALTER   5905,5905
ALTER   6083,6083
ALTER   6117,6117
ALTER   6412,6412
ALTER   7401,7401
ALTER   7404,7409
ALTER   7708,7708
ALTER   7782,7783
ALTER   7802
ALTER   7807,7808
ALTER   7809,7810
ALTER   7820
ALTER   7833
ALTER   7849,7856
ALTER   7859,7860
ALTER   7861,7861
ALTER   7863,7863
ALTER   7865,7865
ALTER   7906,7906
ALTER   7915,7915
ALTER   7920,7920
ALTER   7924,7924
ALTER   7928,7928
ALTER   7933,7933
ALTER   7942,7942
ALTER   8136
ALTER   8165,8165
ALTER   8225,8232
ALTER   8264,8264
ALTER   8301,8301
ALTER   8302,8302
ALTER   8303
ALTER   8317
ALTER   8332,8333
ALTER   8335,8352
ALTER   8556
```

```
ALTER   8596,8596
ALTER   8597
ALTER   8602
ALTER   8604,8604
ALTER   8608,8608       $ORG CONTENTS ARE IN ADDRESS
ALTER   8618,8618
ALTER   8631,8631       SAME AS 8608
ALTER   8648
ALTER   8662,8662
ALTER   8685
ALTER   8686,8686
ALTER   8690
ALTER   8700
ALTER   8703
ALTER   8708
ALTER   8716,8716
ALTER   8717
ALTER   8729,8730
ALTER   8737,8737
ALTER   8762,8762
ALTER   8764,8764
ALTER   8766,8766
ALTER   8788
ALTER   8790,8791
ALTER   8794,8794
ALTER   8796,8796
ALTER   8804
ALTER   8808,8808
ALTER   8809
ALTER   8812,8812
ALTER   8813,8813
ALTER   8820
ALTER   8821
ALTER   8822,8823
ALTER   8833
ALTER   8845,8845
ALTER   8854,8855
ALTER   8858,8860
ALTER   8864,8865
ALTER   8866,8866
ALTER   8868,8870
ALTER   8875,8875
ALTER   8884
ALTER   8885,8886
ALTER   8899,8899
ALTER   8910
ALTER   8911
ALTER   8923,8924
ALTER   8933,8933
ALTER   8936,8967
ALTER   8970,8970
ALTER   8974
ALTER   8976,8976
ALTER   8979
```

```
ALTER   8980,8981
ALTER   8988
ALTER   8991,8991
ALTER   8994
ALTER   9023,9023
ALTER   9047,9047
ALTER   9055,9066       CHANGE MOVE FOR 2 WORD CALL
ALTER   9070,9070
ALTER   9072
ALTER   9089,9089
ALTER   9090,9091
ALTER   9093,9093
ALTER   9094,9094
ALTER   9095,9095
ALTER   9098,9099
ALTER   9102,9102
ALTER   9103,9103
ALTER   9106,9106
ALTER   9108
ALTER   9111,9111
ALTER   9225,9228
ALTER   9363,9363
ALTER   9369,9369
ALTER   9397
ALTER   9569,9571
ALTER   9647,9649
ALTER   9950,9950
ALTER   9954,9954
ALTER   10440,10440
ALTER   10442,10442
ALTER   10447,10447
ALTER   10450,10450
ALTER   10456,10456
ALTER   10460,10460
ALTER   10464,10464
ALTER   10499,10499
ALTER   10656,10660
ALTER   10661,10662
ALTER   10664,10665
ALTER   10667,10668
ALTER   10670,10671
ALTER   10673,10674
ALTER   10676,10677
ALTER   10679,10680
ALTER   10682,10683
ALTER   10685,10686
ALTER   10688,10689
ALTER   11033,11042     TAGS IN NEW DIGITS
ALTER   11179
ALTER   11233,11233
ALTER   11270,11270
ALTER   11315
```

ROW OPSYN NULL
DECK

```
                                        2          PCC
                                        3          ZST
                                        4  * M948-508,FMS,DEBUG,20,40,20000,700          ASSEMBLE LISP 1.5          LISPHERE
                                        5  *       FAP                                                               LC000200
                                        6          COUNT    13000                                                    LC000300
                                        7          ABS                                                               LC000400
                                        8  * FIELD TEST ASSEMBLY OF LISP 1.5       SEPTEMBER 1961
                                        9  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * LC003500
                                       10  *                                                                         LC003600
                                       11  *                                                                         LC003700
                                       12  *     THIS IS THE 709 SECTION OF THE UPPER VERSION OF RWTML               LC003800
                                       13  *        SHARE DIST  NO.  709 AND  741                                    LC003900
                                       14  *        IT LOADS  BINARY 704 STYLE CARDS AND OCTAL CORRECTION CARDS      LC004000
                                       15  *     ON LINE                                                           LC004100
                                       16  *                                                                         LC004200
                                       17  L       HED                                                               LC004400
                                77721  18          ORG      -47                TO POSITION LOAD AT -42               LC004600
                                       19  *       709 BINARY-OCTAL BOOTSTRAP LOADER                                LC004500
77721   0 00025 0 77724        77721  20          IOCD     LOAD,0,21          COMMAND TO LOAD REMAINDER OF LOADER   LC004700
77722   0060 00 0 00001        77722  21          TCOA     1                  DELAY TILL LOADER IN                  LC004800
77723   0020 00 0 77724        77723  22          TRA      LOAD                                                     LC004900
77724   0762 00 0 01321        77724  23  LOAD    RCDA                        INITIATE NEXT CARD                    LC005000
77725   0540 00 0 77747        77725  24          RCHA     LOAD5                                                    LC005100
77726   0060 00 0 77726        77726  25          TCOA     *                  DELAY TILL CARD IS IN                 LC005200
77727   0030 00 0 00174        77727  26          TEFA     CONTIN                                                   LC005300
77730  -0500 00 0 77662        77730  27          CAL      9L                                                       LC005400
77731   0100 00 0 77750        77731  28          TZE      LOAD8              ZERO IMPLIES OCTAL CARD               LC005500
77732  -0734 00 6 00000        77732  29          PDX      ,6                 SET WORD COUNT                        LC005600
77733   0630 00 0 77746        77733  30          STP      LOAD4              SET TO CHECK OR IGNORE SUM            LC005700
77734   0621 00 0 77735        77734  31          STA      LOAD2              SET CARD ORIGIN                       LC005800
77735  -3 00000 4 00000        77735  32  LOAD2   TXL      ****,4,0           OUT IF TRANSFER CARD                  LC005900
77736   0774 00 4 00000        77736  33          AXT      0,4                SET I4 TO ZERO                        LC006000
77737   0560 00 4 77664        77737  34  LOAD3   LDQ      9R+1,4             PICK UP WORD                          LC006100
77740  -0600 60 0 77735        77740  35          STQ*     LOAD2              STORE WORD                            LC006200
77741   0361 60 0 77735        77741  36          ACL*     LOAD2              ADD TO CHECK SUM                      LC006300
77742   1 77777 4 77743        77742  37          TXI      *+1,4,-1           ADVANCE FOR NEXT WORD                 LC006400
77743   2 00001 2 77737        77743  38          TIX      LOAD3,2,1          COUNT WORDS TO BE STORED              LC006500
77744   0322 00 0 77663        77744  39          ERA      9R                 COMPARE CHECK SUMS                    LC006600
77745   0100 00 0 77724        77745  40          TZE      LOAD AGREE-LOAD NEXT CARD                                LC006700
77746   0 00000 0 77724        77746  41  LOAD4   HTR      LOAD               ERROR-START TO READ NEXT CARD         LC006800
77747   0 00030 0 77662        77747  42  LOAD5   IOCD     9L,0,24            COMMAND TO BRING IN BINARY IMAGE      LC006900
77750   0774 00 5 00016        77750  43  LOAD8   AXT      14,5               14 TO IR1 AND IR 4                    LC007000
                                       44  *                                                                         LC009900
                                       45          ABS                         RESUME STANDARD PUNCHING              LC007200
                                       46  *                                                                         LC010200
77751   0774 00 2 00002        77751  47  LOAD9   AXT      2,2                SET TO COUNT FIELD PAIRS              LC007300
77752  -0500 00 4 77704        77752  48          CAL      9L+18,4            ROW                                   LC007400
77753  -0602 00 1 77700        77753  49          ORS      9L+14,1            ROW UNION                             LC007500
77754   0560 00 1 77700        77754  50          LDQ      9L+14,1                                                  LC007600
77755   1 00026 2 77765        77755  51          TXI      LOD11,2,22         SET TO PEEL OFF SIX BITS              LC007700
77756   3 00002 4 77760        77756  52  LOD10   TXH      *+2,4,2            SKIP STORE TILL AFTER ONE-ROW         LC007800
77757   0602 00 0 00000        77757  53          SLW      ****               STORE OCTAL CORRECTION                LC007900
77760   2 00001 2 77755        77760  54          TIX      *-3,2,1            ADVANCE TO NEXT PAIR, THIS HALF       LC008000
77761   2 00002 4 77751        77761  55          TIX      LOAD9,4,2          ADVANCE TO NEXT ROW                   LC008100
```

```
77762 -2 00015 5 77725     56          TNX     LOAD+1,5,13      OUT AFTER RIGHT HALF                    LC008200
77763  0762 00 0 01321     57          RCDA                     START NEXT CARD                         LC008300
77764  1 00014 5 77751     58          TXI     LOAD9,5,12       ADVANCE TO RIGHT HALF CARD              LC008400
77765  0760 00 0 00000     59 LOD11    CLM                      CLEAR AC                                LC008500
77766  0767 00 0 00002     60          ALS     2                                                        LC008600
77767 -0763 00 0 00001     61          LGL     1                PEEL OFF BITS                          LC008700
77770  2 00004 2 77766     62          TIX     LOD11+1,2,4      COUNT COLUMNS PER FIELD                LC008800
77771  3 00014 4 77773     63          TXH     *+2,4,12         USE 7-ROW AS FIRST SUM                 LC008900
77772  0361 00 2 77712     64          ACL     11L+4,2          ADD PREVIOUS SUM                       LC009000
77773  0602 00 2 77712     65          SLW     11L+4,2          NEW PARTIAL SUM                        LC009100
77774 -2 00002 2 77756     66          TNX     LOD10,2,2        OUT IF SECOND FIELD OF PAIR            LC009200
77775  0621 00 0 77757     67          STA     LOD10+1          STORE ADDRESS OF CORRECTION            LC009300
77776  1 00054 2 77765     68          TXI     LOD11,2,44       RETURN TO PEEL OFF 12 BITS             LC009400
                           69 *
77777  0 00133 0 77777     70                  -1,,-STS          LEAD WORD FOR ATOM VERITAS-NUMQUAM-PERIT
                           71 *
                77662      72          ORG     LOAD-34          COMMON STORAGE
77662                      73 COMMON   BSS     0                                                        LC047600
77662                      74  9L      BSS     24               INPUT BUFFER                           LC009600
                77663      75  9R      SYN     9L+1             CARD CHECK SUM                         LC009700
                77706      76  11L     SYN     9L+20            TEMPORARY FOR OCTAL                    LC009800
                77724      77 LOADER   SYN     LOAD                                                     00000007
                           78 *
                           79 * PROPERTY LISTS FOR THE SPECIAL ATOMS NIL AND VERITAS-NUNQUAM-PERIT THE
                           80 * ZERO AND THE BINARY TRUTH ATOMS RESPECTIVELY
                           81 *
                77640      82          ORG     COMMON-18
77640  0 00137 0 07335     83 NILSXX           $PNAME,,-*-1
77641  0 00000 0 00136     84                  -*-1
77642 -0 00000 0 00135     85          MZE     -*-1
77643 -053143777777        86          OCT     453143777777     NIL
77644  0 00000 0 00370     87 NILLOC           $ZERO
                           88 *
77645  0 00132 0 10742     89  STS             $APVAL,,-*-1
77646 -0 00130 0 00131     90          MZE     -*-1,,-*-2
77647  0 00000 0 00001     91                  1                IS A CONSTANT ,,1 FOR APPLY
77650  0 00127 0 07335     92                  $PNAME,,-*-1
77651  0 00000 0 00126     93                  -*-1
77652 -0 00000 0 00125     94          MZE     -*-1
77653  546351642554        95          BCI     1,*TRUE*
                           96 *
                           97                  **************************************************       LC010300
                           98                  BOOTSTRAP RECORD FOR 709 LISP                            LC010400
                           99                                                                           LC010500
                00144     100         ORG     100              BEGIN LISP
                          101         HEAD    8                                                        1.5M4770
                          102 *                                                                        1.5L0020
                          103 * BOTTOM        THE BOOTSTRAP RECORD FOR LISP ON SYSTEM AND TEMPORARY TAP1.5L0030
                          104 *                                                                        1.5L0040
00144  0 00364 0 00147    105 BOTTOM  IOCD     BOTTOM+3,,BSRECL-2 I-O COMMAND TO READ IN  BOOTSTRAP REC.1.5L0050
00145  0060 00 0 00001    106         TCOA    1                WAIT UNTIL RECORD IS READ IN            1.5L0060
00146  0020 00 0 00147    107         TRA     BOTTOM+3         START OF LISP                           1.5L0070
00147  0774 00 4 00003    108         AXT     3,4              NUMBER OF WORDS IN LOWER MEMORY         1.5L0080
00150  0500 00 4 00003    109         CLA     3,4              MOVE THEM TO ORIGINAL POSITION          1.5L0090
```

```
00151  0601 00 4 00147   110          STO   BOTTOM+3,4                                          1.5L0100
00152  2 00001 4 00150   111          TIX   *-2,4,1                                            1.5L0110
00153  0774 00 4 00366   112          AXT   BSRECL,4     LENGTH OF BOOTSTRAP RECORD            1.5L0120
00154 -0754 00 0 00000   113          PXD   0,0          CLEAR THE AC                          1.5L0130
00155  0361 00 4 00532   114          ACL   CHKSUM,4     COMPUTE THE CHECK SUM FOR RECORD      1.5L0140
00156  2 00001 4 00155   115          TIX   *-1,4,1                                            1.5L0150
00157  0322 00 0 00532   116          ERA   CHKSUM       COMPARE WITH THE CHECKSUM ON TAPE     1.5L0160
00160  0100 00 0 00162   117          TZE   *+2          SKIP IF THEY ARE EQUAL                1.5L0170
00161  0420 00 0 00001   118          HPR   1            THEY DO NOT, STOP                     1.5L0180
00162  0500 00 0 00201   119          CLA   STRA         STR TRAP
00163  0601 00 0 00002   120          STO   2            SET STR CELL
00164  0500 00 0 00200   121          CLA   FLTRA        FLOATING POINT TRAP
00165  0601 00 0 00010   122          STO   8            SET TRAP CELL
00166  0500 00 0 00367   123          CLA   SYSTAP       TAPE SPECIFICATION FOR SYSTEM TAPE    1.5L0190
00167  0074 00 4 00276   124          TSX   $(IOS),4     SET UP I-O COMMANDS                   1.5L0200
00170  0074 00 4 00202   125          TSX   LRTAPE,4     READ REST OF SYSTEM TAPE              1.5L0210
00171  0 77241 0 00537   126                LOWREG,,-LOWREG  REST OF CORE
00172  0522 00 0 00352   127          XEC   $REW         REWIND SYSTAP                         1.5L0230
00173  0020 00 0 77724   128          TRA   $LOAD        GO TO READ ANY CORRECTION CARDS       1.5L0240
                         129 *                                                                1.5L0250
00174  0500 00 0 00177   130 CONTIN CLA   ZERC          LOADER RETURNS HERE, GO TO OVERLORD
00175  0601 00 0 00000   131          STO   0            SET ZERO CELL
00176  0020 00 0 10230   132          TRA   OVRLRD       GO TO OVERLORD
                         133 *
                         134 * NORMAL CONTENTS FOR CELLS 0, 2, 10 (OCTAL) RESPECTIVELY
                         135 *
00177  0 00140 0 77777   136  ZERC           -1,,-NILSXX  BEGINNING OF ATOM  NIL
00200  0021 00 0 01707   137  FLTRA TTR      FLAPTR
00201  0021 00 0 17061   138 STRA   TTR      C$LINK
                  00200  139 FLAPCX SYN      FLTRA
                  00201  140 FLAPCY SYN      STRA
                  00177  141 FLAPCZ SYN      ZERC
                         142 *                                                                1.5L0270
                         143 *                                                                1.5L0280
                         144 * LRTAPE        LISP READ TAPE PROGRAM FOR BINARY TAPES        1.5L0290
                         145 *                                                                1.5L0300
00202  0500 00 4 00001   146 LRTAPE CLA   1,4            PARAMETER WORD                       1.5L0310
00203  0634 00 4 00533   147          SXA   RTRX,4       SAVE INDEX REGISTERS                 1.5L0320
00204 -0634 00 2 00533   148          SXD   RTRX,2                                            1.5L0330
00205  0734 00 2 00000   149  RTTWO PAX      0,2          START ADDRESS                        1.5L0340
00206  0622 00 0 00207   150          STD   *+1          COUNT                                1.5L0350
00207  1 00000 2 00210   151          TXI   *+1,2,**     END + 1 ADDRESS                      1.5L0360
00210  0634 00 2 00534   152          SXA   RTADR,2      INITIALIZE ADDRESS                   1.5L0370
00211 -0734 00 2 00000   153          PDX   0,2          COUNT IN IR 2                        1.5L0410
00212  0500 00 0 00205   154          CLA   RTTWO        TAG OF 2                             1.5L0380
00213  0625 00 0 00534   155          STT   RTADR        SET TAG                              1.5L0390
00214 -0634 00 0 00534   156          SXD   RTADR,0      ZERO DECREMENT
00215  0500 00 0 00362   157          CLA   $LCH         PICK UP CURRENT LOAD CHANNEL INS.     1.5L0420
00216  0601 00 0 00535   158          STO   RTLCH        MAKE IMMUNE FROM OVER WRITING        1.5L0430
00217  0500 00 0 00346   159          CLA   $(IOU)       GET CURRENT I-O UNIT                 1.5L0440
00220  0601 00 0 00536   160          STO   RTIOU        PREVENT OVERWRITING                  1.5L0450
00221 -0625 00 0 00357   161          STL   $TCO         WAIT FOR CHANNELL                    1.5L0460
00222  0522 00 0 00357   162          XEC   $TCO         TO GO OUT OF OPERATION               1.5L0470
00223  0760 00 0 00005   163          IOT                TURN OFF I-O CHECK                   1.5L0480
```

```
00224  0761 00 0 00000   164          NOP
00225 -0774 00 4 00225   165          AXC    *,4                                          1.5L0490
00226  0522 00 0 00360   166          XEC    $TRC      TURN OFF INDICATOR                 1.5L0500
00227  0522 00 0 00356   167          XEC    $TEF      TURN OFF INDICATOR                 1.5L0510
00230  0522 00 0 00350   168  RTRD    XEC    $RDS      SELECT TAPE                        1.5L0520
00231 -0754 00 0 00000   169          PXD    0,0       CLEAR AC                           1.5L0530
00232 -0774 00 4 00274   170          AXC    RTIOC,4   POINTER TO I-O COMMAND            1.5L0540
00233  0522 00 0 00361   171          XEC    $RCH      RESET AND LOAD CHANNEL             1.5L0550
00234  0522 00 0 00535   172  RTLC    XEC    RTLCH     LOAD CHANNEL                       1.5L0560
00235  0560 00 0 00532   173          LDQ    CHKSUM    PICK UP WORD READ IN               1.5L0570
00236 -0600 60 0 00534   174          STQ*   RTADR     PUT IT AWAY                        1.5L0580
00237  0361 60 0 00534   175          ACL*   RTADR     ADD TO CHECK SUM                   1.5L0590
00240  2 00001 2 00234   176          TIX    RTLC,2,1  DO ANOTHER LOAD CHANNEL            1.5L0600
00241 -0774 00 4 00275   177          AXC    RTIOD,4   POINTER TO DISCONNECT INSTRUCTION  1.5L0620
00242  0522 00 0 00535   178          XEC    RTLCH     XEC LCH INS.                       1.5L0630
00243  0322 00 0 00532   179          ERA    CHKSUM    SUBTRACT CHECK SUMS                1.5L0640
00244  0602 00 0 00532   180          SLW    CHKSUM    STORE DIFFERENCE                   1.5L0650
00245  0500 00 0 00536   181          CLA    RTIOU     PICK UP CURRENT IOU                1.5L0660
00246  0074 00 4 00276   182          TSX    $(IOS),4  SET UP I-O COMMANDS                1.5L0670
00247 -0625 00 0 00357   183          STL    $TCO      WAIT FOR CHANNEL TO GO OUT OF OPERATIO1.5L0680
00250  0522 00 0 00357   184          XEC    $TCO                                         1.5L0690
00251  0760 00 0 00005   185          IOT               TEST INDICATOR                     1.5L0700
00252  0020 00 0 00263   186          TRA    RCK       TRY AGAIN                          1.5L0710
00253  0520 00 0 00532   187          ZET    CHKSUM    SKIP IF CHECK SUMS AGREE           1.5L0720
00254  0020 00 0 00263   188          TRA    RCK       TRY AGAIN                          1.5L0730
00255 -0774 00 4 00263   189          AXC    RCK,4                                        1.5L0740
00256  0522 00 0 00360   190          XEC    $TRC      TEST FOR REDUNDANCY
00257  0522 00 0 00356   191          XEC    $TEF      AND EOF
00260  0534 00 4 00533   192          LXA    RTRX,4    RESTORE INDEX REGISTERS            1.5L0770
00261 -0534 00 2 00533   193          LXD    RTRX,2                                       1.560780
00262  0020 00 4 00002   194          TRA    2,4       EXIT                               1.5L0790
                         195 *                                                           1.5L0800
00263 -0534 00 2 00534   196  RCK     LXD    RTADR,2   DID NOT WORK, SEE IF FIRST OR SECOND 1.5L0810
00264 -3 00000 2 00266   197          TXL    *+2,2,0
00265  0420 00 0 00002   198          HPR    2         SECOND TRY FAILED, STOP            1.5L0830
00266 -0634 00 4 00534   199          SXD    RTADR,4   MAKE NON-ZERO                     1.5L0840
00267  0522 00 0 00355   200          XEC    $BSR      BACK SPACE AND TRY AGAIN           1.5L0850
00270  0534 00 4 00533   201          LXA    RTRX,4    GET CALL WORD IR                   1.5L0860
00271  0500 00 4 00001   202          CLA    1,4       CALL PARAMETER                     1.5L0870
00272 -0734 00 2 00000   203          PDX    0,2       COUNT TO IR 2                      1.5L0880
00273  0020 00 0 00230   204          TRA    RTRD                                         1.5L0890
                         205 *                                                           1.5L0900
00274 -1 00001 0 00532   206  RTIOC   IOCT   CHKSUM,,1  BRING IN 1 WORD                  1.5L0910
00275  0 00000 0 00000   207  RTIOD   IOCD   0,,0       DISCONNECT CHANNEL                 1.5L0920
                         208 *                                                           1.5L0970
                         209 *                                                           1.5M4160
                         210 *        (IOS)  INPUT OUTPUT SUPERVISOR A LA BELL LABS BE SYS 3 1.5M4170
                         211 *                                                           1.5M4180
00276  0340 00 0 00346   212  (IOS)   CAS    IOU       CHECK TO SEE IF SAME UNIT AS LAST TIME1.5M4190
00277  0020 00 0 00301   213          TRA    *+2       NO                                 1.5M4200
00300  0020 00 4 00001   214          TRA    1,4       YES EXIT                           1.5M4210
00301  0634 00 4 00325   215          SXA    IOSX,4    NO, SAVE LINK IR                   1.5M4220
00302  0634 00 2 00324   216          SXA    IOSY,2    SAVE INDEX 2
00303  0601 00 0 00346   217          STO    IOU       UPDATE IOU                         1.5M4230
```

```
00304  0621 00 0 00350   218        STA   $RDS     UPDATE ADDRESSES OF TAPE COMMANDS      1.5M4240
00305  0621 00 0 00351   219        STA   $WRS                                            1.5M4250
00306  0621 00 0 00352   220        STA   $REW                                            1.5M4260
00307  0621 00 0 00355   221        STA   $BSR                                            1.5M4270
00310  0621 00 0 00353   222        STA   $WEF                                            1.5M4280
00311  0120 00 0 00313   223        TPL   *+2       TAPE IN NORMAL DENSITH (BIN=HI, BCD=LO1.5M4290
00312  0322 00 0 00347   224        ERA   IOSBB     CHANGE DENSITY BIT                     1.5M4300
00313  0621 00 0 00354   225        STA   $SDN                                            1.5M4310
00314  0522 00 0 00354   226        XEC   $SDN                                            1.5M4320
00315  0774 00 2 00005   227        AXT   5,2       NUMBER OF COMMANDS TO BE SET
00316 -0734 00 4 00000   228        PDX   0,4       CHANNEL NUMBER TO IR                   1.5M4330
00317  1 00014 4 00320   229        TXI   *+1,4,12  TOTAL NUMBER OF COMMANDS - 3
00320 -0500 00 4 00346   230  IOSA  CAL   IOU,4     PICK UP PROPER COMMAND
00321  0602 00 2 00363   231        SLW   COMAND,2  PUT IN PROPER PLACE
00322 -2 00003 4 00324   232        TNX   IOSY,4,3  DECREMENT BY NUMBER OF CHANNELS
00323  2 00001 2 00320   233        TIX   IOSA,2,1  LOOP 5 TIMES
00324  0774 00 2 00000   234  IOSY  AXT   **,2      RESTORE INDEX 2
00325  0774 00 4 00000   235  IOSX  AXT   **,4      RESTORE LINK IR                        1.5M4380
00326  0020 00 4 00001   236        TRA   1,4                                            1.5M4390
                         237  *                                                         1.5M4400
                         238  *     TAPE COMMANDS FOLLOW                                1.5M4410
                         239  *                                                         1.5M4420
00327  0031 00 4 00000   240        TEFC  0,4                                            1.5M4430
00330 -0030 00 4 00000   241        TEFB  0,4                                            1.5M4440
00331  0030 00 4 00000   242        TEFA  0,4                                            1.5M4450
00332  0062 00 0 00000   243        TCOC  **                                             1.5M4460
00333  0061 00 0 00000   244        TCOB  **                                             1.5M4470
00334  0060 00 0 00000   245        TCOA  **                                             1.5M4480
00335  0024 00 4 00000   246        TRCC  0,4                                            1.5M4490
00336 -0022 00 4 00000   247        TRCB  0,4                                            1.5M4500
00337  0022 00 4 00000   248        TRCA  0,4                                            1.5M4510
00340  0541 00 4 00000   249        RCHC  0,4                                            1.5M4520
00341 -0540 00 4 00000   250        RCHB  0,4                                            1.5M4530
00342  0540 00 4 00000   251        RCHA  0,4                                            1.5M4540
00343  0545 00 4 00000   252        LCHC  0,4                                            1.5M4550
00344 -0544 00 4 00000   253        LCHB  0,4                                            1.5M4560
00345  0544 00 4 00000   254        LCHA  0,4                                            1.5M4570
00346  0 00000 0 00000   255  IOU   PZE                   LAST UNIT USED                 1.5M4580
00347  0 00000 0 00020   256  IOSBB PZE   16            BINARY BIT                       1.5M4590
                         257        HEAD  0                                            00000003
                         258  *                                                         1.5M4600
                         259  *     ACTUAL TAPE COMMANDS USED BY PROGRAMS (SHOULD BE UNHEADED)  1.5M4610
                         260  *                                                         1.5M4620
00350  0762 00 0 01220   261  RDS   RTBA  **                                           1.5M4630
00351  0766 00 0 01220   262  WRS   WTBA  **                                           1.5M4640
00352  0772 00 0 01200   263  REW   REWA  **                                           1.5M4650
00353  0770 00 0 01200   264  WEF   WEFA  **                                           1.5M4660
00354  0761 00 0 00000   265  SDN   NOP                 MAKE A SDN INSTRUCTION FOR 7090
00355  0764 00 0 01200   266  BSR   BSRA  **                                           1.5M4680
00356  0030 00 4 00000   267  TEF   TEFA  0,4                                          1.5M4690
00357  0060 00 0 00000   268  TCO   TCOA  **                                           1.5M4700
00360  0022 00 4 00000   269  TRC   TRCA  0,4                                          1.5M4720
00361  0540 00 4 00000   270  RCH   RCHA  0,4                                          1.5M4730
00362  0544 00 4 00000   271  LCH   LCHA  0,4                                          1.5M4740
```

```
        00363                          272 COMAND BSS     0                                    1.5M4750
        00363  0 00000 0 00000        273 SYSPPT PZE                   ADDRESS,,CHANNEL     1.5M3890
        00364  0 00001 0 01203        274 SYSPOT          1*512+2*64+3,,1  INTIAL ASSIGNMENT OF A3  1.5M3900
        00365  0 00000 0 00000        275 SYSPIT                                              1.5M3910
        00366  0 00000 0 00000        276 SYSTMP                                              1.5M3920
        00367  0 00000 0 00000        277 SYSTAP                                              1.5M3930
        00370                          278 TAPASG BSS     0                                    1.5M3940
                           00276       279  (IOS) SYN     B$(IOS)                              00000001
                           77724       280  LOAD  SYN     LOADER                               00000008
                           00346       281  (IOU) SYN     B$IOU                                00000009
```

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

```
                              282          EJECT
                              283 *        CONSTANT POOL                                 RDCI0552
                              284                                                        RDCI0553
00370  0 00000 0 00000        285  ZERO    PZE                                           RDCI0561
00371 +000000000001           286  Q1      DEC      1
00372 +000000000002           287  Q2      DEC      2
00373 +000000000003           288  Q3      DEC      3
00374 +000000000004           289  Q4      DEC      4
00375 +000000000005           290  Q5      DEC      5
00376 +000000000006           291  Q6      DEC      6
00377 +000000000007           292  Q7      DEC      7
00400 +000000000010           293  Q8      DEC      8
00401 +000000000011           294  Q9      DEC      9
00402 +000000000012           295  Q10     DEC      10
00403 +000000000014           296 Q12      DEC      12
00404  0 00000 0 00015        297  Q13              13
00405  0 00000 0 00016        298  Q14              14
00406 +000000000021           299  Q17     DEC      17
00407 +000000000024           300  Q20     DEC      20
00410 +000000000025           301  Q21     DEC      21
00411  0 00000 0 00026        302  Q22              22
00412 +000000000044           303  Q36     DEC      36
00413 +000000000077           304  Q63     DEC      63
00414 +000000000100           305  Q64     DEC      64
00415 +000000000200           306  Q128    DEC      128
00416 +000000000014           307  Q014    OCT      14
00417 +000000000017           308  Q017    OCT      17
00420 +000000000020           309  Q020    OCT      20                                    CPOP0001
00421 +000000000022           310  Q022    OCT      22
                  00410       311  Q025    SYN      Q21
00422 +000000000033           312  Q033    OCT      33                                    CPOP0018
00423 +000000000040           313  Q040    OCT      40                                    CPOP0017
00424 +000000000041           314  Q041    OCT      41
00425 +000000000043           315  Q043    OCT      43
00426 +000000000050           316  Q050    OCT      50
00427 +000000000060           317  Q060    OCT      60                                    CPOP0002
00430 +000000000061           318  Q061    OCT      61
                  00413       319  Q077    SYN      $Q63
                  00415       320  Q0200   SYN      Q128
00431 +000000003300           321  Q033Q2  OCT      3300                                  CPOP0005
00432 +001000000000           322  Q01Q9   OCT      1000000000
00433 +233000000000           323  Q233Q9  OCT      233000000000
00434 -377000000000           324  Q777Q9  OCT      777000000000
00435 +200000000000           325  Q02Q11  OCT      200000000000
00436  0 00000 1 00000        326  QT1              ,1
00437  0 00000 2 00000        327  QT2              ,2
00440  0 00000 4 00000        328  QT4              ,4
00441  0 00000 5 00000        329  QT5              0,5
00442  0 00001 0 00000        330  QD1     PZE      ,,1                                   RDCI0563
00443  0 00002 0 00000        331  QD2     PZE      ,,2                                   CPOP0019
00444  0 00005 0 00000        332  QD5     PZE      ,,5
00445  0 00006 0 00000        333  QD6     PZE      ,,6                                   CPOP2000
00446  0 00007 0 00000        334  QD7     PZE      ,,7                                   CPOP2001
00447  0 00024 0 00000        335  QD20    PZE      ,,20                                  CPOP0016
```

```
00450  0 00025 0 00000    336  QD21   PZE    ,,21                                  CPOP0007
00451 -1 00000 0 00000    337  QP5    SIR
00452  600000000000       338  OBLANK BCI    1, 00000                              1.5M5360
00453  006060606060       339  ZBLANK BCI    1,0
00454 +201400000000       340  QF1    DEC    1.0                                   RDCI0559
00455 -0 00000 0 00000    341  SBIT   MZE                                          CPOP0004
00456 +377777777777       342  MAGMSK OCT    377777777777                          CPOP0003
00457  0 00000 0 77777    343  AMASK  PZE    -1                                    CPOP0020
00460  0 77777 0 00000    344  DMASK  PZE    ,,-1                                  RDCI0562
00461 -3 00000 0 00000    345  PMASK  TXL    0,0,0
00462  0 77777 0 77777    346  ADMASK PZE    -1,,-1                                CPOP0008
00463  0 00000 7 77777    347  ATMASK PZE    -1,7                                  CPOP0009
00464 -3 77777 0 00000    348  PDMASK SVN    ,,-1
00465 -3 77777 7 00000    349  PDTMSK SVN    0,7,-1
00466 -3 00000 7 77777    350  PTAMSK SVN    -1,7
00467 +000077000000       351  CNTMSK OCT    000077000000
00470  0 00000 7 00000    352  TAGMSK PZE    ,7
00471 -3 77777 7 77777    353  SEVENS SVN    -1,7,-1                               RDCI0565
00472  606060606060       354  BLANKS BCI    1,                                    RDCI0560
00473                     355  BCONAT BSS    0          BEGINNING OF CONSTANT ATOMS
00473  0 00000 0 07335    356  PNAMEA PZE    PNAME                                 CPOP0015
00474  0 10742 0 00000    357  APVALD PZE    ,,APVAL                               CPOP0013
00475  0 10135 0 00000    358  BIND   PZE    ,,BIN                                 CPOP0014
                  00475    359  FIXD   SYN    BIND
00476  0 10120 0 00000    360  FLOATD        ,,$FLOAT                              RDCJ0001
00477  0 10103 0 00000    361  FSUBRD PZE    ,,FSUBR                               CPOP0012
00500  0 10076 0 00000    362  FNARGD PZE    ,,FUNARG                              CPOP2005
00501  0 10005 0 00000    363  LABELD PZE    ,,LABEL
00502  0 07775 0 00000    364  LAMDAD PZE    ,,LAMBDA
00503  0 07462 0 00000    365  OCTD          ,,$OCT                                RDCJ0002
00504  0 07335 0 00000    366  PNAMED PZE    ,,PNAME                               CPOP0010
00505  0 07250 0 00000    367  QUOTED PZE    ,,QUOTE
00506  0 06733 0 00000    368  SUBRD  PZE    ,,SUBR                                CPOP0011
00507  0 07110 0 00000    369  QSPECD PZE    0,,SPECAL
00510  0 06706 0 00000    370  QSYMD  PZE    0,,SYM
00511  0 07676 0 10211    371                ERSETO,,PJ36
00512  0 07666 0 07706    372                PJ37,,PJ38          LOGAND LOGXOR
00513  0 07604 0 07614    373                -II7,,-II8          MAX MIN
00514  0 06657 0 07355    374                PLUS,,TIMES
00515  0 06131 0 06130    375                H01,,H02            PROTECT INTEGER OBJECTS
00516  0 06133 0 06132    376                H03,,H04
00517  0 06135 0 06134    377                H05,,H06
00520  0 06137 0 06136    378                H07,,H10
00521  0 00000 0 06127    379  H00A   PZE    H00
00522  0 00000 0 06141    380  H12A   PZE    H12
00523  0 00000 0 06221    381  H72A   PZE    H72
00524  0 06140 0 00000    382  H11D   PZE    ,,H11
00525  0 06143 0 00000    383  H14D   PZE    ,,H14
00526  0 06162 0 00000    384  H33D   PZE    ,,H33
00527  0 06163 0 00000    385  H34D   PZE    ,,H34
00530  0 06167 0 00000    386  H40D   PZE    ,,H40
00531  0 06223 0 00000    387  H74D   PZE    ,,H74
                  00531    388  ECONAT SYN    H74D          END OF CONSTANT ATOMS
```

```
                                  389        EJECT
    00532                         390 CHKSUM BSS     5              THESE CELLS ARE NOT WRITTEN ON TAPE  1.5L0980
                                  391        HEAD    B              CELLS FOR LRTAPE
                          00533   392  RTRX  SYN     CHKSUM+1       PROTECTED STORAGE                    1.5L0930
                          00534   393  RTADR SYN     CHKSUM+2                                            1.5L0940
                          00535   394  RTLCH SYN     CHKSUM+3                                            1.5L0950
                          00536   395  RTIOU SYN     CHKSUM+4                                            1.5L0960
                          00366   396 BSRECL EQU     CHKSUM-BOTTOM  LENGTH OF BOOTSTRAP RECORD           1.5L0990
                          00537   397 LOWREG SYN     *              LOWEST REGISTER ON LISP RECORD       1.5L1000
                                  398 *                                                                  1.5L1010
    00537  0500 00 4 00001        399 LWTAPE CLA     1,4            PARAMETER WORD                       1.5L1020
    00540  0621 00 0 00631        400        STA     WTIOC          SET UP I-O COMMANDS                  1.5L1030
    00541  0622 00 0 00631        401        STD     WTIOC                                               1.5L1040
    00542  0622 00 0 00561        402        STD     WTAD           COUNT                                1.5L1050
    00543  0634 00 4 00574        403        SXA     WTX,4          SAVE LINK IR                         1.5L1060
    00544  0600 00 0 00630        404        STZ     WTAG           ZERO TEST CELL                       1.5L1070
    00545  0600 00 0 00627        405        STZ     WERC
    00546 -0625 00 0 00357        406        STL     $TCO                                                1.5L1080
    00547  0522 00 0 00357        407        XEC     $TCO           WAIT FOR CHANNEL                     1.5L1090
    00550  0760 00 0 00005        408        IOT                    TURN OFF INDICATORS                  1.5L1100
    00551  0761 00 0 00000        409        NOP                                                         1.5L1110
    00552 -0774 00 4 00552        410        AXC     *,4                                                 1.5L1120
    00553  0522 00 0 00360        411        XEC     $TRC                                                1.5L1130
    00554  0522 00 0 00356        412        XEC     $TEF                                                1.5L1140
    00555  0522 00 0 00351        413  WTWS  XEC     $WRS           SELECT TAPE                          1.5L1150
    00556 -0774 00 4 00631        414        AXC     WTIOC,4        POINTER TO IO COMMAND                1.5L1160
    00557  0522 00 0 00361        415        XEC     $RCH           RESET AND LOAD CHANNEL               1.5L1170
    00560  0534 00 4 00631        416        LXA     WTIOC,4        ADDRESS OF BEGINNING OF BLOCK        1.5L1180
    00561  1 00000 4 00562        417  WTAD  TXI     *+1,4,**       END + 1 OF BLOCK                     1.5L1190
    00562  0634 00 4 00565        418        SXA     WTACL,4        SET CHECKSUM COMPUTE ADDRESS
    00563 -0534 00 4 00631        419        LXD     WTIOC,4        COUNT OF BLOCK                       1.5L1230
    00564 -0754 00 0 00000        420        PXD     0,0            CLAER AC                             1.5L1210
    00565  0361 00 4 00000        421  WTACL ACL     **,4           COMPUTE CHECKSUM                     1.5L1220
    00566  2 00001 4 00565        422        TIX     *-1,4,1        LOOP
    00567  0602 00 0 00532        423        SLW     CHKSUM         STOE IN CHECK SUM CELL               1.5L1240
    00570 -0774 00 4 00632        424        AXC     WTIOD,4        CHECKSUM WRITE COMMAND
    00571  0522 00 0 00362        425        XEC     $LCH           LOAD CHANNEL
    00572 -0774 00 4 00576        426        AXC     WRCK,4         TEST FOR WRITE REDUNDANCY
    00573  0522 00 0 00360        427        XEC     $TRC                                                1.5L1280
    00574  0774 00 4 00000        428  WTX   AXT     **,4           RESTORE LINK IR                      1.5L1290
    00575  0020 00 4 00002        429        TRA     2,4            EXIT                                 1.5L1300
                                  430 *                                                                  1.5L1310
    00576 -0520 00 0 00630        431 WRCK   NZT     WTAG
    00577  0020 00 0 00615        432        TRA     WAGN           TRY TO WRITE ABAIN
    00600 -0625 00 0 00627        433        STL     WERC           CELL SAYS THERE WAS BAD TAPE TROULLE
    00601 -0534 00 4 00366        434        LXD     SYSTMP,4       FORM MESSAGE TO OPERATOR
    00602  0754 00 4 00000        435        PXA     0,4
    00603  0400 00 0 00420        436        ADD     $Q020
    00604  0767 00 0 00006        437        ALS     6
    00605  0601 00 0 00620        438        STO     WERM
    00606  0500 00 0 00366        439        CLA     SYSTMP
    00607 -0320 00 0 00417        440        ANA     $Q017
    00610 -0602 00 0 00620        441        ORS     WERM
    00611  0074 00 4 01222        442        TSX     OUTPUT,4       WRITE CHANGE TAPE MESSAGE
```

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

```
00612 -0 00000 0 00364   443          MZE    BCDOUT
00613  0 00007 0 00620   444                 WERM,,7
00614  0420 00 0 00003   445          HPR    3
00615  0522 00 0 00355   446 WAGN     XEC    $BSR
00616 -0625 00 0 00630   447          STL    WTAG
00617  0020 00 0 00555   448          TRA    WTWS
                         449 *
00620  606060606060      450 WERM     BCI    7,      IS BAD, CHANGE IT AND PUSH START.
00621  603162602221
00622  247360233021
00623  452725603163
00624  602145246047
00625  646230606263
00626  215163336060
                         451 *
00627  0 00000 0 00000   452 WERC
00630  0 00000 0 00000   453  WTAG
00631 -1 00000 0 00000   454  WTIOC  IOCT   **,,**          WRITE OUT BLOCK
00632  0 00001 0 00532   455  WTIOD  IOCD   CHKSUM,,1        WRITE OUT CHECK SUM
                         456 *                                                    1.5P0028
                         457 * TAPDMP      DUMP CORE ON SYSTMP. USED BY OVERLORD 1.5P0029
                         458 *                                                    1.5P0030
00633  0634 00 4 00647   459 TAPDMP SXA    TPDMX,4         SAVE LINK IR           1.5P0031
00634  0074 00 4 06311   460          TSX    TEREAD,4        CLEAN UP READ BUFFER
00635  0500 00 0 00366   461          CLA    SYSTMP          SPEC. FOR TEMPORARY TAPE 1.5P0032
00636  0074 00 4 00276   462          TSX    $IIOS),4        SET UP I-O COMMANDS    1.5P0033
00637  0074 00 4 00537   463 TPRTY    TSX    LWTAPE,4        WRITE BOOTSTRAP RECORD
00640  0 00366 0 00144   464                 BOTTOM,,BSRECL                         1.5P0035
00641  0074 00 4 00537   465          TSX    LWTAPE,4        WRITE REST OF CORE     1.5P0036
00642  0 77241 0 00537   466                 LOWREG,,-LOWREG                        1.5P0037
00643  0522 00 0 00353   467          XEC    $WEF            WRITE AN EOF MARK      1.5P0038
00644  0522 00 0 00352   468          XEC    $REW            REWIND SYSTMP          1.5P0039
00645  0520 00 0 00627   469          ZET    WERC            SEE IF SYSTMP WAS CHANGEDAFTER FIRST
00646  0020 00 0 00637   470          TRA    TPRTY           RECORD WAS WRITTEN  IF SO REWRITE IT
00647  0774 00 4 00000   471  TPDMX   AXT    **,4            RESTORE LINK IR        1.5P0040
00650  0020 00 4 00001   472          TRA    1,4             EXIT                   1.5P0041
                         473 *                                                    1.5P0042
                         474 * OVLT       READS A NEW CORE IMAGE IN FROM SYSTMP. USED BY OVERLORD 1.5P0043
                         475 *                                                    1.5P0044
00651 -0754 00 4 00000   476 OVLTXX PXD    0,4             LINK IR TO AC
00652 -0734 00 2 00000   477          PDX    0,2             PUT IN IR 2 FOR SAFE KEEPING 1.5P0046
00653  0500 00 0 00366   478          CLA    SYSTMP          TEMPORARY TAPE SPEC.   1.5P0047
00654  0074 00 4 00276   479          TSX    $IIOS),4        SET UP I-O COMMANDS    1.5P0048
00655  0074 00 4 00202   480          TSX    LRTAPE,4        READ IN BOOTSTRAP RECORD 1.5P0049
00656  0 00366 0 00144   481                 BOTTOM,,BSRECL                         1.5P0050
00657  0074 00 4 00202   482          TSX    LRTAPE,4        READIN RST OF LISP     1.5P0051
00660  0 77241 0 00537   483                 LOWREG,,-LOWREG
00661  0522 00 0 00352   484          XEC    $REW            REWIND SYSTMP          1.5P0053
00662  0020 00 2 00001   485          TRA    1,2             EXIT                   1.5P0054
                         486 *                                                    1.5P0055
                         487 *                                                    1.5P0056
00663  0500 00 4 00002   488  INPUT   CLA    2,4                                    00000012
00664  0634 00 4 00675   489          SXA    INX4,4          SAVE LINK IR
00665  0601 00 0 00673   490          STO    CALL
```

```
00666  0500 00 0 00365   491          CLA     SYSPIT              INPUT TAPE SPEC.                    00000010
00667  0074 00 4 00276   492          TSX     $(IOS),4            SET UP I-O COMMANDS                 00000011
00670  0522 00 0 01376   493          XEC     $SWT1               TEST FOR ON-LINE INPUT              LC015700
00671  0522 00 0 00350   494          XEC     $RDS                SELECT INPUT TAPE                   LC015800
00672  0074 00 4 00702   495          TSX $RTX,4                                                      LC015900
00673  0 77777 0 00000   496  CALL         **,,-1                                                     LC016000
00674  0020 00 0 00677   497          TRA *+3                                                         LC016100
00675  0774 00 4 00000   498  INX4    AXT     **,4                RESTORE LINK IR
00676  0020 00 4 00005   499          TRA 5,4                                                         LC016300
00677  0534 00 4 00675   500          LXA     INX4,4              RESTORE LINK IR
00700 -0120 00 4 00003   501          TMI 3,4                                                         LC016500
00701  0020 00 4 00004   502          TRA 4,4                                                         LC016600
                         503                                                                         LC016700
                         504 C        HED                                                            LC048800
                         505 *                                                                       LC049300
00702  0634 00 4 00725   506  RTX     SXA     RTXX,4              SAVE LINK IR                        1.5P0001
00703  0500 00 4 00001   507          CLA     1,4                 GET PARAMETER WORD                  1.5P0002
00704  0522 00 0 01376   508          XEC     $SWT1               TEST FOR ON-LINE INPUT              1.5P0003
00705  1 00000 0 00710   509          TXI     H1,,0               IS FROM TAPE                        1.5P0004
00706  0762 00 0 01321   510          RCDA                        SELECT CARD READER                  1.5P0005
00707  1 00000 0 00741   511          TXI     RDBCD,,0            GO TO CARD IMMAGE CONVERSION PROGRAM 1.5P0006
00710  0621 00 0 01177   512  H1      STA     CMMND               SET ADDRESS OF I-O COMMAND          1.5P0007
00711 -0774 00 4 00713   513          AXC     *+2,4               LOCATION TO INDEX REGISTER          1.5P0008
00712  0522 00 0 00356   514          XEC     $TEF                TURN OFFF EOF INDICATOR             1.5P0009
00713 -0500 00 0 00727   515          CAL     H2                  PICK UP SWITCH                      1.5Q8091
00714  0601 00 0 00727   516  H3      STO     H2                  SET TO TXH FIRST TIME THROUGH       1.5P0010
00715 -0774 00 4 01177   517          AXC     CMMND,4             LOCATION OF I-O COMMAND             1.5P0011
00716  0522 00 0 00361   518          XEC     $RCH                RESET AND LOAD CHANNEL              1.5P0012
00717 -0625 00 0 00357   519          STL     $TCO                SET UP TCO COMMAND                  1.5P0013
00720  0522 00 0 00357   520          XEC     $TCO                WAIT FOR CHANNEL TO GO OUT OF OPERATIO1.5P0014
00721 -0774 00 4 00734   521          AXC     RTXBE,4             LOACTION OF BAD EXIT                1.5P0015
00722  0522 00 0 00356   522          XEC     $TEF                GO IF EOF FOUND                     1.5P0016
00723 -0774 00 4 00727   523          AXC     H2,4                LOCATION TO TRY AGAIN               1.5P0017
00724  0522 00 0 00360   524          XEC     $TRC                GO IF REDUNDANCY CHECK FOUND        1.5P0018
00725  0774 00 4 00000   525  RTXX    AXT     **,4                RESTORE LINK IR
00726  0020 00 4 00003   526          TRA     3,4                 GOOD EXIT                           1.5P0020
00727  3 00000 0 00734   527  H2      TXH     RTXBE,,0            IS TXL ON SECOND TRY                1.5P0021
00730  0522 00 0 00355   528          XEC     $BSR                BACKSPACE RECORD                    1.5P0022
00731  0522 00 0 00350   529          XEC     $RDS                SELECT TAPE                         1.5P0023
00732  0502 00 0 00727   530          CLS     H2                  PICK UP SWITCH                      1.5P0024
00733 -3 00000 0 00714   531          TXL     H3,,0               GO TRY AGAIN                        1.5P0025
00734  0534 00 4 00725   532  RTXBE   LXA     RTXX,4              LINK IR
00735  0020 00 4 00002   533          TRA     2,4
00736  0762 00 0 01321   534  RCD     RCDA                        RESTART AFTER ERROR                 LC054200
00737 -0534 00 1 00757   535          LXD B2,1            X                                           LC054300
00740 -0534 00 2 00761   536          LXD B3,2            X                                           LC054400
00741  0030 00 0 00742   537  RUBCD   TEFA *+1                     TURN OFF END FILE INDICATOR         LC054500
00742  0604 00 0 01173   538          STI B50                     SAVE INDICATORS                     LC054600
00743 -0057 00  000003   539          RIL 3                       TURN INDICATORS 1,2 OFF             LC054700
00744  0540 00 0 01174   540          RCHA LR                     READ IN 9 LEFT +RT INTO L,R         LC054800
00745  0544 00 0 01175   541          LCHA 8LR                    DELAY, START 8LEFT + RT INTO 8L,8R  LC054900
00746  0030 00 4 00002   542          TEFA 2,4                    GO TO END OF FILE RETURN IF EOF ON  LC055000
00747  0560 00 0 77671   543  B1      LDQ L                       X                                   LC055100
00750 -0600 00 0 77663   544          STQ LS                      SET LEFT SUM                        LC055200
```

```
00751 -0634 00 1 00757   545        SXD B2,1        SAVE INDEX REGISTERS          LC055300
00752 -0634 00 2 00761   546        SXD B3,2        X                             LC055400
00753 -0534 00 1 00770   547        LXD B4,1        SET DIGIT ROW COUNT           LC055500
00754  0560 00 0 77672   548        LDQ R                                         LC055600
00755 -0600 00 0 77664   549        STQ RS          SET RIGHT SUM                 LC055700
00756  0074 00 2 01110   550        TSX C1,2        ENTER CONVERSION LOOP         LC055800
00757 -3 00000 0 00762   551  B2    TXL B5          LEAVE CONVERSION LOOP         LC055900
00760  0767 00 0 00001   552        ALS 1                                         LC056000
00761 -3 00000 0 01145   553  B3    TXL C2          INITIALIZE BCD RECORD         LC056100
00762  0544 00 0 01174   554  B5    LCHA LR         DELAY UNTIL 8 IN, START READING 7 LC056200
00763  0560 00 0 77665   555        LDQ 8L          USE 8 ROW AS SUM              LC056300
00764 -0600 00 0 77663   556        STQ LS          X                             LC056400
00765  0560 00 0 77666   557        LDQ 8R          X                             LC056500
00766 -0600 00 0 77664   558        STQ RS          X                             LC056600
00767  0074 00 2 01110   559        TSX C1,2        ENTER CONVERSION LOOP         LC056700
00770 -3 00010 0 00773   560  B4    TXL B6,0,8      LEAVE CONVERSION LOOP         LC056800
00771  0767 00 0 00003   561        ALS 3           ADD 8 TIMES 8 ROW             LC056900
00772 -3 00000 0 01144   562        TXL C3          X                             LC057000
00773 -0500 00 0 77671   563  B6    CAL L           USE 9 ROW AS SUM              LC057100
00774  0602 00 0 77663   564        SLW LS          X                             LC057200
00775 -0500 00 0 77672   565        CAL R           X                             LC057300
00776  0602 00 0 77664   566        SLW RS          X                             LC057400
00777 -3 00002 1 01160   567  B13   TXL B25,1,2      IS IT ZERO OR ONE ROW  YES'   LC057500
01000  0544 00 0 01174   568  B14   LCHA LR         DELAY, READ IN N RT AND LEFT  LC057600
01001 -0054 00  000001   569        LFT 1           IS END OF RECORD INDICATOR ON LC057700
01002  0020 00 0 01040   570        TRA B9          YES' END OF RECORD            LC057800
01003 -0500 00 0 77671   571  B8    CAL L           NO' TEST LEFT ROW FOR         LC057900
01004 -0320 00 0 77663   572        ANA LS          ILLEGAL DOUBLE PUNCH          LC058000
01005 -0100 00 0 01163   573        TNZ B17         X                             LC058100
01006 -0500 00 0 77671   574  B10   CAL L           FORM LOGICAL SUM              LC058200
01007 -0602 00 0 77663   575        ORS LS          OF LEFT ROWS                  LC058300
01010 -0500 00 0 77672   576        CAL R           TEST FOR ILLEGAL              LC058400
01011 -0320 00 0 77664   577        ANA RS          DOUBLE PUNCH                  LC058500
01012 -0100 00 0 01163   578        TNZ B17         X                             LC058600
01013 -0500 00 0 77672   579  B11   CAL R           FORM LOGICAL SUM OF           LC058700
01014 -0602 00 0 77664   580        ORS RS          RIGHT ROWS                    LC058800
01015 -2 00001 1 01154   581        TNX B12,1,1     TEST FOR ZONE ROWS            LC058900
01016  0074 00 2 01110   582        TSX C1,2        ENTER CONVERSION LOOP         LC059000
01017 -3 00000 0 00777   583        TXL B13         LEAVE CONVERSION LOOP         LC059100
01020 -3 00000 0 01144   584        TXL C3          ADD TO BCD RECORD             LC059200
01021 -0500 00 0 77665   585  B7    CAL 8L          ADD 8 LEFT ROW TO             LC059300
01022 -0501 00 0 77663   586        ORA LS          LEFT LOGICAL SUM              LC059400
01023  0602 00 0 77665   587        SLW LDS         X                             LC059500
01024  0544 00 0 01174   588        LCHA LR         DELAY, START READING X-L,R INTO L,R LC059600
01025 -0320 00 0 77667   589        ANA LZ          FORM INDICATOR FOR            LC059700
01026  0602 00 0 77663   590        SLW LS          BOTH DIGIT AND ZERO           LC059800
01027 -0500 00 0 77666   591        CAL 8R          ADD 8 RIGHT ROW TO            LC059900
01030 -0501 00 0 77664   592        ORA RS          RIGHT LOGICAL SUM             LC060000
01031  0602 00 0 77666   593        SLW RDS         X                             LC060100
01032 -0320 00 0 77670   594        ANA RZ          FORM INDICATOR FOR            LC060200
01033  0602 00 0 77664   595        SLW RS          BOTH DIGIT AND ZERO           LC060300
01034  0074 00 2 01110   596  B40   TSX C1,2        ENTER CONVERSION LOOP         LC060400
01035 -3 00000 0 01000   597        TXL B14         LEAVE CONVERSION LOOP         LC060500
01036  0767 00 0 00004   598        ALS 4           SHIFT TO ZONE POSITION        LC060600
```

```
01037 -3 00000 0 01144   599        TXL C3          X                          LC060700
01040 -0500 00 0 77663   600  B9    CAL LS          SAVE LEFT ZONE SUM         LC060800
01041  0602 00 0 77671   601        SLW L           X                          LC060900
01042 -0500 00 0 77665   602        CAL LDS         FORM INDICATOR FOR         LC061000
01043  0760 00 0 00006   603        COM             ZERO AND X AND / OR Y      LC061100
01044 -0320 00 0 77667   604        ANA LZ          IN LEFT ROWS               LC061200
01045  0320 00 0 77663   605        ANS LS          X                          LC061300
01046 -0500 00 0 77664   606        CAL RS          SAVE RIGHT ZONE SUM        LC061400
01047  0602 00 0 77672   607        SLW R           X                          LC061500
01050 -0500 00 0 77666   608        CAL RDS         FORM INDICATOR FOR         LC061600
01051  0760 00 0 00006   609        COM             ZERO AND X AND/OR Y        LC061700
01052 -0320 00 0 77670   610        ANA RZ          IN RIGHT ROWS              LC061800
01053  0320 00 0 77664   611        ANS RS          X                          LC061900
01054  0074 00 2 01110   612        TSX C1,2        ENTER CONVERSION LOOP      LC062000
01055 -3 00000 0 01063   613        TXL B15         LEAVE CONVERSION LOOP      LC062100
01056  0602 00 0 77662   614        SLW TP          MULTIPLY INDICATOR         LC062200
01057  0767 00 0 00002   615        ALS 2           BITS BY TEN                LC062300
01060  0361 00 0 77662   616        ACL TP          X                          LC062400
01061  0767 00 0 00001   617        ALS 1           X                          LC062500
01062 -3 00000 0 01144   618        TXL C3          X                          LC062600
01063 -0500 00 0 77665   619  B15   CAL LDS         FORM INDICATOR FOR         LC062700
01064 -0501 00 0 77667   620        ORA LZ          BLANK COLUMNS IN           LC062800
01065 -0501 00 0 77671   621        ORA L           LEFT HALF OF CARD          LC062900
01066  0760 00 0 00006   622        COM             X                          LC063000
01067  0602 00 0 77663   623        SLW LS          X                          LC063100
01070 -0500 00 0 77666   624        CAL RDS         FORM INDICATOR FOR         LC063200
01071 -0501 00 0 77670   625        ORA RZ          BLANK COLUMNS IN           LC063300
01072 -0501 00 0 77672   626        ORA R           RIGHT HALF OF CARD         LC063400
01073  0760 00 0 00006   627        COM             X                          LC063500
01074  0602 00 0 77664   628        SLW RS          X                          LC063600
01075  0074 00 2 01110   629        TSX C1,2        ENTER CONVERSION LOOP      LC063700
01076 -3 00000 0 01104   630        TXL B16         LEAVE CONVERSION LOOP      LC063800
01077  0602 00 0 77662   631        SLW TP          MULTIPLY INDICATOR         LC063900
01100  0767 00 0 00001   632        ALS 1           BITS BY 3 AND              LC064000
01101  0361 00 0 77662   633        ACL TP          SHIFT TO ZONE POSITION     LC064100
01102  0767 00 0 00004   634        ALS 4           X                          LC064200
01103 -3 00000 0 01144   635        TXL C3          X                          LC064300
01104 -0534 00 1 00757   636  B16   LXD B2,1        RESTORE INDEX REGISTERS    LC064400
01105 -0534 00 2 00761   637        LXD B3,2        AND RETURN TO MAIN         LC064500
01106  0441 00 0 01173   638        LDI B50               RESTORE INDICATORS   LC064600
01107  0020 00 4 00003   639        TRA 3,4         PROGRAM                    LC064700
01110 -0634 00 1 01113   640  C1    SXD C4,1        SAVE ROW COUNT             LC064800
01111 -0500 00 4 00001   641  C9    CAL 1,4         INITIALIZE ADDRESSES       LC064900
01112  0401 00 0 01127   642        ADM C7          X  ADD 6                   LC065000
01113 -3 00000 0 01117   643  C4    TXL C6,,**      TRANSFER IO LEFT ROW       LC065100
01114  0401 00 0 01127   644        ADM C7          RIGHT ROW, ADD 6 MORE      LC065200
01115  0560 00 0 77664   645        LDQ RS          OBTAIN RIGHT SUM AND       LC065300
01116  1 00000 0 01120   646        TXI C8           SKIP OVER LEFT SUM        LC065400
01117  0560 00 0 77663   647  C6    LDQ LS          OBTAIN LEFT SUM            LC065500
01120  0621 00 0 01145   648  C8    STA C2          SET BCD RECORD ADDRESS     LC065600
01121  0621 00 0 01144   649        STA C3          X                          LC065700
01122  3 00001 1 01126   650        TXH C5,1,1      SKIP TEST IF DIGIT ROW     LC065800
01123 -0600 00 0 77662   651        STQ TP          TEST FOR NO SUM            LC065900
01124 -0500 00 0 77662   652        CAL TP          X                          LC066000
```

```
01125  0100 00 0 01150    653        TZE C11         X                                          LC066100
01126  0534 00 1 01127    654  C5    LXA C7,1        SET WORD COUNT                             LC066200
01127 -0754 00 0 00006    655 C7     PXD     6,0               CONVERT ROW
01130 -0763 00 0 00001    656        LGL 1           X                                          LC066400
01131  0767 00 0 00005    657        ALS 5           X                                          LC066500
01132 -0763 00 0 00001    658        LGL 1           X                                          LC066600
01133  0767 00 0 00005    659        ALS 5           X                                          LC066700
01134 -0763 00 0 00001    660        LGL 1           X                                          LC066800
01135  0767 00 0 00005    661        ALS 5           X                                          LC066900
01136 -0763 00 0 00001    662        LGL 1           X                                          LC067000
01137  0767 00 0 00005    663        ALS 5           X                                          LC067100
01140 -0763 00 0 00001    664        LGL 1           X                                          LC067200
01141  0767 00 0 00005    665        ALS 5           X                                          LC067300
01142 -0763 00 0 00001    666        LGL 1           X                                          LC067400
01143  0020 00 2 00002    667        TRA 2,2         EXIT FOR ROW PROCEDURE                     LC067500
01144  0361 00 1 00000    668  C3    ACL 0,1         ADD TO BCD RECORD                          LC067600
01145  0602 00 1 00000    669  C2    SLW 0,1         STORE IN BCD RECORD                        LC067700
01146  2 00001 1 01127    670        TIX C7,1,1      COUNT WORDS                                LC067800
01147 -0534 00 1 01113    671        LXD C4,1        RESTORE ROW COUNT                          LC067900
01150  0502 00 0 01113    672  C11   CLS C4          INVERT ROW SWITCH AND                      LC068000
01151  0601 00 0 01113    673        STO C4           TEST FOR RIGHT ROW DONE                   LC068100
01152 -0120 00 2 00001    674        TMI 1,2         TRANSFER IF RIGHT ROW DONE                 LC068200
01153  1 00000 0 01111    675  C10   TXI C9          GO CONVERT RIGHT ROW                       LC068300
01154 -0051 00  000002    676  B12   IIL 2                  CHANGE INDICATOR BIT 17             LC068400
01155 -0056 00  000002    677        LNT 2                  IS THIS TWELVE ROW                  LC068500
01156  0020 00 0 01165    678        TRA B100               CHANGE                              LC068600
01157  0020 00 0 01034    679        TRA B40                NO                                  LC068700
01160 -3 00001 1 01021    680  B25   TXL B7,1,1      IS IT XERO ROW OR ONE ROW                  LC068800
01161  0544 00 0 01176    681        LCHA ZLR                                                   LC068900
01162  0020 00 0 01003    682        TRA B8                                                     LC069000
01163 -0760 00 0 00003    683  B17   SSM                     SET ERROR SIGN
01164  1 00001 4 01104    684        TXI     B16,4,1         RESTORE INDEX REGISTERS AND MAKE BAD X
01165  0060 00 0 01165    685  B100  TCOA *                                                     LC069200
01166  0074 00 2 01110    686        TSX C1,2                                                   LC069300
01167 -3 00000 0 01172    687        TXL B200                                                   LC069400
01170  0767 00 0 00004    688        ALS 4                                                      LC069500
01171 -3 00000 0 01144    689        TXL C3                                                     LC069600
01172  0020 00 0 01040    690  B200  TRA B9                                                     LC069700
01173  0 00000 0 00000    691  B50   PZE                    INDICATOR STORAGE                   LC069800
01174 -3 00002 0 77671    692  LR    MTH L,0,2                                                  LC069900
01175 -3 00002 0 77665    693  8LR   MTH 8L,0,2                                                 LC070000
01176 -3 00002 0 77667    694  ZLR   MTH LZ,0,2                                                 LC070100
01177 -3 77777 0 00000    695 CMMND  MTH     **,0,-1
                 77662    696        ORG     COMMON
77662                     697  TP    BSS 1           TEMPORARY                                  LC070300
77663                     698  LS    BSS 1           LEFT SUM                                   LC070400
77664                     699  RS    BSS 1           RIGHT SUM                                  LC070500
77665                     700  LDS   BSS 1           LEFT DIGIT SUM                             LC070600
77666                     701  RDS   BSS 1           RIGHT DIGIT SUM                            LC070700
77667                     702  LZ    BSS 1           LEFT ZERO ROW                              LC070800
77670                     703  RZ    BSS 1           RIGHT ZERO ROW                             LC070900
77671                     704  L     BSS 1           LEFT ROW                                   LC071000
77672                     705  R     BSS 1           RIGHT ROW                                  LC071100
                 77665    706  8L    SYN LDS         8 LEFT ROW                                 LC071200
```

```
                         77666    707  8R     SYN RDS              8 RIGHT ROW                              LC071300
                         01200    708         ORG     CMMND+1
                                  709 0       HED                                                           LC071400
                         00000    710  BCDIN  EQU 0                                                         LC013900
                         00702    711  RTX    SYN     C$RTX                                                 LC071800
                                  712         HEAD    D                                                     1.5P0200
                                  713 *
                                  714 *       SPACEX  PROVIDES A VARITY OF SPACES ON OFF LINE PRINTER
                                  715 *
   01200   0522 00 0 01402        716 SPACEX XEC      $SWT5               TEST FOR NO OFF-LINE OUTPUT
   01201   0020 00 0 01203        717         TRA     *+2
   01202   0020 00 4 00002        718         TRA     2,4                 RETURN
   01203   0634 00 4 01206        719         SXA     SPX,4               SAVE LINK IR
   01204   0500 00 0 00364        720         CLA     SYSPOT              SET UP TAPES
   01205   0074 00 4 00276        721         TSX     $(IOS),4
   01206   0774 00 4 00000        722  SPX    AXT     **,4                RESTORE LINK IR
   01207   0500 00 4 00001        723         CLA     1,4                 GET PARAMETER
   01210   0737 00 4 00000        724         PAC     0,4                 COMPLEMENT INTO IR 4
   01211   0522 00 0 00351        725         XEC     $WRS
   01212   0522 00 0 00361        726         XEC     $RCH
   01213   0534 00 4 01206        727         LXA     SPX,4
   01214   0020 00 4 00002        728         TRA     2,4                 RETURN
   01215   2 00001 0 00453        729 8SPACE IORP     ZBLANK,,1           DOUBLE SPACE
   01216   2 00001 0 00453        730 6SPACE IORP     ZBLANK,,1           DOUBLE SPACE
   01217   2 00001 0 00453        731 4SPACE IORP     ZBLANK,,1           DOUBLE SPACE
   01220   2 00001 0 00453        732 2SPACE IORP     ZBLANK,,1           DOUBLE SPACE
   01221   0 00000 0 00000        733         IOCD    0,,0                DISCONNECT CHANNEL
                                  734 *                                                                     1.5L1370
                                  735 * OUTPUT        BCD OUTPUT ROUTINE FOR LISP                           1.5L1380
                                  736 * SWITCHES...                                                         LC029400
                                  737 *    3  PRINT ON-LINE                                                 LC029600
                                  738 *    5  DONT WRITE TAPE FOR OFF-LINE PRINTING                         LC029800
                                  739 *                                                                     1.5L1390
   01222   0634 00 4 01245        740 OUTPUT SXA      WOTX,4              SAVE LINK IR                      1.5L1400
   01223   0500 00 4 00002        741         CLA     2,4                 GET PARAMETER WORD                1.5L1450
   01224   0622 00 0 01367        742         STD     WOTC                SET COUNT OF I-O COMMAND          1.5L1440
   01225   0400 00 0 00407        743         ADD     $Q20                END OF BLOCK                      1.5L1460
   01226   0621 00 0 01234        744         STA     WOTM                SET MOVE LOOP                     1.5L1470
   01227  -0625 00 0 00357        745         STL     $TCO                WAIT FOR COMPLETION OF LAST OPERATION
   01230   0522 00 0 00357        746         XEC     $TCO
   01231   0500 60 4 00001        747         CLA*    1,4                 GET TAPE SPECIFICATION            1.5L1500
   01232   0074 00 4 00276        748         TSX     $(IOS),4            SET UP I-O COMMANDS               1.5L1510
   01233   0774 00 4 00024        749         AXT     20,4                MAXIMIUM THAT MAY BE ON 1 RECORD  1.5L1540
   01234   0500 00 4 00000        750  WOTM   CLA     **,4                MOVE INTO BUFFER                  1.5L1550
   01235   0601 00 4 01367        751         STO     WOTB,4                                                1.5L1560
   01236   2 00001 4 01234        752         TIX     WOTM,4,1                                              1.5L1570
   01237   0522 00 0 01402        753         XEC     $SWT5               TEST FOR NO TAPE OUTPUT           1.5L1410
   01240   0020 00 0 01242        754         TRA     *+2                 IS OUTPUT ON TAPE                 1.5L1420
   01241   0020 00 0 01245        755         TRA     WOTX                TEST FOR ON-LINE OUTPUT           1.5L1430
   01242   0522 00 0 00351        756         XEC     $WRS                SELECT TAPE                       1.5L1580
   01243  -0774 00 4 01367        757         AXC     WOTC,4              POINTER TO I-O COMMAND            1.5L1590
   01244   0522 00 0 00361        758         XEC     $RCH                RESET ANF LOAD CHANNEL            1.5L1600
   01245   0774 00 4 00000        759  WOTX   AXT     **,4                RESTORE LINK IR                   1.5L1610
   01246   0500 00 4 00001        760         CLA     1,4                 TEST FOR ON-LINE                  1.5L1620
```

```
01247  0522 00 0 01400   761          XEC    $SWT3             ON-LINE SENSE SWITCH                     1.5L1630
01250  0120 00 4 00003   762          TPL    3,4               EXIT IF DONE                             1.5L1640
                         763 * DM 716A - 48 CARDS - 02-09-59                                            716A0001
                         764 *BCD ON-LINE PRINT ROUTINE FOR 709                                         716A0002
                         765 * MODIFED FOR USE IN LISP 1.5
01251  0634 00 4 01334   766  WOTON SXA    WOTU,4            PRINT ON LINE
01252  0634 00 2 01335   767          SXA    WOTV,2            SAVE INDEX REGISTERS
01253  0634 00 1 01336   768          SXA    WOTW,1
01254  0600 00 0 01340   769          STZ    WOTT              SET SWITCH
01255  0600 00 0 01341   770          STZ    WOTS              SET SWITCH TO SKIP FIRST CHARACTER
01256 -0534 00 6 01367   771          LXD    WOTC,6            COUNT IN  INDEX 4 AND 2
01257  1 01343 4 01260   772          TXI    *+1,4,WOTB-20     ADD BEGINNING OF BUFFER
01260  0634 00 4 01271   773          SXA    BC05,4            SET ADDRESS
01261  0766 00 0 01361   774  BC02    WPDA                SELECT PRINTER                                716A0009
01262  0520 00 0 01340   775          ZET    WOTT              SKIP ON FIRST 72 CHARACTERS
01263  0760 00 0 01371   776          SPRA   9                 SET UP SECOND HALF OF LINE
01264  0774 00 4 00030   777          AXT    24,4         CLEAR                                         716A0010
01265  0600 00 4 77714   778          STZ    COMMON+26,4    WORKING                                     716A0011
01266  2 00001 4 01265   779          TIX    *-1,4,1        STORAGE                                     716A0012
01267 -0500 00 0 00455   780  BC03    CAL    BC50         STROBE STARTER                                716A0013
01270  0634 00 2 01274   781  BC04    SXA    BC01,2       WORKING CELL FOR N                            716A0014
01271  0560 00 2 00000   782  BC05    LDQ    0,2          PICK UP WORD TO CONVERT                       716A0015
01272  0774 00 2 00006   783          AXT    6,2          X2 COUNTS 6 CHARACTERS                        716A0016
01273  0602 00 0 77714   784  BC06    SLW    COMMON+26    STROBE                                        716A0017
01274 -0754 00 0 00000   785  BC07    PXD    **,0                                                       716A0018
01275 -0763 00 0 00006   786          LGL    6            LOOK AT                                       716A0019
01276 -0520 00 0 01341   787          NZT    WOTS              SKIP IF NOT FIRST CHARACTER
01277  0500 00 0 00427   788          CLA    $Q060             GET BCD BLANK FOR LEADING CHARACTER
01300  0767 00 0 00001   789          ALS    1              ONE CHARACTER                               716A0020
01301  0734 00 1 00000   790          PAX    ,1                                                         716A0021
01302 -0500 00 0 77714   791          CAL    COMMON+26    STROBE                                        716A0022
01303 -2 00140 1 01305   792          TNX    *+2,1,96     NOT 0                                         716A0023
01304 -0602 00 4 77707   793          ORS    COMMON+21,4  0                                             716A0024
01305  3 00136 1 01320   794          TXH    BC08,1,94    BLANK                                         716A0025
01306 -2 00076 1 01311   795          TNX    *+3,1,62     NOT 11                                        716A0026
01307 -0602 00 4 77711   796          ORS    COMMON+23,4  11                                            716A0027
01310 -2 00002 1 01320   797          TNX    BC08,1,2                                                   716A0028
01311 -2 00036 1 01314   798          TNX    *+3,1,30     NOT 12                                        716A0029
01312 -0602 00 4 77713   799          ORS    COMMON+25,4  12                                            716A0030
01313 -2 00002 1 01320   800          TNX    BC08,1,2                                                   716A0031
01314 -2 00022 1 01317   801          TNX    *+3,1,18     NOT 8 COMBINATION                             716A0032
01315  1 00002 1 01316   802          TXI    *+1,1,2                                                    716A0033
01316 -0602 00 4 77667   803          ORS    COMMON+5,4   8 COMBINATION                                 716A0034
01317 -0602 00 5 77707   804          ORS    COMMON+21,5  NUMBER                                        716A0035
01320  0771 00 0 00001   805  BC08    ARS    1            MOVE STROBE                                   716A0036
01321 -0625 00 0 01341   806          STL    WOTS              SET SWITCH
01322  2 00001 2 01273   807          TIX    BC06,2,1     BACK FOR NEXT CHARACTER                       716A0037
01323  0534 00 3 01274   808          LXA    BC01,3       N                                             716A0038
01324 -2 00001 2 01330   809          TNX    BC15,2,1     OUT IF N WORDS DONE                           716A0039
01325 -0100 00 0 01270   810          TNZ    BC04         BACK FOR REST OF HALF-CARD                    716A0040
01326 -3 00000 4 01330   811          TXL    BC15,4,0     RIGHT-HALF DONE                               716A0041
01327  1 77777 4 01267   812          TXI    BC03,4,-1    BACK FOR RIGHT HALF                           716A0042
01330  0540 00 0 01342   813  BC15    RCHA   BC49                                                       716A0043
01331 -0625 00 0 01340   814          STL    WOTT              SET SWITCH FOR SECOND HALF LINE
```

```
01332  3 00001 1 01261    815          TXH    BC02,1,1      BACK FOR MORE WORDS                    716A0044
01333  0060 00 0 01333    816          TCOA   *                                                    716A0045
01334  0774 00 4 00000    817  WOTU    AXT    **,4          RESTORE INDEX REGISTERS
01335  0774 00 2 00000    818  WOTV    AXT    **,2
01336  0774 00 1 00000    819  WOTW    AXT    **,1
01337  0020 00 4 00003    820          TRA    3,4           EXIT
                          821 *
01340  0 00000 0 00000    822  WOTT                         NON-ZERO ON SECOND HALF LINE
01341  0 00000 0 00000    823  WOTS                         ZERO FOR FIRST CHARACTER
01342  0 00030 0 77664    824  BC49    IOCD   COMMON+2,,24                                         716A0047
                   01274  825  BC01    SYN    BC07
                   00455  826  BC50    SYN    $SBIT
                          827 *
01367                     828  WOTB    BES    20            OUTPUT BUFFER                          1.5L1660
01367  2 00000 0 01343    829  WOTC    IORP   WOTB-20,,**    WRITE RECORD FROM BUFFER
01370  0 00000 0 00000    830          IOCD   0,,0           DISCONNECT CHANNEL
                   00364  831 BCDOUT  SYN    SYSPOT                                               1.5L1700
                   00363  832 PPTOUT  SYN    SYSPPT                                               1.5L1710
                          833 *
                          834                                                                     LC072900
01371  0762 00 0 01321    835 PSHLDB  RCDA                                                        LC073000
01372  0540 00 0 01375    836         RCHA   *+3                                                  LC073100
01373  0544 00 0 00000    837         LCHA   0                                                    LC073200
01374  0021 00 0 00001    838         TTR    1                                                    LC073300
01375 -1 00003 0 00000    839         IOCT   0,,3                                                 LC073400
                          840         HEAD   0                                                    1.5+0201
                          841 * $SWTN COMMANDS                 ALL SWT COMMANDS ARE EXECUTED      1.5L1730
                          842 * NOTE....      SWT COMMANDS MAY BE SIMULATED BY MAKING DOWN SWITCHES
                          843 *       ZET     $ZERO
                          844 *               AND UP SWITCHES
                          845 *       NZT     $ZERO
                          846 *
01376  0 76000 0 00161    847  SWT1    SWT    1                                                    1.5L1770
01377  0 76000 0 00162    848  SWT2    SWT    2                                                    1.5L1780
01400  0 76000 0 00163    849  SWT3    SWT    3                                                    1.5L1790
01401  0 76000 0 00164    850  SWT4    SWT    4                                                    1.5L1800
01402  0 76000 0 00165    851  SWT5    SWT    5                                                    1.5L1810
01403  0 76000 0 00166    852  SWT6    SWT    6                                                    1.5L1820
                          853 *
                          854 * SENSE LIGHT AND TEST INSTRUCTIONS TO BE EXECUTED OR DUMMYED
                          855 *
01404  0760 00 0 00141    856  SLN1    SLN    1
01405  0760 00 0 00142    857  SLN2    SLN    2
01406  0760 00 0 00143    858  SLN3    SLN    3
01407  0760 00 0 00144    859  SLN4    SLN    4
01410  0760 00 0 00140    860  SLF     SLF
01411 -0760 00 0 00141    861  SLT1    SLT    1
01412 -0760 00 0 00142    862  SLT2    SLT    2
01413 -0760 00 0 00143    863  SLT3    SLT    3
01414 -0760 00 0 00144    864  SLT4    SLT    4
                          865                                                                     LC073500
                          866         HEAD   D                                                    1.5P0300
                          867 *     C043 786 R. CALEY  ... GETTM ... READ CLOCK ROUTINE FOR 709 ......LC073700
                          868 *  RECODED AND SQUEEZED BY D. A. EDWARDS                           LC073800
```

```
01415  0762 00 0 01361   869  GETTM RPRA                                                    LC073900
01416  0634 00 1 01510   870       SXA   EXA,1                                             LC074000
01417  0634 00 2 01511   871       SXA   EXB,2          ..                                 LC074100
01420  0634 00 4 01473   872       SXA   EXC,4          ..                                 LC074200
01421  0774 00 2 00041   873       AXT   33,2           SET UP FOR LOOP                    LC074300
01422  0600 00 2 77723   874       STZ   COMMON+33,2    ZERO CARD IMAGE AND WORKING STORAGE LC074400
01423  2 00001 2 01422   875       TIX   *-1,2,1        LOOP                               LC074500
01424  0540 00 0 01515   876       RCHA  SKP27          SET PRINTER TO SKIPPING FIRST 27 WORDSLC074600
01425  0760 00 0 01367   877       SPRA  7              SENSE TIME CLOCK                   LC074700
01426  0760 00 0 01371   878       SPRA  9              SET ECHO ENTRIES                   LC074800
01427 -0140 00 0 01431   879       TNO   *+2            SKIP IF OVERFLOW LIGHT OFF         LC074900
01430 -0625 00 0 77667   880       STL   COMMON+5       OVERFLOW LIGHT ON, MAKE COMMON+5 =/ 0 LC075000
01431  0544 00 0 01520   881       LCHA  ONWD           9 RIGHT ECHO                       LC075100
01432  0774 00 4 00011   882       AXT   9,4            ROW COUNT                          LC075200
01433  0544 00 0 01516   883       LCHA  SKP3           IOCPN ZERO,,3  IOCT COMMON,,1      LC075300
01434  0560 00 0 77662   884  LOAD LDQ   COMMON                                           LC075400
01435  0774 00 2 00002   885       AXT   2,2            ..                                 LC075500
01436 -0754 00 0 00000   886  CONV PXD   ,0                                               LC075600
01437  0774 00 1 00006   887       AXT   6,1            ..                                 LC075700
01440  0767 00 0 00005   888       ALS   5              ..                                 LC075800
01441 -0763 00 0 00001   889       LGL   1              ..                                 LC075900
01442  2 00001 1 01440   890       TIX   *-2,1,1        ..                                 LC076000
01443 -0602 00 2 77665   891       ORS   COMMON+3,2     ..                                 LC076100
01444 -0500 00 2 77667   892       CAL   COMMON+5,2     ..                                 LC076200
01445  0361 00 2 77665   893       ACL   COMMON+3,2     ..                                 LC076300
01446  0602 00 2 77667   894       SLW   COMMON+5,2     ..                                 LC076400
01447  2 00001 2 01436   895       TIX   CONV,2,1       ..                                 LC076500
01450  0544 00 0 01517   896       LCHA  SKP1           IOCPN ZERO,,1  IOCT COMMON,,1      LC076600
01451  2 00001 4 01434   897       TIX   LOAD,4,1       COUNTS ROWS                        LC076700
01452  0544 00 0 01513   898       LCHA  ZERO           IOCD 0,,0  DISCONNECT PRINTER      LC076800
01453  0560 00 0 77665   899       LDQ   COMMON+3       DATE                               LC076900
01454 -0754 00 0 00000   900       PXD   ,0                                                LC077000
01455 -0763 00 0 00006   901       LGL   6              ..                                 LC077100
01456 -0100 00 0 01460   902       TNZ   *+2            ..                                 LC077200
01457 -0500 00 0 00427   903       CAL   OCT60          INSERT BLANK                       LC077300
01460 -0763 00 0 00014   904       LGL   12             ..                                 LC077400
01461 -0501 00 0 00430   905       ORA   OCT61          INSERT / BETWEEN MONTH AND DAY     LC077500
01462  0767 00 0 00022   906       ALS   18             ..                                 LC077600
01463  0602 00 0 77665   907       SLW   COMMON+3       ..                                 LC077700
01464 -0754 00 0 00000   908       PXD   ,0                                                LC077800
01465 -0763 00 0 00006   909       LGL   6              ..                                 LC077900
01466 -0100 00 0 01470   910       TNZ   *+2            ..                                 LC078000
01467 -0500 00 0 00427   911       CAL   OCT60          INSERT BLANK                       LC078100
01470 -0763 00 0 00014   912       LGL   12             ..                                 LC078200
01471 -0501 00 0 00427   913       ORA   OCT60          PROVIDE BLANK AS LAST CHARACTER    LC078300
01472 -0501 00 0 77665   914       ORA   COMMON+3       ..                                 LC078400
01473  0774 00 4 00000   915  EXC  AXT   **,4           RESTORE LINK IR                    LC078500
01474  0602 60 4 00001   916       SLW*  1,4            STORE DATE IN REGISTER SPECIFIED   LC078600
01475 -0754 00 0 00000   917       PXD   ,0                                                LC078700
01476  0560 00 0 77666   918       LDQ   COMMON+4       TIME                               LC078800
01477 -0763 00 0 00006   919       LGL   6              ..                                 LC078900
01500 -0100 00 0 01502   920       TNZ   *+2            ..                                 LC079000
01501 -0500 00 0 00427   921       CAL   OCT60          BLANK                              LC079100
01502 -0763 00 0 00036   922       LGL   30             ..                                 LC079200
```

```
01503 -0501 00 0 00431    923         ORA    OCT33          PROVIDE DECIMAL POINT               LC079300
01504  0602 60 4 00002    924         SLW*   2,4            STORE TIME                          LC079400
01505  0767 00 0 00010    925         ALS    8              TURN ON OVER FLOW                   LC079500
01506 -0520 00 0 77667    926         NZT    COMMON+5       LEAVE ON IF COMMON+5 IS NON ZERO    LC079600
01507  0140 00 0 01510    927         TOV    *+1            TURN OFF OVER FLOW LIGHT            LC079700
01510  0774 00 1 00000    928  EXA    AXT    0,1             RESTORE IRS                        LC079800
01511  0774 00 2 00000    929  EXB    AXT    0,2            ..                                  LC079900
01512  0020 00 4 00003    930         TRA    3,4             EXIT........                       LC080000
01513  0 00000 0 00000    931  ZERO   PZE    0              ..                                  LC080100
01514  0 00000 0 00000    932         PZE                                                       LC080200
01515 -1 00033 2 77670    933  SKP27  IOCTN  COMMON+6,,27                                       LC080300
01516 -0 00002 2 01513    934  SKP3   IOCPN  ZERO,,2        SKIP TWO WORDS                      LC080400
01517 -0 00001 2 01513    935  SKP1   IOCPN  ZERO,,1        SKIP ONE WORD                       LC080500
01520 -1 00001 0 77662    936  ONWD   IOCT   COMMON,,1      TRANSMIT ONE WORD TO COMMON         LC080600
                 00427    937  OCT60  SYN    $Q060                                              1.5L3190
                 00430    938  OCT61  SYN    $Q061          BCD /                               1.5L3200
                 00431    939  OCT33  SYN    Q033Q2         BCD .0                              1.5L3210
                          940 *  TIME  PRINTS THE DATE AND TIME .                               LC081000
01521  0634 00 4 01531    941  TIME   SXA    TIR,4          SAVE LINK IR                        LC081100
01522  0074 00 4 01415    942         TSX    GETTM,4        GET TIME FROM ON-LINE CLOCK         LC081200
01523  0 00000 0 01535    943                TR+2           STORE DATE                          1.5P0395
01524  0 00000 0 01536    944                TR+2+1         STORE TIME                          1.5P0396
01525  0074 00 4 01222    945         TSX    OUTPUT,4       PRINT OUT DATE AND TIME             LC081500
01526  0 00000 0 00364    946                BCDOUT         ON BCD OUTPUT TAPE                  LC081600
01527  0 00021 0 01533    947                TR,,17                                             1.5P0398
01530 -0754 00 0 00000    948         PXD    0,0
01531  0774 00 4 00000    949  TIR    AXT    **,4           RESTORE LINK IR                     LC081800
01532  0020 00 4 00001    950         TRA    1,4            RETURN                              LC081900
01533  006063302560       951  TR     BCI    1,0 THE                                            1.5P1399
01534  633144256074       952         BCI    9,TIME (          ) HAS COME, THE WALRUS SAID, TO TALK 1.5P0399
01535  606060606060
01536  606060606060
01537  346030216260
01540  234644257360
01541  633025606621
01542  435164626062
01543  213124736063
01544  466063214342
01545  604626604421       953         BCI    7, OF MANY THINGS .....    -LEWIS CARROLL-        1.5P0400
01546  457060633031
01547  452762603333
01550  333333606060
01551  404325663162
01552  602321515146
01553  434340606060
                          954 0       HED                                                       LC085000
                 01521    955  TIME   SYN    D$TIME                                             1.5P0301
                 01415    956  GETTM  SYN    D$GETTM                                            1.5P0302
                          957                                                                   LC086800
01554  0420 00 0 00007    958 PAUSEF HPR 7                                                      LC086900
01555  0020 00 4 00001    959         TRA 1,4                                                   LC087000
                          960                                                                   LC087100
                          961                                                                   LC090700
                          962 *
```

```
                                    963 * ERROR       PROCESSES ALL LISP ERRORS. NORMALLY GIVES ERROR NUMBER,
                                    964 *             ERROR LOCATION, LISP PRINT OF AC AND BACK TRACE OFALL
                                    965 *             FUNCTIONS ENTERED ON PUSH DOWN LIST.
                                    966 *
01556  0 00000 0 00000   967  ERAC                                 PLACE TO STORE MACHINE REGISTERS
01557  0 00000 0 00000   968  ERMQ
01560  0 00000 0 00000   969  ERIND
01561  0 00000 0 00000   970  ERX                                  INDEX 1,,INDEX 2
01562  3 00000 0 01563   971  ERROR TXH  **+1,,**                  INDEX 4
01563 -0520 00 0 11664   972        NZT  ERNULL                    SEE IF ERROR PROGRAM IS TO BE EXECUTED
01564  0522 00 0 11665   973        XEC  EREXIT                    NORMAL SETTING GOES TO EVALQUOTE
01565 -0600 00 0 01557   974        STQ  ERMQ                      SAVE MACHINE REGISTERS
01566  0604 00 0 01560   975        STI  ERIND
01567  0634 00 1 01561   976        SXA  ERX,1
01570 -0634 00 2 01561   977        SXD  ERX,2
01571  0441 00 0 10340   978        LDI  SYSIND                    PICK UP SYSTEM INDICATORS
01572  0055 00  000010   979        SIR  ERRORI                    SET ERROR HAS OCURRED INDICATOR
01573  0604 00 0 10340   980        STI  SYSIND                    UPDATE SYSTEM INDICATOR CELLS
01574  0601 00 0 01655   981        STO  ERT                       AC TO BE PRINTED
01575  0500 00 4 00001   982        CLA  1,4                       ERROR NUMBER TO AC
01576  0601 00 0 01661   983        STO  ERM                       PUT IN ERROR MESSAGE
01577 -0535 00 4 01562   984        LDC  ERROR,4
01600 -0754 00 4 00000   985        PXD  0,4
01601  0131 00 0 00000   986        XCA                            AND CONVERT TO OCATL
01602  0074 00 4 11021   987        TSX  OCTALP,4
01603 -0501 00 0 00452   988        ORA  OBLANK                    INSERT LEADING BLANK
01604  0602 00 0 01664   989        SLW  ERN                       PUT IN ERROR MESSAGE
01605  0074 00 4 01222   990        TSX  OUTPUT,4                  WRITE OUT ERROR MESSAGE
01606  0 00000 0 00364   991             BCDOUT
01607  0 00011 0 01656   992             ERO,,9
01610  0520 00 0 01654   993        ZET  BACACT                    SKIP IF BACK TRACE IS NOT ACTIVE
01611  0020 00 0 01650   994        TRA  BACER                     GO TO SPECIAL ROUTINE
01612 -0625 00 0 01654   995        STL  BACACT                    MAKE BACK TRACE ROUTINE ACTIVE
01613  0500 00 0 01655   996        CLA  ERT                       PICK UP AC ON ENTRANCE
01614  0074 00 4 04604   997        TSX  $PRINT,4                  PRINT IT IN LISP
01615  0054 00  000200   998        RFT  NOBACT                    TEST FOR NO BACK TRACE
01616  0020 00 0 01646   999        TRA  BACC                      GO TO EXIT
01617  0560 00 0 00370  1000        LDQ  $ZERO                     ZERO THE ERROR LIST
01620 -0534 00 4 11670  1001        LXD  NUBPDL,4                  BEGINNING OF PUSH DOWN LIST
01621  1 77777 4 01622  1002        TXI  **+1,4,-1                 PUSH UP BY -1
01622 -0634 00 4 01624  1003        SXD  BEX,4                     SET UP ALL DONE TEST INSTRUCTION
01623 -0534 00 4 02317  1004        LXD  $CPPI,4                   PICK UP CURRENT PDL COUNTER
01624  3 00000 4 01644  1005  BEX   TXH  BACTD,4,**                GO IF ALL UNSAVED
01625 -0500 00 4 77777  1006        CAL  -1,4                      EITHER UNSAVE OR UNWND
01626 -0320 00 0 00461  1007        ANA  $PMASK                    DEPENDING ON COMPILED OR
01627  0322 00 0 00451  1008        ERA  $QP5                      SYSTEM SUBROUTINE PUT IT THERE
01630  0100 00 0 01633  1009        TZE  **+3                      TEST IS FOR STR OP
01631  0074 00 4 02326  1010        TSX  UNSAVE,4                  IN LAST WORD OF BLOCK FROM COMPILER
01632  0020 00 0 01634  1011        TRA  **+2
01633  0074 00 4 17330  1012        TSX  C$UNWND,4
01634 -0534 00 4 02317  1013        LXD  $CPPI,4                   BEGINNING OF BLOCK JUST UNSAVED
01635  0500 00 4 00000  1014        CLA  0,4                       LAST IR 4 WORD
01636  0734 00 4 00000  1015        PAX  0,4                       FUNCTION ATOMIC SYMBOL
01637 -0754 00 4 00000  1016        PXD  0,4                       PUT IN DECREMENT
```

```
01640  0074 00 4 03730  1017         TSX   $CONS,4          ADD TO ERROR LIST
01641  0131 00 0 00000  1018         XCA                    ANSWER TO MQ
01642 -0534 00 4 02317  1019         LXD   $CPPI,4          PUSH DOWN INDICTOR
01643  0020 00 0 01624  1020         TRA   BEX              GO BACK FOR NEXT
01644  0131 00 0 00000  1021  BACTD  XCA                    LIST TO AC
01645  0074 00 4 04604  1022         TSX   $PRINT,4         PRINT THE ERROR LIST
01646  0600 00 0 01654  1023  BACD   STZ   BACACT           DE-ACTIVATE THE BACK TRACE ROUTINE
01647  0522 00 0 11665  1024         XEC   EREXIT           NORMAL SETTING GOES TO EVALQUOTE
                        1025 *
01650  0074 00 4 01222  1026  BACER  TSX   OUTPUT,4         WRITE OUT MESSAGE THAT BACK TRACE
01651  0 00000 0 00364  1027         BCDOUT                 CAUSED ANOTHER ERROR
01652  0 00007 0 01667  1028         BACE,,7
01653  0020 00 0 01646  1029         TRA   BACD             RESET AND RETURN
                 000200  1030 NOBACT BOOL  200              NO BACK TRACE INDICATOR
01654  0 00000 0 00000  1031 BACACT                         NON-ZERO MEANS BACK TRACE ACTIVE
01655  0 00000 0 00000  1032  ERT                           TEMPORARY STORAGE FOR AC
01656  005454546025     1033  ERO    BCI   3,0*** ERROR NUMBER
01657  515146516045
01660  644422255160
01661  0 00000 0 00000  1034  ERM                           ERROR NUMBER IN BCD GOES HERE
01662  603145242567     1035         BCI   2, INDEX 4 =
01663  600460136060
01664  0 00000 0 00000  1036  ERN                           OCATL LOCATION GOES HERE
01665  604623632143     1037         BCI   2, OCTAL. ***
01666  336054545460
01667  005454546021     1038  BACE   BCI   7,0*** ABOVE ERROR TERMINATED BACK-TRACE ***
01670  224665256025
01671  515146516063
01672  255144314521
01673  632524602221
01674  234240635121
01675  232560545454
                        1039 *
                        1040 * FLAPTR AND DCT     GIVE ERROR DIAGNOSTICS FOR FLOATING POINT  TRAP AND1.5M4800
                        1041 *                DIVIDE CHECK INCLUDING LOCATION AND CONTENTS OF AC.      1.5M4810
                        1042 *                BOTH MY BE IGNORED BY MAKING CELL FPTGNR NON-ZERO.       1.5M4820
                        1043 *                                                                         1.5M4830
01676  0520 00 0 01706  1044  DCT    ZET   FPTGNR           TEST FOR IGNORE ERROR FLAG               1.5M4840
01677  0020 00 4 00001  1045         TRA   1,4              RETURN                                   1.5M4850
01700 -0634 00 4 01562  1046         SXD   $ERROR,4         SAVE IR 4                                1.5M4860
01701 -0535 00 4 01562  1047         LDC   $ERROR,4         COMPLEMENT LOCATION OF ENTRANCE          1.5M4870
01702  0634 00 4 01717  1048         SXA   FLXT,4           SET TRAP ADDRESS
01703 -0634 00 0 01717  1049         SXD   FLXT,0           ZERO THE DECREMENT
01704 -0625 00 0 01765  1050         STL   FPTDV            SET DIVIDE CHECK FLAG                    1.5M4890
01705  0020 00 0 01722  1051         TRA   FPTA             DO FLOATING POINT TRAP ERROR             1.5M4900
                        1052 *                                                                         1.5M4910
01706  0 00000 0 00000  1053 FPTGNR                         TEST CELL IS NON-ZERO TO IGNORE TRAPS
                        1054 *
01707  0601 00 0 77662  1055 FLAPTR STO    COMMON           SAVE AC
01710  0500 00 0 00000  1056         CLA   0                GET TRAP LOCATION
01711  0621 00 0 01717  1057         STA   FLXT             SET EXT CELL
01712  0622 00 0 01717  1058         STD   FLXT
01713  0500 00 0 00177  1059         CLA   FLAPCZ           NORMAL CONTENTS OF ZERO
01714  0601 00 0 00000  1060         STD   0
```

```
01715  0500 00 0 77662  1061         CLA   COMMON              RESTORE AC
01716  0520 00 0 01706  1062         ZET   FPTGNR              TEST FOR IGNORE TRAP
01717 -3 00000 0 00000  1063  FLXT   TXL   **,,**              IMMEDIATE EXIT INSTRUCTION
01720  0600 00 0 01765  1064         STZ   FPTDV               INDICATE FLAPPING TRAP          1.5M4940
01721 -0634 00 4 01562  1065         SXD   $ERROR,4            SAVE LINK IR                    1.5M4950
01722  0131 00 0 00000  1066  FPTA   XCA                       AC TO MQ                        1.5M4960
01723  0074 00 4 11021  1067         TSX   OCTALP,4            CONVERT TO OCTAL
01724  0602 00 0 01757  1068         SLW   FPTAC               STORE OCTAL FOR LEFT HALF OF AC 1.5M5020
01725  0074 00 4 11021  1069         TSX   OCTALP,4            CONVERT TO OCTAL
01726  0602 00 0 01760  1070         SLW   FPTAD               STORE AWAY IN ERROR MESSAGE     1.5M5070
01727  0560 00 0 01717  1071         LDQ   FLXT                GET TRAP CELL CONTENTS
01730 -0773 00 0 00022  1072         RQL   18                  POSITION IN LEFT HALF OF MQ     1.5M5090
01731  0074 00 4 11021  1073         TSX   OCTALP,4            CONVERT TO OCTAL
01732 -0501 00 0 00452  1074         ORA   OBLANK              MAKE LAEDING ZERO A BLANK       1.5M5130
01733  0602 00 0 01754  1075         SLW   FPTLO               SAVE OCTAL FOR LOCATION OF ERROR 1.5M5140
01734 -0774 00 4 01761  1076         AXC   FPTF,4              POINTER TO BEGINNING OF ERROR MESSAGE 1.5M5150
01735  0520 00 0 01765  1077         ZET   FPTDV               TEST FOR DIVIDE CHECK ERROR     1.5M5160
01736 -0774 00 4 01763  1078         AXC   FPTD,4              DIVIDE CHECK MESSAGE            1.5M5170
01737  0500 00 4 00000  1079         CLA   0,4                 PICK UP PROPER MESSAGE          1.5M5180
01740  0601 00 0 01751  1080         STO   FPTTY               STORE IN MESSAGE                1.5M5190
01741  0500 00 4 00001  1081         CLA   1,4                                                 1.5M5200
01742  0601 00 0 01752  1082         STO   FPTTY+1                                             1.5M5210
01743  0074 00 4 01222  1083         TSX   OUTPUT,4            WRITE ERROR MESSAGE
01744  0 00000 0 00364  1084               BCDOUT
01745  0 00010 0 01751  1085               FPTTY,,8
01746 -0754 00 0 00000  1086         PXD   0,0                 CLAER AC
01747  0074 00 4 01563  1087         TSX   $ERROR+1,4          GO TO ERROR PROGRAM             1.5M5220
01750  542760600154     1088         BCI   1,*G  1*            FLOATING POINT TRAP OR DCT
01751  606060606060     1089  FPTTY  BCI   3,          AT....                                 1.5M5230
01752  606060606060
01753  216333333333
01754  0 00000 0 00000  1090  FPTLO                           LOCATION OF ERROR               1.5M5240
01755  606631633060     1091         BCI   2, WITH AC =                                      1.5M5250
01756  212360136060
01757  0 00000 0 00000  1092  FPTAC                           OCTAL LEFT HALF OF AC           1.5M5260
01760  0 00000 0 00000  1093  FPTAD                           OCTAL RIGHT HALF OF AC          1.5M5270
01761  002643214760     1094  FPTF   BCI   2,0FLAP TRAP                                      1.5M5300
01762  635121476060
01763  002431653124     1095  FPTD   BCI   2,0DIVIDE CHK                                    1.5M5310
01764  256023304260
                        1096  *                                                             1.5M5320
                        1097  * THIS ROUTINE USES $ERROR,$ERRORP1( AND FPTGNR                1.5M5330
01765  0 00000 0 00000  1098  FPTDV                           DIVIDE CHECK INDICATOR CELL     1.5M5350
                        1099  *                                                             1.5M5370
                        1100  *                                                             1.5M5380
                        1101  * STRPNT       A DEBUGGING AID WHICH PRINTS THE DECREMENT OF THE AC AS 1.5M5390
                        1102  *       A LIST OR DUMPS AC AND IR 4 IN OCTAL WHICH EVER IS APPROPRIATE. 1.5M5400
                        1103  *                                                             1.5M5410
01766  0520 00 0 02051  1104  STRPNT ZET   STRT                TEST IF ROUNTINE IS ACTIVE.     1.5M5420
01767  0020 00 0 02037  1105         TRA   STREX               IT IS THEREFORE EXIT            1.5M5430
01770  0634 00 4 02035  1106         SXA   STRX,4              NO, SAVE LINK IR                1.5M5440
01771  0601 00 0 02046  1107         STO   STRA                SAVE AC                         1.5M5450
01772 -0600 00 0 02047  1108         STQ   STRQ                SAVE MQ                         1.5M5460
01773 -0625 00 0 02051  1109         STL   STRT                SET CELL TO INDAICTE ACTIVE
```

```
01774  0560 00 0 00000  1110          LDQ   0              PICK UP TRAP LOCATION              1.5M5480
01775 -0600 00 0 02052  1111          STQ   STRXT          SAVE CONTENTS                      1.5M5490
01776 -0773 00 0 00022  1112          RQL   18             ADDRESS PORTION TO LEFT HALF OF MQ 1.5M5500
01777  0074 00 4 11021  1113          TSX   OCTALP,4
02000 -0501 00 0 00452  1114          ORA   OBLANK         LEADING BLANK                      1.5M5560
02001  0602 00 0 02055  1115          SLW   STRM           STORE TRAP ADDRESS IN OCATL        1.5M5570
02002  0500 00 0 00177  1116          CLA   FLAPCZ         RESTORE ORIGNAL CONTENTS OF ZERO
02003  0601 00 0 00000  1117          STO   0
02004  0074 00 4 01222  1118          TSX   OUTPUT,4                                          1.5M5580
02005  0 00000 0 00364  1119                BCDOUT         OUTPUT BCD MESSAGE                 1.5M5590
02006  0 00005 0 02053  1120                STRN,,5                                           1.5M5600
02007  0560 00 0 02046  1121   STRO   LDQ   STRA           AC AT TIME OF TRAP
02010  0074 00 4 11021  1122          TSX   OCTALP,4       CONVERT TO OCTAL
02011  0602 00 0 02064  1123          SLW   STRMA          STORE LEFT HALF IN OCTAL           1.5M5990
02012  0074 00 4 11021  1124          TSX   OCTALP,4       CONVERT TO OCTAL
02013  0602 00 0 02065  1125          SLW   STRMB          RIGHT HALF IN OCTAL                1.5M6040
02014  0560 00 0 02035  1126          LDQ   STRX           PICK UP LINK IR                    1.5M6050
02015 -0773 00 0 00025  1127          RQL   21             SHIFT TO LEFT OF MQ                1.5M6060
02016  0074 00 4 11021  1128          TSX   OCTALP,4       CONVERT TO OCTAL
02017  0771 00 0 00006  1129          ARS   6              MAKE A HOLE
02020 -0501 00 0 00452  1130          ORA   OBLANK         MAKE LEADING ZERO A BLANK          1.5M6120
02021  0602 00 0 02070  1131          SLW   STRMC          PUT IN MESSAGE                     1.5M6140
02022  0074 00 4 01222  1132          TSX   OUTPUT,4                                          1.5M6150
02023  0 00000 0 00364  1133                BCDOUT         OUTPUT IN BCD                      1.5M6160
02024  0 00011 0 02060  1134                STRMD,,9
02025 -0500 00 0 02046  1135          CAL   STRA           PICK UP AC                         1.5M5610
02026 -0734 00 4 00000  1136          PDX   0,4                                               1.5M5620
02027 -0320 00 0 00466  1137          ANA   PTAMSK         MASK OUT ONLY DECREMENT
02030 -0100 00 0 02035  1138          TNZ   STRF           GO IF ANY THING LEFT
02031 -3 00000 4 02035  1139 STRTOP   TXL   STRF,4,**      -TFS-1   IF NOT IN LIST STRUCTURE  1.5M5660
02032  3 00000 4 02035  1140 STRBTM   TXH   STRF,4,**      -BRK  GO TO EXIT IF NOT IN FREE STORAG
02033 -0754 00 4 00000  1141          PXD   0,4            OTHERWISE                          1.5M5680
02034  0074 00 4 04604  1142          TSX   $PRINT,4       PRINT AS LISP LIST                 1.5M5690
02035                   1143   STRF   BSS   0
02035  0774 00 4 00000  1144   STRX   AXT   **,4           DITTO LINK IR                      1.5M5740
02036  0600 00 0 02051  1145          STZ   STRT           INDICATE ROUTINE IS INACTIVE       1.5M5750
02037  0522 00 0 01403  1146   STREX  XEC   $SWT6          SHOULD WE GO BACK TO OVERLORD
02040  0020 00 0 02042  1147          TRA   *+2
02041  0020 00 0 10230  1148          TRA   OVRLRD         FIND NEXT OVERLORD DIRECTION CARD  1.5M5770
02042 -0754 00 0 00000  1149          PXD   0,0
02043 -0634 00 4 01562  1150          SXD   $ERROR,4
02044  0074 00 4 01563  1151          TSX   $ERROR+1,4
02045  542660600554     1152          BCI   1,*F  5*       STR TRAP ERROR
                        1153 *                                                                1.5M5920
                        1154 *                                                                1.5M6190
02046  0 00000 0 00000  1155   STRA                        AC STROAGE                         1.5M6200
02047  0 00000 0 00000  1156   STRQ                        MQ                                 1.5M6220
02050 -3 00000 0 00000  1157   STRD   TXL   **,,**         MASK FOR PREFIX                    1.5M6240
02051  0 00000 0 00000  1158   STRT                        CELL INDICATES ACTIVE IF NON-ZERO  1.5M6250
02052  0 00000 0 00000  1159   STRXT                       STORAGE FOR CONTENTS OF ZERO       1.5M6260
02053  006263516063     1160   STRN   BCI   2,0STR TRAP AT                                    1.5M6270
02054  512147602163
02055  0 00000 0 00000  1161   STRM   PZE                  TRAP LOCATION IN OCTAL             1.5M6280
02056  604623632143     1162          BCI   2, OCTAL.                                         1.5M6290
```

```
02057  336060606060
02060  004623632143     1163  STRMD BCI      4,OOCTAL CONTENTS OF AC                            1.5M6300
02061  602346456325
02062  456362604626
02063  602123606060
02064  0 00000 0 00000  1164  STRMA                                                             1.5M6310
02065  0 00000 0 00000  1165  STRMB                                  OCTAL CONTENTS OF AC GO HERE  1.5M6320
02066  602145246031     1166        BCI      2, AND INDEX 4                                    1.5M6330
02067  452425676004
02070  0 00000 0 00000  1167  STRMC                                  OCATL LINK IR CONTENTS GO HERE  1.5M6340
                        1168 *                                                                  1.5M6350
                        1169 * THIS ROUTINE USES $PRINT,OUTPUT,BCDOUT AND OBLANK                1.5M6360
                        1170 *                                                                  1.5M6370
                        1171 *                                                                  1.5M6380
                        1172                                                                    LC099800
                        1173              ERROR1 USED BY APPLY HAS ONE ARGUMENT AND PRINTS IT USING  LC099900
                        1174              PRINT                                                 LC100000
                        1175                                                                    LC100100
02071 -0634 00 4 01562  1176 ERROR1 SXD $ERROR,4                                                LC100200
02072  0074 00 4 01563  1177        TSX $ERROR+1,4                                              LC100300
02073  542160600154     1178        BCI      1,*A  1*           APPLIED FUNCTION CALLED ERROR
                        1179 *
                        1180 * SETUP         TAKES  SIZE PARAMETERS AND SETS UP THE DEPENDENT CELLS
                        1181 *               MAINLY IN THE RECLAIMER (GARBAGGE COLLECTOR) AND STRPNT
                        1182 *
                        1183        HEAD     E
                        1184 *
                        1185 *      RESETP  ALTERNATE ENTRANCE TO SETUP TO CHANGE COMPOSITION OF
                        1186 * FREE STRORAGE SLIGHTLY.
                        1187 *
02074 -0625 00 0 02256  1188 RESETP STL     RST              SET RESETUP SWITCH
02075  0634 00 4 02252  1189        SXA     SUPX,4           SAVE LINK IR
02076  0020 00 0 02147  1190        TRA     RSU              CHANGE GARBAGGE COLLECTOR PARAMETERS
                        1191 *
02077  0634 00 4 02252  1192  SETUP SXA     SUPX,4           SAVE LINK IR
02100  0500 00 0 02303  1193        CLA     $TPG
02101  0601 00 0 02304  1194        STO     $ORG
02102  0400 00 0 02305  1195        ADD     LBINPG
02103  0734 00 4 00000  1196        PAX     0,4
02104  1 77777 4 02105  1197        TXI     *+1,4,-1
02105 -0634 00 4 16526  1198        SXD     C$LBPTP,4        SETUP FOR LAP
02106  0737 00 4 00000  1199        PAC     0,4
02107 -0634 00 4 04016  1200        SXD     BLKETP,4         END OF BLOCK RESERVATION
02110  0400 00 0 00371  1201        ADD     $Q1
02111  0737 00 4 00000  1202        PAC     0,4
02112 -0634 00 4 02317  1203        SXD     $CPPI,4          SET PUSH DOWN CELLS
02113 -0634 00 4 02413  1204        SXD     $CSSI,4
02114 -0634 00 4 11670  1205        SXD     NUBPDL,4         PRIVATE COPY FOR BACKTRACE
02115  0400 00 0 02306  1206        ADD     LPBPDL
02116  0621 00 0 02761  1207        STA     ZPDL             G C ZEROS THE UNUSED PDL
02117  0402 00 0 00407  1208        SUB     $Q20             PROTECTION AGINST COMPILER SAVING
02120  0737 00 4 00000  1209        PAC     0,4              WITH OUT LOOKING
02121 -0634 00 4 02414  1210        SXD     ENDPDL,4         OUT OF PDL TEST
02122  0500 00 0 02274  1211        CLA     $TFS
```

```
02123  0402 00 0 02310  1212        SUB   LFREES
02124  0621 00 0 02277  1213        STA   $TBT
02125  0400 00 0 00371  1214        ADD   $Q1
02126  0621 00 0 02276  1215        STA   $BFS
02127  0500 00 0 02307  1216        CLA   LFULWS
02130  0771 00 0 00005  1217        ARS   5
02131  0400 00 0 00371  1218        ADD   $Q1
02132  0601 00 0 02311  1219        STO   $LBT
02133  0500 00 0 02276  1220        CLA   $BFS
02134  0402 00 0 02311  1221        SUB   $LBT
02135  0601 00 0 02300  1222        STO   $BBT
02136  0402 00 0 00371  1223        SUB   $Q1
02137  0601 00 0 02301  1224        STO   $TFW
02140  0500 00 0 02276  1225        CLA   $BFS
02141  0402 00 0 02307  1226        SUB   LFULWS
02142  0601 00 0 02302  1227        STO   $BFW
02143  0402 00 0 02306  1228        SUB   LPBPDL
02144  0402 00 0 02305  1229        SUB   LBINPG
02145  0402 00 0 02303  1230        SUB   $TPG
02146 -0120 00 0 02257  1231        TMI   SETERR          OVER LAPPING STORAGE ERROR
                        1232 *            STRPNT SETUP
02147  0535 00 4 02274  1233  RSU   LAC   $TFS,4
02150  1 77777 4 02151  1234        TXI   *+1,4,-1
02151 -0634 00 4 02031  1235        SXD   STRTOP,4
02152  0535 00 4 02276  1236        LAC   $BFS,4
02153 -0634 00 4 02032  1237        SXD   STRBTM,4
                        1238 *            RECLAIMER SETUP
02154  0534 00 4 02311  1239        LXA   $LBT,4
02155  0634 00 4 02532  1240        SXA   A,4
02156  0534 00 4 02276  1241        LXA   $BFS,4
02157  0634 00 4 02533  1242        SXA   B,4
02160  0534 00 4 02301  1243        LXA   $TFW,4
02161 -0634 00 4 02645  1244        SXD   C,4
02162 -0634 00 4 02734  1245        SXD   I,4
02163 -0634 00 4 03116  1246        SXD   MONE,4
02164  0534 00 4 02277  1247        LXA   $TBT,4
02165  0634 00 4 02662  1248        SXA   MBTTA,4
02166  0634 00 4 02667  1249        SXA   D,4
02167  0634 00 4 02677  1250        SXA   E,4
02170  0634 00 4 03126  1251        SXA   MLTBT,4
02171  0534 00 4 02274  1252        LXA   $TFS,4
02172  0634 00 4 02713  1253        SXA   F,4
02173  0534 00 4 02276  1254        LXA   $BFS,4
02174  0634 00 4 02746  1255        SXA   SFWLD,4
02175  0534 00 4 02302  1256        LXA   $BFW,4
02176  0634 00 4 02733  1257        SXA   H,4
02177  0535 00 4 02302  1258        LAC   $BFW,4
02200 -0634 00 4 03066  1259        SXD   MRKLST,4
02201 -0634 00 4 03114  1260        SXD   MLBCW,4
02202  0535 00 4 02274  1261        LAC   $TFS,4
02203  1 77777 4 02204  1262        TXI   *+1,4,-1
02204 -0634 00 4 03067  1263        SXD   MRKLST+1,4
02205 -0634 00 4 03111  1264        SXD   MLIST,4
02206  0535 00 4 02276  1265        LAC   $BFS,4
```

```
02207 -0634 00 4 02720   1266          SXD     G,4
02210 -0634 00 4 03112   1267          SXD     MLBEA,4
02211 -0535 00 4 02414   1268          LDC     ENDPDL,4
02212  1 00001 4 02213   1269          TXI     *+1,4,1
02213  0634 00 4 03100   1270          SXA     MLEPD,4
02214  0634 00 4 03107   1271          SXA     MLEPE,4
02215  0535 00 4 02300   1272          LAC     $BBT,4
02216 -0634 00 4 03113   1273          SXD     MLBBJ,4
02217  0520 00 0 02256   1274          ZET     RST             SKIP IF INITAL SETUP
02220  0020 00 0 02252   1275          TRA     SUPX            GO TO EXIT OTERWISE
02221  0535 00 4 02276   1276          LAC     $BFS,4          BOTTOM OF FREE STORAGE
02222  1 77777 4 02223   1277          TXI     *+1,4,-1        SUBTRACT 1
02223 -0634 00 4 02232   1278          SXD     SUPFS,4         SET DECREMENT
02224  0535 00 4 02275   1279          LAC     $MFS,4          LOWERP
02225 -0754 00 4 00000   1280          PXD     0,4             POINTER TO LWERP IN DECREMENT
02226  0601 00 0 03751   1281          STO     $FREE           SET UP FREE
02227  0400 00 0 00442   1282          ADD     $QD1
02230  0601 00 4 00000   1283          STO     0,4             START MAKING FREE STORAGE
02231  1 00001 4 02232   1284          TXI     *+1,4,1
02232 -3 00000 4 02227   1285  SUPFS   TXL     *-3,4,**        -BFS
02233  0600 00 4 00000   1286          STZ     0,4
02234  0535 00 4 02302   1287          LAC     $BFW,4          BOTTOM FULL WORD SPACR
02235 -0754 00 4 00000   1288          PXD     0,4
02236  0601 00 0 03727   1289          STO     FWORDL          SET UP FULL WORD LIST
02237 -0737 00 4 00000   1290          PDC     0,4             GET IT RUE IN INDEX
02240 -0634 00 4 02243   1291          SXD     SUPFV,4         USE TO CALCULATE LENGTH OF FULL WORD S
02241  0534 00 4 02300   1292          LXA     $BBT,4          TFW + 1
02242  0634 00 4 02245   1293          SXA     SUPFW,4         SET END + 1 ADDRESSS
02243  2 00000 4 02244   1294  SUPFV   TIX     *+1,4,**        LENGHT OF FULL WORD
02244  0402 00 0 00442   1295          SUB     $QD1
02245  0601 00 4 00000   1296  SUPFW   STO     **,4            MAKE LIST
02246  2 00001 4 02244   1297          TIX     *-2,4,1         LOOP
02247  0600 60 0 02245   1298          STZ*    SUPFW           MAKE LAST ENTRY ZERO
02250  0500 00 0 66430   1299          CLA     $OBLB           BEGINNING OF UNSORTED OBJECT LIST
02251  0074 00 4 02420   1300          TSX     CNSFWL,4
02252  0774 00 4 00000   1301  SUPX    AXT     **,4
02253  0600 00 0 02256   1302          STZ     RST             ZERO RESETUP SWITCH
02254 -0754 00 0 00000   1303          PXD     0,0
02255  0020 00 4 00001   1304          TRA     1,4
02256  0 00000 0 00000   1305  RST                             RESETUP TEST CELL
02257  0074 00 4 01222   1306 SETERR   TSX     OUTPUT,4
02260 -0 00000 0 00364   1307          MZE     BCDOUT          PRINT ON-LINE
02261  0 00011 0 02263   1308                  NOSET,,9
02262  0020 00 0 02252   1309          TRA     SUPX            EXIT
02263  004665255143      1310  NOSET   BCI     9,00VERLAPPING PARAMETERS -SETUP- ERROR NUMBER *0  7*
02264  214747314527
02265  604721512144
02266  256325516260
02267  406225636447
02270  406025515146
02271  516045644422
02272  255160544660
02273  600754606060
                         1311 *
```

```
                                    1312          HEAD    0
                                    1313 *
                                    1314 *                STORAGE MAP CELLS FOR LISP
                                    1315 *
02274  0 00000 0 71651              1316  TFS             UPERML-1          UPPER LIMIT OF FREE STORAGE
02275  0 00000 0 66230              1317  MFS             LOWERP            LOW LIMIT OF PERM. LIST STRUCTURE
02276  0 00000 0 00000              1318  BFS                               BOTTOM OF FREE STORAGE
02277  0 00000 0 00000              1319  TBT                               TOP OF BIT TABLE
02300  0 00000 0 00000              1320  BBT                               BOTTOM OF BIT TABLR
02301  0 00000 0 00000              1321  TFW                               TOP OF FULL WORD SPACE PROPER
02302  0 00000 0 00000              1322  BFW                               BOTTOM OF FULL WORD SPACE
02303  0 00000 0 17462              1323  TPG             TOPROG
02304  0 00000 0 00000              1324  ORG                               ORIGIN OF BINARY PROGRAM IN DECREMENT
02305  0 00000 0 00000              1325 LBINPG                             LENGTH OF BINATY PROGRAM
02306  0 00000 0 00000              1326 LPBPDL                             LENGTH OF PUBLIC PUSH DOWN LIST
02307  0 00000 0 00000              1327 LFULWS                             LENGTH OF FULL WORD SPACE + BIT TABLE
02310  0 00000 0 00000              1328 LFREES                             LENGTH OF FREE STORAGE
02311  0 00000 0 00000              1329  LBT                               LENGTH OF FULL WORD BIT TABLE
                                    1330 * SAVE AND UNSAVE                  THE CLOSED SUBROUTINES THAT CONTROL
                                    1331 *                THE PUBLIC PUSH DOWN LIST. THE CALLING SEQUENCES ARE ...
                                    1332 *
                                    1333 *        TSX      $SAVE,4
                                    1334 *        TXL      $ENDN,,END OF BLOCK TO BE SAVED  + 2
                                    1335 *        RETURN
                                    1336 *                 WHERE N IN $ENDN IS THE NUMBER OF ITEMS TO BE SAVED
                                    1337 *
                                    1338 *        TSX      UNSAVE,4
                                    1339 *        RETURN
                                    1340 *                 THE SAVED ITEMS MUST BE IN A CONTIGOUS BLOCK WITH THE
                                    1341 *                 THE FIRST ITEM    PZE ATOMIC NAME OF SUBR,,IR 4
                                    1342 *                 THE SAVE PARAMETER WORD IS ADDED AS THE LAST ITEM ON THE
                                    1343 *                 BLOCK TO BE SAVED BUT IS NOT UNSAVED.
                                    1344 *
02312  0634 00 2 02405              1345  SAVE    SXA      SAVY,2            SAVE INDEX 2 AND 1
02313  0634 00 1 02404              1346          SXA      SAVZ,1
02314  0601 00 0 02407              1347          STO      SAVT              SAVE THE AC
02315  0500 60 4 00001              1348          CLA*     1,4               AMMOUNT TO SUBTRACT FROM CPPI IN AC
02316  0734 00 1 00000              1349          PAX      0,1               PUT - NUMBER OF ITEMS TO BE SAVED + 1
02317  1 00000 1 02320              1350  CPPI    TXI      *+1,1,**          IN IR 1 AND INCREMENT BE PUSH DOWN CNT
02320 -3 00000 1 02415              1351          TXL      NOPDL,1,**        GO TO NOPDL IF NOT ENOUGH PDL
02321 -0634 00 1 02317              1352          SXD      $CPPI,1           UP DATE PDL COUNTER LOCATION
02322  0500 00 4 00001              1353          CLA      1,4               PARAMETER WORD
02323  0601 00 1 77777              1354          STO      -1,1              PUT ON PUSH DOWN LIST
02324 -0737 00 2 00000              1355          PDC      0,2               LOCATION OF BLOCK TO BE SAVED + 2
02325  0522 00 4 00001              1356          XEC      1,4               JUMP INTO SAVE TABLE
                                    1357 *
02326  0634 00 2 02405              1358 UNSAVE   SXA      SAVY,2            SAVE INDEX 2 AND 1
02327  0634 00 1 02404              1359          SXA      SAVZ,1
02330  0601 00 0 02407              1360          STO      SAVT              SAVE THE AC
02331 -0534 00 2 02317              1361          LXD      $CPPI,2           CURRENT PUSH DOWN COUNTER
02332  0500 00 2 77777              1362          CLA      -1,2              LAST SAVE PARAMETER WORD
02333  0621 00 0 02336              1363          STA      SAVJ              SET FETCH AND TXI INSTRUCTIONS
02334  0621 00 0 02342              1364          STA      SAVK
02335 -0634 00 2 02337              1365          SXD      SAVI,2            SET UP TO RESTORE PDL COUNTER
```

```
02336  0535 00 1 00000   1366  SAVJ  LAC   **,1          NUMBER TO BE UNSAVED
02337  1 00000 1 02340   1367  SAVI  TXI   **+1,1,**     ADD PUSH DOWN COUNTER
02340 -0634 00 1 02317   1368        SXD   $CPPI,1       UPDATE PDL COUNTER CELL
02341 -0737 00 1 00000   1369        PDC   0,1           LOCATION OF END OF BLOCK + 2
02342  1 00001 4 00000   1370  SAVK  TXI   **,4,1        JUMP TO PUSH DOWN TABLE AND SET IR 4
                         1371  *                         PROPER EXIT .
                         1372  *
                         1373  *               SAVE AND UNSAVE TABLE TO DO THE ACTUAL MOVING TO AND FROM
                         1374  *               THE PUBLIC PUSH DOWN LIST.
                         1375  *
02343  0500 00 2 77757   1376  END16 CLA   -17,2
02344  0601 00 1 77757   1377        STO   -17,1
02345  0500 00 2 77760   1378  END15 CLA   -16,2
02346  0601 00 1 77760   1379        STO   -16,1
02347  0500 00 2 77761   1380  END14 CLA   -15,2
02350  0601 00 1 77761   1381        STO   -15,1
02351  0500 00 2 77762   1382  END13 CLA   -14,2
02352  0601 00 1 77762   1383        STO   -14,1
02353  0500 00 2 77763   1384  END12 CLA   -13,2
02354  0601 00 1 77763   1385        STO   -13,1
02355  0500 00 2 77764   1386  END11 CLA   -12,2
02356  0601 00 1 77764   1387        STO   -12,1
02357  0500 00 2 77765   1388  END10 CLA   -11,2
02360  0601 00 1 77765   1389        STO   -11,1
02361  0500 00 2 77766   1390  END9  CLA   -10,2
02362  0601 00 1 77766   1391        STO   -10,1
02363  0500 00 2 77767   1392  END8  CLA   -9,2
02364  0601 00 1 77767   1393        STO   -9,1
02365  0500 00 2 77770   1394  END7  CLA   -8,2
02366  0601 00 1 77770   1395        STO   -8,1
02367  0500 00 2 77771   1396  END6  CLA   -7,2
02370  0601 00 1 77771   1397        STO   -7,1
02371  0500 00 2 77772   1398  END5  CLA   -6,2
02372  0601 00 1 77772   1399        STO   -6,1
02373  0500 00 2 77773   1400  END4  CLA   -5,2
02374  0601 00 1 77773   1401        STO   -5,1
02375  0500 00 2 77774   1402  END3  CLA   -4,2
02376  0601 00 1 77774   1403        STO   -4,1
02377  0500 00 2 77775   1404  END2  CLA   -3,2
02400  0601 00 1 77775   1405        STO   -3,1
02401  0500 00 2 77776   1406  END1  CLA   -2,2
02402  0601 00 1 77776   1407        STO   -2,1
02403  0500 00 0 02407   1408  ENDO  CLA   SAVT            RESTORE THE AC
02404  0774 00 1 00000   1409  SAVZ  AXT   **,1            AND INDEX 1 + 2
02405  0774 00 2 00000   1410  SAVY  AXT   **,2
02406  0020 00 4 00002   1411        TRA   2,4             EXIT
                         1412  *
02407  0 00000 0 00000   1413  SAVT                       TEMPORARY STORAGE FOR AC
                         1414  *               TIMING INFORAMTION .. SAVE AND UNSAVE 34 + 4N CYCLES
                         1415  *               ON THE 709  (SUBTRACT 5 CYCLES FOR SAVE AND 4 FOR UNSAVE
                         1416  *               ON THE 7090)
                         1417  *
                         1418                                                          LC123100
                         1419        TERPDL                                            LC123200
```

```
                                    1420          RESETS PUBLIC PUSH DOWN LIST TO ZERO                                LC123300
                                    1421                                                                              LC123400
02410  0500 00 0 02413   1422 TERPDL CLA $CSSI                                                                        LC123500
02411  0622 00 0 02317   1423       STD CPPI                                                                          LC123600
02412  0020 00 4 00001   1424       TRA 1,4                                                                           LC123700
02413  0 00000 0 00000   1425 CSSI                                                                                   LC123900
02414 -3 00000 4 02415   1426 ENDPDL TXL     **+1,4,**          OUT OF PDL TEST INSTRUCTION (IS XEC)
02415 -0634 00 4 01562   1427  NOPDL SXD $ERROR,4                                                                   LC124100
02416  0074 00 4 01563   1428       TSX $ERROR+1,4                                                                    LC124200
02417  542760600254      1429       BCI    1,*G  2*            OUT OF PUBLIC PUSH DOWN LIST
                                    1430                                                                              LC124600
                                    1431                                                                              LC124700
                                    1432 *                                                                            1.5M4790
                                    1433       HEAD    E                                                              1.5P7000
                                    1434                                                                              LC118600
                                    1435 *                                                                            1.5M8400
                                    1436 * CNSFWL      USED BY SETUP TO MOVE ALL FULL WORDS ON PERMENENT OBJECTS1.5M8410
                                    1437 *             TO THE FULL WORD SPACE.                                        1.5M8420
                                    1438 *             ALSO BUCKET SORTS THE PERMENENT OBJECTS.                       1.5M8430
                                    1439 *                                                                            1.5M8440
02420  0634 00 4 02447   1440 CNSFWL SXA     CNFWX,4            SAVE INDEX REGISTERS                                1.5M8450
02421  0634 00 2 02450   1441       SXA     CNFWY,2                                                                   1.5M8460
02422 -0734 00 4 00000   1442       PDX     0,4                POINTER TO OBJECT LIST                              1.5M8470
02423  0500 00 4 00000   1443 CNMLP CLA     0,4                NEXT WORD ON LIST                                   1.5M8480
02424  0622 00 0 03310   1444       STD     CNXT               POINTER TO NEXT WORD                                1.5M8490
02425  0734 00 2 00000   1445       PAX     0,2                POINTET TO AN ATOM                                  1.5M8500
02426 -0634 00 2 03313   1446       SXD     CNAT,2             SAVE THE POINTER TO THE ATOM                        1.5M8510
02427  0500 00 2 00000   1447       CLA     0,2
02430 -0320 00 0 00470   1448       ANA     TAGMSK             TEST FOR NUMBER
02431 -0100 00 0 02452   1449       TNZ     CNNM               MAKE A NUMVER
02432  0500 00 2 00000   1450 CNSLP CLA     0,2                NEXT WORD ON ATOM                                   1.5M8520
02433  0734 00 2 00000   1451       PAX     0,2                CAR OF ATOM, SEARCH FOR FULL WORD                   1.5M8530
02434  3 06733 2 02436   1452       TXH     *+2,2,$SUBR        SUCH AS $SUBR                                       1.5M8540
02435  3 06732 2 02461   1453       TXH     CMKO,2,$SUBR-1                                                         1.5M8550
02436  3 10103 2 02440   1454       TXH     *+2,2,$FSUBR                                                           1.5M8560
02437  3 10102 2 02461   1455       TXH     CMKO,2,$FSUBR-1                                                        1.5M8570
02440  3 07335 2 02442   1456       TXH     *+2,2,$PNAME                                                           1.5M8580
02441  3 07334 2 02476   1457       TXH     CMPNT,2,$PNAME-1                                                       1.5M8590
02442 -0734 00 2 00000   1458 CNRS  PDX     0,2                IS NONE OF ABOVE SO CDR TO IR 2                     1.5M8680
02443  3 00000 2 02432   1459 CNRT  TXH     CNSLP,2,0          GO BACK IF NOT END OF PROPERTY LIST                 1.5M8690
02444 -0534 00 4 03310   1460 CNNR  LXD     CNXT,4             POINTER TO NEXT OBJECT
02445  3 00000 4 02423   1461       TXH     CNMLP,4,0          GO BACK IF NOT END                                  1.5M8710
02446 -0754 00 0 00000   1462       PXD     0,0                CLAER AC                                            1.5M8720
02447  0774 00 4 00000   1463 CNFWX AXT     **,4               RESTORE INDEX REGISTERS                             1.5M8730
02450  0774 00 2 00000   1464 CNFWY AXT     **,2                                                                   1.5M8740
02451  0020 00 4 00001   1465       TRA     1,4                EXIT                                                1.5M8750
                                    1466 *                                                                            1.5M8760
02452  0500 00 2 00000   1467 CNNM  CLA     0,2
02453 -0120 00 0 02444   1468       TMI     CNNR               DONT MOVE NUMBERS WITH MZE PREFIX
02454 -0734 00 4 00000   1469       PDX     0,4
02455  0500 00 4 00000   1470       CLA     0,4
02456  0074 00 4 03710   1471       TSX     $CONSW,4
02457  0622 00 2 00000   1472       STD     0,2
02460  0020 00 0 02444   1473       TRA     CNNR               MAKE UP THE NEW NUMBER
```

```
                                    1474 *
02461 -0734 00 2 00000  1475 CMKD   PDX     0,2     PUT ONE WORD IN FULL WORD SPACE          1.5M8770
02462  0500 00 2 00000  1476        CLA     0,2     GET NEXT WORD ON PROPERTY LIST           1.5M8780
02463  0622 00 0 03311  1477        STD     CNX     POINTER TO REST OF OBJECT                1.5M8790
02464 -0120 00 0 02474  1478        TMI     CMK     SKIP MOVING THIS WORD IF MINUS SIGN IS   1.5M8800
02465  0734 00 4 00000  1479        PAX     0,4     SENSED, OTHERWISE GET POINTER TO FULL    1.5M8810
02466  0500 00 4 00000  1480        CLA     0,4     WORD AND WORD IT SELF IN AC              1.5M8820
02467  0074 00 4 03710  1481        TSX     $CONSW,4 PUT IT IN FULL WORD SPACE               1.5M8830
02470  0771 00 0 00022  1482        ARS     18      MOVE POINTER TO WORD IN FWS TO ADDRESS   1.5M8840
02471  0621 00 2 00000  1483        STA     0,2     REPLACE THE ADDRESS                      1.5M8850
02472 -0534 00 2 03311  1484        LXD     CNX,2   POINTER TO NEXT WORD ON PROPERTY LIST    1.5M8860
02473  0020 00 0 02443  1485        TRA     CNRT    RETURN                                   1.5M8870
                                    1486 *                                                   1.5M8880
02474  0602 00 2 00000  1487 CMK    SLW     0,2     RESTORE WORD WITH PLUS SIGN              1.5M8890
02475  0020 00 0 02442  1488        TRA     CNRS    GO BACK                                  1.5M8900
                                    1489 *                                                   1.5M8910
02476 -0734 00 2 00000  1490 CMPNT  PDX     0,2     PUT PRINT NAME IN FULL WORD SPACE        1.5M8920
02477  0500 00 2 00000  1491        CLA     0,2     NEXT WORD ON PROPERTY LIST               1.5M8930
02500  0622 00 0 03311  1492        STD     CNX     POINTER TO NEXT WORD ON PROPERTY LIST    1.5M8940
02501  0734 00 2 00000  1493        PAX     0,2     POINTET TO PNAME LIST                    1.5M8950
02502 -0634 00 2 03314  1494        SXD     CNVA,2  SAVE IT                                  1.5M8960
02503  0500 00 2 00000  1495 CMPLP  CLA     0,2     FIRST FORD ON PNAME LIST                 1.5M8970
02504 -0120 00 0 02515  1496        TMI     CMPS    SKIP IF WORD IS FLAGGED
02505  0622 00 0 03312  1497        STD     CNFT    POINTER TO NEXT WORD ON PNAME LIST       1.5M8980
02506  0734 00 4 00000  1498        PAX     0,4     POINTER TO FULL WORD                     1.5M8990
02507  0500 00 4 00000  1499        CLA     0,4     FULL WORD                                1.5M9000
02510  0074 00 4 03710  1500        TSX     $CONSW,4 PUT IN FULL WORD SPACE                  1.5M9010
02511  0771 00 0 00022  1501        ARS     18      POINTER TO WORD                          1.5M9020
02512  0621 00 2 00000  1502        STA     0,2     RPLACE THE ADDRESS                       1.5M9030
02513 -0534 00 2 03312  1503        LXD     CNFT,2  POINTER TO NEXT WORD ON PNAME LIST       1.5M9040
02514  3 00000 2 02503  1504        TXH     CMPLP,2,0 GO BACK IF NOT END                     1.5M9050
02515  0500 00 0 03314  1505 CMPS   CLA     CNVA    POINTER TO PNAME LIST
02516  0560 00 0 03313  1506        LDQ     CNAT    ATOM THAT WE ARE WORKING ON              1.5M9070
02517  0074 00 4 06417  1507        TSX     BUKSRT,4 PUT ON BUCKET SORTED OBJECT LIST        1.5M9080
02520 -0534 00 2 03311  1508        LXD     CNX,2   POINTER TO NEXT WORD ON ATOM             1.5M9090
02521  0020 00 0 02443  1509        TRA     CNRT    GO BACK                                  1.5M9100
                                    1510 *                                                   1.5M9110
                                    1511 *
                                    1512 *                                                   1.5M9180
                                    1513 * RECLAIMER   LISP 1.5 STORAGE CONTROL PROGRAM.  CODED 1 MARCH 1961  1.5M9190
                                    1514 *                                                   1.5M9200
02522  0634 00 4 03043  1515 RECLAM SXA     RCX,4   SAVE INDEX REGISTERS                     1.5M9210
02523  0634 00 2 03044  1516        SXA     RCY,2                                            1.5M9220
02524  0634 00 1 03045  1517        SXA     RCZ,1                                            1.5M9230
02525  0604 00 0 03224  1518        STI     RCIND   AND MACHINE REGISTETS                    1.5M9240
02526  0601 00 0 03306  1519        STO     RCAC                                             1.5M9250
02527 -0600 00 0 03307  1520        STQ     RCMQ                                             1.5M9260
02530  0600 00 0 03225  1521        STZ     RCBE    INITIALIZE BAD EXIT CELL                 1.5M9270
02531  0560 00 0 03270  1522 RCA    LDQ     RCSGNL  SIGNAL PHASE 1                           1.5M9330
02532  0774 00 4 00000  1523 A      AXT     **,4    BIT TABLE LENGTH                         1.5M9340
02533  0600 00 4 00000  1524 B      STZ     **,4    DOTTOM FREE STORAGE                      1.5M9350
02534  2 00001 4 02533  1525        TIX     *-1,4,1 ZERO THE BIT TABLE                       1.5M9360
02535 -0534 00 4 02414  1526        LXD     ENDPDL,4 END OF PDL
02536 -0634 00 4 02540  1527        SXD     RCIA,4  SET UP TNX INSTRUCTION                   1.5M9380
```

```
02537 -0534 00 4 02317  1528          LXD   $CPPI,4      CURRENT PUSH DOWN LIST LOC.                1.5M9390
02540 -2 00000 4 03103  1529  RCIA    TNX   MLPDE,4,**   AMMOUNT OF PUSH DOWN LIST AVAILABLE        1.5M9400
02541 -0634 00 4 03102  1530          SXD   MLPDC,4      SET CELL IN MRKLST                         1.5M9410
02542  0634 00 4 02760  1531          SXA   ZPDLA,4      LENGTH LEFT BAR FOR ZEROIND PDL
02543 -0774 00 2 66427  1532          AXC   OBLIST,2     POINTER TO OBJECT LICT
02544  0441 00 0 10340  1533          LDI   SYSIND       SYSTEM INDICATORS                          1.5M9430
02545  0520 00 0 11516  1534          ZET   EVQRTS       SKIP IF DURING READ IN IN EVALQUOTE
02546  0056 00  000004  1535          RNT   DEBUGI       SKIP MARKING OBLIST IF IN A DEBUG          1.5M9440
02547  0074 00 4 03066  1536          TSX   MRKLST,4      MARK THE LIST                              1.5M9450
                        1537 *                                                                     1.5M9500
                        1538 *          TEMLIS MARKER                                              1.5M9510
                        1539 *          TEMLIS IS A LIST IN FREE STORAGE AND FULL WORD SPACE       1.5M9520
                        1540 *          OF THE FORM (CONS (CONSW BEG,,END) TEMLIS) AND INDICATES   1.5M9530
                        1541 *          PLACES WHERE LIST STRUCTURE MAY BE DURING A GARBAGE        1.5M9540
                        1542 *          COLLECTION. USED PRINCIPALLY BY THE COMPILER               1.5M9550
                        1543 *                                                                     1.5M9560
02550  0600 00 0 03273  1544          STZ   TMLM        SET EXIT SWITCH                            1.5M9590
02551 -0534 00 4 03304  1545          LXD   TEMLIS,4                                             1.5M9600
02552  0500 00 4 00000  1546  TMLJ    CLA   0,4          NEXT WORD ON TEMLIS                        1.5M9610
02553  0622 00 0 03273  1547          STD   TMLM         SAVE POINTER TO NEXT WORD                  1.5M9620
02554  0734 00 4 00000  1548          PAX   0,4          POINTER TO FULL WORD                       1.5M9630
02555  0500 00 4 00000  1549          CLA   0,4          FULL WORD                                  1.5M9640
02556  0734 00 4 00000  1550          PAX   0,4          BEGINNING OF ARRAY                         1.5M9650
02557 -0634 00 4 02563  1551          SXD   TMLC,4                                               1.5M9660
02560 -0734 00 1 00000  1552          PDX   0,1          END OF ARRAY                               1.5M9670
02561  1 00001 1 02562  1553          TXI   **+1,1,1     ADD 1                                      1.5M9680
02562  0634 00 1 02565  1554  TMLK    SXA   TMLE,1
02563 -2 00000 1 02577  1555  TMLD    TNX   TMLH,1,**    SUBTRACT BEGINNING , GIVES COUNT IN IR     1.5M9700
02564  0634 00 1 03216  1556          SXA   GCPDLC,1     LAST USE IS MARKING PDL, SAVE LENGTH       1.5M9710
02565  0441 00 1 00000  1557  TMLE    LDI   **,1         PICK UP WORD                               1.5M9720
02566  0444 00 0 03274  1558          QFT   TMPTM        SKIP IF NOTAG OR PREFIX                    1.5M9730
02567  0020 00 0 02576  1559          TRA   TMLG         NOT A LIST, DO NOT MARK                    1.5M9740
02570 -0046 00 0 00000  1560          PIA                ITEM TO AC                                 1.5M9750
02571  0621 00 0 02574  1561          STA   TMLF         SAVE ADDRESS                               1.5M9760
02572 -0734 00 2 00000  1562          PDX   0,2                                                    1.5M9770
02573  0074 00 4 03066  1563          TSX   MRKLST,4     MARK THE DECREMENT                         1.5M9780
02574  0774 00 2 00000  1564  TMLF    AXT   **,2         ADDRESS OF WORD TO IR                      1.5M9790
02575  0074 00 4 03066  1565          TSX   MRKLST,4     MARK IT                                    1.5M9800
02576  2 00001 1 02565  1566  TMLG    TIX   TMLE,1,1     GET NEXT WORD IN ARRAY                     1.5M9810
02577 -0534 00 4 03273  1567  TMLH    LXD   TMLM,4       NEXT TEMLIS ITEM                           1.5M9820
02600  3 00000 4 02552  1568          TXH   TMLJ,4,0     GO IF NOT DONE                             1.5M9830
02601  0520 00 0 03273  1569          ZET   TMLM         TEST FOR EXIT                              1.5M9840
02602  0020 00 0 02611  1570          TRA   MPDLF        ALL DONE                                   1.5M9850
02603 -0535 00 4 02413  1571          LDC   $CSSI,4      BEGINNING OF PDL                           1.5M9860
02604 -0634 00 4 02563  1572          SXD   TMLD,4       SET UP CELL                                1.5M9870
02605 -0535 00 1 02317  1573          LDC   $CPPI,1      FIRST FREE CELL ON PDL                     1.5M9880
02606 -0625 00 0 03273  1574          STL   TMLM         INDICATE LAST USE OF LOOP                  1.5M9890
02607  0600 00 0 03216  1575          STZ   GCPDLC       PUSH DOWN LENGTH INITIALLY ZERO
02610  0020 00 0 02562  1576          TRA   TMLK         GO MARK PUSH DOWN LIST                     1.5M9900
02611 -0534 00 4 03305  1577  MPDLF   LXD   ARYLIS,4     START TO MARK ACTIVE ARRAYS                1.5M9910
02612 -3 00000 4 02707  1578 MARYB    TXL   RCB,4,0      GO IF NO ARRAYS
02613  0500 00 4 00000  1579          CLA   0,4          NEXT WORD ON ARYLIS                        1.5M9930
02614  0622 00 0 03226  1580          STD   MARYT        SAVE POINTER TO NEXT WORD                  1.5M9940
02615  0734 00 4 00000  1581          PAX   0,4          ARYATOM TO AC                              1.5M9950
```

```
02616  0500 00 4 00000   1582  MARYA CLA    0,4                NEXT WORD ON ATOM                            1.5M9960
02617  0734 00 4 00000   1583        PAX    0,4                                                             1.5M9970
02620 -3 10734 4 02622   1584        TXL    *+2,4,$ARRAY-1     SERCH FOR ARRAY SPECIFICATION                1.5M9980
02621 -3 10735 4 02626   1585        TXL    MRKA,4,$ARRAY      GO IF FOUND                                  1.5N0010
02622 -0734 00 4 00000   1586        PDX    0,4                POINTER TO NEXT WORD                         1.5N0020
02623  3 00000 4 02616   1587        TXH    MARYA,4,0          GO IF NOT END OF ATOM                        1.5N0030
02624 -0534 00 4 03226   1588  MARYC LXD    MARYT,4            NEXT WORD ON ARYLIS                          1.5N0040
02625  0020 00 0 02612   1589        TRA    MARYB                                                           1.5N0050
                         1590 *                                                                             1.5N0060
02626 -0734 00 4 00000   1591  MRKA  PDX    0,4                GET ARRAY SPECIFICATIONS                     1.5N0070
02627  0500 00 4 00000   1592        CLA    0,4                                                             1.5N0080
02630  0734 00 4 00000   1593        PAX    0,4                                                             1.5N0090
02631  0500 00 4 00000   1594        CLA    0,4
02632  0734 00 4 00000   1595        PAX    0,4
02633  0500 00 4 00000   1596        CLA    0,4                FIRST SPEC. WORD                             1.5N0100
02634  0734 00 2 00000   1597        PAX    0,2                END OF ARRAY + 1                             1.5N0110
02635  0621 00 0 02702   1598        STA    MRKE               END OF ARRAY + 1                             1.5N0120
02636  0500 00 4 00001   1599        CLA    1,4                                                             1.5N0130
02637  0601 00 0 03275   1600        STO    MRKP               SECOND SPEC. WORD  TOTAL L,, LIST L          1.5N0140
02640  0734 00 1 00000   1601        PAX    0,1                TOTAL LENGTH                                 1.5N0150
02641 -0634 00 1 02642   1602        SXD    MAA,1              UPDATE TNX INSTRUCTION                       1.5N0160
02642 -2 00000 2 02624   1603  MAA   TNX    MARYC,2,**         LOCATION OF BEGINNING OF ARRAY               1.5N0170
02643  0634 00 2 02644   1604        SXA    MAB,2              PREPARE TO COMPLEMENT                        1.5N0180
02644 -0774 00 2 00000   1605  MAB   AXC    **,2                                                            1.5N0190
02645  1 00000 2 02646   1606  C     TXI    *+1,2,**           TOP FULL WORD                                1.5N0200
02646  0754 00 2 00000   1607        PXA    0,2                CALCULATE BIT TABLE WORD AND BIT             1.5N0210
02647 -0765 00 0 00005   1608        LGR    5                  BIT NUMBER IN TO MQ                          1.5N0220
02650  0734 00 2 00000   1609        PAX    0,2                WORD NUMBER IN IR 2                          1.5N0230
02651 -0754 00 0 00000   1610        PXD    0,0                ZERO AC                                      1.5N0240
02652 -0763 00 0 00005   1611        LGL    5                  BIT NUMBER                                   1.5N0250
02653  0734 00 4 00000   1612        PAX    0,4                                                             1.5N0260
02654  3 00036 4 02665   1613        TXH    MBTT,4,30          GO TO MARK BY 32                             1.5N0270
02655 -0754 00 0 00000   1614        PXD    0,0                ZERO AC                                      1.5N0280
02656 -0501 00 4 03266   1615  MAC   ORA    BIT,4                                                           1.5N0290
02657 -2 00001 1 02662   1616        TNX    MBTTA,1,1          DECREMENT COUNT                              1.5N0300
02660  2 00001 4 02656   1617        TIX    MAC,4,1            RUN BIT COUNT DOWN                           1.5N0310
02661 -0501 00 0 03266   1618        ORA    BIT                PUT IN ZERO BIT                              1.5N0320
02662 -0602 00 2 00000   1619  MBTTA ORS    **,2               TOP BIT TABLE, SET BITS                      1.5N0330
02663 -2 00001 1 02700   1620        TNX    MRKF,1,1           GO IF DONE                                   1.5N0340
02664  1 77777 2 02665   1621        TXI    *+1,2,-1           DECREMENT BIT WORD BY ONE                    1.5N0350
02665 -0500 00 0 00471   1622  MBTT  CAL    MONS               ALL ONES TO AC                               1.5N0360
02666 -2 00040 1 02671   1623  MAE   TNX    MAD,1,32           DECREMENT COUNT BY 32                        1.5N0370
02667 -0602 00 2 00000   1624  D     ORS    **,2               TOP BIT TABLE, SET ALL BITS                  1.5N0380
02670  1 77777 2 02666   1625        TXI    MAE,2,-1           DECREMENT BIT TABLE WORD COUNT               1.5N0390
02671  0754 00 1 00000   1626  MAD   PXA    0,1                PREPARE TO MARK LAST BITS                    1.5N0400
02672  0737 00 1 00000   1627        PAC    0,1                COMPLMENT COUNT                              1.5N0410
02673 -0754 00 0 00000   1628        PXD    0,0                ZERO AC                                      1.5N0420
02674 -0501 00 1 03226   1629  MAF   ORA    MBITF,1            SET PROPER BIT                               1.5N0430
02675  1 00001 1 02676   1630        TXI    *+1,1,1            INCREMENT COUNT BY ONE                       1.5N0440
02676  3 00000 1 02674   1631        TXH    MAF,1,0            GO UNTIL COUNT REACHES ZERO                  1.5N0450
02677 -0602 00 2 00000   1632  E     ORS    **,2               TOP BIT TABLE, SET BITS                      1.5N0460
02700 -0534 00 1 03275   1633  MRKF  LXD    MRKP,1             GET LIST LENGTH IF ANY                       1.5N0470
02701 -3 00000 1 02624   1634        TXL    MARYC,1,0          EXIT IF A NON-LIST ARRAY                     1.5N0480
02702  0500 00 1 00000   1635  MRKE  CLA    **,1               LIST ITEM                                    1.5N0490
```

```
02703 -0734 00 2 00000    1636           PDX     0,2                                                 1.5N0500
02704  0074 00 4 03066    1637           TSX     MRKLST,4                MARK IT                     1.5N0510
02705  2 00001 1 02702    1638           TIX     MRKE,1,1                GET NEXT ITEM               1.5N0520
02706  0020 00 0 02624    1639           TRA     MARYC                   EXIT                        1.5N0530
                          1640 *                                                                     1.5N0590
                          1641 *               ALL MARKING DONE. NOW SWEEP FREE STORAGE              1.5N0600
                          1642 *                                                                     1.5N0610
02707  0774 00 2 00000    1643  RCB      AXT     0,2                     ZERO COUNT IR               1.5N0620
02710  0600 00 0 03212    1644           STZ     FSC                     INITIALIZE COUNTER
02711  0560 00 0 03271    1645           LDQ     RCSGNM                  SWEEPING SIGNAL TO MQ       1.5N0630
02712 -0774 00 1 03751    1646           AXC     $FREE,1                 INITIALIZE LAST LOC IR      1.5N0640
02713 -0774 00 4 00000    1647  F        AXC     **,4                    TOP FREE STORAGE            1.5N0650
02714  0502 00 4 00000    1648  SFSL     CLS     0,4                     PICK UP WORD                1.5N0660
02715 -0120 00 0 02724    1649           TMI     SFSC                    COLLECT IF SIGN NOW MINUS   1.5N0670
02716  0601 00 4 00000    1650           STO     0,4                     RESTORE WORD WITH + SIGN    1.5N0680
02717  1 00001 4 02720    1651  SFSA     TXI     *+1,4,1                 INCREMENT BY ONE            1.5N0690
02720 -3 00000 4 02714    1652  G        TXL     SFSL,4,**               LOOP IF LESS THAN BOTTOM FREE STORAGE 1.5N0700
02721  0600 00 1 00000    1653           STZ     0,1                     ZERO LAST WORD COLLECTED    1.5N0710
02722  0634 00 2 03212    1654           SXA     FSC,2                   SAVE COUNT                  1.5N0720
02723  0020 00 0 02730    1655           TRA     SWPFWS                                              1.5N0730
02724 -0754 00 4 00000    1656  SFSC     PXD     0,4                     THIS LOCATION               1.5N0740
02725  0601 00 1 00000    1657           STO     0,1                     STORE POINTER IN LAST WORD COLLECTED  1.5N0750
02726 -0734 00 1 00000    1658           PDX     0,1                     UP DATE LAST WORD IR        1.5N0760
02727  1 00001 2 02717    1659           TXI     SFSA,2,1                UPDATE COUNTER              1.5N0770
                          1660 *                                                                     1.5N0780
                          1661 *              NOW SWEEP FULL WORD SPACE WITH THE BIT TABLE           1.5N0790
                          1662 *                                                                     1.5N0800
02730  0774 00 4 03727    1663 SWPFWS AXT     FWORDL,4                BEGINNING OF FULL WORD LIST    1.5N0810
02731  0634 00 4 03057    1664           SXA     SFWA,4                  INITIALIZE ADDRESS          1.5N0820
02732  0600 00 0 03210    1665           STZ     FWC                     ZERO FULL WORD COUNTER      1.5N0830
02733 -0774 00 1 00000    1666  H        AXC     **,1                    BOTTOM FULL WORD SPACE      1.5N0840
02734  1 00000 1 02735    1667  I        TXI     *+1,1,**                TOP FULL WORD SPACE         1.5N0850
02735  0754 00 1 00000    1668           PXA     0,1                     GET ADDRESS OF BIT TABLE CORRESPONDING1.5N0860
02736 -0765 00 0 00005    1669           LGR     5                       TO THE BOTTOM OF FULL WORD SPACE      1.5N0870
02737  0734 00 4 00000    1670           PAX     0,4                     BIT TABLE WORD              1.5N0880
02740  1 00001 4 02741    1671           TXI     *+1,4,1                 MAKE INDEXING EASY          1.5N0890
02741 -0754 00 0 00000    1672           PXD     0,0                     ZERO AC                     1.5N0900
02742 -0763 00 0 00005    1673           LGL     5                       BIT NUMBER                  1.5N0910
02743  0734 00 2 00000    1674           PAX     0,2                     INTO IR 2                   1.5N0920
02744  1 00001 2 02745    1675           TXI     *+1,2,1                 MAKE INDEXING EASY          1.5N0930
02745  0535 00 1 02733    1676           LAC     H,1                     SET UP IR 1
02746  0441 00 4 00000    1677  SFWLD    LDI     **,4                    BOTTOM FREE STORAGE, (TBT + 1)        1.5N0940
02747  0446 00 0 00471    1678           ONT     MONES                   SKIP IF ALL WORDS TO BE SAVED         1.5N0950
02750  0020 00 0 03047    1679           TRA     SFWSC                   SEARCH FOR THE WORDS TO BE COLLECTED  1.5N0960
02751  1 77740 1 02752    1680           TXI     *+1,1,-32               DECREMENT CURRENT LOC IR    1.5N0970
02752  2 00001 4 02746    1681  SFWB     TIX     SFWLD,4,1               INDEX THROUGH BIT TABLE     1.5N0980
02753  0500 00 0 03210    1682  SFWDN    CLA     FWC                     ALL DONE, GET FULL WORD COUNTER       1.5N0990
02754  0601 60 0 03057    1683           STO*    SFWA                    SET UP LAST CELL COLLECTED  1.5N1000
02755  0560 00 0 03272    1684           LDQ     RCSGNN                  PASE 3 SIGNAL
02756  0520 00 0 03220    1685           ZET     RCT                     TEST FOR OUT OF ARRAY SPACE ENTRANCE  1.5N1020
02757  0074 00 4 03165    1686           TSX     RELOC,4                 RELOCATE AND COMPACT FULL WORD SPACE  1.5N1030
02760  0774 00 4 00000    1687 ZPCLA     AXT     **,4                    ZERO UNUSED PDL
02761  0600 00 4 00000    1688 ZPDL      STZ     **,4                    ZERO PDL WORD
02762  2 00001 4 02761    1689           TIX     *-1,4,1
```

```
02763  0560 00 0 00402  1690        LDQ   CRITWN  CRITACL WORD NUMBER                          1.5N1040
02764  0600 00 0 03225  1691        STZ   RCBE    INITIALIZE BAD EXIT TEST CELL               1.5N1050
02765  0500 00 0 03210  1692        CLA   FWC     NUMBER OF FULL WORDS COLLECTED              1.5N1060
02766  0040 00 0 02770  1693        TLQ   RCEA    TRANSFER IF MORE THAN CRITACL COLLECT       1.5N1070
02767 -0625 00 0 03225  1694        STL   RCBE    NOT ENOUGH, SIGNAL BAD EXIT                 1.5N1080
02770  0400 00 0 03222  1695  RCEA  ADD   TFWC    ADD TOTAL OF FULL WORDS COLLECTED           1.5N1090
02771  0601 00 0 03222  1696        STO   TFWC    UPDATE COUNTER                              1.5N1100
02772 -0763 00 0 00004  1697        LGL   4       INCREASE TOLERENCE BY 2 TO THE 4 TH         1.5N1110
02773  0500 00 0 03212  1698        CLA   FSC     NUMBER OF FREE STORAGE CELLS PICKED UP      1.5N1120
02774  0040 00 0 02776  1699        TLQ   RCEB    TRA IF GREATER THAN CRITACL NUMBER          1.5N1130
02775 -0625 00 0 03225  1700        STL   RCBE    NO, SIGNAL BAD EXIT                         1.5N1140
02776  0400 00 0 03223  1701  RCEB  ADD   TFSC    ADD TOTAL OF FREE COLLECTED TO DATE         1.5N1150
02777  0601 00 0 03223  1702        STO   TFSC    UPDATE TOTAL                                1.5N1160
03000  0500 00 0 03217  1703        CLA   RCC     NUMBER OF RECLAIMATION CYCLES EXECUTED      1.5N1170
03001  0400 00 0 00371  1704        ADD   $Q1     INCREMENT BY 1                              1.5N1180
03002  0601 00 0 03217  1705        STO   RCC     UPDATE TOTAL                                1.5N1190
03003  0500 00 0 03221  1706        CLA   RLC     NUMBER OF TIMES RELOCATION OF FWS           1.5N1200
03004  0520 00 0 03220  1707        ZET   RCT     SKIP IF NO RELOCATION
03005  0400 00 0 00371  1708        ADD   $Q1                                                 1.5N1220
03006  0601 00 0 03221  1709        STO   RLC     UPDATE COUNTER
03007 -0520 00 0 03225  1710        NZT   RCBE    SKIP IF BAD EXIT                            1.5N1240
03010  0020 00 0 03012  1711        TRA   RCED    DO GOOD EXIT                                1.5N1250
03011  0020 00 0 03014  1712        TRA   RCEC    DO VERBOSE AND BAD EXIT                     1.5N1280
03012 -0520 00 0 03267  1713  RCED  NZT   VERBOS  SKIP IF TALKATIVE                          1.5N1290
03013  0020 00 0 03040  1714        TRA   RCEXIT  DO EXIT                                     1.5N1300
03014  0535 00 4 03043  1715 RCEC  LAC   RCX,4    GET EXIT IR4
03015 -0754 00 4 00000  1716        PXD   0,4     AND CONVERT FOR PRINTING
03016  0131 00 0 00000  1717        XCA
03017  0074 00 4 11021  1718        TSX   OCTALP,4
03020 -0501 00 0 00452  1719        ORA   OBLANK
03021  0602 00 0 03201  1720        SLW   RCT1
03022  0500 00 0 03210  1721        CLA   FWC     FULL WORD COUNTER                            1.5N1340
03023  0074 00 4 04111  1722        TSX   $DECON,4  CONVERT TO BCD DECIMAL                    1.5N1350
03024  0602 00 0 03210  1723        SLW   RCT4    PUT IN MESSAGE                              1.5N1360
03025  0500 00 0 03212  1724        CLA   FSC     FREE STORAGE COUNTER                        1.5N1370
03026  0074 00 4 04111  1725        TSX   $DECON,4  TO DECIMAL                                1.5N1380
03027  0602 00 0 03212  1726        SLW   RCT5    PUT IN MESSAGE                              1.5N1390
03030  0500 00 0 03216  1727        CLA   GCPDLC  NUMBER OF ACTIVE REGISTERS ON PDL          1.5N1400
03031  0074 00 4 04111  1728        TSX   $DECON,4  TO DECIMAL                                1.5N1410
03032  0602 00 0 03216  1729        SLW   RCT6    IN MESSAGE                                  1.5N1420
03033  0074 00 4 01222  1730        TSX   OUTPUT,4  WRITE OUT MESSAGE                        1.5N1430
03034  0 00000 0 00364  1731        BCDOUT                                                    1.5N1440
03035  0 00023 0 03174  1732        RCTM,,19                                                  1.5N1450
03036  0520 00 0 03225  1733        ZET   RCBE    SKIP IF GOOD EXIT                           1.5N1460
03037  0020 00 0 03152  1734        TRA   RCBEX   DO BAD EXIT                                 1.5N1470
03040  0500 00 0 03306  1735 RCEXIT CLA   RCAC    RESTORE MACHINE REGISTERS                   1.5N1480
03041  0560 00 0 03307  1736        LDQ   RCMQ                                               1.5N1490
03042  0441 00 0 03224  1737        LDI   RCIND                                               1.5N1500
03043  0774 00 4 00000  1738  RCX   AXT   **,4      AND INDEX REGISTERS                       1.5N1510
03044  0774 00 2 00000  1739  RCY   AXT   **,2                                                1.5N1520
03045  0774 00 1 00000  1740  RCZ   AXT   **,1                                                1.5N1530
03046  0020 00 4 00001  1741        TRA   1,4       EXIT                                      1.5N1540
03047  0446 00 2 03267  1742  SFWSC ONT   MBIT,2    CHECK FOR CURRENT BIT                     1.5N1550
03050  0020 00 0 03055  1743        TRA   SFWC      IS OFF, COLLECT WORD                      1.5N1560
```

```
03051  1 77777 1 03052   1744          TXI     *+1,1,-1        IS ON, DECREMENT CURRENT LOC IR          1.5N1570
03052  2 00001 2 03047   1745  SFWD    TIX     SFWSC,2,1       INDEX THROUGH THE BITS                   1.5N1580
03053  0774 00 2 00040   1746          AXT     32,2            SET UP IR WITH NUMBER OF BITS PER WORD1.5N1590
03054  0020 00 0 02752   1747          TRA     SFWB            EXAMINE NEXT WORD IN BIT TABLE           1.5N1600
                         1748 *                                                                           1.5N1610
03055 -0754 00 1 00000   1749  SFWC    PXD     0,1             COLLECT THIS WORD, POINTER TO THIS WOR1.5N1620
03056  0400 00 0 03210   1750          ADD     FWC             D PLUS NUMBER OF WORDS COLLECTED IN AC1.5N1630
03057  0601 00 0 00000   1751  SFWA    STO     **              SET LAST WORD COLLECTED                  1.5N1640
03060  0400 00 0 00371   1752          ADD     $Q1             INCREMENT NUMBER OF FULL WORDS COLLECT1.5N1650
03061  0621 00 0 03210   1753          STA     FWC             SAVE FULL WORD COUNTER                   1.5N1660
03062 -0737 00 1 00000   1754          PDC     0,1             COMPLEMENT CURRENT LOCATION              1.5N1670
03063  0634 00 1 03057   1755          SXA     SFWA,1          TO FORM TRUE ADDRESS FOR UPDATE STORE    1.5N1680
03064 -0734 00 1 00000   1756          PDX     0,1             CURRENT LOCATION POINTER                 1.5N1690
03065  1 77777 1 03052   1757          TXI     SFWD,1,-1       DECREMENT CURRENT LOCATION AND RETURN    1.5N1700
                         1758 *                                                                           1.5N1710
                         1759 * MRKLST         THE RECURSIVE SUBROUTINE THAT DOES ALL LIST MARKING       1.5N1720
                         1760 *                                                                           1.5N1730
03066  3 00000 2 03132   1761 MRKLST TXH     MLEXT,2,**      BFW BAR, REJECT POINTERS TO PROGRAM      1.5N1740
03067 -3 00000 2 03132   1762          TXL     MLEXT,2,**      TFS BAR - 1, REJECT POINTERS TO LOADER1.5N1750
03070  0634 00 1 03130   1763          SXA     MSRTN,1         SAVE IR 1                                1.5N1760
03071  0634 00 4 03131   1764          SXA     MRKX,4          SAVE LINK IR                             1.5N1770
03072  0774 00 1 00001   1765          AXT     1,1             PRESET TO ONE FOR FAST PUSH DOWN ACESS1.5N1780
03073  0020 00 0 03111   1766          TRA     MLIST           DO ACTUAL MARKING                        1.5N1790
                         1767 *                                                                           1.5N1800
03074  0502 00 2 00000   1768  MWIN    CLS     0,2             MARK THIS WORD IN FREE STORAGE           1.5N1810
03075  0120 00 0 03127   1769          TPL     MOUT            TRANSFER OUT IF ALREADY MARKED           1.5N1820
03076  0601 00 2 00000   1770          STO     0,2             CAR OF LIST                              1.5N1830
03077  0734 00 2 00000   1771          PAX     0,2             CAR TO IR 2
03100  0622 00 1 00000   1772  MLEPD   STD     **,1            ENDPDL + 1, SAVE CDR OF LIST ON PDL      1.5N1840
03101  1 00001 1 03102   1773          TXI     *+1,1,1         INCREMENT PUSH DOWN COUNTER              1.5N1850
03102 -3 00000 1 03111   1774  MLPDC   TXL     MLIST,1,**      ENDPDL - C($CPPI) BAR, GO IF NOT NOPDL1.5N1860
03103  0074 00 4 03133   1775  MLPDE   TSX     RCERR,4         OUT OF PUSH DOWN LIST, FATAL ERROR       1.5N1870
03104  004546604724      1776          BCI     3,0NO PDL -MRKLST-                                       1.5N1880
03105  436040445142
03106  436263406060
03107  0500 00 1 00000   1777  MLEPE   CLA     **,1            ENDPDL + 1, GET CDR OF LIST              1.5N1890
03110 -0734 00 2 00000   1778          PDX     0,2             PUT IN  IR 2                             1.5N1900
03111 -3 00000 2 03127   1779  MLIST   TXL     MOUT,2,**       TFS BAR - 1, OUT IF NOT IN LISP STORAG1.5N1910
03112 -3 00000 2 03074   1780  MLBFA   TXL     MWIN,2,**       BOTTOM FREE STORAGE BAR, IN FREE         1.5N1920
03113 -3 00000 2 03127   1781  MLBBJ   TXL     MOUT,2,**       BBT BAR  OUT IF POINTER TO BIT TABLE
03114 -3 00000 2 03116   1782  MLBDW   TXL     MONE,2,**       BOTTOM FULL WORD BAR, IN FULL WORD       1.5N1930
03115  0020 00 0 03127   1783          TRA     MOUT            EXIT , NOT ANY OF ABOVE                  1.5N1940
                         1784 *                                                                           1.5N1950
03116  1 00000 2 03117   1785  MONE    TXI     *+1,2,**        TOP FULL WORD                            1.5N1960
03117  0754 00 2 00000   1786          PXA     0,2             CALCULATE BIT TABLE WORD AND BIT         1.5N1970
03120 -0765 00 0 00005   1787          LGR     5                                                        1.5N1980
03121  0734 00 2 00000   1788          PAX     0,2             BIT TABLE WORD                           1.5N1990
03122 -0754 00 0 00000   1789          PXD     0,0                                                      1.5N2000
03123 -0763 00 0 00005   1790          LGL     5               BIT TABLE BIT                            1.5N2010
03124  0734 00 4 00000   1791          PAX     0,4                                                      1.5N2020
03125 -0500 00 4 03266   1792          CAL     BIT,4           PICK UP BIT                              1.5N2030
03126 -0602 00 2 00000   1793  MLTBT   ORS     **,2            TOP BIT TABLE, PUT IN BIT                1.5N2040
03127  2 00001 1 03107   1794  MOUT    TIX     MLEPE,1,1       GO BACK IF IN RECURSION                  1.5N2050
03130  0774 00 1 00000   1795  MSRTN   AXT     **,1            OTHERWISE RESTORE IR 1                   1.5N2060
```

```
03131  0774 00 4 00000   1796  MRKX  AXT   **,4          AND LINK IR                                  1.5N2070
03132  0020 00 4 00001   1797  MLEXT TRA   1,4           AND EXIT                                     1.5N2080
                         1798  *                                                                      1.5N2090
                         1799  * RCERR     RECLAIMER FATAL ERROR DUMP ROUTINE                       1.5N2100
                         1800  *                                                                      1.5N2110
03133 -0634 00 4 01562   1801  RCERR SXD   $ERROR,4       SAVE IR 4                                    1.5N2120
03134  0634 00 4 03135   1802        SXA   **+1,4         COMPLEMENT IR 4 TO GET ERROR MESSAGE         1.5N2130
03135 -0774 00 4 00000   1803        AXC   **,4                                                       1.5N2140
C3136  1 00001 4 03137   1804        TXI   **+1,4,1       LOCATION OF ERROR MESSAGE                    1.5N2150
03137  0634 00 4 03142   1805        SXA   RCFEM,4        BUILD OUTPUT CALL
03140  0074 00 4 01222   1806        TSX   OUTPUT,4       WRITE ERROR MESSAGE ON TAPE                  1.5N2170
03141  0 00000 0 00364   1807        BCDOUT                                                           1.5N2180
03142  0 00003 0 00000   1808  RCFEM       **,,3          WRITE OUT 3 WORDS
03143  0600 00 0 03751   1809        STZ   $FREE                                                      1.5N2200
03144  0600 00 0 03727   1810        STZ   FWORDL         ZERO STORAGE LISTS                           1.5N2210
03145  0441 00 0 10340   1811        LDI   SYSIND         GET SYSTEM INDICATORS
03146  0055 00  000010   1812        SIR   ERRORI         SET ERRIR INDICATOR
03147  0604 00 0 10340   1813        STI   SYSIND         UPDATE REGISTER
03150  0074 00 4 01521   1814        TSX   $TIME,4        PRINT THE CURRENT TO TIME
03151  0020 00 0 10230   1815        TRA   OVRLRD         GET NEXT DIRECTION CARD
                         1816  *                                                                      1.5N2250
03152  0441 00 0 03224   1817  RCBEX LDI   RCIND          RESTORE MACHINE REGISTERS                    1.5N2270
03153  0500 00 0 03306   1818        CLA   RCAC                                                       1.5N2280
03154  0560 00 0 03307   1819        LDQ   RCMQ                                                       1.5N2290
03155  0534 00 4 03043   1820        LXA   RCX,4          AND INDEX REGISTERS                          1.5N2300
03156  0534 00 2 03044   1821        LXA   RCY,2                                                      1.5N2310
03157  0534 00 1 03045   1822        LXA   RCZ,1                                                      1.5N2320
03160 -0634 00 4 01562   1823        SXD   $ERROR,4       SAVE IR 4                                    1.5N2330
03161  0601 00 0 01556   1824        STO   $ERAC          SAVE THE CONTENTS OF THE AC
03162 -0754 00 0 00000   1825        PXD   0,0
03163  0074 00 4 01563   1826        TSX   $ERROR+1,4     GO TO ERROR                                  1.5N2340
03164  542723600254      1827        BCI   1,*GC 2*      NOT ENOUGH WORDS COLLECTED -RECLAIMER-
                         1828  *                                                                      1.5N2380
                         1829  * RELOC      RELOCATES ALL ITEMS IN FULL WORD SPACE INTO A COMPACTED   1.5N2390
                         1830  *           BLOCK TO MAKE BLOCKS OF CONTIGOUS STORAGE AVAILABLE FOR   1.5N2400
                         1831  *           ARRAYS.                                                    1.5N2410
                         1832  *                                                                      1.5N2420
03165  0634 00 4 03172   1833  RELOC SXA   RELX,4         SAVE LINK IR                                 1.5N2430
03166  0074 00 4 03133   1834        TSX   RCERR,4        THIS RPUTINE HAS NOT BEEN CODED YET.         1.5N2440
03167  004546605125      1835        BCI   3,ONO RELOCATOR                                            1.5N2450
C3170  434623216346
03171  516060606060
03172  0774 00 4 00000   1836  RELX  AXT   **,4          RESTORE LINK IR                              1.5N2460
03173  0020 00 4 00001   1837        TRA   1,4           RETURN TO MAIN PROGRAM                       1.5N2470
                         1838  *                                                                      1.5N2480
                         1839  * MESSAGES AND CONSTANTS PLUS STORAGE GO HERE                          1.5N2490
                         1840  *                                                                      1.5N2500
03174  002721512221      1841 RCTM   BCI   5,OGARBAGE COLLECTOR ENTERED AT
C3175  272560234643
C3176  432523634651
03177  602545632551
C3200  252460216360
C3201  0 00000 0 00000   1842 RCTI                      THE CALL LOCATION IS PUT HERE
C3202  604623632143      1843        BCI   4, OCTAL.
```

```
03203  336060606060
03204  606060606060
03205  606060606060
03206  606026644343         1844        BCI     2,  FULL WORDS                                                 1.5N2580
03207  606646512462
03210  0 00000 0 00000      1845  RCT4                                      NUMBER FULL WORDS COLLECTED        1.5N2590
03211  602651252560         1846        BCI     1,  FREE                                                       1.5N2600
03212  0 00000 0 00000      1847  RCT5                                      FREE STORAGE WORDS COLLECTED       1.5N2610
03213  606047646230         1848        BCI     3,  PUSH DOWN DEPTH                                            1.5N2620
03214  602446664560
03215  242547633060
03216  0 00000 0 00000      1849  RCT6                                      DEPTH ON PUSH DOWN LIST GOES HERE  1.5N2630
                 03210      1850  FWC   SYN     RCT4                                                           1.5N2640
                 03212      1851  FSC   SYN     RCT5                        STORAGE SAVING SYN S               1.5N2650
                 03216      1852 GCPDLC SYN     RCT6                                                           1.5N2660
03217  0 00000 0 00000      1853  RCC                                       TOTAL NUMBER OF RECLAMATION CYCLES 1.5N2670
03220  0 00000 0 00000      1854  RCT                                       TEST CELL TO SEE IF RELOCATION WAS DON1.5N2680
                 03220      1855 RCRLOC SYN     RCT                                                            1.5N2690
03221  0 00000 0 00000      1856  RLC                                       NUMBER OF TIMES RELOCATION WAS DONE 1.5N2700
03222  0 00000 0 00000      1857  TFWC                                      TOTAL FULL WORDS COLLECTED         1.5N2710
03223  0 00000 0 00000      1858  TFSC                                      TOTAL FREE STORAGE COLLECTED       1.5N2720
                 00471      1859  MONES SYN     SEVENS
                 00471      1860  MONS  SYN     SEVENS
03224  0 00000 0 00000      1861  RCIND                                     INDICATOR STORAGE                  1.5N2750
03225  0 00000 0 00000      1862  RCBE                                      TEST CELL FOR BAD EXIT
03226  0 00000 0 00000      1863 MARYT                                      TEMPORARY STORAGE
                 00402      1864 CRITWN SYN     $Q10
                            1865 *                                                                             1.5N2780
                            1866 * BIT TABLES FOR MARKING AND SWEEPING FULL WORD SPACE                         1.5N2790
                            1867 *                                                                             1.5N2800
03227 +000000000020         1868        OCT     20
03230 +000000000040         1869        OCT     40,100,200,400,1000,2000,4000,10000,20000,40000,100000         1.5N2820
03231 +000000000100
03232 +000000000200
03233 +000000000400
03234 +000000001000
03235 +000000002000
03236 +000000004000
03237 +000000010000
03240 +000000020000
03241 +000000040000
03242 +000000100000
03243 +000000200000         1870        OCT     200000,400000,1000000,2000000,4000000,10000000,20000000        1.5N2830
03244 +000000400000
03245 +000001000000
03246 +000002000000
03247 +000004000000
03250 +000010000000
03251 +000020000000
03252 +000040000000         1871        OCT     40000000,100000000,200000000,400000000,1000000000              1.5N2840
03253 +000100000000
03254 +000200000000
03255 +000400000000
03256 +001000000000
```

```
03257 +002000000000     1872          OCT   2000000000,4000000000,10000000000,20000000000   1.5N2850
03260 +004000000000
03261 +010000000000
03262 +020000000000
03263 +040000000000     1873          OCT   40000000000,100000000000,200000000000          1.5N2860
03264 +100000000000
03265 +200000000000
03266 -000000000000     1874  BIT     OCT   400000000000                                   1.5N2870
                 03267  1875  MBIT    SYN   BIT+1
                 03226  1876  MBITF   SYN   BIT-32
                        1877  *                                                            1.5N2890
                        1878  *                                                            1.5N2900
03267 -377777777777     1879  VERBOS  OCT   777777777777    THIS CELL NON ZERO MAKES THE RECLAIMER
                        1880  *              VERY TALKATIVE                                1.5N2920
03270 +111111111111     1881  RCSGNL  OCT   111111111111
03271 +222222222222     1882  RCSGNM  OCT   222222222222                                   1.5N2940
03272 +333333333333     1883  RCSGNN  OCT   333333333333    PHASE SIGNALS FOR MQ           1.5N2950
03273  0 00000 0 00000  1884  TMLM          TEMPORARY STORAGE                              1.5N2960
03274 -3 00000 7 00000  1885  TMPTM   SVN   ,7              PREFIX AND TAG MASK            1.5N2970
03275  0 00000 0 00000  1886  MRKP          TEMPORARY STORAGE                              1.5N2990
                        1887  *                                                            1.5N3000
03276  0 74500 0 74501  1888  TEMXX         -*-1,,-*-2      PERMENANT TEMLIS ITEMS
03277  0 00531 0 00473  1889                BCONAT,,ECONAT
03300  0 74476 0 74477  1890                -*-1,,-*-2
03301  0 16503 0 16477  1891                C$PROBE,,C$PROEN  LAP PROTECTED AREA
03302  0 00000 0 74475  1892                -*-1              END OF TEMLIS
03303  0 03707 0 03304  1893                BEGBLK,,ENDBLK-1  FUNCTION STORAGE
                        1894  *
```

```
                                1895          EJECT
                                1896 *                STORAGE BLOCK FOR FUNCTIONS ALL OVER THE PACKAGE
                                1897 *
03304                           1898 BEGBLK BSS       0
                                1899 *                RECLAIMER STORAGE TO BE MARKED
03304  0 74502 0 00000          1900 TEMLIS           ,,-TEMXX
03305  0 00000 0 00000          1901 ARYLIS                                LIST OF ACTIVE ARRAYS
03306  0 00000 0 00000          1902  RCAC                                 AC STORAGE                                1.5N2760
03307  0 00000 0 00000          1903  RCMQ                                 MQ-STORAGE                                1.5N2770
                                1904 *                CNSFWL STORAGE
03310  0 00000 0 00000          1905  CNXT                                 POINTER TO NEXT WORD ON LINEAR OBJLIST1.5M9120
03311  0 00000 0 00000          1906  CNX                                  POINTER TO NEXT WORD ON PROPERTY LIST 1.5M9130
03312  0 00000 0 00000          1907  CNFT                                 POINTER TO NEXT WORD  ON PNAME LIST   1.5M9140
03313  0 00000 0 03313          1908  CNAT            *                    POINTER TO FIRST WORD OF CURRENT ATOM 1.5M9150
03314  0 00000 0 00000          1909  CNVA                                 POINTER TO FIRST WORD OF PNAME LIST   1.5M9160
                                1910 ************************************************************
                                1911 *                                     THESE CARDS ARE A BLOCK
                                1912          HEAD    A                    $ALIST AND RET IR4
03315  0 00000 0 00000          1913 CSV
                                1914          HEAD    0                    ARGUMENT REGISTERS
03316  0 00000 0 00000          1915 ALIST                                 REFERED TO BY COMPILED FUNCTIONS
                                1916                                                                             LC089200
                                1917              REGISTERS FOR FUNCTION ARGUMENTS.  ARG1 ANDARG2 ARE NOT        LC089300
                                1918                   NORMALLY USED.                                            LC089400
                                1919                                                                             LC087200
03317  0 00000 0 00000          1920  ARG1                                                                        LC089500
03320  0 00000 0 00000          1921  ARG2                                                                        LC089600
03321  0 00000 0 00000          1922  ARG3                                                                        LC089700
03322  0 00000 0 00000          1923  ARG4                                                                        LC089800
03323  0 00000 0 00000          1924  ARG5                                                                        LC089900
03324  0 00000 0 00000          1925  ARG6                                                                        LC090000
03325  0 00000 0 00000          1926  ARG7                                                                        LC090100
03326  0 00000 0 00000          1927  ARG8                                                                        LC090200
03327  0 00000 0 00000          1928  ARG9                                                                        LC090300
03330  0 00000 0 00000          1929  ARG10                                                                       LC090400
03331  0 00000 0 00000          1930 ARG11
03332  0 00000 0 00000          1931 ARG12
03333  0 00000 0 00000          1932 ARG13
03334  0 00000 0 00000          1933 ARG14
03335  0 00000 0 00000          1934 ARG15
03336  0 00000 0 00000          1935 ARG16
03337  0 00000 0 00000          1936 ARG17
03340  0 00000 0 00000          1937 ARG18
03341  0 00000 0 00000          1938 ARG19
03342  0 00000 0 00000          1939 ARG20
                                1940                                                                             LC090600
                                1941 ************************************************
                                1942          HEAD    R                    AND                                   1.5R1490
03343  0 00000 0 10772          1943  EVA1            $AND                                                        LC497000
03344  0 00000 0 00000          1944  EVA2                                                                        LC496900
03345  0 00000 0 00000          1945  EVA9                                                                        LC496800
                                1946          HEAD    A                    APPEND                                1.5R1500
03346  0 00000 0 10762          1947 AS1              $F1                                                         LC391100
03347  0 00000 0 00000          1948 CWR1                                                                         LC391000
```

```
                          1949        HEAD   A              APPLY                                   1.5R1510
03350  0 00000 0 00000    1950  ASS1                                                                LC442100
03351  0 00000 0 00000    1951  ASSL                                                                LC442000
03352  0 00000 0 00000    1952  ASSA                                                                LC441900
03353  0 00000 0 00000    1953  AST1                                                                LC442200
03354  0 00000 0 00000    1954  AST2                                                                LC442300
03355  0 00000 0 00000    1955  AST3                                                                LC442400
03356  0 00000 0 00000    1956  AST4                                                                LC442500
                          1957        HEAD   R              COPY                                    1.5R1530
03357  0 00000 0 10430    1958  CS1          $COPYN                                                 LC214200
03360  0 00000 0 00000    1959  CS2                                                                 LC214100
                          1960        HEAD   C              CP1                                     1.5R1540
03361  0 00000 0 10440    1961  CR1          $F12                                                   LC374300
03362  0 00000 0 00000    1962  CR2                                                                 LC374200
03363  0 00000 0 00000    1963  CWRL                                                                LC374400
                          1964        HEAD   A              EVCON                                   1.5R1550
03364  0 00000 0 10460    1965  ECS1         $COND                                                  LC473300
03365  0 00000 0 00000    1966  ECS2                                                                LC473200
03366  0 00000 0 00000    1967  ECS3                                                                LC473100
03367  0 00000 0 00000    1968  ECS4                                                                LC473000
                          1969        HEAD   R              EVLIS                                   1.5R1560
03370  0 00000 0 10167    1970  EVLX         EVLISL         LINK IR
03371  0 00000 0 00000    1971  ELA                    ALIST                                        LC528900
                          1972        HEAD   A              EVP26                                   1.5R1570
03372  0 00000 0 00000    1973  EVS1                        IR4, BOTTOM OF PROTECTED TEMP. STORAGELC523500
03373  0 00000 0 00000    1974  EVSE                                                                LC523300
03374  0 00000 0 00000    1975  EVSA                                                                LC523400
03375 -0 00000 0 00000    1976  EVTRK MZE                   TRACE SWITCH
03376  0 00000 0 00000    1977  EVCDR                       ARG LIST FOR SUBR ARGUMENTS
03411                     1978  EAG11 BES    10             ARGUMENT BLOCK FOR EVAL
03411  0 00000 0 00000    1979  EVTDE                       CDR(E)                                  LC523800
03412  0 00000 0 00000    1980  EVD2                                                                LC524200
                          1981        HEAD   R              GO SPECIAL FORM
03413  0 00000 0 10037    1982  GOX          $GO            LINK IR                                 1.5R1470
                          1983        HEAD   R              LABP                                    1.5R1600
03414  0 00000 0 00000    1984  BFS4                                                                LC483000
                          1985        HEAD   R              LAMP                                    1.5R1610
03415  0 00000 0 00000    1986  BFS2                                                                LC479800
03416  0 00000 0 00000    1987  BFS3                                                                LC479900
                          1988 *
                          1989        HEAD   C              LINK FOR COMPILED FUNCTIONS
03417  0 00000 0 00000    1990 LNKA                         LINK STORAGE FOR AC
03420  0 00000 0 00000    1991 LNKB                         LINK STORAGE FOR MQ
                          1992        HEAD   D              MAPCAR                                  1.5R1620
03421  0 00000 0 07646    1993  RET          $PMAPCA                                                LC403000
03422  0 00000 0 00000    1994  L                                                                   LC402900
03423  0 00000 0 00000    1995  F                                                                   LC402800
                          1996        HEAD   R              MAPCON                                  1.5R1630
03424  0 00000 0 07636    1997  MCN5         -$)0698                                                LC406600
03425  0 00000 0 00000    1998  MCN4                                                                LC406500
03426  0 00000 0 00000    1999  MCN3                                                                LC406400
03427  0 00000 0 00000    2000  MCN2                                                                LC406300
                          2001        HEAD   R              MAPLIS                                  1.5R1640
03430  0 00000 0 07626    2002  MS1          -$)069A        LINK IR STORAGE
```

```
03431  0 00000 0 00000  2003  MS2                          ARGUMENT L                          LC210600
03432  0 00000 0 00000  2004  MS3                          FUNCTIONAL ARGUMENT                 LC210500
03433  0 00000 0 00000  2005  MS4                          FINAL ANSWER                        LC210400
03434  0 00000 0 00000  2006  MS5                          INTERMEDIATE ANSWER                 LC210300
                        2007        HEAD    R               OR                                1.5R1650
03435  0 00000 0 07435  2008  EVR1           $OR                                             LC499900
03436  0 00000 0 00000  2009  EVR2                                                           LC499800
03437  0 00000 0 00000  2010  EVR9                                                           LC499700
                        2011        HEAD    A             PAIR                              1.5R1660
03440  0 00000 0 00000  2012  TEM                           FIRST ARGUMENT                      4500
03441  0 00000 0 00000  2013  LIS                           SECOND ARGUMENT                     4510
                        2014        HEAD    P             PRINAR                            1.5R1670
03442  0 00000 0 00000  2015  PAS3                                                           LC429200
03443  0 00000 0 00000  2016  PAS4                                                           LC429300
                        2017        HEAD    R             PROGRAM FEATURE
03444  0 00000 0 07300  2018  INTRX          $PROG          LINK INDEX REGISTER
03445  0 00000 0 00000  2019  INTB                          CURRENT STATEMENT                 1.5R1120
03446  0 00000 0 00000  2020  INTGL                         GO LIST,(LIST OF PROGRAM POINTS) + IR2
03447  0 00000 0 00000  2021  INTPL                         PAIR LIST                         1.5R1100
03450  0 00000 0 00000  2022  INTGS                         GO SWITCH , NON-ZERO IF GO OR RETURN 1.5R1090
                        2023        HEAD    I             READ1                             1.5R1680
03451  0 00000 0 07226  2024  RS1            $F13
03452  0 00000 0 00000  2025  RS2                                                            LC295800
03453  0 00000 0 00000  2026  PRINTL                        TEMPORARY STORAGE FOR PRINT OR PUNCH
                        2027        HEAD    R             SEARCH                            1.5R1690
03454  0 00000 0 07042  2028  SRS1           $SRCH          IR4                               LC225600
03455  0 00000 0 00000  2029  SRS2                          L                                 LC225500
03456  0 00000 0 00000  2030  SRS3                          P                                 LC225400
03457  0 00000 0 00000  2031  SRS4                          F                                 LC225300
03460  0 00000 0 00000  2032  SRS5                          U                                 LC225200
                        2033        HEAD    R             SETQP                             1.5R1700
03461  0 00000 0 07022  2034  REPS1          $SETQ
03462  0 00000 0 00000  2035  REPV                                                           LC487100
03463  0 00000 0 00000  2036  REPT1                                                          LC487300
                        2037        HEAD    B             SUBLIS                            1.5R1710
03464  0 00000 0 06726  2038  X1             $F17           IR4 OF SUBLIS                     LC387700
03465  0 00000 0 00000  2039  X2                            CDR(E)                            LC387800
03466  0 00000 0 00000  2040  X3                            CAR(E)                            LC387900
03467  0 00000 0 00000  2041  X4                            SUBLIS(P,CDR(E))                  LC388000
03470  0 00000 0 00000  2042  X5                            CDAR(J)                           LC388100
03471  0 00000 0 00000  2043  P                                                              LC388200
03472  0 00000 0 00000  2044  E                                                              LC387600
                        2045        HEAD    R             SUBST                             1.5R1720
03473  0 00000 0 00000  2046  SXT
03474  0 00000 0 00000  2047  SZ
03475  0 00000 0 00000  2048  SX
03476  0 00000 0 00000  2049  SY
03477  0 00000 0 00000  2050  ST
                        2051        HEAD    Q             ADD, ETC.
03500  0 00000 0 00000  2052  AMIR                          IR 4 STORAGE                      RDCX0293
03501  0 00000 0 00000  2053  AMIND                         INDICATOR REGISTER STORAHE        RDCX0292
03502  0 00000 0 00000  2054  AMLIS                         LIST STORAGE                      RDCX0291
03503  0 00000 0 00000  2055  AMQ                           TYPE STORAGE                      RDCX0289
                        2056  *                             ARRAY MAKE PROGRAM
```

```
03504  0 00000 0 00000  2057  AFAT                          ARRAY ATOM GOES HERE
03505  0 00000 0 00000  2058  ATMP                          TEMPORARY STORAGE                1.5N6370
                        2059        HEAD  S                 EVALQUOTE STORAGE
03506  0 00000 0 00000  2060  EVQAN
03507                   2061        BSS   100               EVALQUOTE BUFFER                    9220
03653 -0 00000 0 00000  2062  EVQB  MZE                     TEST CELL FOR READ IN               9230
                        2063        HEAD  F
                        2064 *                CHARACTER FUNCTIONS
03654                   2065  BBPNT BSS   1                 POINTER TO REMAINDER OF LIST     RDCI0354
03655                   2066  PIND  BSS   1                                                  RDCI0355
                        2067 *                MKNO
03656  0 00000 0 00000  2068  MKTI                          TEMP STORAGE TYPE (FIX OR FLO)   RDCI0412
03657                   2069        BSS   25                ROOM FOR MORE STORAGE
03710                   2070  ENDBLK BSS    0
```

```
                                    2071          EJECT
                                    2072          HEAD    0
                                    2073 * CONSW           PUTS FULL WORDS IN FULL WORD SPACE                    1.5N3010
                                    2074 *                                                                       1.5N3020
03710  0634 00 4 03724              2075   CONSW  SXA     CSWX,4          SAVE LINK IR                          1.5N3030
03711 -0534 00 4 03727              2076   FWLOR  LXD     FWORDL,4        PICK UP FULL WORD LIST                1.5N3040
03712 -3 00000 4 04031              2077          TXL     FWLOUT,4,0      TEST FOR NO MORE                      1.5N3050
03713 -0600 00 0 03726              2078          STQ     CSWQ            SAVE MQ                               1.5N3060
03714  0560 00 4 00000              2079          LDQ     0,4             PICK UP POINTER TO NEXT WORD ON FWL   1.5N3070
03715 -0620 00 0 03727              2080          SLQ     FWORDL          UP DATE FULL WORD LIST POINTER        1.5N3080
03716  0601 00 4 00000              2081          STO     0,4             PUT AC IN FULL WORD AREA              1.5N3090
03717 -0754 00 4 00000              2082          PXD     0,4             POINTER TO AC                         1.5N3100
03720 -0534 00 4 03727              2083          LXD     FWORDL,4        POINTER TO NEXT AVAILABLE WORD        1.5N3110
03721  3 00000 4 03723              2084 LOWARY   TXH     CSWO,4,**       BOTTOM FULL WORD SPACE, TEST FOR ARY  1.5N3120
03722 -0634 00 4 03721              2085          SXD     *-1,4           AVAILABLE LOCATION AND UPDATE SAME    1.5N3130
03723  0560 00 0 03726              2086   CSWO   LDQ     CSWQ            RESTORE MQ                            1.5N3140
03724  0774 00 4 00000              2087   CSWX   AXT     **,4            RESTORE LINK IR                       1.5N3150
03725  0020 00 4 00001              2088          TRA     1,4             EXIT                                  1.5N3160
03726  0 00000 0 00000              2089   CSWQ                           TEMPORARY STORAGE FOR MQ              1.5N3170
03727  0 00000 0 00000              2090 FWORDL                           POINTER TO FULL WORD LIST             1.5N3180
                                    2091 *                                                                       1.5N3190
                                    2092 * CONS            BASIC LISP FUNCTION PUTS A WORD IN FREE STORAGE       1.5N3200
                                    2093 *                                                                       1.5N3210
03730  0634 00 4 03747              2094   CONS   SXA     CNSX,4          SAVE LINK IR                          1.5N3220
03731 -0534 00 4 03751              2095          LXD     $FREE,4         GET FREE STORAGE LIST POINTER         1.5N3230
03732  3 00000 4 03734              2096          TXH     *+2,4,0         SKIP IF NOT OUT OF FREE STORAGE       1.5N3240
03733  0074 00 4 04037              2097          TSX     FROUT,4         OUT OF FREE STORAGE                   1.5N3250
03734  0771 00 0 00022              2098          ARS     18              DECREMENT TO ADDRESS                  1.5N3260
03735  0621 00 4 00000              2099          STA     0,4             PUT ADDRESS AWY                       1.5N3270
03736  0500 00 4 00000              2100          CLA     0,4             GET POINTER TO NEXT WORD IN FREE      1.5N3280
03737  0622 00 0 03751              2101          STD     FREE            PUT IN FREE                           1.5N3290
03740 -0620 00 4 00000              2102          SLQ     0,4             PUT DECREMENT AWAY                    1.5N3300
03741 -0754 00 4 00000              2103          PXD     0,4             POINTER TO WORD                       1.5N3310
03742  0774 00 4 00000              2104   CNTR1  AXT     **,4            LOW ORDER 15 BITS OF CONS COUNTER KEPT1.5P6000
03743  2 00001 4 03746              2105          TIX     *+3,4,1         DECREMENT COUNT BY 1                  1.5P6001
03744  0074 00 4 03752              2106          TSX     ARREST,4        COUNT EXHAUSTED, RELOAD OR STOP       1.5P6002
03745  0774 00 4 77777              2107          AXT     -1,4            RELOAD NUMBER                         1.5P6003
03746  0634 00 4 03742              2108          SXA     CNTR1,4         PUT IN COUNTER                        1.5P6004
03747  0774 00 4 00000              2109   CNSX   AXT     **,4            RESTORE LINK IR                       1.5N3320
03750  0020 00 4 00001              2110          TRA     1,4             EXIT                                  1.5N3330
03751  0 00000 0 00000              2111   FREE                           POINTER TO FREE STORAGE LIST          1.5N3340
                                    2112 *                                                                       1.5P6005
03752 -0520 00 0 11671              2113 ARREST NZT     TCOUNT          SKIP IF COUNS COUNTER ON              1.5P6006
03753  0020 00 4 00001              2114          TRA     1,4             OTERWISE RETURN                       1.5P6007
03754  0601 00 0 04107              2115          STO     CNTM            SAVE AC                               1.5P6008
03755  0500 00 0 04106              2116          CLA     CNTS            GET REST OF COUNTER                   1.5P6009
03756  0100 00 0 03763              2117          TZE     AWHOA           GO TO ERROR CALL IF EXHAUSTED         1.5P6010
03757  0402 00 0 04110              2118          SUB     CTG             DECREMENT BY 32,768                   1.5P6011
03760  0601 00 0 04106              2119          STO     CNTS            UPDATE COUNTER                        1.5P6012
03761  0500 00 0 04107              2120          CLA     CNTM            RESTORE AC                            1.5P6013
03762  0020 00 4 00001              2121          TRA     1,4             E7IT TO RELOAD CNTR1                  1.5P6014
                                    2122 *                                                                       1.5P6015
03763  0634 00 0 11671              2123   AWHOA  SXA     TCOUNT,0        DEACTIVATE THE CONS COUNTER
03764  0500 00 0 04100              2124          CLA     CNTST           PICK UP  INITAL COUNT                 1.5P6017
```

```
03765  0560 00 0 00475   2125          LDQ     $FIXD              PICK UP $FIX                          1.5P6018
03766 -0634 00 4 01562   2126          SXD     $ERROR,4           SAVE LINK IR                          1.5P6019
03767  0774 00 4 00010   2127          AXT     8,4                8 SPARE CONSES FOR $MKNO
03770  0634 00 4 03742   2128          SXA     CNTR1,4
03771  0074 00 4 12636   2129          TSX     $MKNO,4            MAKE THE COUNT A NUMBER               1.5P6020
03772  0074 00 4 01563   2130          TSX     $ERROR+1,4         GO TO ERROT                           1.5P6021
03773  542660600154      2131          BCI     1,*F  1*           CONS COUNTER TRAP
                         2132 *                                                                       1.5P6040
                         2133 * SPEAK         TURNS THE CONTENTS OF THE CONS COUNTER INTO A FIXED POINT1.5P6041
                         2134 *               NUMBER.                                                 1.5P6042
                         2135 *                                                                       1.5P6043
03774  0500 00 0 00457   2136  SPEAK CLA     $AMASK             GET ADDRESS MASK                      1.5P6044
03775 -0320 00 0 03742   2137          ANA     CNTR1              PICK UP 15 LOW ORDER BITS             1.5P6045
03776 -0501 00 0 04106   2138          ORA     CNTS               OR IN REST OF COUNT                   1.5P6046
03777  0601 00 0 04107   2139          STO     CNTM               SAVE CURRENT VALUE                    1.5P6047
04000  0500 00 0 04100   2140          CLA     CNTST              PICK UP INITIAL VALUE                 1.5P6048
04001  0402 00 0 04107   2141          SUB     CNTM               SUBTRACT CURRENT VALUE TO GET NUMBER  1.5P6049
04002  0560 00 0 00475   2142          LDQ     $FIXD              OF CONSES.  PUT $FIX IN MQ            1.5P6050
04003  0020 00 0 12636   2143          TRA     $MKNO              MAKE THE RESULT A NUMBER              1.5P6051
                         2144 *                                                                       1.5N3350
                         2145 * BLOCKR        BLOCK RESERVATION ROUTINE USED IN DECLARING ARRAYS.     1.5N3360
                         2146 *                                                                       1.5N3370
04004  0634 00 4 04026   2147 BLOCKR SXA     BLKX,4             SAVE LINK IR
04005 -0625 00 0 04056   2148          STL     NROOM              SET UP TOO BIG TEST CELL              1.5N3390
04006  0621 00 0 04022   2149          STA     BLKB               BE RESERVED                           1.5N3400
04007 -0534 00 4 02304   2150          LXD     $ORG,4             ADDRESSOF FIRST REGISTER AVAIALABER
04010  0754 00 4 00000   2151   BKOR  PXA     0,4                ADDRESS OF FIRST REGISTER FOR ARRAYS  1.5N3420
04011  0401 00 0 04022   2152          ADM     BLKB               ADDRESS OF END OF BLOCK               1.5N3430
04012  0621 00 0 04023   2153          STA     BLKC               INITIALIZE STZ LOOP TO CLEAN OUT BLOCK1.5N3470
04013  0734 00 4 00000   2154          PAX     0,4
04014  0402 00 0 00371   2155          SUB     $Q1
04015  0621 00 0 04030   2156          STA     BLKBB
04016 -3 00000 4 04044   2157 BLKETP TXL     BLKOUT,4,**        BOTTOM BIT TABLE BAR, GO IF WONT FIT  1.5N3480
04017 -0634 00 4 02304   2158          SXD     $ORG,4             UPDATE ORG
04020  0500 00 4 77777   2159          CLA     -1,4               POINTER TO NEXT WORD ON FULL WORD LIST
04021  0622 00 0 03727   2160          STD     FWORDL             UPDATE FULL WORD LIST                 1.5N3510
04022  0774 00 4 00000   2161   BLKB  AXT     **,4               LENGTH OF BLOCK                       1.5N3520
04023  0600 00 4 00000   2162   BLKC  STZ     **,4               ZERO THE BLOCK                        1.5N3530
04024  2 00001 4 04023   2163          TIX     *-1,4,1
04025  0500 00 0 04030   2164          CLA     BLKBB              GET ANSWER                            1.5N3550
04026  0774 00 4 00000   2165   BLKX  AXT     **,4               RESTORE LINK IR                       1.5N3560
04027  0020 00 4 00001   2166          TRA     1,4                                                      1.5N3570
04030  0 00000 0 00000   2167  BLKBB                              ANSWER STORED HERE                    1.5N3580
                         2168 *                                                                       1.5N3590
                         2169 *                VAROIUS ENTRANCES TO THE RECLAIMER                     1.5N3600
                         2170 *                                                                       1.5N3610
                         2171 *                FWLOUT - OUT OF FULL WORD LIST                         1.5N3620
04031  0601 00 0 03726   2172 FWLOUT STO     CSWQ               SAVE FULL WORD                        1.5N3630
04032 -0754 00 0 00000   2173          PXD     0,0                ZERO AC                               1.5N3640
04033  0600 00 0 03220   2174          STZ     RCRLOC             SIGNAL NO RELOCATION IS NECESSARY     1.5N3650
04034  0074 00 4 02522   2175          TSX     RECLAM,4           DO THE WORK                           1.5N3660
04035  0500 00 0 03726   2176          CLA     CSWQ               RESTORE AC                            1.5N3670
04036  0020 00 0 03711   2177          TRA     FWLOR              RETURN TO CONSW                       1.5N3680
                         2178 *               FROUT - OUT OF REE STORAGE                              1.5N3690
```

```
04037  0634 00 4 04042  2179  FROUT  SXA   FRX,4      SAVE LINK IR
04040  0600 00 0 03220  2180         STZ   RCRLOC     SIGNAL NO RELOCATION NECESSARY          1.5N3710
04041  0074 00 4 02522  2181         TSX   RECLAM,4   DO THE WORK                             1.5N3720
04042  0774 00 4 00000  2182  FRX    AXT   **,4       RESTORE LINK OR                         1.5N3730
04043  0020 00 4 77776  2183         TRA   -2,4       NON-STANDARD EXIT                       1.5N3740
                        2184  *      BLKOUT - OUT OF FULL WORD SPACE FOR ARRAYS             1.5N3750
04044 -0625 00 0 03220  2185  BLKOUT STL   RCRLOC     SIGNAL RELOCATION NECESSARY             1.5N3760
04045 -0754 00 0 00000  2186         PXD   0,0        CLEAR AC                                1.5N3770
04046 -0520 00 0 04056  2187         NZT   NROOM      FALL THROUGH ON SECOND CONSECUTIVE ENT   1.5N3780
04047  0020 00 0 04026  2188         TRA   BLKX       EXIT FROM BLOCKR ROUTINE                1.5N3790
04050  0074 00 4 02522  2189         TSX   RECLAM,4   DO THE WORK                             1.5N3800
04051  0500 00 0 03727  2190         CLA   FWORDL     PICK UP POINTER TO FIRST AVAILABLE WOR   1.5N3810
04052  0622 00 0 03721  2191         STD   LOWARY     SET UP LOWARY                           1.5N3820
04053  0737 00 4 00000  2192         PAC   0,4        COMPLEMENT INTO IR 4                    1.5N3830
04054  0600 00 0 04056  2193         STZ   NROOM      SET UP TOO BIG TEST CELL                1.5N3840
04055  0020 00 0 04010  2194         TRA   BKOR       DO BLOCK RESERVATION                    1.5N3850
04056  0 00000 0 00000  2195  NROOM                                                          1.5N3860
                        2196  *                                                              1.5N3870
                        2197  *                                                              1.5P6052
                        2198  * COUNT       A FUNCTION OF 1 ARGUMENT (A FIXED POINT NUMBER) TURNS ON 1.5P6053
                        2199  *             THE CONS COUNTER AND LOADS IT WITH THAT NUMBER   1.5P6054
                        2200  *             A LOAD OF NIL  SIMPLY LEAVES THE PREVIOUS CONTENTS IN THE1.5P6055
                        2201  *             COUNTER                                          1.5P6056
                        2202  *                                                              1.5P6057
04057 -0625 00 0 11671  2203  COUNT  STL   TCOUNT     ACTIVATE THE CONS COUNTER               1.5P6058
04060 -0100 00 0 04064  2204         TNZ   CNTA       GO IF ARUGMENT IS NOT NULL              1.5P6089
04061  0500 00 0 04107  2205         CLA   CNTM       OLD VALUE OF CNTR1                      1.5P6090
04062  0621 00 0 03742  2206         STA   CNTR1      PUT IT THERE                            1.5P6091
04063  0020 00 0 04076  2207         TRA   CNTB       CLEAR AC AND EXIT                       1.5P6092
04064  0634 00 4 04074  2208  CNTA   SXA   CNTX,4     RELOAD COUNTER WITH FIXED POINT ARG.    1.5P6060
04065  0634 00 2 04075  2209         SXA   CNTY,2     SAVE INDEX REGISTERS                    1.5P6061
04066 -0734 00 2 00000  2210         PDX   0,2        ARGUMENT TO INDEX 2                     1.5P6062
04067  0074 00 4 13075  2211         TSX   FIXVAL,4   EVALUATE AS A FIXED POINT NUMBER        1.5P6063
04070  0601 00 0 04100  2212         STO   CNTST      SET INITIAL VALUE CELL                  1.5P6064
04071  0621 00 0 03742  2213         STA   CNTR1      LOW ORDER 15 BITS TO CNTR1              1.5P6065
04072 -0320 00 0 00465  2214         ANA   PDTMSK     MASK OUT LOW ORDER 15 BITS
04073  0601 00 0 04106  2215         STO   CNTS       STORE REMAINDER IN HIGH ORDER CELL      1.5P6069
04074  0774 00 4 00000  2216  CNTX   AXT   **,4       RESTORE INDEX REGISTERS                 1.5P6070
04075  0774 00 2 00000  2217  CNTY   AXT   **,2                                              1.5P6071
04076 -0754 00 0 00000  2218  CNTB   PXD   0,0        GIVE VALUE OF NIL                       1.5P6072
04077  0020 00 4 00001  2219         TRA   1,4        EXIT                                    1.5P6073
04100  0 00000 0 00000  2220  CNTST                  INTAL VALUE OF COUNT
                        2221  *                                                              1.5P6074
                        2222  * UNCONT      DEACTIVATES THE CONS COUNTER                     1.5P6075
                        2223  *                                                              1.5P6076
04101  0634 00 0 11671  2224  UNCONT SXA   TCOUNT,0   DEACTIVATE THE CONS COUNTER
04102  0500 00 0 03742  2225         CLA   CNTR1      GET CURENT CONTENST OF COUNTER           1.5P6078
04103  0621 00 0 04107  2226         STA   CNTM       SAVE IN TEMP STORAGE                    1.5P6079
04104 -0754 00 0 00000  2227         PXD   0,0        GIVE VALUE OF NULL                      1.5P6080
04105  0020 00 4 00001  2228         TRA   1,4        EXIT                                    1.5P6081
                        2229  *                                                              1.5P6082
04106  0 00000 0 00000  2230  CNTS                   HIGH ORDER BITS OF CONS COUNTER         1.5P6083
04107  0 00000 0 00000  2231  CNTM                   TEMPORARY STORAGE                       1.5P6084
04110  0 00000 1 00000  2232  CTG           ,1       LOW ORDER BIT OF HIGH ORDER 20 BITS
```

```
                              *                                                                    1.5P6087
                              *                                                                    1.5P6088
                              E        HED                                                         LC188300
                              *        DECON AND NUMNAM                                            RDC10244
                              *                                                                    RDC10245
                              *        DECON TAKES A DECIMAL INTEGER (+ OR -) AS INPUT IN THE AC AND  RDC10246
                              *        GIVES AS OUTPUT THE BCD REPRESENTATION OF THAT NUMBER.  LO ORDER RDC10247
                              *        BITS ARE IN AC, HI ORDER BITS IN MQ.  LEADING ZEROS ARE     RDC10248
                              *        SUPPRESSED.  IF THERE ARE NO HI ORDER BITS, MQ IS ZERO.  THE  RDC10249
                              *        P BIT AND SIGN OF AC WILL AGREE.                            RDC10250
                              *                                                                    RDC10251
                              *        NUMNAM TAKES AS INPUT A POINTER TO A DECIMAL INTEGER (+ OR -) ANDRDC10252
                              *        CAUSES THE BCD REPRESENTATION OF THAT NUMBER TO BE PRINTED, WITH RDC10253
                              *        LEADING ZEROS SUPPRESSED.                                   RDC10254
                                                                                                   RDC10255
                                                                                                   RDC10256
04111  0600 00 0 77662        DECON STZ       DETS1             SIGNAL FOR DECON EXIT              RDC10257
04112  0600 00 0 77664              STZ       DELOD             SET LO ORDER DIGITS TO ZERO        RDC10258
04113  0634 00 4 04176              SXA       DEIR4,4           SAVE IR4                           RDC10259
04114  0020 00 0 04121              TRA       DE7                                                  RDC10260
                                                                                                   RDC10261
04115 -0625 00 0 77662        NUMNAM STL      DETS1             SIGNAL FOR NUMNAM EXIT             RDC10262
04116  0634 00 4 04176              SXA       DEIR4,4           SAVE IR4                           RDC10263
04117 -0734 00 4 00000              PDX       ,4                PLACE INPUT NUMBER IN AC           RDC10264
04120  0500 00 4 00000              CLA       0,4                                                  RDC10265
04121 -0625 00 0 77663        DE7   STL       DETS2             SIGNAL FOR NO HI- ORDER DIGITS     RDC10266
04122  0601 00 0 77667              STO       DEINP             SAVE INPUT FOR SIGN TEST           RDC10267
04123  0760 00 0 00012              DCT                         SHUT OFF DIVIDE CHECK LIGHT        RDC10268
04124  0761 00 0 00000              NOP                                                            RDC10269
04125 -0130 00 0 00000              XCL                         NUMBER TO MQ                       RDC10270
04126  0774 00 4 00044              AXT       36,4              INDEX FOR SHIFTING                 RDC10271
04127  0600 00 0 77665        DE4   STZ       DEDIG             DEDIG WILL RECIEVE DIGITS          RDC10272
                                                                                                   RDC10273
04130 -0754 00 0 00000        DE1   PXD       ,0                                                   RDC10274
04131  0221 00 0 00402              DVP       $Q10              PUT ANOTHER DIGIT IN DEDIG         RDC10275
04132  0767 00 4 00044              ALS       36,4                                                 RDC10276
04133 -0602 00 0 77665              ORS       DEDIG                                                RDC10277
04134 -0600 00 0 77666              STQ       DEMQ              IF QUOTIENT ZERO, CONVERSION       RDC10278
04135 -0520 00 0 77666              NZT       DEMQ                IS DONE                          RDC10279
04136  0020 00 0 04144              TRA       DE2                                                  RDC10280
04137  2 00006 4 04130              TIX       DE1,4,6                                              RDC10281
                                                                                                   RDC10282
04140  0500 00 0 77665              CLA       DEDIG             STORE LO ORDER DIGITS              RDC10283
04141  0601 00 0 77664              STO       DELOD                                                RDC10284
04142  0600 00 0 77663              STZ       DETS2             SIGNAL THAT HI ORDER DIGITS EXIST  RDC10285
04143  1 00036 4 04127              TXI       DE4,4,30          RESTORE SHIFT INDEX AND LOOP AGAIN RDC10286
                                                                                                   RDC10287
04144  0560 00 0 77667        DE2   LDQ       DEINP             SEE IF MINUS SIGN NEEDED           RDC10288
04145  0162 00 0 04157              TQP       DEV                                                  RDC10289
04146  2 00006 4 04154              TIX       DEQ,4,6                                              RDC10290
                                                                                                   RDC10291
                              *     MINUS SIGN BEGINS A NEW WORD                                   RDC10292
04147  0500 00 0 77665              CLA       DEDIG             STORE LO ORDER DIGITS              RDC10293
04150  0601 00 0 77664              STO       DELOD                                                RDC10294
```

```
04151  0600 00 0 77663   2287          STZ     DETS2     SIGNAL THAT HI ORDER DIGITS EXIST   RDC10295
04152  0600 00 0 77665   2288          STZ     DEDIG     CLEAR DIGITS REGISTER               RDC10296
04153  0774 00 4 00044   2289          AXT     36,4      RESTORE SHIFT INDEX                 RDC10297
04154  0500 00 0 00423   2290  DEQ     CLA     DEMIN     INSERT MINUS SIGN                   RDC10298
04155  0767 00 4 00044   2291          ALS     36,4                                          RDC10299
04156 -0602 00 0 77665   2292          ORS     DEDIG                                         RDC10300
                         2293                                                               RDC10301
04157  0760 00 0 00012   2294  DEV     DCT                                                   RDC10302
04160  0074 00 4 01676   2295          TSX     $DCT,4    MACHINE ERROR
04161  0520 00 0 77662   2296          ZET     DETS1     SEE WHICH EXIT TO USE               RDC10304
04162  0020 00 0 04200   2297          TRA     DE5                                           RDC10305
                         2298                                                               RDC10306
                         2299 *        DECON EXIT                                          RDC10307
04163 -0500 00 0 77665   2300          CAL     DEDIG     PICK UP DIGITS                      RDC10308
04164 -3 00006 4 04170   2301          TXL     DEJ,4,6   TRANSFER IF FULL WORD OF DIGITS     RDC10309
04165 -0765 00 4 00052   2302          LGR     42,4      INSERT LEADING BLANKS               RDC10310
04166 -0500 00 0 00472   2303          CAL     BLANKS                                        RDC10311
04167 -0763 00 4 00052   2304          LGL     42,4                                          RDC10312
04170  0560 00 0 77664   2305  DEJ     LDQ     DELOD     LO ORDER DIGITS OR ZERO -           RDC10313
04171 -0520 00 0 77663   2306          NZT     DETS2       SEE WHICH                         RDC10314
04172 -0130 00 0 00000   2307          XCL               LO ORDER DIGITS TO AC               RDC10315
04173 -0760 00 0 00001   2308          PBT               SIGN AND P BIT MUST AGREE           RDC10316
04174  0020 00 0 04176   2309          TRA     *+2                                           RDC10317
04175 -0760 00 0 00003   2310          SSM                                                   RDC10318
04176  0774 00 4 00000   2311  DEIR4   AXT     **,4      RESTORE IR4 AND EXIT                RDC10319
04177  0020 00 4 00001   2312          TRA     1,4                                           RDC10320
                         2313                                                               RDC10321
                         2314 *        NUMNAM EXIT                                         RDC10322
04200 -0500 00 0 77665   2315  DE5     CAL     DEDIG     INSERT TRAILING SEVENS INTO         RDC10323
04201  0560 00 0 00471   2316          LDQ     SEVENS      DIGITS WORD                       RDC10324
04202 -0765 00 4 00052   2317          LGR     42,4                                          RDC10325
04203  0131 00 0 00000   2318          XCA                                                   RDC10326
04204  0074 00 4 05110   2319          TSX     $PRIN2,4  PRINT WORD OF DIGITS                RDC10327
04205  0520 00 0 77663   2320          ZET     DETS2     SEE IF ANOTHER WORD MUST            RDC10328
04206  0020 00 0 04211   2321          TRA     DEY         BE PRINTED                        RDC10329
04207 -0500 00 0 77664   2322          CAL     DELOD     PRINT LO ORDER DIGITS               RDC10330
04210  0074 00 4 05110   2323          TSX     $PRIN2,4                                      RDC10331
                         2324                                                               RDC10332
04211  0534 00 4 04176   2325  DEY     LXA     DEIR4,4   RESTORE IR4,  CLEAR AC, AND EXIT    RDC10333
04212 -0754 00 0 00000   2326          PXD     ,0                                            RDC10334
04213  0020 00 4 00001   2327          TRA     1,4                                           RDC10335
                         2328                                                               RDC10336
                         2329                                                               RDC10343
                         2330                                                               RDC10344
                  00423  2331  DEMIN   SYN     $QD40     BCD MINUS SIGN
04214                    2332  DEORG   BSS
                  77662  2333          ORG     COMMON                                        RDC10347
77662                    2334  DETS1   BSS     1         ZERO MEANS DECON EXIT               RDC10348
77663                    2335  DETS2   BSS     1         ZERO MEANS HI ORDER DIGITS          RDC10349
77664                    2336  DELOD   BSS     1         LO ORDER DIGITS                     RDC10350
77665                    2337  DEDIG   BSS     1         CURRENT DIGITS                      RDC10351
77666                    2338  DEMQ    BSS     1         MQ FOR ZERO TEST                    RDC10352
77667                    2339  DEINP   BSS     1         INPUT NUMBER                        RDC10353
                  04214  2340          ORG     DEORG                                         RDC10354
```

```
                                2341                                                                    RDC10355
                                2342 *      THIS ROUTINE USES COMMON, SEVENS, $PRIN2, BLANKS, AND $Q10  RDC10356
                                2343 *                                                                  RDC10357
                                2344                                                                    LC196600
                                2345 R      HED                                                         LC201800
                                2346                MAPLIS      NEW, FASTER VERSION WITH OPEN SAVE AND CONSLC201900
                                2347 *                                                                  LC202000
04214  0100 00 4 00001          2348 MAPLIS IZE     1,4         NULL(L) = NIL                           LC202100
04215 -0634 00 4 03430          2349        SXD     MS1,4       SAVE LINK IR                            LC202200
04216 -0534 00 4 02317          2350        LXD     $CPPI,4     GET PDL POINTER                         LC202300
04217  1 77772 4 04220          2351        TXI     *+1,4,-6          SAVE TOTAL OF 6 ITEMS
04220  0522 00 0 02414          2352        XEC     $ENDPDL           TEST FOR OUT OF PUSH DOWN LIST        1.5P7030
04221 -0634 00 4 02317          2353        SXD     $CPPI,4     UPDATE PDL POINTER LOCATION             LC202800
04222  0601 00 0 03317          2354        STO     $ARG1       SAVE AC                                 LC202900
04223  0500 00 0 03430          2355        CLA     MS1         START SAVING    LINK IR                 LC203000
04224  0601 00 4 77772          2356        STO     -6,4                                                LC203200
04225  0500 00 0 03431          2357        CLA     MS2         L ARGUMENT                              LC203900
04226  0601 00 4 77773          2358        STO     -5,4                                                LC203400
04227  0500 00 0 03432          2359        CLA     MS3         FUNCTIONAL ARGUMENT                     LC203700
04230  0601 00 4 77774          2360        STO     -4,4                                                LC203600
04231  0500 00 0 03433          2361        CLA     MS4         FINAL ANSWER                            LC203500
04232  0601 00 4 77775          2362        STO     -3,4                                                LC203800
04233  0500 00 0 03434          2363        CLA     MS5         INTERMEDIATE ANSWER                     LC203300
04234  0601 00 4 77776          2364        STO     -2,4                                                LC203100
04235  0500 00 0 04344          2365        CLA     MS6               SAVE MARKER
04236  0601 00 4 77777          2366        STO     -1,4                                                LC204000
04237  0500 00 0 03317          2367        CLA     $ARG1       SAVING ALL DONE, RESTORE AC             LC204100
04240  0601 00 0 03431          2368        STO     MS2         PUT L ARGUMENT AWAY                     LC204200
04241 -0600 00 0 03432          2369        STQ     MS3         PUT FUNCTIONAL ARGUMENT AWAY            LC204300
04242  0162 00 0 04334          2370        TQP     CMP         IF TRANSFER, F NOT A TXL, SO GO TO COMPAT LC204400
04243  0074 00 4 03432          2371        TSX     MS3,4       EXECUTE FUNCTIONAL ARGUMENT             LC204500
04244 -0534 00 4 03751          2372 MAIN   LXD     $FREE,4     START OPEN CONS                         LC204600
04245  3 00000 4 04247          2373        TXH     *+2,4,0     TEST FOR OUT OF FREE STORAGE            LC204700
04246  0074 00 4 04037          2374        TSX     $FRCUT,4    GO IF NO MORE FS                        LC204800
04247  0771 00 0 00022          2375        ARS     18          PUT F(L) IN ADDRESS                     LC204900
04250  0560 00 4 00000          2376        LDQ     0,4         GET NEXT REGISTER ON FSL                LC205000
04251 -0620 00 0 03751          2377        SLQ     $FREE       UPDATE FREE                             LC205100
04252  0601 00 4 00000          2378        STO     0,4         CONS(F(L),NIL)                          LC205200
04253 -0634 00 4 03433          2379        SXD     MS4,4       FINAL ANSWER                            LC205300
04254 -0634 00 4 03434          2380        SXD     MS5,4       INT. ANSWER                             LC205400
04255  0534 00 4 03742          2381        LXA     $CNTR1,4          PICK UP CONS COUNTER
04256  2 00001 4 04261          2382        TIX     *+3,4,1           DECREMENT BY 1                        1.5P7021
04257  0074 00 4 03752          2383        TSX     ARREST,4          GO IF OUT OF COUNTER                  1.5P7022
04260  0774 00 4 77777          2384        AXT     -1,4              RELOAD OF -1 FOR COUNTER              1.5P7023
04261  0634 00 4 03742          2385        SXA     $CNTR1,4          RESTORE CONS COUNTER
04262 -0534 00 4 03431          2386 MLOP1  LXD     MS2,4       MAUN LOOP,  GET L                       LC205500
04263  0500 00 4 00000          2387        CLA     0,4         TAKE CDR(L)                             LC205600
04264 -0734 00 4 00000          2388        PDX     0,4                                                 LC205700
04265  3 00000 4 04306          2389        TXH     MPRG1,4,0   IF NOT NULL GO ON TO MAIN PROPRAM        LC205800
04266  0500 00 0 03433          2390        CLA     MS4         ALL DONE, PICK UP FINAL ANSWER          LC205900
04267 -0534 00 4 02317          2391        LXD     $CPPI,4     START OPEN UNSAVE BY GETTING PDL POINTER LC206600
04270  0560 00 4 77776          2392        LDQ     -2,4                                                LC206100
04271 -0600 00 0 03434          2393        STQ     MS5                                                 LC206400
04272  0560 00 4 77775          2394        LDQ     -3,4
```

```
04273 -0600 00 0 03433  2395          STQ     MS4                                                    LC206300
04274  0560 00 4 77774  2396          LDQ     -4,4                                                   LC206200
04275 -0600 00 0 03432  2397          STQ     MS3                                                    LC206500
04276  0560 00 4 77773  2398          LDQ     -5,4
04277 -0600 00 0 03431  2399          STQ     MS2                                                    LC206700
04300  0560 00 4 77772  2400          LDQ     -6,4
04301 -0600 00 0 03430  2401          STQ     MS1                                                    LC206900
04302  1 00006 4 04303  2402          TXI     *+1,4,6         RESTORE PDL COUNTER
04303 -0634 00 4 02317  2403          SXD     $CPPI,4         SET CPPI                               LC207100
04304 -0534 00 4 03430  2404          LXD     MS1,4           PICK UP LINK IR                        LC207200
04305  0020 00 4 00001  2405          TRA     1,4             RETURN                                 LC207300
                        2406 *                                                                       LC207400
04306 -0754 00 4 00000  2407  MPRG1   PXD     0,4             MAIN PROGRAM  PUT L IN AC              LC207500
04307  0601 00 0 03431  2408          STO     MS2             SAVE IN L ARGUMENT REGISTER            LC207600
04310 -0534 00 4 03432  2409          LXD     MS3,4           SEE IF FUNCTIONAL ARG IS S EXPRESSION  LC207700
04311  3 00012 4 04340  2410          TXH     CMP1,4,10       GO IF S EXPRESSION                     LC207800
04312  0074 00 4 03432  2411          TSX     MS3,4           EXECUTE FUNCTIONAL ARGUMENT (TXL INS.) LC207900
04313 -0534 00 4 03751  2412  MAIN1   LXD     $FREE,4         START OPEN CONS                        LC208000
04314  3 00000 4 04316  2413          TXH     *+2,4,0         TEST FOR OUT OF FREE STORAGE           LC208100
04315  0074 00 4 04037  2414          TSX     $FROUT,4        GO IF OUT                              LC208200
04316  0560 00 4 00000  2415          LDQ     0,4             PICK UP POINTER TO NEXT FREE REGISTER  LC208300
04317 -0620 00 0 03751  2416          SLQ     $FREE           UPDATE FREE                            LC208400
04320  0771 00 0 00022  2417          ARS     18              ITEM TO ADDRESS                        LC208500
04321  0601 00 4 00000  2418          STO     0,4             CONS(F(L),NIL)                         LC208600
04322 -0754 00 4 00000  2419          PXD     0,4             ANSWER TO AC                           LC208700
04323  0534 00 4 03742  2420          LXA     $CNTR1,4        PICK UP CONS COUNTER
04324  2 00001 4 04327  2421          TIX     *+3,4,1         DECREMENT BY 1                         1.5P7026
04325  0074 00 4 03752  2422          TSX     ARREST,4        GO IF OUT OF COUNTER                   1.5P7027
04326  0774 00 4 77777  2423          AXT     -1,4            RELOAD OF -1 FOR COUNTER               1.5P7028
04327  0634 00 4 03742  2424          SXA     $CNTR1,4        RESTORE CONS COUNTER
04330 -0534 00 4 03434  2425          LXD     MS5,4           PICK UP LAST ANSWER                    LC208800
04331  0622 00 4 00000  2426          STD     0,4             CONCATENATE THE ANSWERS BY RPLACD      LC208900
04332  0601 00 0 03434  2427          STO     MS5             UPDATE INT. ANSWER                     LC209000
04333  0020 00 0 04262  2428          TRA     MLOP1           GO TO HEAD OF MAIN LOOP                LC209100
                        2429 *                                                                       LC209200
04334 -0620 00 0 04336  2430  CMP     SLQ     *+2             COMPAT CALL FOR S EXPRESSION FUN. ARG. LC209300
04335  0074 00 4 12007  2431          TSX     COMPAT,4                                               LC209400
04336  0 00000 0 00001  2432                  1,,**           FUNCTION OF 1 ARGUMENT                 LC209500
04337  0020 00 0 04244  2433          TRA     MAIN            GO BACK TO MAIN PROGRAM                LC209600
                        2434 *                                                                       LC209700
04340 -0634 00 4 04342  2435  CMP1    SXD     *+2,4           ANOTHER COMPAT CALL                    LC209800
04341  0074 00 4 12007  2436          TSX     COMPAT,4                                               LC209900
04342  0 00000 0 00001  2437                  1,,**                                                  LC210000
04343  0020 00 0 04313  2438          TRA     MAIN1           RETURN TO MAIN PROGRAM                 LC210100
                        2439 *                                                                       LC210200
04344 -3 03436 0 02371  2440  MS6     TXL     $END5,,MS5+2        SAVE 5 ITEMS
                        2441                                                                         LC210900
                        2442              FUNCTION COPY                                              LC211000
                        2443              COPY(L)= (L=0 YIELDS 0, CAR(L)=-1 YIELDS L,                LC211100
                        2444                 OTHERWISE CONS(COPY(CAR(L)),COPY(CDR(L))))              LC211200
                        2445 R        HED                                                            LC211300
04345  0100 00 4 00001  2446  COPY    TZE 1,4                     L=0                                LC211400
04346 -0634 00 4 03357  2447          SXD CS1,4                                                      LC211500
04347 -0734 00 4 00000  2448          PDX 0,4                     L                                  LC211600
```

```
      04350 -0634 00 4 04377   2449         SXD CT1,4               L                                    LC211700
      04351  0500 00 4 00000   2450         CLA 0,4                 CWR(L)                               LC211800
      04352  0734 00 4 00000   2451         PAX 0,4                 CAR(L)                               LC211900
      04353 -3 77776 4 04357   2452         TXL C1,4,-2             CAR(L)=-1                            LC212000
      04354  0500 00 0 04377   2453         CLA CT1                 L                                    LC212100
      04355 -0534 00 4 03357   2454         LXD CS1,4                                                    LC212200
      04356  0020 00 4 00001   2455         TRA 1,4                                                      LC212300
      04357  0074 00 4 02312   2456  C1     TSX $SAVE,4                                                  LC212400
      04360 -3 03362 0 02377   2457         TXL     $END2,,CS2+2    SAVE 2 ITEMS
      04361 -0534 00 4 04377   2458         LXD CT1,4               L                                    LC212600
      04362  0500 00 4 00000   2459         CLA 0,4                 CWR(L)                               LC212700
      04363  0601 00 0 03360   2460         STO CS2                                                      LC212800
      04364 -0320 00 0 00460   2461         ANA DECM                CDR(L)                               LC212900
      04365  0074 00 4 04345   2462         TSX COPY,4              COPY(CDR(L))                         LC213000
      04366  0534 00 4 03360   2463         LXA CS2,4               CAR(L)                               LC213100
      04367  0601 00 0 03360   2464         STO CS2                 COPY(CDR(L))                         LC213200
      04370 -0754 00 4 00000   2465         PXD 0,4                                                      LC213300
      04371  0074 00 4 04345   2466         TSX COPY,4              COPY(CAR(L))                         LC213400
      04372  0560 00 0 03360   2467         LDQ CS2                                                      LC213500
      04373  0074 00 4 03730   2468         TSX $CONS,4                                                  LC213600
      04374  0074 00 4 02326   2469         TSX UNSAVE,4                                                 LC213700
      04375 -0534 00 4 03357   2470         LXD CS1,4                                                    LC213900
      04376  0020 00 4 00001   2471         TRA 1,4                                                      LC214000
      04377  0 00000 0 00000   2472  CT1                                                                 LC214300
                       00460   2473  DECM   SYN     $DMASK                                               1.5L3230
                               2474                                                                      LC219100
                               2475            FUNCTION SEARCH                                           LC219200
                               2476            SEARCH(L,P,F,U)=(L=0 YIELDS U,P(L) YIELDS F(L),           LC219300
                               2477                OTHERWISE SEARCH (CDR(L),P,F,U))                      LC219400
                               2478                                                                      LC219500
                               2479 R       HED                                                          LC219600
      04400 -0634 00 4 03454   2480 SEARCH SXD      SRS1,4
      04401  0074 00 4 02312   2481         TSX $SAVE,4                                                  LC221200
      04402 -3 03462 0 02371   2482         TXL     $END5,,SRS5+2   SAVE 5 ITEMS
      04403 -0600 00 0 03456   2483         STQ SRS3                P                                    LC221500
      04404  0100 00 0 04445   2484  SR3    TZE     SR4
      04405  0601 00 0 03455   2485         STO SRS2                L                                    LC221400
      04406  0560 00 0 03321   2486         LDQ $ARG3               F                                    LC221600
      04407 -0600 00 0 03457   2487         STQ SRS4                                                     LC221700
      04410  0560 00 0 03322   2488         LDQ $ARG4               U                                    LC221800
      04411 -0600 00 0 03460   2489         STQ SRS5                                                     LC221900
      04412 -0534 00 4 03456   2490         LXD SRS3,4                                                   LC222000
      04413  3 00012 4 04416   2491         TXH **3,4,10                                                 LC222100
      04414  0074 00 4 03456   2492         TSX SRS3,4                                                   LC222200
      04415  0020 00 0 04421   2493         TRA **4                                                      LC222300
      04416 -0634 00 4 04420   2494         SXD **2,4                                                    LC222400
      04417  0074 00 4 12007   2495         TSX COMPAT,4                                                 LC222500
      04420  0 00000 0 00001   2496            1,,**                                                     LC222600
      04421  0100 00 0 04435   2497         TZE SR1                 NOT P(L)                             LC222700
      04422  0500 00 0 03455   2498         CLA SRS2                L                                    LC222800
      04423 -0534 00 4 03457   2499         LXD SRS4,4                                                   LC222900
      04424  3 00012 4 04427   2500         TXH **3,4,10                                                 LC223000
      04425  0074 00 4 03457   2501         TSX SRS4,4                                                   LC223100
      04426  0020 00 0 04432   2502         TRA **4                                                      LC223200
```

```
04427 -0634 00 4 04431              SXD **+2,4                                                LC223300
04430  0074 00 4 12007              TSX COMPAT,4                                              LC223400
04431  0 00000 0 00001                  1,,**                                                 LC223500
04432  0074 00 4 02326              TSX UNSAVE,4                                              LC223600
04433 -0534 00 4 03454              LXD SRS1,4                                                LC223800
04434  0020 00 4 00001              TRA 1,4                                                   LC223900
04435  0500 00 0 03460       SR1    CLA SRS5                    1 YIELDS                      LC224000
04436  0601 00 0 03322              STO $ARG4                   U                             LC224100
04437  0500 00 0 03457              CLA SRS4                                                  LC224200
04440  0601 00 0 03321              STO $ARG3                   F                             LC224300
04441 -0534 00 4 03455              LXD SRS2,4                  L                             LC224400
04442  0500 00 4 00000              CLA 0,4                                                   LC224500
04443 -0320 00 0 00460              ANA DECM                    CDR(L)                        LC224600
04444  0020 00 0 04404              TRA      SR3
04445  0074 00 4 02326       SR4    TSX      UNSAVE,4
04446 -0534 00 4 03322              LXD $ARG4,4                                               LC219900
04447  3 00012 4 04452              TXH      SRCMPT,4,10                                      LC220000
04450 -0534 00 4 03454              LXD      SRS1,4                                           LC220100
04451  0020 00 0 03322              TRA      $ARG4                                            LC220200
                              *                                                               LC220300
04452  0600 00 0 03321       SRCMPT STZ      $ARG3                                            LC220400
04453  0560 00 0 03321              LDQ      $ARG3                                            LC220500
04454  0074 00 4 03730              TSX      $CONS,4                                          LC220600
04455  0131 00 0 00000              XCA                                                       LC220700
04456  0500 00 0 03322              CLA      $ARG4                                            LC220800
04457 -0534 00 4 03454              LXD      SRS1,4                                           LC220900
04460  0020 00 0 14663              TRA      $APPLY                                           LC221000
                                                                                              LC225700
                                    FUNCTION EQUAL                                            LC225800
                                    EQUAL(L1,L2)=(L1=L2 YIELDS1,L1=0VL2=0 YIELDS 0,           LC225900
                                    CAR(L1)=-1VCAR(L2)=-1 YIELDS 0, OTHERWISE                 LC226000
                                        EQUAL(CAR(L1,CAR(L2))AEQUAL(CDR(L1),CDR(L2)))         LC226100
                                                                                              LC226200
                              L     HED                                                       LC226300
                              * EQUAL        A FUNCTION OF 2 ARGUMENTS DETERMINES WETHER 2 LIST        RDCX0603
                              *              STRUCTURES ARE EQUIVELENT.  REPROGRAMMED 5 OCTOBER 1960 RDCX0604
                              *              TO MAKE USE OF THE NUMBER CONVENTIONS CURRENTLY IN USE. RDCX0605
                              *                                                               RDCX0606
04461 -0634 00 4 04600       EQUAL SXD      EQXR,4             SAVE LINK IR                   RDCX0607
04462 -0600 00 0 04602             STQ      EQL2               SAVE ARGUMENT 2                RDCX0609
04463  0601 00 0 04601             STO      EQL1               SAVE ARGUMENT 1                RDCX0610
04464  0402 00 0 04602       EQLP  SUB      EQL2               EQ TEST                        RDCX0611
04465  0100 00 0 04516             TZE      EQT                TWO LIST ARE EQ, EXIT TRUE     RDCX0612
04466 -0520 00 0 04601             NZT      EQL1               SKIP IF L1 NON NULL            RDCX0613
04467  0020 00 0 04521             TRA      EQF                L1 NULL BUT NOT EQ L2, EXIT FALSE   RDCX0614
04470 -0520 00 0 04602             NZT      EQL2               NULL TEST L2                   RDCX0615
04471  0020 00 0 04521             TRA      EQF                L2 NULL BUT NOT EQ  L1, EXIT FALSE  RDCX0616
04472 -0534 00 4 04602             LXD      EQL2,4             PICK UP LIST 2                 RDCX0617
04473  0500 00 4 00000             CLA      0,4                GET NEXT ELEMENT               RDCX0618
04474  0622 00 0 04602             STD      EQL2               SAVE CDR OF LIST 2             RDCX0619
04475  0734 00 4 00000             PAX      0,4                CAR OF LIST 2                  RDCX0620
04476  3 77776 4 04524             TXH      EQA,4,-2           GO IF ATOM                     RDCX0621
04477 -0754 00 4 00000             PXD      0,4                CAR OF LIST TO DECREMENT OF AC RDCX0622
04500  0131 00 0 00000             XCA                         SWITCH TO MQ                   RDCX0623
```

```
04501 -0534 00 4 04601   2557          LXD     EQL1,4             PICK UP LIST 1                      RDCX0624
04502  0500 00 4 00000   2558          CLA     0,4                GET NEXT ELEMENT                    RDCX0625
04503  0622 00 0 04601   2559          STD     EQL1               SAVE CDR OF LIST 1                  RDCX0626
04504  0734 00 4 00000   2560          PAX     0,4                CAR OF LIST TO IR 4                 RDCX0627
04505  3 77776 4 04521   2561          TXH     EQF,4,-2           GO TO FALSE EXIT IF THIS IS AN ATOM RDCX0628
04506 -0754 00 4 00000   2562          PXD     0,4                CAR OF LIST TO DECREMENT OF AC      RDCX0629
04507  0074 00 4 02312   2563          TSX     $SAVE,4            SAVE CALL                           RDCX0630
04510 -3 04604 0 02375   2564          TXL     $END3,,EQL2+2      SAVE 3 ITEMS
04511  0074 00 4 04461   2565          TSX     $EQUAL,4           TEST FOR EQUALITY IN CAR  DIRECTION RDCX0632
04512  0074 00 4 02326   2566          TSX     UNSAVE,4           UNSAVE CALL                         RDCX0633
04513  0100 00 0 04521   2567          TZE     EQF                WHOLE LIST IS FALSE IF CAR DIRECTION FRDCX0635
04514  0500 00 0 04601   2568          CLA     EQL1               PICK UP REST OF LIST 1              RDCX0636
04515  0020 00 0 04464   2569          TRA     EQLP               TEST EQUALITY IN CDR DIRECTION      RDCX0637
                         2570 *                                                                       RDCX0638
04516  0500 00 0 00442   2571 EQT      CLA     $QD1               TRUE EXIT, PICK UP 1 IN DECREMENT   RDCX0639
04517 -0534 00 4 04600   2572          LXD     EQXR,4             RESTORE LINK IR                     RDCX0641
04520  0020 00 4 00001   2573          TRA     1,4                                                    RDCX0642
                         2574 *                                                                       RDCX0643
04521 -0754 00 0 00000   2575  EQF     PXD     0,0                FALSE EXIT, CLEAR AC                RDCX0644
04522 -0534 00 4 04600   2576          LXD     EQXR,4             RESTORE LINK IR                     RDCX0646
04523  0020 00 4 00001   2577          TRA     1,4                EXIT                                RDCX0647
                         2578 *                                                                       RDCX0648
04524  0560 00 0 04601   2579 EQA      LDQ     EQL1
04525 -0774 00 4 04527   2580          AXC     EQAR,4
04526  0634 00 4 04574   2581          SXA     EQPX,4
04527  0020 00 0 04542   2582 EQAR     TRA     EQPE
04530  0100 00 0 04521   2583          TZE     EQF
04531  0020 00 0 04516   2584          TRA     EQT
                         2585 *
                         2586 *        EQP TESTS FOR EQ BETWEEN LISTS AND NUMERICAL EQUALITY BETWEEN
                         2587 *        NUMBERS.   USES A TOLERENCE  IN TESTIONG FLOATION PT NUMBERS
                         2588 *
04532  0040 00 0 04537   2589 EQP      TLQ     EQPF
04533  0131 00 0 00000   2590          XCA
04534  0040 00 0 04537   2591          TLQ     EQPF
04535  0500 00 0 00442   2592 EQPTX    CLA     $QD1
04536  0020 00 4 00001   2593          TRA     1,4
04537  0634 00 4 04574   2594 EQPF     SXA     EQPX,4
04540 -0734 00 4 00000   2595          PDX     0,4
04541  0500 00 4 00000   2596          CLA     0,4
04542 -0734 00 4 00000   2597 EQPE     PDX     0,4
04543 -0320 00 0 00470   2598          ANA     TAGMSK
04544  0100 00 0 04573   2599          TZE     EQPFX
04545  0601 00 0 04576   2600          STO     EQPT
04546  0500 00 4 00000   2601          CLA     0,4
04547  0131 00 0 00000   2602          XCA
04550 -0734 00 4 00000   2603          PDX     0,4
04551  0500 00 4 00000   2604          CLA     0,4
04552 -0734 00 4 00000   2605          PDX     0,4
04553 -0320 00 0 00470   2606          ANA     TAGMSK
04554 -0320 00 0 04576   2607          ANA     EQPT
04555  0100 00 0 04573   2608          TZE     EQPFX
04556 -0320 00 0 00436   2609          ANA     $QT1
04557  0601 00 0 04576   2610          STO     EQPT
```

```
04560  0500 00 4 00000  2611         CLA     0,4
04561  0601 00 0 04577  2612         STO     EQPS
04562  0131 00 0 00000  2613         XCA
04563  0402 00 0 04577  2614         SUB     EQPS
04564  0534 00 4 04574  2615         LXA     EQPX,4
04565  0100 00 0 04535  2616         TZE     EQPTX
04566  0520 00 0 04576  2617         ZET     EQPT
04567  0020 00 0 04573  2618         TRA     EQPFX
04570  0760 00 0 00003  2619         SSP
04571  0402 00 0 14623  2620         SUB     FLOTOL
04572 -0120 00 0 04535  2621         TMI     EQPTX
04573 -0754 00 0 00000  2622 EQPFX   PXD     0,0
04574  0774 00 4 00000  2623 EQPX    AXT     **,4
04575  0020 00 4 00001  2624         TRA     1,4
04576  0 00000 0 00000  2625 EQPT                            TEST CELL NON 0 YIELDS FIX
04577  0 00000 0 00000  2626 EQPS                            STORAGE
04600  0 00000 0 10241  2627  EQXR          $F8              INDEX REGISTER STORAGE          RDCX0687
04601  0 00000 0 00000  2628  EQL1                           LIST 1 STORAGE                  RDCX0688
04602  0 00000 0 00000  2629  EQL2                           LIST 2 STORAGE                  RDCX0689
04603  0 00000 0 00000  2630  EQTS                           TEST CELL  0 FIX, NON 0 FLO     RDCX0690
                        2631 *                                                               RDCX0691
                        2632 *  EQUAL USES $SAVE,$QD1,UNSAVE,$EQUAL AND FIXFLO               RDCX0692
                        2633                                                                 LC233300
                        2634             PRINT                  MAY 14,1959              LC233400
                        2635                                                                 LC233500
                        2636                                                                 LC233600
                        2637             PRINT(L)=(CAR(L)=-1 YIELDS PRIN1(L),1 YIELDS    LC233700
                        2638             (PRIN2(LPAR2),PRINT(CAR(L)),(CDR(L)=0YIELDS     LC233800
                        2639             PRIN2(RPAR2),1 YIELDS(PRIN2(COMMA2),PRINT       LC233900
                        2640             (CDR(L))))))                                    LC234000
                        2641                                                             LC234100
                        2642             THE LIST L IS PRINTED IN THE RESTRICTED NOTATION LC234200
                        2643                                                             LC234300
                        2644             PRINT REQUIRES THE SUBROUTINES PRIN1,PRIN2,     LC234400
                        2645             TERPRI,MISPH2(OR UASPH2) ALL HEADED BY P        LC234500
                        2646             AND SAVE,UNSAVE,ERROR UNHEADED                  LC234600
                        2647                                                             LC234700
                        2648 T       HED                                                 LC234800
                        2649                                                             LC234900
                        2650             PRINT MASTERMINDER                              LC235000
                        2651                                                             LC235100
04604  0634 00 4 04614  2652  PRINT SXA     PRPS1,4          SAVE LINK IR
04605 -0534 00 4 02317  2653         LXD     $CPPI,4          SAVE CURRENT CONTENTS OF CPPI   1.5L3240
04606 -0634 00 4 05307  2654         SXD     PCPPI,4                                          1.5L3250
04607  0600 00 0 05310  2655         STZ     WALLPC           ZERO WALL PAPER COUNTER         1.5L3260
04610  0601 00 0 03453  2656         STO     PRINTL         SAVE THE ARGUMENT
04611  0074 00 4 04620  2657         TSX PRINO,4                                              LC235500
04612  0074 00 4 05214  2658  PRTTI  TSX TERPRI,4                                           LC235600
04613  0500 00 0 03453  2659         CLA     PRINTL         RESTORE THE ARGUMENT
04614  0774 00 4 00000  2660  PRPS1  AXT     **,4               RESTORE LINK IR
04615  0020 00 4 00001  2661         TRA 1,4                                                  LC235900
04616  0500 00 0 04673  2662  PRNIL  CLA     PRBLW            PICK UP NIL REPRESENTATION      1.5L3310
04617  0020 00 0 05110  2663         TRA     $PRIN2         PUT IN PRINT LINE AND EXIT
04620 -0634 00 4 04674  2664  PRINO  SXD PS1,4                                              LC236200
```

```
04621  0100 00 0 04616   2665          TZE     PRNIL          PRINT THE NULL LIST
04622 -0734 00 4 00000   2666          PDX 0,4                                      LC236300
04623 -0634 00 4 04702   2667          SXD L1,4                                     LC236400
04624  0500 00 4 00000   2668          CLA 0,4                                      LC236500
04625  0601 00 0 04701   2669          STO CWRL                                     LC236600
04626  0734 00 4 00000   2670          PAX 0,4                                      LC236700
04627 -3 77776 4 04633   2671          TXL     XA1,4,-2
04630  0500 00 0 04702   2672          CLA L1                                       LC236900
04631 -0534 00 4 04674   2673          LXD PS1,4                                    LC237000
04632  0020 00 0 04703   2674          TRA $PRIN1                                   LC237100
04633  0500 00 0 04677   2675 XA1      CLA     LPAR2
04634  0074 00 4 05110   2676          TSX $PRIN2,4                                 LC237300
04635  0500 00 0 04701   2677          CLA CWRL                                     LC237400
04636  0074 00 4 02312   2678          TSX $SAVE,4                                  LC237500
04637 -3 04677 0 02377   2679          TXL     $END2,,PS2+2   SAVE 2 ITEMS
04640  0622 00 0 04675   2680  A3      STD     PS2            SAVE LIST             1.5L3350
04641  0734 00 4 00000   2681          PAX     0,4            CAR TO IR 4           1.5L3360
04642 -3 00000 4 04667   2682          TXL PRP2,4,0                                 LC237900
04643 -0754 00 4 00000   2683          PXD 0,4                                      LC238000
04644  0074 00 4 04620   2684          TSX PRIN0,4                                  LC238100
04645 -0534 00 4 04675   2685  A4      LXD PS2,4                                    LC238200
04646 -3 00000 4 04656   2686          TXL     A6,4,0         EXIT IF NULL          1.5P7070
04647  0500 00 4 00000   2687          CLA     0,4            TEST FOR ATOM         1.5L3390
04650  0734 00 4 00000   2688          PAX     0,4                                  1.5L3400
04651 -3 77776 4 04662   2689          TXL     A2,4,-2        GO TO A2 IF NOT AN ATOM 1.5L3410
04652  0500 00 0 04672   2690          CLA     DOT            OTHERWISE PRINT IN DOT NOTATION 1.5L3420
04653  0074 00 4 05110   2691          TSX     $PRIN2,4       PUT IN PRINT LINE     1.5L3430
04654  0500 00 0 04675   2692          CLA     PS2            CDR OF LIST           1.5L3440
04655  0074 00 4 04703   2693          TSX     $PRIN1,4       PRINT AS ATOM         1.5L3450
04656  0074 00 4 02326   2694  A6      TSX     UNSAVE,4                             1.5L3380
04657  0500 00 0 04676   2695          CLA RPAR2                                    LC238600
04660 -0534 00 4 04674   2696          LXD PS1,4                                    LC238700
04661  0020 00 0 05110   2697          TRA $PRIN2                                   LC238800
04662  0500 00 0 04700   2698  A2      CLA COMM2                                    LC238900
04663  0074 00 4 05110   2699          TSX $PRIN2,4                                 LC239000
04664 -0534 00 4 04675   2700          LXD PS2,4                                    LC239100
04665  0500 00 4 00000   2701          CLA 0,4                                      LC239200
04666  0020 00 0 04640   2702          TRA A3                                       LC239400
                         2703                                                       LC239500
04667  0500 00 0 04673   2704  PRP2    CLA PRBLW                                    LC239600
04670  0074 00 4 05110   2705          TSX $PRIN2,4                                 LC239700
04671  0020 00 0 04645   2706          TRA A4                                       LC239800
04672 -203360777777      2707  DOT     OCT     603360777777   .
04673 -053143777777      2708  PRBLW   OCT     453143777777   NIL
04674  0 00000 0 07320   2709  PS1             $F4                                  LC240100
04675  0 00000 0 00000   2710  PS2                                                  LC240000
04676 +347777777777      2711  RPAR2   OCT 347777777777                            LC240200
04677 -347777777777      2712  LPAR2   OCT 747777777777                            LC240300
04700 -207777777777      2713  COMM2   OCT 607777777777   BLANK   INSTEAD OF A COMMA LC239900
04701  0 00000 0 00000   2714  CWRL                                                 LC240500
04702  0 00000 0 00000   2715  L1                                                   LC240600
                         2716                                                       LC240700
                         2717                                                       LC240800
                         2718 T       HED                                         LC240900
```

```
                                                                                         LC241000
                                                                                         LC241100
                                          SUBROUTINE(PRIN1(L))                           LC241200
                                  /       CAR(L)   N=-1 YIELDS ERROR                     LC241300
                                          ST = L                                         LC241400
                                  A1      CDR(L) = 0 YIELDS ERROR                        LC241500
                                          L = CDR(L)                                     LC241600
                                          CAR(L) = PNAME YIELDS GO(A3)                   LC241700
                                          CAR(L) N= FLOAT YIELDS GO(A1)                  LC241800
                                          L = CAR(CDR(L))                                LC241900
                                          VAL = FLONAM(L)                                LC242000
                                          REPLACD(CONS(PNAME,CONS(VAL,CDR(ST))),ST)      LC242100
                                          L = CDR(ST)                                    LC242200
                                  A3      L= CAR(CDR(L))                                 LC242300
                                  A2      PRIN2(CWR(CAR(L))                              LC242400
                                          L = CDR(L)                                     LC242600
                                                           L=0 YIELDS RETURN
                                  */      GO(A2)                                         LC242700
                                                                                         LC242800
04703 -0634 00 4 05072   PRIN1 SXD PR1,4                                                 LC242900
04704  0601 00 0 05071         STO PRSS                    SAVE OBJECT                   LC243000
04705 -0734 00 4 00000         PDX ,4                                                    LC243100
04706  0500 00 4 00000         CLA ,4                                                    LC243200
04707  0625 00 0 05103         STT      PTTGR
04710 -0320 00 0 00457         ANA ADDM                                                  LC243300
04711  0402 00 0 00457         SUB ADDM                                                  LC243400
04712  0100 00 0 04720         TZE PR3                     CAR(L) N=-1 YIELDS ERROR      LC243500
04713 -0634 00 4 01562   PR2   SXD $ERROR,4                                              LC243600
04714  0074 00 4 05214         TSX TERPRI,4                                              LC243700
04715 -0754 00 0 00000         PXD      0,0
04716  0074 00 4 01563         TSX $ERROR+1,4                                            LC243800
04717  54476060O154            BCI      1,*P  1*           TRIED TO PRINT NON-OBJECT -PRIN1-
                 00457   ADDM  SYN      $AMASK
04720  0520 00 0 05103   PR3   ZET      PTTGR
04721  0020 00 0 04733         TRA      PR3N
04722  0500 00 4 00000         CLA      0,4                FIRST WORD OF ATOM            PNPAA//I
04723  0020 00 0 04726         TRA      *+3
04724 -3 07334 4 04726   PR3P  TXL      *+2,4,$PNAME-1
04725 -3 07335 4 04750         TXL      PA3,4,$PNAME
04726 -0734 00 4 00000         PDX      0,4                CDR                           PNPA0022
04727 -3 00000 4 05056         TXL      PR5,4,0            UNPRINTABLE
04730  0500 00 4 00000         CLA      0,4                NEXT WORD                     PNPA0002
04731  0734 00 4 00000         PAX      0,4
04732  0020 00 0 04724         TRA      PR3P               EXAMINE WORD                  PNPA0026
04733 -0534 00 4 05071   PR3N  LXD      PRSS,4
04734  0500 00 4 00000         CLA      0,4
04735 -0734 00 4 00000         PDX      0,4
04736  0634 00 4 05102         SXA      PTPNT,4
04737  0500 00 0 05103         CLA      PTTGR
04740 -0320 00 0 00437         ANA      $QT2
04741 -0100 00 0 04764         TNZ      PR4F
04742  0500 00 0 05103         CLA      PTTGR
04743 -0320 00 0 00440         ANA      $QT4
04744 -0100 00 0 04767         TNZ      LUCY
```

```
04745 -0754 00 4 00000  2773        PXD   0,4
04746  0074 00 4 04115  2774        TSX   NUMNAM,4
04747  0020 00 0 04762  2775        TRA   PR4E
                        2776 *                                                  PNPA0019
04750 -0734 00 4 00000  2777  PA3   PDX   0,4      FOUND A PNAME               PNPA0027
04751  0500 00 4 00000  2778        CLA   0,4                                   PNPA0028
04752  0734 00 4 00000  2779        PAX   0,4      POINTER TO PRINT LIST        PNPA0029
04753  0500 00 4 00000  2780  PR4   CLA   0,4      LIST ITEM                    PNPA0030
04754  0622 00 0 05073  2781        STD   L        SAVE REST OF LIST IF ANY     PNPA0031
04755  0734 00 4 00000  2782        PAX   0,4      POINTER TO FIRST FULL FULL WORD PNPA0032
04756  0500 00 4 00000  2783        CLA   0,4      FULL WORD                    PNPA0333
04757  0074 00 4 05110  2784        TSX   $PRIN2,4 PRINT IT                     PNPA0034
04760 -0534 00 4 05073  2785        LXD   L,4      PICK UP REST OF LIST         PNPA0035
04761  3 00000 4 04753  2786        TXH   PR4,4,0  PRINT MORE IF MORE           PNPA0036
04762 -0534 00 4 05072  2787  PR4E  LXD   PR1,4    EXIT BY RESTORING LINK IR    PNPA0037
04763  0020 00 4 00001  2788        TRA   1,4      EXIT                         PNPA0039
04764 -0754 00 4 00000  2789 PR4F   PXD   0,4
04765  0074 00 4 05500  2790        TSX   FLONAM,4
04766  0020 00 0 04762  2791        TRA   PR4E
                        2792 *                                                  RDC10171
                        2793 *      PRINT THE NUMBER OCTALLY                    RDC10172
04767  0534 00 2 05102  2794  LUCY  LXA   PTPNT,2    GET POINTER TO NUMBER       RDC10174
04770  0560 00 2 00000  2795        LDQ   0,2                                   RDC10175
04771  0162 00 0 04776  2796        TQP   BETTY    TEST FOR NEGATIVE NUMBER     RDC10176
04772  0500 00 0 05100  2797        CLA   MISGN    IF SO, PRINT -               RDC10177
04773  0074 00 4 05110  2798        TSX   $PRIN2,4                               RDC10178
04774  0500 00 2 00000  2799        CLA   0,2      REMOVE MINUS SIGN            RDC10179
04775 -0130 00 0 00000  2800        XCL                                         RDC10180
04776 -0520 00 2 00000  2801  BETTY NZT   0,2      TEST IF NUMBER ALL ZEROS     RDC10181
04777  0020 00 0 05053  2802        TRA   MARIE                                 RDC10182
                        2803 *      LOOK FOR NON-ZERO DIGIT ON LEFT             RDC10183
05000 -0754 00 0 00000  2804        PXD   ,0                                    RDC10184
05001  0774 00 2 00014  2805        AXT   12,2     IR2 COUNTS ZEROS ON RIGHT    RDC10185
05002 -0763 00 0 00003  2806        LGL   3                                     RDC10186
05003  1 77777 2 05004  2807        TXI   *+1,2,-1 COUNT VACATED POSITIONS      RDC10187
05004  0100 00 0 05002  2808        TZE   *-2                                   RDC10188
                        2809 *      A NON-ZERO DIGIT HAS APPEARED ON THE LEFT   RDC10189
05005 -0501 00 0 00414  2810        ORA   $Q64       PUT IN OVERFLOW FLIPPER   RDC10190
05006  0140 00 0 05007  2811        TOV   *+1        SHUT OFF OVERFLOW LIGHT   RDC10191
05007 -0600 00 0 05074  2812  GRETA STQ   TONI       TEST IF ALL DIGITS ARE SPREAD RDC10192
05010  0162 00 0 05012  2813        TQP   *+2        TEST FOR NON-ZERO SIGN BIT
05011  1 77777 2 05015  2814        TXI   FIFI,2,-1  SOME DIGITS NOT SPREAD, SO CONTINUE
05012 -0520 00 0 05074  2815        NZT   TONI                                  RDC10193
05013  0020 00 0 05032  2816        TRA   DEBBY      TRA IF ALL NON-ZERO DIGITS SPREAD RDC10194
05014  1 77777 2 05015  2817        TXI   *+1,2,-1                             RDC10195
05015  0767 00 0 00003  2818  FIFI  ALS   3          SPREAD ONE DIGIT          RDC10196
05016 -0763 00 0 00003  2819        LGL   3                                     RDC10197
05017 -0140 00 0 05007  2820        TNO   GRETA      SEE IF FULL WORD OF DIGITS RDC10198
05020 -0600 00 0 05074  2821        STQ   TONI       PRINT THE WORD            RDC10199
05021  0074 00 4 05110  2822        TSX   $PRIN2,4                              RDC10200
05022  0500 00 0 00371  2823        CLA   $Q1        PUT IN OVERFLOW FLIPPER   RDC10201
05023  0560 00 0 05074  2824        LDQ   TONI                                  RDC10202
05024  0140 00 0 05025  2825        TOV   *+1        SHUT OFF OVERFLOW LIGHT   RDC10203
05025  0162 00 0 05027  2826        TQP   *+2        TEST FOR NON-ZERO SIGN BIT
```

```
05026  1 77777 2 05015  2827          TXI     FIFI,2,-1
05027  0520 00 0 05074  2828          ZET     TONI                    SEE IF ALL DIGITS SPREAD                RDC10204
05030  1 77777 2 05015  2829          TXI     FIFI,2,-1                                                       RDC10205
05031  0020 00 0 05036  2830          TRA     VICKI                                                           RDC10206
                        2831 *        FORM WORD FOR PRINTING                                                  RDC10207
05032  0560 00 0 00471  2832  DEBBY   LDQ     SEVENS                  PUT 77S IN RIGHT END OF WORD            RDC10208
05033 -0763 00 0 00006  2833          LGL     6                         OVERFLOW SIGNALS LEFT END OF WORD     RDC10209
05034 -0140 00 0 05033  2834          TNO     *-1                                                             RDC10210
05035  0074 00 4 05110  2835          TSX     $PRIN2,4                                                        RDC10211
                        2836 *        PRINT Q AND SCALE FACTOR IF ANY                                         RDC10212
05036  3 00000 2 05041  2837  VICKI   TXH     MICKY,2,0               CONTINUE IF 0 SCALE FACTOR              RDC10213
05037  0500 00 0 05101  2838          CLA     BCIQ                                                            RDC10214
05040  0020 00 0 05054  2839          TRA     PATSY                                                           RDC10215
05041 -3 00011 2 05046  2840  MICKY   TXL     SANDY,2,9               TRA IF SCALE FACTOR LESS THAN 10        RDC10216
                        2841 *        OCTAL SCALE FACTOR MORE THAN 10                                         RDC10217
05042 -0754 00 2 00000  2842          PXD     ,2                                                              RDC10218
05043  0400 00 0 05075  2843          ADD     BQ10                    FORM SCALE FACTOR FOR PRINTING          RDC10219
05044 -0760 00 0 00003  2844          SSM                                                                     RDC10220
05045  0020 00 0 05054  2845          TRA     PATSY                                                           RDC10221
                        2846 *        OCTAL SCALE FACTOR LESS THAN 10                                         RDC10222
05046 -0754 00 2 00000  2847  SANDY   PXD     ,2                                                              RDC10223
05047  0767 00 0 00006  2848          ALS     6                                                               RDC10224
05050  0400 00 0 05076  2849          ADD     BQO                                                             RDC10225
05051 -0760 00 0 00003  2850          SSM                                                                     RDC10226
05052  0020 00 0 05054  2851          TRA     PATSY                                                           RDC10227
05053  0500 00 0 05077  2852  MARIE   CLA     BCIOQ                   PRINT OQ                                RDC10228
05054  0074 00 4 05110  2853  PATSY   TSX     $PRIN2,4                                                        RDC10229
05055  0020 00 0 04762  2854          TRA     PR4E                                                            RDC10231
                        2855                                                                                  LC249300
                        2856              GENERATE A PRINT NAME FOR AN OBJECT WITHOUT ONE.                    LC249400
                        2857                                                                                  LC249500
                        2858              THE PRINT NAME IS OF THE FORM LDDDDD WHERE THE D,S ARE THE           LC249600
                        2859              OCTAL DIGITS OF THE 2,S COMPLIMENT OF THE FIRST WORD OF              LC249700
                        2860               THE PROPERTY LIST OF THE OBJECT.                                   LC249800
                        2861                                                                                  LC249900
05056 -0535 00 4 05071  2862  PR5     LDC     PRSS,4
05057 -0754 00 4 00000  2863          PXD     0,4
05060  0131 00 0 00000  2864          XCA
05061  0074 00 4 11021  2865          TSX     OCTALP,4
05062 -0501 00 0 05070  2866          ORA     PRC1
05063 -0760 00 0 00003  2867          SSM                     FIX SIGN TO AGREE WITH P BIT FOR PRIN2          LC250700
05064 -0760 00 0 00001  2868          PBT                                                                     LC250800
05065  0760 00 0 00002  2869          CHS                                                                     LC250900
05066 -0534 00 4 05072  2870          LXD     PR1,4                   RESTORE LINK IR                         1.5P7080
05067  0020 00 0 05110  2871          TRA     $PRIN2                  PUT IN PRINT LINE AND EXIT              1.5L3510
                        2872                                                                                  LC251300
05070  430000000000     2873  PRC1    BCI     1,L00000                L SYMBOL
05071  0 00000 0 00000  2874  PRSS                                    STORAGE FOR POINTER TO OBJECT           LC251600
05072  0 00000 0 00000  2875  PR1                                                                             LC251700
05073  0 00000 0 00000  2876  L                                                                               LC251900
05074                   2877  TONI    BSS     1                                                               RDC10233
05075 +100066777777     2878  BQ10    OCT     100066777777            USED TO FORM BCI Q1N                    RDC10234
05076 +100077777777     2879  BQO     OCT     100077777777            USED TO FORM BCI QN                     RDC10235
05077 +005077777777     2880  BCIOQ   OCT     005077777777            BCI OQ                                  RDC10236
```

```
05100 -077777777777         MISGN OCT      407777777777       BCI -                                RDC10237
05101 -107777777777         BCIQ  OCT      507777777777                                            RDC10238
05102                       PTPNT BSS      1                                                       RDC10240
05103  0 00000 0 00000      PTTGR                             TEST CELL FOR NUMBER FLAGS
                                                                                                   LC252600
                                                                                                   LC252700
                                      PRIN2    PRINTS UP TO 6 CHARACTERS IN ONE WORD WHEN THE      LC252800
                                      CHARACTERS ARE JUSTIFIED TO THE LEFT AND FOLLOWED BY THE     LC252900
                                      ILLEGAL CHARACTER WHOSE OCTAL FORM IS 77                     LC253000
                                                                                                   LC253100
                                                                                                   LC253200
05104 -0634 00 4 05255      PRINT2 SXD PR9,4                                                       RDCX0002
05105 -0734 00 4 00000             PDX 0,4                    BRING BCD WORD TO AC                 RDCX0003
05106  0500 00 4 00000             CLA 0,4                                                         RDCX0004
05107  0020 00 0 05112             TRA      *+3                                                    RDCX0005
05110  3 00000 0 05341      PRIN2  TXH      $PUN2,,0          SWITCH TO PUNCH OUT ROUTINE          RDCX0006
05111 -0634 00 4 05255             SXD      PR9,4                                                  RDCX006A
05112 -0634 00 2 05254             SXD PR8,2                                                       RDCX0007
05113 -0634 00 1 05253             SXD PR7,1                                                       RDCX0008
05114 -0534 00 4 05256             LXD WORDS,4                ROOM LEFT IN OUTPUT RECORD           LC253900
05115 -3 00000 4 05245             TXL INIT,4,0               CAN BE ZERO ONLY IF ROUTINE NOTUSED  LC254000
05116  0774 00 1 00001      COMB4  AXT 1,1                                                         LC254100
05117  0601 00 0 05262             STO TEMP                                                        LC254200
05120 -0500 00 0 05262             CAL TEMP                                                        LC254300
05121 -0340 00 0 00471             LAS SEVENS                 WORD OF ALL 77-S CAUSES NO ACTION    RDCX0010
05122  0020 00 0 05124             TRA *+2                                                         RDCX0011
05123  0020 00 0 05155             TRA NOJOB                                                       RDCX0012
05124 -0320 00 0 05260      SHIFL  ANA RCHM     IS THE RIGHT CHARACTER 77                          LC254400
05125  0402 00 0 05260             SUB RCHM                                                        LC254500
05126 -0100 00 0 05133             TNZ JUST                   NOT 77                               LC254600
05127 -0500 00 0 05262             CAL TEMP                                                        LC254700
05130  0771 00 0 00006             ARS 6                                                           LC254800
05131  0602 00 0 05262             SLW TEMP                                                        LC254900
05132  1 00001 1 05124             TXI SHIFL,1,1                                                   LC255000
05133 -0500 00 0 05262      JUST   CAL TEMP                                                        LC255100
05134  0020 00 1 05143             TRA LSHIF+1,1                                                   LC255200
05135  0767 00 0 00006             ALS 6                                                           LC255300
05136  0767 00 0 00006             ALS 6                                                           LC255400
05137  0767 00 0 00006             ALS 6                                                           LC255500
05140  0767 00 0 00006             ALS 6                                                           LC255600
05141  0767 00 0 00006             ALS 6                                                           LC255700
05142  0602 00 0 05262      LSHIF  SLW TEMP                                                        LC255800
05143  0560 00 0 05262             LDQ TEMP                                                        LC255900
05144 -0500 00 0 05261             CAL PART                                                        LC256000
05145 -0534 00 2 05257             LXD PARTS,2                                                     LC256100
05146 -0763 00 0 00006      COMB   LGL 6                                                           LC256200
05147  0602 00 0 05261             SLW PART                                                        LC256300
05150 -2 00001 2 05162             TNX WFULL,2,1                                                   LC256400
05151  1 00001 1 05152      COMB5  TXI *+1,1,1                                                     LC256500
05152 -3 00006 1 05146             TXL COMB,1,6                                                    LC256600
05153 -0634 00 2 05257      COMB1  SXD PARTS,2                                                     LC256700
05154 -0634 00 4 05256             SXD WORDS,4                                                     LC256800
05155 -0534 00 1 05253      NOJOB  LXD PR7,1                                                       RDCX0013
05156 -0534 00 2 05254             LXD PR8,2                                                       LC257000
```

```
05157 -0534 00 4 05255  2935         LXD PR9,4                                                    LC257100
05160 -0754 00 0 00000  2936         PXD 0,0                                                      LC257200
05161  0020 00 4 00001  2937         TRA 1,4                                                      LC257300
05162  0602 00 4 05307  2938  WFULL  SLW REC,4                                                     LC257400
05163 -2 00001 4 05166  2939         TNX RECFL,4,1                                                LC257500
05164  0774 00 2 00006  2940  COMB3  AXT 6,2                                                      LC257600
05165  0020 00 0 05151  2941         TRA COMB5                    /                               LC257700
05166 -0600 00 0 05262  2942  RECFL  STQ TEMP                                                    LC257800
05167  0500 00 0 05310  2943         CLA     WALLPC               GET MAX NUMBER OF LINES PER LIST 1.5L3540
05170  0400 00 0 00371  2944         ADD     $Q1                                                  1.5L3550
05171  0340 00 0 05311  2945         CAS     BRKOUT               COMPARE WITH MAX NUMBER         1.5L3560
05172  0020 00 0 05174  2946         TRA     *+2                  NO, GO ON                       1.5L3570
05173  0020 00 0 05207  2947         TRA     PRTB                 = BREAKOUT                      1.5L3580
05174  0601 00 0 05310  2948         STO     WALLPC               PUT AWAY                        1.5L3590
05175  0074 00 4 01222  2949         TSX OUTPUT,4                                                 LC257900
05176  0 00000 0 00364  2950 PRINTD      BCDOUT                                                   LC258000
05177  0 00024 0 05263  2951         REC-20,,20                                                   LC258100
05200  0560 00 0 05262  2952         LDQ TEMP                                                     LC258200
05201 -0534 00 4 00447  2953         LXD QD20,4                                                   LC258300
05202 -0500 00 0 00472  2954         CAL BLNKA                                                    LC258400
05203  0602 00 0 05261  2955         SLW PART                                                     LC258500
05204 -0534 00 4 00447  2956         LXD QD20,4                                                   LC258600
05205 -0534 00 2 00444  2957         LXD QD5,2                                                    LC258700
05206  0020 00 0 05151  2958         TRA COMB5                                                    LC258800
05207 -0534 00 4 05307  2959  PRTB   LXD     PCPPI,4              PUSH DOWN COUNTER               1.5L3600
05210 -0634 00 4 02317  2960         SXD     $CPPI,4              RESTORE TO ENTRANCE VALUE       1.5L3610
05211 -0534 00 1 05253  2961         LXD     PR7,1                RESTORE INDEX 1 AND 2           1.5L3620
05212 -0534 00 2 05254  2962         LXD     PR8,2                                                1.5L3630
05213  0020 00 0 04612  2963         TRA     PRTT1                BREAKOUT                        1.5L3640
05214 -0634 00 2 05254  2964 TERPRI  SXD PR8,2                                                    LC258900
05215 -0634 00 4 05255  2965         SXD PR9,4                                                    LC259000
05216 -0534 00 2 05257  2966         LXD PARTS,2                                                  LC259100
05217 -0534 00 4 05256  2967         LXD WORDS,4                                                  LC259200
05220 -0500 00 0 05261  2968         CAL PART                                                     LC259300
05221  0560 00 0 00472  2969         LDQ BLANK                                                    LC259400
05222 -0763 00 0 00006  2970  TER1   LGL 6                                                       LC259500
05223  2 00001 2 05222  2971         TIX TER1,2,1                                                 LC259600
05224  0602 00 4 05307  2972  TER3   SLW REC,4                                                    LC259700
05225 -2 00001 4 05230  2973         TNX TER2,4,1                                                 LC259800
05226 -0500 00 0 00472  2974         CAL BLANK                                                    LC259900
05227  0020 00 0 05224  2975         TRA TER3                                                     LC260000
05230  0074 00 4 01222  2976  TER2   TSX OUTPUT,4                                                 LC260100
05231  0 00000 0 00364  2977 PRINTC      BCDOUT                                                   LC260200
05232  0 00024 0 05263  2978         REC-20,,20                                                   LC260300
05233 -0534 00 4 00447  2979         LXD QD20,4                                                   LC260400
05234 -0634 00 4 05256  2980         SXD WORDS,4                                                  LC260500
05235 -0534 00 2 00444  2981         LXD QD5,2                                                    LC260600
05236 -0634 00 2 05257  2982         SXD PARTS,2                                                  LC260700
05237 -0534 00 2 05254  2983         LXD PR8,2                                                    LC260800
05240 -0534 00 4 05255  2984         LXD PR9,4                                                    LC260900
05241  0500 00 0 00472  2985         CLA BLNKA                                                    LC261000
05242  0601 00 0 05261  2986         STO PART                                                     LC261100
05243 -0754 00 0 00000  2987         PXD 0,0
05244  0020 00 4 00001  2988         TRA 1,4                                                      LC261200
```

```
05245 -0534 00 4 00447   2989  INIT  LXD QD20,4                                                    LC261300
05246  0560 00 0 00472   2990        LDQ BLNKA                                                     LC261400
05247 -0600 00 0 05261   2991        STQ PART                                                      LC261500
05250  0774 00 2 00005   2992        AXT 5,2                                                       LC261600
05251 -0634 00 2 05257   2993        SXD PARTS,2                                                   LC261700
05252  0020 00 0 05116   2994        TRA COMB4                                                     LC261800
                         2995 *                                                                  1.5L1720
05253  0 00000 0 00000   2996  PR7                                                               LC262000
05254  0 00000 0 00000   2997  PR8                                                               LC262100
05255  0 00000 0 00000   2998  PR9                                                               LC262200
05256  0 00000 0 00000   2999  WORDS                                                             LC262300
05257  0 00000 0 00000   3000  PARTS                                ROOM IN PARTIAL WORD         LC262400
05260 +000000000077      3001  RCHM  OCT 77                                                      LC262500
05261  0 00000 0 00000   3002  PART                                                              LC262600
05262  0 00000 0 00000   3003  TEMP                                                              LC262700
05307                    3004  REC   BES 20                                                     LC262800
05307  0 00000 0 00000   3005  PCPPI                                PUSHDOWN COUNTER STORAGE     1.5L3650
05310  0 00000 0 00000   3006 WALLPC                               NUMBER OF LINES IN THIS LIST SO FAR 1.5L3660
05311 +000000000031      3007 BRKOUT DEC   25                     MAXIMUM NUMBER OF LINES IN ANY LIST
                   00444 3008  QD5   SYN   $QD5
                   00447 3009  QD20  SYN   $QD20                                                 1.5L3680
                   00472 3010  BLANK SYN   BLANKS                                               1.5L3690
                   00472 3011  BLNKA SYN   BLANKS                                               1.5L3700
                         3012 *                                                                  1.5L1850
                         3013 * BCDAD1      A CONVERT TABLE FOR ADDING 1 TO A 6 DIGIT BCD NUMBER 1.5L1860
                         3014 *             USED BY LOADING BCD NUMBER INTO AC AND DOING       1.5L1870
                         3015 *       CVR   BCDAD1,,6                                           1.5L1880
                         3016 *                                                                  1.5L1890
05312  0 00000 0 05312   3017  ADT   PZE   ADT                  0                               1.5L1900
05313  0 10000 0 05312   3018 BCDAD1 PZE   ADT,,1*4096          1                               1.5L1910
05314  0 20000 0 05312   3019        PZE   ADT,,2*4096                                           1.5L1920
05315  0 30000 0 05312   3020        PZE   ADT,,3*4096          3                               1.5L1930
05316  0 40000 0 05312   3021        PZE   ADT,,4*4096          4                               1.5L1940
05317  0 50000 0 05312   3022        PZE   ADT,,5*4096          5                               1.5L1950
05320  0 60000 0 05312   3023        PZE   ADT,,6*4096          6                               1.5L1960
05321  0 70000 0 05312   3024        PZE   ADT,,7*4096          7                               1.5L1970
05322  1 00000 0 05312   3025        PON   ADT                  8                               1.5L1980
05323  1 10000 0 05312   3026        PON   ADT,,1*4096          9                               1.5L1990
05324  0 00000 0 05313   3027        PZE   BCDAD1               10                              1.5L2000
                         3028 *                                                                  1.5L2020
                         3029 * PUNCH       WRITES OUT A LIST ON THE SYSTEM PERIFIAL PUNCH TAPE 1.5L2030
                         3030 *             (SYSPPT) IN A FORM SUTABLE FOR PUNCHING IN BCD.    1.5L2040
                         3031 *                                                                  1.5L2050
05325  0634 00 4 05337   3032  PUNCH SXA   PNCHX,4               SAVE LINK IR                  1.5L2060
05326 -0625 00 0 05461   3033        STL   PUNACT                ACTIVTE PUNCH ROUTINE         1.5L2070
05327 -0734 00 4 00000   3034        PDX   0,4                   ARGUMENT TO IR 4              1.5L2080
05330  0502 00 0 05110   3035        CLS   $PRIN2                SET SWITCH TO                 1.5L2090
05331  0601 00 0 05110   3036        STO   $PRIN2                GO TO PUNCH ROUTINE           1.5L2100
05332 -0754 00 4 00000   3037        PXD   0,4                   ARGUMENT TO AC                1.5L2110
05333  0601 00 0 03453   3038        STO   PRINTL              SAVE THE ARGUMENT
05334  0074 00 4 04620   3039        TSX   $PRINO,4              USES PRINT ROUTINE            1.5L2120
05335  0074 00 4 05421   3040        TSX   TERPUN,4              TERMINATE PUNCHING            1.5L2130
05336  0500 00 0 03453   3041        CLA   PRINTL              RESTORE THE ARGUMENT
05337  0774 00 4 00000   3042 PNCHX AXT    **,4                 RESTORE LINK IR               1.5L2140
```

```
05340  0020 00 4 00001   3043        TRA    1,4                 EXIT                                  1.5L2160
                         3044 *                                                                      1.5L2170
                         3045 * PUN2        PUNCH EQUIVELENT OF PRIN 2                                1.5L2180
                         3046 *                                                                      1.5L2190
05341  0634 00 4 05364   3047  PUN2  SXA    PNX,4               SAVE INDEX REGISTERS                  1.5L2200
05342  0634 00 2 05365   3048        SXA    PNY,2                                                     1.5L2210
05343  0634 00 1 05366   3049        SXA    PNZ,1                                                     1.5L2220
05344  0774 00 4 00014   3050  PWRDS AXT    12,4                NUMBER OF WORDS LEFT IN BUFFER
05345. 0774 00 2 00006   3051  PPRTS AXT    6,2                 CHARACTER POSITION
05346 ,0774 00 1 00006   3052        AXT    6,1                 MAXIMUM NUMBER OF CHARACTERS          1.5L2250
05347  0131 00 0 00000   3053        XCA                        ARGUMENT TO MQ                        1.5L2260
05350 -0754 00 0 00000   3054  PLP   PXD    0,0                 CLEAR AC                              1.5L2270
05351 -0763 00 0 00006   3055        LGL    6                   CHARACTER TO MQ                       1.5L2280
05352  0340 00 0 05457   3056        CAS    PSS                 COMPARE WITH 77                       1.5L2290
05353  0761 00 0 00000   3057        NOP                        GREATER, (IMPOSSIBLE)                 1.5L2300
05354  0020 00 0 05361   3058        TRA    POUT                = , GO TO EXIT                        1.5L2310
05355  0522 00 2 05455   3059        XEC    PCNT,2              LESS THAN, SHIFT CHARACTER            1.5L2320
05356 -0602 00 4 05476   3060        ORS    POUP,4              PUT IN OUTPUT LINE                    1.5L2330
05357 -2 00001 2 05370   3061        TNX    PRPLP,2,1           GO IF LAST CHARACTER IN WORD          1.5L2340
05360  2 00001 1 05350   3062  PGRA  TIX    PLP,1,1             GET NEXT CHARACTER                    1.5L2350
05361  0634 00 2 05345   3063  POUT  SXA    PPRTS,2             SAVE INDEX 2 N 4                      1.5L2360
05362  0634 00 4 05344   3064        SXA    PWRDS,4                                                   1.5L2370
05363 -0754 00 0 00000   3065        PXD    0,0                 CLEAR AC                              1.5L2380
05364  0774 00 4 00000   3066  PNX   AXT    **,4                RESTORE INDEX REGISTERS               1.5L2390
05365  0774 00 2 00000   3067  PNY   AXT    **,2                                                      1.5L2400
05366  0774 00 1 00000   3068  PNZ   AXT    **,1
05367  0020 00 4 00001   3069        TRA    1,4                 EXIT                                  1.5L2420
                         3070 *                                                                      1.5L2430
05370  0774 00 2 00006   3071  PRPLP AXT    6,2                 RELOAD CHARACTER COUNT                1.5L2440
05371  2 00001 4 05360   3072        TIX    PGRA,4,1            GO IF WORD COUNT NOT EXHAUSTED        1.5L2450
05372  0500 00 0 05455   3073        CLA    PCNT                GET CARD NUMBER IN BCD                1.5L2460
05373  0114 06 0 05313   3074        CVR    BCDAD1,,6           ADD 1 IN BCD                          1.5L2470
05374  0601 00 0 05455   3075        STO    PCNT                                                      1.5L2480
05375 -0600 00 0 05460   3076        STQ    PNCQ                SAVE CONTENTS OF MQ                   1.5L2490
05376  0560 00 0 00370   3077        LDQ    $ZERO               ZERO MQ                               1.5L2500
05377 -0765 00 0 00006   3078        LGR    6                   SHIFT LOW ORDER DIGIT INTO MQ         1.5L2510
05400  0361 00 0 05456   3079        ACL    PLIS                ADD BCD NAME OF CARD                  1.5L2520
05401  0602 00 0 05476   3080        SLW    POUP                PUT IN ID FIELD                       1.5L2530
05402 -0600 00 0 05477   3081        STQ    POUP+1                                                    1.5L2540
05403  0074 00 4 01222   3082        TSX    OUTPUT,4            GO TO OUTPUT                          1.5L2550
05404  0 00000 0 00363   3083               PPTOUT              PUNCH OUT TAPE                        1.5L2560
05405  0 00016 0 05462   3084               POUP-12,,14         14 WORDS OUT                          1.5L2570
05406 -0046 00 0 00000   3085        PIA                        SAVE INDICATORS IN AC                 1.5L2580
05407  0441 00 0 10340   3086        LDI    SYSIND              PICK UP SYSTEM INDICATORS             1.5L2590
05410  0055 00  000040   3087        SIR    PPTIND              SET PUNCH TAPE INDICATOR              1.5L2600
05411  0604 00 0 10340   3088        STI    SYSIND              UPDATE SYSTEM INDICATORS              1.5L2610
05412  0044 00 0 00000   3089        PAI                        RESTORE INDICATORS                    1.5L2620
05413  0774 00 4 00014   3090        AXT    12,4                NUMBER OF WORDS FROM CC 1 TO 72       1.5L2630
05414  0600 00 4 05476   3091        STZ    POUP,4              ZERO OUTPUT BUFFER                    1.5L2640
05415  2 00001 4 05414   3092        TIX    *-1,4,1                                                   1.5L2650
05416  0774 00 4 00014   3093        AXT    12,4                RELOAD WORD COUNT                     1.5L2660
05417  0560 00 0 05460   3094        LDQ    PNCQ                RESTORE CONTENTS OF MQ                1.5L2670
05420  0020 00 0 05360   3095        TRA    PGRA                CONTINUE WORK                         1.5L2680
                         3096 *                                                                      1.5L2690
```

```
                                3097 * TERPUN      FILLS OUT BUFFER WITH BLANKS AND PUNCHES OUT LAST CARD   1.5L2700
                                3098 *             OPERATES ONLY IF PUNCH ROUTINE IS CURRENTLY ACTIVE      1.5L2710
                                3099 *                                                                     1.5L2720
05421 -0520 00 0 05461          3100 TERPUN NZT    PUNACT              SKIP IF PUNCH ROUTINE IS CURRENTLY ACT1.5L2730
05422  0020 00 4 00001          3101        TRA    1,4                 IMMEDIATE EXIT                       1.5L2740
05423  0600 00 0 05461          3102        STZ    PUNACT              DE ACTIVATE THE PUNCH ROUTINE        1.5L2750
05424  0634 00 4 05364          3103        SXA    PNX,4               SAVE INDEX REGISTERS                 1.5L2760
05425  0634 00 2 05365          3104        SXA    PNY,2                                                    1.5L2770
05426  0634 00 1 05366          3105        SXA    PNZ,1                                                    1.5L2780
05427  0500 00 0 05110          3106        CLA    $PRIN2                                                   1.5L2790
05430  0602 00 0 05110          3107        SLW    $PRIN2              RESTORE PRIN2 SWITCH                 1.5L2800
05431  0534 00 4 05344          3108        LXA    PWRDS,4             PICK UP WORD COUNT                   1.5L2810
05432  0534 00 2 05345          3109        LXA    PPRTS,2             CHARACTER COUNT                      1.5L2820
05433  0774 00 1 00001          3110        AXT    1,1                 CONSTANT 1                           1.5L2830
05434  0560 00 0 00472          3111        LDQ    BLANKS              BLANK MQ                             1.5L2840
05435 -0754 00 0 00000          3112  TPLP  PXD    0,0                 CLEAR AC                             1.5L2850
05436 -0763 00 0 00006          3113        LGL    6                   1 INTO AC                            1.5L2860
05437  0522 00 2 05455          3114        XEC    PCNT,2              SHIFT INTO POSITIN                   1.5L2870
05440 -0602 00 4 05476          3115        ORS    POUP,4              PUT IN OUTPUT LINE                   1.5L2880
05441  2 00001 2 05435          3116        TIX    TPLP,2,1            FILL OUT THIS WORD                   1.5L2890
05442 -2 00001 4 05370          3117        TNX    PRPLP,4,1           GO IF LAST WORD IN BUFFER            1.5L2900
05443  0500 00 0 00472          3118        CLA    BLANKS              BLANK AC                             1.5L2910
05444  0601 00 4 05476          3119        STO    POUP,4              BLANK REST OF BUFFER                 1.5L2920
05445  2 00001 4 05444          3120        TIX    *-1,4,1                                                  1.5L2930
05446  0020 00 0 05370          3121        TRA    PRPLP               GO PUNCH IT OUT                      1.5L2940
                                3122 *              CONSTANTS, STORAGE AND SHIFT TABLE                     1.5L2950
05447  0767 00 0 00036          3123        ALS    30                                                       1.5L2960
05450  0767 00 0 00030          3124        ALS    24                                                       1.5L2970
05451  0767 00 0 00022          3125        ALS    18                                                       1.5L2980
05452  0767 00 0 00014          3126        ALS    12                                                       1.5L2990
05453  0767 00 0 00006          3127        ALS    6                                                        1.5L3000
05454  0761 00 0 00000          3128        NOP                                                             1.5L3010
05455  0 00000 0 00000          3129  PCNT  PZE                         BASE OF SHIFT TABLE AND CARD COUNT   1.5L3020
05456  433162470000             3130  PLIS  BCI    1,LISP00            CARD ID                              1.5L3030
05457 +000000000077             3131  PSS   OCT    77                  CHARACTER THAT TERMINATES A PNAME    1.5L3040
05460  0 00000 0 00000          3132  PNCQ                                                                  1.5L3050
05461  0 00000 0 00000          3133 PUNACT                            NON-ZERO IF PUNCH ROUTINE ACTIVE     1.5L3060
05462                           3134        BSS    12                                                       1.5L3070
05476 +000000000000             3135  POUP  OCT    0,0                 OUTPUT BUFFER                        1.5L3080
05477 +000000000000
                                3136                                                                       LC263200
                                3137              FLONAM               MAY 14,1559                         LC263300
                                3138                   FORMS THE  BCD LIST  FOR A FLOATING NUMBER IN THE ACC LC263400
                                3139                                                                       LC263500
                                3140 T      HED                                                            LC263600
05500  0634 00 4 05666          3141 FLONAM SXA    FLNX,4
05501 -0734 00 4 00000          3142        PDX    0,4
05502  0500 00 4 00000          3143        CLA    0,4
05503 -0100 00 0 05512          3144        TNZ    FLNA
05504  0534 00 4 05666          3145        LXA    FLNX,4
05505  0131 00 0 00000          3146        XCA
05506  0500 00 0 05706          3147        CLA    FLZPZ               0.0
05507  0162 00 0 05110          3148        TQP    $PRIN2
05510  0402 00 0 05731          3149        SUB    C0                  -0.0
```

```
05511  0020 00 0 05110  3150        TRA   $PRIN2
05512  0634 00 2 05667  3151  FLNA  SXA   FLNY,2
05513  0634 00 1 05670  3152        SXA   FLNZ,1
05514  0774 00 1 00001  3153        AXT   1,1          SET UP BUFFER IRS
05515  0774 00 2 00044  3154        AXT   36,2
05516  0600 00 0 05703  3155        STZ   FLOPB-3
05517  0600 00 0 05704  3156        STZ   FLOPB-2
05520  0600 00 0 05705  3157        STZ   FLOPB-1
05521  0601 00 0 77667  3158        STO   COMMON+5
05522  0131 00 0 00000  3159        XCA
05523 -0754 00 0 00000  3160        PXD   ,0             CLEAR ACC. AND SIGN.      21303PRT90124
05524  0765 00 0 00000  3161  FL73  LRS   0              SIGN TO MQ                21305PRT90125
05525  0763 00 0 00010  3162        LLS   8              CHARACTERISTIC.           21310PRT90126
05526  0402 00 0 00415  3163        SUB   A128           128                       21315PRT90127
05527 -0600 00 0 77662  3164        STQ   COMMON         SAVE MANTISSA.            21320PRT90128
05530  0131 00 0 00000  3165        XCA                  MULTIPLY BY               21325PRT90129
05531  0200 00 0 05720  3166        MPY   LOG2           LOG BASE 10 OF 2.         21330PRT90130
05532  0601 00 0 77664  3167        STO   COMMON+2                                 21335PRT90131
05533  0120 00 0 05542  3168        TPL   FL75                                     21340PRT90132
05534  0402 00 0 05717  3169  FL74  SUB   A1             1                         21345PRT90133
05535  0601 00 0 77664  3170        STO   COMMON+2                                 21350PRT90134
05536  0131 00 0 00000  3171        XCA                                            21355PRT90135
05537  0760 00 0 00006  3172        COM                                            21360PRT90136
05540  0760 00 0 00003  3173        SSP                                            21365PRT90137
05541  0131 00 0 00000  3174        XCA                                            21370PRT90138
05542  0200 00 0 05721  3175  FL75  MPY   LOG10          LOG BASE 2 OF 10/4.       21375PRT90139
05543  0765 00 0 00041  3176        LRS   33                                       21380PRT90140
05544  0621 00 0 05555  3177        STA   FL76A                                    21385PRT90141
05545 -0600 00 0 77672  3178        STQ   COMMON+8                                21390PRT90142
05546  0774 00 4 00007  3179        AXT   7,4                                      21395PRT90143
05547  0560 00 0 05722  3180        LDQ   C7                                       21400PRT90144
05550  0200 00 0 77672  3181  FL76  MPY   COMMON+8                                 21405PRT90145
05551  0400 00 4 05732  3182        ADD   C0+1,4                                   21410PRT90146
05552  0131 00 0 00000  3183        XCA                                            21415PRT90147
05553  2 00001 4 05550  3184        TIX   FL76,4,1                                 21420PRT90148
05554  0200 00 0 77662  3185        MPY   COMMON         MANTISSA.                 21425PRT90149
05555  0774 00 4 00000  3186  FL76A AXT   **,4                                     21427PRT90150
05556  0765 00 4 00042  3187        LRS   34,4                                     21430PRT90151
05557  0100 00 0 05564  3188        TZE   FL77                                     21435PRT90152
05560  0221 00 0 05716  3189        DVP   A1-1           10.                       21440PRT90153
05561  0500 00 0 77664  3190        CLA   COMMON+2                                 21445PRT90154
05562  0400 00 0 05717  3191        ADD   A1             1.                        21450PRT90155
05563  0601 00 0 77664  3192        STO   COMMON+2                                 21455PRT90156
05564  0774 00 4 00010  3193  FL77  AXT   8,4
05565 -0200 00 4 05717  3194  FL78  MPR   A1,4          10 TO DEC. PLACES.        21475PRT90160
05566  0340 00 4 05717  3195        CAS   A1,4                                     21480PRT90161
05567  0761 00 0 00000  3196        NOP                  GREATER.                  21485PRT90162
05570  0020 00 0 05572  3197        TRA   FL79           EQUAL.                    21490PRT90163
05571  0020 00 0 05576  3198        TRA   FL80           LESS.                     21495PRT90164
05572  0500 00 0 05717  3199  FL79  CLA   A1             ROUNDING CAUSED CARRY.    21500PRT90165
05573  0400 00 0 77664  3200        ADD   COMMON+2                                 21505PRT90166
05574  0601 00 0 77664  3201        STO   COMMON+2        EXP+1.                    21510PRT90167
05575  0500 00 4 05720  3202        CLA   A1+1,4          10 TO THE DEC. PL.-1.     21515PRT90168
05576  0601 00 0 77672  3203  FL80  STO   COMMON+8                                 21520PRT90169
```

```
05577 -0754 00 0 00000  3204        PXD   ,0                                  21525PRT90170
05600  0560 00 0 77664  3205        LDQ   COMMON+2      ENTER DEC EXP.          21530PRT90171
05601  0221 00 0 05716  3206        DVP   A1-1          10                      21535PRT90172
05602 -0600 00 0 77671  3207        STQ   COMMON+7                             21540PRT90173
05603  0634 00 4 05621  3208        SXA   FL82,4                               21545PRT90174
05604  0074 00 4 05673  3209        TSX   INBCD,4                              21550PRT90175
05605 -0754 00 0 00000  3210        PXD   ,0                                   21555PRT90176
05606  0560 00 0 77671  3211        LDQ   COMMON+7                            21560PRT90177
05607  0221 00 0 05716  3212        DVP   A1-1                                21565PRT90178
05610  0100 00 0 05612  3213        TZE   *+2
05611  0074 00 4 05673  3214        TSX   INBCD,4                             21570PRT90179
05612  0500 00 0 77664  3215        CLA   COMMON+2                            21575PRT90180
05613  0100 00 0 05617  3216        TZE   FL81                                 21580PRT90181
05614  0120 00 0 05617  3217        TPL   FL81                                 21585PRT90182
05615  0500 00 0 00423  3218        CLA   ONEMI         MINUS SIGN              21590PRT90183
05616  0074 00 4 05673  3219        TSX   INBCD,4                             21605PRT90186
05617  0500 00 0 00410  3220  FL81  CLA   ONEE
05620  0074 00 4 05673  3221        TSX   INBCD,4
05621  0774 00 4 00000  3222  FL82  AXT   **,4                                21620PRT90187
05622  0600 00 0 05702  3223        STZ   FLZET
05623  0500 00 0 77672  3224  FL65  CLA   COMMON+8                            21145PRT90103
05624  0765 00 0 00043  3225  FL67  LRS   35                                  21160PRT90106
05625  0221 00 0 05716  3226        DVP   A1-1          10.                     21165PRT90107
05626 -0600 00 0 77672  3227        STQ   COMMON+8      FRACTIONAL PART.        21170PRT90108
05627 -0520 00 0 05702  3228        NZT   FLZET
05630  0100 00 0 05635  3229        TZE   FL01
05631 -0602 00 0 05702  3230        ORS   FLZET
05632  0634 00 4 05634  3231        SXA   *+2,4         SAVE IR4.               21175PRT90109
05633  0074 00 4 05673  3232        TSX   INBCD,4       ENTER DIGIT.            21180PRT90110
05634  0774 00 4 00000  3233        AXT   **,4          RESTORE.                21185PRT90111
05635  2 00001 4 05623  3234  FL01  TIX   FL65,4,1                              21190PRT90112
05636 -0754 00 0 00000  3235        PXD   0,0
05637 -0520 00 0 05702  3236        NZT   FLZET
05640  0074 00 4 05673  3237        TSX   INBCD,4
05641  0500 00 0 00422  3238        CLA   A33           DEC. POINT.             21195PRT90113
05642  0074 00 4 05673  3239        TSX   INBCD,4       ENTER.                  21200PRT90114
05643 -0754 00 0 00000  3240        PXD   0,0
05644  0074 00 4 05673  3241        TSX   INBCD,4
05645  0560 00 0 77667  3242        LDQ   COMMON+5
05646 -0500 00 0 00427  3243        CAL   ONEBL         BLANK                   21220PRT90118
05647  0162 00 0 05651  3244        TQP   FL70          FOR PLUS.               21225PRT90119
05650 -0500 00 0 00423  3245        CAL   ONEMI         NEGATIVE.               21230PRT90120
05651  0074 00 4 05673  3246  FL70  TSX   INBCD,4       INSERT BLANK OR MINUS.  21235PRT90121
05652 -0754 00 2 00000  3247        PXD   0,2
05653 -0737 00 2 00000  3248        PDC   0,2
05654  0560 00 0 00471  3249        LDQ   ONES          FILL OUT LAST WORD WITH 77S
05655 -0500 00 1 05706  3250        CAL   FLOPB,1
05656 -0763 00 2 00000  3251        LGL   0,2
05657 -0130 00 0 00000  3252        XCL
05660  0131 00 0 00000  3253        XCA
05661  0074 00 4 05110  3254        TSX   $PRIN2,4
05662 -2 00001 1 05666  3255        TNX   FLNX,1,1
05663  0500 00 1 05706  3256        CLA   FLOPB,1
05664  0074 00 4 05110  3257        TSX   $PRIN2,4
```

```
05665  2 00001 1 05663   3258          TIX     *-2,1,1
05666  0774 00 4 00000   3259  FLNX    AXT     **,4
05667  0774 00 2 00000   3260  FLNY    AXT     **,2
05670  0774 00 1 00000   3261  FLNZ    AXT     **,1
05671 -0754 00 0 00000   3262          PXD     0,0
05672  0020 00 4 00001   3263          TRA     1,4
                         3264 *
05673 -0320 00 0 00413   3265  INBCD   ANA     A77
05674  0767 00 2 00044   3266          ALS     36,2
05675 -0602 00 1 05706   3267          ORS     FLOPB,1
05676  2 00006 2 05701   3268          TIX     *+3,2,6
05677  1 00001 1 05700   3269          TXI     *+1,1,1
05700  0774 00 2 00044   3270          AXT     36,2
05701  0020 00 4 00001   3271          TRA     1,4
                         3272 *
05702  0 00000 0 00000   3273  FLZET
05706                    3274  FLOPB   BES     3
05706  606060600000      3275  FLZPZ   VFD     H24/ 0.0,012/7777
05707 +000575360400      3276          DEC     100000000                                70100PRT90437
05710 +000046113200      3277          DEC     10000000                                 70101PRT90438
05711 +000003641100      3278          DEC     1000000                                  70102PRT90439
05712 +000000303240      3279          DEC     100000                                   70103PRT90440
05713 +000000023420      3280          DEC     10000                                    70104PRT90441
05714 +000000001750      3281  THSND   DEC     1000                                     70105PRT90442
05715 +000000000144      3282          DEC     100                                      70106PRT90443
05716 +000000000012      3283          DEC     10                                       70107PRT90444
05717 +000000000001      3284  A1      DEC     1                                        70108PRT90445
05720 +115040465025      3285  LOG2    OCT     115040465025      LOG BASE 10 OF 2.      70110PRT90446
05721 +324464741127      3286  LOG10   OCT     324464741127      LOG BASE 2 OF 10-4.    70115PRT90447
05722 +000001601225      3287  C7      OCT     1601225                                  70120PRT90448
05723 +000007762664      3288  C6      OCT     7762664                                  70125PRT90449
05724 +000132240566      3289  C5      OCT     132240566                                70130PRT90450
05725 +001164125106      3290  C4      OCT     1164125106                               70135PRT90451
05726 +007066267024      3291  C3      OCT     7066267024                               70140PRT90452
05727 +036577252307      3292  C2      OCT     36577252307                              70145PRT90453
05730 +130562064437      3293  C1      OCT     130562064437                             70150PRT90454
05731  2 00000 0 00000   3294  C0      TIX     0,0,0                                    70155PRT90455
                  00422  3295  A33     SYN     $Q033
                  00413  3296  A77     SYN     $Q63
                  00415  3297  A128    SYN     $Q128
                  00420  3298  ONEPL   SYN     $QO20
                  00410  3299  ONEE    SYN     $QO25
                  00423  3300  ONEMI   SYN     $QO40
                  00427  3301  ONEBL   SYN     $QO60
                  00471  3302  ONES    SYN     SEVENS
                         3303 *
                         3304          READ                                             LC286900
                         3305                                                           LC287000
                         3306          READ = SELECT(RD.,LPAR,READ1.,                   LC287100
                         3307                        LITER,INTERN.,                     LC287200
                         3308                        NUMB,INTERN.,                      LC287300
                         3309                        RPAR,ERROR.,                       LC287400
                         3310                        1;ERROR)                           LC287500
                         3311                                                           LC287600
```

```
                                                                                     LC290600
                                  READ1                                              LC290700
                                                                                     LC290800
                                  READ1 = SELECT(RD.,RPAR,0.,                        LC290900
                                                   LPAR,CONS(READ1,READ1).,          LC291000
                                                   LITER,CONS(INTERN,READ1).,        LC291100
                                                   NUMB,CONS(INTERN,READ1))          LC291200
                                                                                     LC291300
                       I         HED                                                 LC291400
05732  0634 00 4 05734   READ   SXA    REDS1,4         SAVE LINK IR
05733  0074 00 4 06026          TSX    $RD,4           GET FIRST ITEM
05734  0774 00 4 00000   REDS1  AXT    **,4            RESTORE LINK IR
05735  0340 00 0 06022   REDIS  CAS    RLPAR           DISPATCH ON TYPE OF ITEM READ
05736  0020 00 0 05740          TRA    *+2
05737  0020 00 0 05757          TRA    READ1           WAS (
05740  0340 00 0 06023          CAS    RRPAR
05741  0020 00 0 05743          TRA    *+2
05742  0020 00 0 05747          TRA    REDER
05743  0340 00 0 06024          CAS    RDOT
05744  0020 00 4 00001          TRA    1,4
05745  0020 00 0 05747          TRA    REDER
05746  0020 00 4 00001          TRA    1,4
05747 -0634 00 4 01562   REDER  SXD    $ERROR,4        MUST BE AN ERROR
05750  0601 00 0 03452          STO    RS2             SAVE TYPE
05751  0074 00 4 01222          TSX    OUTPUT,4        WRITE OUT INPUT BUFFER
05752  0 00000 0 00364                 BCDOUT
05753  0 00016 0 06351                 CELL-15,,14
05754  0500 00 0 03452          CLA    RS2             GET TYPE
05755  0074 00 4 01563          TSX    $ERROR+1,4      GO TO ERROR
05756  545160600154             BCI    1,*R  1*        CONTEXT ERROR
                         *
05757 -0634 00 4 03451   READ1  SXD    RS1,4           SAVE LINK IR
05760  0074 00 4 06026          TSX    $RD,4           GET NEXT ITEM
05761  0340 00 0 06023          CAS    RRPAR
05762  0020 00 0 05764          TRA    *+2
05763  0020 00 0 06003          TRA    RP1             WAS )  RETURN WITH NIL
05764  0074 00 4 02312          TSX    $SAVE,4
05765 -3 03454 0 02377          TXL    $END2,,RS2+2    SAVE 2 ITEMS
05766  0340 00 0 06024          CAS    RDOT
05767  0020 00 0 05771          TRA    *+2
05770  0020 00 0 06006          TRA    RP2             WAS .
05771  0340 00 0 06022          CAS    RLPAR
05772  0020 00 0 05774          TRA    *+2
05773  0074 00 4 05757          TSX    READ1,4
05774  0601 00 0 03452          STO    RS2             SAVE RESULTS
05775  0074 00 4 05757          TSX    READ1,4         GET NEXT ITEM
05776  0131 00 0 00000          XCA                    PUT IN MQ
05777  0500 00 0 03452          CLA    RS2             FIRST ITEM
06000  0074 00 4 02326          TSX    UNSAVE,4
06001 -0534 00 4 03451          LXD    RS1,4           RESTORE LINK IR
06002  0020 00 0 03730          TRA    $CONS           CONSTRUCT A LIST
                         *
06003 -0754 00 0 00000   RP1    PXD    0,0             WAS )  RETURN WITH NIL
06004 -0534 00 4 03451          LXD    RS1,4
```

```
06005  0020 00 4 00001  3366          TRA     1,4
                        3367 *
06006  0074 00 4 06026  3368  RP2     TSX     $RD,4           WAS .  GET NEXT ITEM
06007  0074 00 4 05735  3369          TSX     REDIS,4         DISPATCH ON IT
06010  0601 00 0 03452  3370          STO     RS2             SAVE RESULTS
06011  0074 00 4 06026  3371          TSX     $RD,4           GET NEXT ITEM
06012  0340 00 0 06023  3372          CAS     RRPAR           SHOULD BE )
06013  0020 00 0 05747  3373          TRA     REDER           GO TO ERROR IF NOT
06014  0020 00 0 06016  3374          TRA     *+2
06015  0020 00 0 05747  3375          TRA     REDER
06016  0500 00 0 03452  3376          CLA     RS2             GET ITEM READ
06017  0074 00 4 02326  3377          TSX     UNSAVE,4
06020 -0534 00 4 03451  3378          LXD     RS1,4           RESTORE LINK IR
06021  0020 00 4 00001  3379          TRA     1,4             RERURN WITH IT
                        3380 *
                 00505  3381 RLTR    SYN     QUOTED          SYMBOL FLAG
                 00476  3382  RNUMB  SYN     FLOATD          FLOAT (USED TO SIGNIFY ANY KIND NUMBER
                        3383 *
                        3384 I       HED                                                     LC296600
                        3385                                                                 LC296700
                        3386             RD(A)                                               LC296800
                        3387                                                                 LC296900
                        3388             READS BCD LISTS FROM CARDS (SW 1 DOWN) OR TAPE 4 (SW1 UP)  LC297000
                        3389                                                                 LC297100
06022  0 00531 0 00000  3390  RLPAR           ,,$H74D
06023  0 00527 0 00000  3391  RRPAR           ,,$H34D
06024  0 00526 0 00000  3392  RDOT            ,,$H33D
06025                    3393  RDVAL  BSS      0
06025  0 00000 0 00001  3394 LRCIS           1               CARD IMAGE EMPTY TEST CELL
06026  0500 00 0 06415  3395 RD      CLA     RDLST
06027  0100 00 0 06032  3396          TZE     RDAA            GO IF NOT
06030  0600 00 0 06415  3397          STZ     RDLST           OTHERWISE ZERO
06031  0020 00 4 00001  3398          TRA     1,4             AND EXIT
06032  0634 00 4 06063  3399  RDAA    SXA     RDX,4           SAVE INDEX REGISTERS
06033  0634 00 2 06070  3400          SXA     RDY,2
06034  0634 00 1 06067  3401          SXA     RDZ,1
06035  0604 00 0 06414  3402          STI     RDIND           SAVE THE INDICATORS
06036  0441 00 0 00370  3403          LDI     $ZERO
06037  0774 00 2 00006  3404  RDPTS   AXT     6,2             SET UP IR 2 AND 1
06040  0774 00 1 00014  3405  RDWDS   AXT     12,1
06041  0074 00 4 06172  3406  RDGC    TSX     GET,4           GET THE FIRST CHARACTER
06042  0734 00 4 00000  3407          PAX     0,4             TYPE TO INDEX REGISTER
06043  0020 00 4 06053  3408          TRA     RDJT1,4         DISPATCH ON TYPE
06044  0020 00 0 06072  3409          TRA     RDDLR           $
06045  0020 00 0 06122  3410          TRA     RDLT
06046  0020 00 0 06123  3411          TRA     RDNM            NUMBER
06047  0020 00 0 06041  3412          TRA     RDGC            ,
06050  0020 00 0 06062  3413          TRA     RDPU            (
06051  0020 00 0 06062  3414          TRA     RDPU            )
06052  0020 00 0 06062  3415          TRA     RDPU            .
06053  0074 00 4 01222  3416  RDJT1   TSX     OUTPUT,4        ILLEGAL CHARACTER
06054  0 00000 0 00364  3417                  BCDOUT
06055  0 00017 0 06353  3418                  RDPB,,15
06056 -0754 00 0 00000  3419          PXD     0,0             CLEAR AC
```

```
06057 -0634 00 4 01562   3420         SXD     $ERROR,4          SAVE IR 4
06060  0074 00 4 01563   3421         TSX     $ERROR+1,4        GO TO ERROR ROUTINE
06061  545160600354      3422         BCI     1,*R  3*
06062  0500 00 4 06025   3423 RDPU    CLA     RDVAL,4
06063  0774 00 4 00000   3424  RDX     AXT     **,4
06064  0634 00 2 06037   3425  RDFIN   SXA     RDPIS,2           SAVE INDEX REGISTERS
06065  0634 00 1 06040   3426          SXA     RDWDS,1
06066  0441 00 0 06414   3427          LDI     RDIND             RESTORE INDICATORS
06067  0774 00 1 00000   3428  RDZ     AXT     **,1              RESTORE INDEX REGISTERS
06070  0774 00 2 00000   3429  RDY     AXT     **,2
06071  0020 00 4 00001   3430          TRA     1,4               EXIT
                         3431 *
06072  0055 00  000003   3432  RDDLR   SIR     3                 SET FIRST CHARCTER AND LITERAL INDICAT
06073  0074 00 4 06172   3433          TSX     GET,4             IS NEXT CHARACTER A $
06074  0734 00 4 00000   3434          PAX     0,4               IF SO IT INDICATES A LITERAL STRING
06075  0500 00 0 06416   3435          CLA     GTVAL             SAVE VALUE OF GET
06076  0601 00 0 06413   3436          STO     RDDDC
06077  3 00006 4 06110   3437          TXH     RDDD,4,6          GO IF A $
06100  0634 00 4 06106   3438          SXA     RDT,4             NOT SO DO A REGULAR D
06101  0500 00 0 06412   3439          CLA     RDDLS             $
06102  0601 00 0 06416   3440          STO     GTVAL
06103  0074 00 4 06241   3441          TSX     PUT,4             PUT IN OUTPUT BUFFER
06104  0500 00 0 06413   3442          CLA     RDDDC             LAST VALUE OF GET
06105  0601 00 0 06416   3443          STO     GTVAL
06106  0774 00 4 00000   3444  RDT     AXT     **,4              TYPE OF LAST CHARACTER
06107  0020 00 4 06137   3445          TRA     RDJT2,4           DISPATCH ON TYPE
                         3446 *
06110  0074 00 4 06172   3447  RDDD    TSX     GET,4             IS A LITERAL STRING
06111  0500 00 0 06416   3448          CLA     GTVAL             USE THIS ITEM AS A DELIMITER
06112  0601 00 0 06413   3449          STO     RDDDC
06113  0074 00 4 06172   3450  RDDDL   TSX     GET,4             GET NEXT CHARACTER
06114  0500 00 0 06413   3451          CLA     RDDDC             GET DELIMITER
06115  0340 00 0 06416   3452          CAS     GTVAL             COMPARE WITH CHARACTER JUST READ
06116  0020 00 0 06120   3453          TRA     *+2               NO
06117  0020 00 0 06142   3454          TRA     RDXT              YES, EXIT
06120  0074 00 4 06241   3455          TSX     PUT,4             NO, PUT AWAY THE CHARACTER
06121  0020 00 0 06113   3456          TRA     RDDDL             GET NEXT CHARACTER
                         3457 *
06122  0055 00  000002   3458  RDLT    SIR     2                 SET LITERAL INDICATOR
06123  0055 00  000001   3459  RDNM    SIR     1                 SET FIRST CHARACTER INDICATOR
06124  0074 00 4 06241   3460  RDNN    TSX     PUT,4             PUT THE CHARACTER AWAY
06125  0074 00 4 06172   3461          TSX     GET,4             GET NEXT CHARACTER
06126  0734 00 4 00000   3462          PAX     0,4
06127  0020 00 4 06137   3463          TRA     RDJT2,4           DISPATCH ON TYPE
06130  0020 00 0 06124   3464          TRA     RDNN              $
06131  0020 00 0 06124   3465          TRA     RDNN              LITERAL
06132  0020 00 0 06124   3466          TRA     RDNN              NUMBER
06133  0020 00 0 06142   3467          TRA     RDXT              ,
06134  0020 00 0 06140   3468          TRA     RDPS              (
06135  0020 00 0 06140   3469          TRA     RDPS              )
06136  0020 00 0 06164   3470          TRA     RDPD              .
06137  0020 00 0 06053   3471  RDJT2   TRA     RDJT1             ILLEGAL CHARACTER
                         3472 *
06140  0500 00 4 06025   3473 RDPS    CLA     RDVAL,4           SETUP RDLST CELL
```

```
06141  0601 00 0 06415   3474         STO   RDLST
06142  0534 00 4 06246   3475  RDXT   LXA   PUTMC,4     CHARACTER COUNT
06143 -0754 00 0 00000   3476         PXD   0,0         CLEAR AC
06144  3 00005 4 06162   3477         TXH   TPF,4,5     GO IF LAST WORD COMPLETED
06145  0560 00 0 00471   3478         LDQ   SEVENS      GET 77 S
06146  0522 00 4 06327   3479         XEC   PTSFT-1,4   PROPER SHIFT
06147  0774 00 4 00006   3480         AXT   6,4         RESET CHARACTER COUNT
06150  0634 00 4 06246   3481         SXA   PUTMC,4
06151  0534 00 4 06254   3482         LXA   PUTPC,4     WORD COUNT
06152 -0602 00 4 06335   3483         ORS   RDPNB,4     PUT IN PNAME BUFFER
06153 -0754 00 0 00000   3484         PXD   0,0         CLEAR AC
06154  0622 00 4 06343   3485  TPFA   STO   PUTVL+6,4   CHOP OFF PNMAE SAUSAGE
06155  0500 00 0 06335   3486         CLA   PUTVL       GET VALUE
06156 -0774 00 4 06062   3487         AXC   RDPU,4      SET UP TRANSFER TO EXIT
06157  0056 00  000002   3488         RNT   2           TEST LITERAL INDICATOR
06160  0020 00 0 06543   3489         TRA   $NUTRN      MAKE IT A NUMBER
06161  0020 00 0 06420   3490         TRA   INTRN1      MAKE IT AN OBJECT
                         3491 *
06162  0534 00 4 06254   3492  TPF    LXA   PUTPC,4     CORRECT PART COUNT
06163  1 00001 4 06154   3493         TXI   TPFA,4,1
                         3494 *
06164  0054 00  000002   3495  RDPD   RFT   2           TEST FOR LITERAL
06165  0020 00 0 06140   3496         TRA   RDPS        FIRST . TERMONATES A LITERAL
06166  0054 00  000020   3497         RFT   20          TEST FOR FIRST DOT IN A NUMBER
06167  0020 00 0 06140   3498         TRA   RDPS        SECOND . TERMINATES A NUMBER
06170  0055 00  000020   3499         SIR   20          SET DOT INDICATOR
06171  0020 00 0 06124   3500         TRA   RDNN
                         3501 *
06172  0634 00 4 06220   3502  GET    SXA   GTX,4       SAVE LINK IR
06173  0520 00 0 06025   3503         ZET   LRCIS       TEST FOR NEW CARD NEEDED
06174  0020 00 0 06227   3504         TRA   GTGCD       GET A NEW CAERD
06175 -0754 00 0 00000   3505  GETGO  PXD   0,0         CLEAR AC
06176  0560 00 1 06370   3506         LDQ   CELL,1      GET NEXT WORD
06177 -0763 00 0 00003   3507         LGL   3           HIGH ORDER BITS
06200  0734 00 4 00000   3508         PAX   0,4
06201 -0763 00 0 00003   3509         LGL   3           CHARACTER
06202  0340 00 0 00416   3510         CAS   $Q014       IS IT ILLEGAL MINUS SIGN
06203  0020 00 0 06205   3511         TRA   *+2         NO
06204  0500 00 0 00423   3512         CLA   $Q040       YES GET LEGAL ONE
06205  0601 00 0 06416   3513         STO   GTVAL       VALUE OF GET FOR PUT
06206 -0320 00 0 00377   3514         ANA   $Q7         MASK OUT HIGH ORDER BIT
06207  0621 00 0 06213   3515         STA   GTPT
06210 -0600 00 1 06370   3516         STQ   CELL,1      UPDATE WORD
06211 -2 00001 2 06222   3517         TNX   GTPC,2,1    UPDATE PART COUNT
06212  0560 00 4 06352   3518  GTMC   LDQ   GTTBL,4     GET TABLE ENTRY
06213 -0763 00 0 00000   3519  GTPT   LGL   **          SHIFT PROPER ITEM TO AC
06214  0522 00 0 06213   3520         XEC   GTPT
06215  0522 00 0 06213   3521         XEC   GTPT
06216 -0754 00 0 00000   3522         PXD   0,0         CLEAR AC
06217 -0763 00 0 00003   3523         LGL   3           TYPE NOW IN AC
06220  0774 00 4 00000   3524  GTX    AXT   **,4        RESTORE LINK IR
06221  0020 00 4 00001   3525         TRA   1,4
                         3526 *
06222  0774 00 2 00006   3527  GTPC   AXT   6,2         RELOAD PART COUNT
```

```
06223  2 00001 1 06212   3528          TIX     GTMC,1,1        GO IF NEW WORD NOT NEEDED
06224 -0625 00 0 06025   3529          STL     LRCIS           GET NEW CARD
06225  0774 00 1 00014   3530          AXT     12,1            ERELOAD IR 1
06226  0020 00 0 06212   3531          TRA     GTMC            GO BACJ
                         3532 *
06227  0074 00 4 00663   3533  GTGCD   TSX     $INPUT,4
06230  0 00000 0 00000   3534          $BCDIN
06231  0 00034 0 06354   3535          LWPO,,28                GET NEXT BCD CARD
06232  0020 00 0 06234   3536          TRA     *+2             IGNORE REDUNDNACY ERROR
06233  0020 00 0 06236   3537          TRA     GTEOF           EOF RETURN
06234  0600 00 0 06025   3538          STZ     LRCIS           SET SWITCH THAT CARD IS PRESENT
06235  0020 00 0 06175   3539          TRA     GETGO           NO GO ON
                         3540 *
06236 -0754 00 0 00000   3541  GTEOF   PXD     0,0             CLEAR AC
06237  0074 00 4 01562   3542          TSX     $ERROR,4        GO TO ERROR
06240  545160600454      3543          BCI     1,*R  4*        EOF ON READ IN
                         3544 *
06241  0054 00  000040   3545  PUT     RFT     40              TEST TO SEE IF TOOMUCH PNAME
06242  0020 00 0 06270   3546          TRA     PTTFA           GO TO ERROR COMMENT
06243  0634 00 4 06256   3547          SXA     PUTX,4          SAVE LINK IR
06244  0056 00  000010   3548          RNT     10              TEST FOR FIRST TIME THRU
06245  0020 00 0 06276   3549          TRA     PUTZB           ZERO PNAME BUFFER
06246  0774 00 4 00006   3550  PUTMC   AXT     6,4             CHARACTER COUNT
06247  0500 00 0 06416   3551          CLA     GTVAL           GET CHARACTER
06250  0560 00 0 00370   3552          LDQ     $ZERO
06251  0522 00 4 06330   3553          XEC     PTSFT,4         PROPER SHIFT TO CHARACTER
06252 -2 00001 4 06260   3554          TNX     PTRFP,4,1       DECREMENT CHARACTER COUNT
06253  0634 00 4 06246   3555          SXA     PUTMC,4         UPDATE COUNT CELL
06254  0774 00 4 00005   3556  PUTPC   AXT     5,4             NUMBER OF WORDS IN PNAME
06255 -0602 00 4 06335   3557  PUTGA   ORS     RDPNB,4         PUT CHARACTER IN
06256  0774 00 4 00000   3558  PUTX    AXT     **,4            RESTORE LINK IR
06257  0020 00 4 00001   3559          TRA     1,4             EXIT
06260  0774 00 4 00006   3560  PTRFP   AXT     6,4             RELOAD PART COUNT
06261  0634 00 4 06246   3561          SXA     PUTMC,4
06262  0534 00 4 06254   3562          LXA     PUTPC,4         WORD COUNT
06263 -0602 00 4 06335   3563          ORS     RDPNB,4
06264  2 00001 4 06266   3564          TIX     *+2,4,1         DECREMENT WORD COUNT
06265  0055 00  000040   3565          SIR     40              INDICATE PNAME BUFFER FULL
06266  0634 00 4 06254   3566          SXA     PUTPC,4         UPDATE COUNTER
06267  0020 00 0 06256   3567          TRA     PUTX            GO ON
                         3568 *
06270  0074 00 4 01222   3569  PTTFA   TSX     OUTPUT,4        TOO MANY CHARACTERS
06271  0 00000 0 00364   3570          BCDOUT                  WRITE OUT PNAME SO FAR
06272  0 00006 0 06327   3571          RDPNB-6,,6
06273 -0754 00 0 00000   3572          PXD     0,0             CLEAR AC
06274  0074 00 4 01562   3573          TSX     $ERROR,4        GO TO ERROR
06275  545160600554      3574          BCI     1,*R  5*
                         3575 *
06276  0055 00  000010   3576  PUTZB   SIR     10              SET SWITCH
06277  0774 00 4 00005   3577          AXT     5,4             FIX UP BUFFER
06300  0634 00 4 06254   3578          SXA     PUTPC,4         AND PART COUNT
06301  0600 00 4 06335   3579          STZ     RDPNB,4
06302  2 00001 4 06301   3580          TIX     *-1,4,1
06303  0500 00 0 06335   3581          CLA     PUTVL           RELINK THE WORDS
```

```
06304  0774 00 4 00005   3582          AXT   5,4
06305  0402 00 0 00442   3583          SUB   $QD1          SET POINTERS
06306  0622 00 4 06343   3584          STD   PUTVL+6,4
06307  2 00001 4 06305   3585          TIX   *-2,4,1
06310  0020 00 0 06246   3586          TRA   PUTMC
                         3587 *
06311 -0625 00 0 06025   3588 TEREAD    STL   LRCIS        SET SWITCH TO GET A NEW CARD
06312  0500 00 0 00376   3589          CLA   $Q6           SET CELLS
06313  0621 00 0 06037   3590          STA   RDPTS
06314  0621 00 0 06246   3591          STA   PUTMC
06315  0500 00 0 00403   3592          CLA   $Q12
06316  0621 00 0 06040   3593          STA   RDWDS
06317  0600 00 0 06415   3594          STZ   RDLST
06320 -0754 00 0 00000   3595          PXD   0,0           CLEAR AC
06321  0020 00 4 00001   3596          TRA   1,4           EXIT
                         3597 *
06322 -0763 00 0 00036   3598          LGL   30
06323 -0763 00 0 00030   3599          LGL   24
06324 -0763 00 0 00022   3600          LGL   18
06325 -0763 00 0 00014   3601          LGL   12
06326 -0763 00 0 00006   3602          LGL   6
06327  0761 00 0 00000   3603          NOP
06330                    3604  PTSFT    BSS   0
06335                    3605 RDPNB     BES   5
06335  0 71442 0 00000   3606  PUTVL           ,,-*-1        VALUE OF RDA
06336  0 71441 0 71450   3607                  -RDPNB+5,,-*-1 FOR INTERN OF NUTRN
06337  0 71440 0 71447   3608                  -RDPNB+4,,-*-1
06340  0 71437 0 71446   3609                  -RDPNB+3,,-*-1
06341  0 71436 0 71445   3610                  -RDPNB+2,,-*-1
06342  0 00000 0 71444   3611                  -RDPNB+1
06343 -260430000000      3612          OCT   660430000000,466666660000,660760000000,566666660000
06344 -066666660000
06345 -260760000000
06346 -166666660000
06347 -260120000000      3613          OCT   660120000000,566666660000,350650000000
06350 -166666660000
06351 -150650000000
06352 -155555550000      3614  GTTBL   OCT   555555550000
06353  006060606060      3615  RDPB    BCI   1,0
06354  0 00000 0 00000   3616  LWPO
06355  0 00000 0 00000   3617  LWCKS
06370                    3618  CELL    BES   10
06404                    3619  LWOPB   BES   12
06404                    3620          BSS   6             ROOM FOR ID AND LLOK AHEAD BITS
06412  000000000053      3621  RDDLS   BCI   1,00000$
06413  0 00000 0 00000   3622  RDDDC
06414  0 00000 0 00000   3623  RDIND                       INDICATOR STORAGE
06415  0 00000 0 00000   3624 RDLST
06416  0 00000 0 00000   3625 GTVAL
                         3626 *
                         3627                                                    LC326700
                         3628          INTERN                                    LC326800
                         3629                                                    LC327800
                         3630 I        HED                                       LC327900
```

```
                          3631 *                                                              1.5M7880
                          3632 * INTERN       CHANGED AND MODIFIED TO INCLUDE EXTERNAL ENTRANCES AND  1.5M7890
                          3633 *              THE BUCKET SORT                                 1.5M7900
                          3634 *                                                              1.5M7910
06417 -0600 00 0 06534    3635 BUKSRT STQ     BSRT         ATOM TO BE PLACED (CNSFWL ENTRANCE) 1.5M7930
06420  0601 00 0 06533    3636 INTRN1 STO     $VALUE       EXTERNAL ENTRANCE FROM APPLY       1.5M7940
06421  0634 00 4 06525    3637 INTERN SXA     ITRX,4       ENTRANCE FROM READ                 1.5M7950
06422  0634 00 2 06526    3638        SXA     ITRY,2       SAVE IR S                          1.5M7960
06423 -0534 00 4 06533    3639        LXD     $VALUE,4     PICK UP POINTER TO PNAME LIST      1.5M7970
06424  0500 00 4 00000    3640        CLA     0,4          GET FIRST WORD OF PNAME            1.5M7980
06425  0734 00 4 00000    3641        PAX     0,4                                             1.5M7990
06426 -0500 00 4 00000    3642        CAL     0,4          GET FIRST WORD IN LOGICAL AC
06427  0765 00 0 00043    3643        LRS     35           PUT IN MQ AND BIT 35 OF AC
06430  0221 00 0 06535    3644        DVP     BUCKNO       DIVIDE BY NUMBER OF BUCKETS        1.5M8010
06431  0760 00 0 00012    3645        DCT                  CHECK DIVISION                     1.5M8020
06432  0074 00 4 01676    3646        TSX     $DCT,4       DIVIDE ERROR                       1.5M8030
06433  0734 00 4 00000    3647        PAX     0,4          REMAINDER TO IR 4                  1.5M8040
06434  0500 00 4 66427    3648        CLA     BUCKET,4     PICK UP BUCKET                     1.5M8050
06435  0634 00 4 06522    3649        SXA     BUCK,4       SAVE THE REMAINDER
06436  0734 00 4 00000    3650        PAX     0,4                                             1.5M8090
06437 -0634 00 4 06540    3651        SXD     05,4         SET UP WORD                        1.5M8100
06440  0520 00 0 06534    3652        ZET     BSRT         TEST FOR CNSFWL ENTRANCE           1.5M8110
06441  0020 00 0 06530    3653        TRA     INTAD        YES, GO                            1.5M8120
06442 -0634 00 4 06536    3654        SXD 01,4                                                LC328200
06443 -0534 00 4 06536    3655 04     LXD 01,4             NEXT OBJECT                        LC328300
06444 -3 00000 4 06504    3656        TXL OUT,4,0          END OF OBLIST                      LC328400
06445  0500 00 4 00000    3657        CLA ,4                                                  LC328500
06446  0622 00 0 06536    3658        STD 01                                                  LC328600
06447  0734 00 4 00000    3659        PAX ,4               OBJECT M/C NAME                    LC328700
06450 -0634 00 4 06537    3660        SXD 02,4             PRESERVE IT                        LC328800
06451  0500 00 4 00000    3661        CLA ,4                                                  LC328900
06452 -0734 00 4 00000    3662 03     PDX ,4               ADDRESS PART IS -1                 LC329000
06453 -3 00000 4 06443    3663        TXL 04,4,0           END OF PROPERTY LIST               LC329100
06454  0500 00 4 00000    3664        CLA ,4                                                  LC329200
06455  0734 00 4 00000    3665        PAX ,4                                                  LC329300
06456 -3 07334 4 06452    3666        TXL 03,4,$PNAME-1    NO                                 LC329400
06457  3 07335 4 06452    3667        TXH 03,4,$PNAME      NO                                 LC329500
06460 -0734 00 4 00000    3668        PDX ,4               YES IT IS                          LC329600
06461  0500 00 4 00000    3669        CLA ,4                                                  LC329700
06462  0734 00 4 00000    3670        PAX ,4               U                                  LC329800
06463 -0534 00 2 06533    3671        LXD $VALUE,2         V                                  LC329900
06464 -3 00000 2 06443    3672 07     TXL     04,2,0                                              4000
06465  0500 00 4 00000    3673        CLA     0,4                                                 4010
06466  0622 00 0 06542    3674        STD Q4               CDR(U)                             LC330100
06467  0734 00 4 00000    3675        PAX ,4               CAR(U)                             LC330200
06470  0500 00 2 00000    3676        CLA ,2                                                  LC330300
06471  0622 00 0 06541    3677        STD Q2               CDR(V)                             LC330400
06472  0734 00 2 00000    3678        PAX ,2                                                  LC330500
06473  0500 00 4 00000    3679        CLA ,4                CWR(CAR(U))                       LC330600
06474  0402 00 2 00000    3680        SUB ,2               -CWR(CAR(V))                       LC330700
06475 -0100 00 0 06443    3681        TNZ 04               NOT THE SAME,NEXT OBJECT           LC330800
06476 -0534 00 4 06542    3682        LXD Q4,4             CDR(U)                             LC330900
06477 -0534 00 2 06541    3683        LXD Q2,2                                                LC331000
06500  3 00000 4 06464    3684        TXH 07,4,0           IF NOT YET END OF NAME             LC331100
```

```
06501  3 00000 2 06443  3685          TXH 04,2,0      IF U,V OF DIFFERENT LENGTH,NEXT   LC331200
06502  0500 00 0 06537  3686          CLA 02                                            LC331300
06503  0020 00 0 06525  3687          TRA     ITRX                                        4020
06504  0500 00 0 06533  3688  OUT     CLA $VALUE                                        LC331600
06505  0074 00 4 07343  3689          TSX $CP1,4                                        LC331700
06506  0560 00 0 00370  3690          LDQ     $ZERO                                       4030
06507  0074 00 4 03730  3691          TSX $CONS,4                                       LC331900
06510  0131 00 0 00000  3692          XCA                                                 4040
06511  0500 00 0 00504  3693          CLA OPNA                                          LC332200
06512  0074 00 4 03730  3694          TSX $CONS,4                                       LC332300
06513  0131 00 0 00000  3695          XCA                 INTO MQ                       1.5M8180
06514  0500 00 0 00460  3696          CLA     $DMASK      ATOM SYMBOL                   1.5M8190
06515  0074 00 4 03730  3697          TSX     $CONS,4     MAKE IT AN ATOM               1.5M8200
06516  0560 00 0 06540  3698  INTCN   LDQ     05          LIST OF ATOMS IN BUCKET       1.5M8210
06517  0622 00 0 06540  3699          STD     05          SAVE ATOM AS ANSWER           1.5M8220
06520  0074 00 4 03730  3700          TSX     $CONS,4     ATTACH TO BEGINNING OF LIST   1.5M8230
06521  0771 00 0 00022  3701          ARS     18          PUT IN ADDRESS                1.5M8240
06522  0774 00 4 00000  3702  BUCK    AXT     **,4        BUCKET NUMBER
06523  0621 00 4 66427  3703          STA     BUCKET,4    PUT IN PROPER BUCJET
06524  0500 00 0 06540  3704          CLA     05          ATOM AS ANSWER                1.5M8270
06525  0774 00 4 00000  3705  ITRX    AXT     **,4        RESTORE LINK IR               1.5M8280
06526  0774 00 2 00000  3706  ITRY    AXT     **,2                                      1.5M8290
06527  0020 00 4 00001  3707          TRA     1,4         EXIT                          1.5M8300
06530  0500 00 0 06534  3708  INTAD   CLA     BSRT        PICK UP ATOM                  1.5M8150
06531  0600 00 0 06534  3709          STZ     BSRT        ZERO LOCATION                 1.5M8160
06532  0020 00 0 06516  3710          TRA     INTCN       PLACE ATOM IN BICKET          1.5M8170
06533  0 00000 0 00000  3711  VALUE                       POINTER TO PNAME LIST
06534  0 00000 0 00000  3712  BSRT                        ATOM ON CNSFWL WENTRANCE      1.5M8320
06535  0 00000 0 00177  3713  BUCKNO  PZE     127         NUMBER OF BUCKETS
                        3714  *                                                         1.5M8140
06536  0 00000 0 00000  3715  01                                                        LC332700
06537  0 00000 0 00000  3716  02                                                        LC332800
06540  0 00000 0 00000  3717  05                                                        LC332900
                00504    3718  OPNA    SYN     PNAMED                                  LC333000
06541  0 00000 0 00000  3719  Q2                                                        LC333200
06542  0 00000 0 00000  3720  Q4                                                        LC333300
                        3721                                                          LC333400
                        3722  T         HED                                         LC333500
06543  0634 00 4 06617  3723  NUTRN   SXA     NX4,4       SAVE INDEX REGISYERS
06544  0634 00 2 06616  3724          SXA     NX2,2
06545  0634 00 1 06615  3725          SXA     NX1,1
06546  0774 00 1 00006  3726          AXT 6,1                                           LC333900
06547 -0534 00 4 06533  3727          LXD $VALUE,4                                      LC334000
06550  0500 00 4 00000  3728  NA1     CLA 0,4                                           LC334100
06551 -0734 00 4 00000  3729          PDX 0,4                                           LC334200
06552  0734 00 2 00000  3730          PAX 0,2                                           LC334300
06553  0500 00 2 00000  3731          CLA 0,2                                           LC334400
06554  0601 00 1 07333  3732          STO BUFFER+6,1                                    LC334500
06555 -3 00000 4 06566  3733          TXL NA2,4,0                                       LC334600
06556  2 00001 1 06550  3734          TIX NA1,1,1                                       LC334700
06557 -0634 00 4 01562  3735  NE      SXD $ERROR,4                                      LC334800
06560  0074 00 4 01222  3736          TSX OUTPUT,4                                      LC334900
06561  0 00000 0 00364  3737              BCDOUT                                        LC335000
06562  0 00016 0 06351  3738              I$CELL-15,,14                                 LC335100
```

```
06563 -0754 00 0 00000  3739        PXD     0,0             CLEAR AC
06564  0074 00 4 01563  3740        TSX $ERROR+1,4                                  LC335200
06565  545160600654     3741        BCI     1,*R  6*        NUMBER TOO LARGE IN CONVERSION
06566  0500 00 0 00472  3742  NA2   CLA BLANKS                                      LC335600
06567  0601 00 1 07334  3743        STO BUFFER+7,1                                  LC335700
06570  0500 00 0 06621  3744        CLA     KBPOS           PARAMETER FOR NUMBR     RDCX0032
06571  0074 00 4 06622  3745        TSX     $NUMBR,4        NUMBER TO MQ            RDCX0033
06572  0100 00 0 06557  3746        TZE     NE              OUT-OF-RANGE ERROR      RDCX0034
06573 -0120 00 0 06612  3747        TMI     NA7             TRA IF FLOATING NUMBER  RDCX0035
06574 -0760 00 0 00001  3748        PBT                     TEST FOR OCTAL NUMBER
06575  0020 00 0 06601  3749        TRA     NA3             TRA IF OCTAL
06576  0500 00 0 00503  3750        CLA     $OCTD           OCTAL SIGNAL FOR $MKNO
06577  0131 00 0 00000  3751        XCA
06600  0020 00 0 06614  3752        TRA     NA8
06601  0131 00 0 00000  3753  NA3   XCA                     NUMBER TO AC
06602  0560 00 0 00475  3754        LDQ     $FIXD           FIX TO MQ
06603 -0120 00 0 06614  3755        TMI     NA8
06604  0340 00 0 00402  3756        CAS     $Q10            TEST FOR 0 THRU 9
06605  0020 00 0 06614  3757        TRA     NA8
06606  0020 00 0 06614  3758        TRA     NA8
06607  0361 00 0 00521  3759        ACL     $H00A           FORM PRINT OBJECT
06610  0767 00 0 00022  3760        ALS     18
06611  0020 00 0 06615  3761        TRA     NX1
06612  0500 00 0 00476  3762  NA7   CLA     FLOATD          FLOAT SIGNAL FOR $MKNO
06613  0131 00 0 00000  3763        XCA                     NUMBER TO AC            RDCX0036
06614  0074 00 4 12636  3764  NA8   TSX     $MKNO,4         MAKE A NUMBER
06615  0774 00 1 00000  3765  NX1   AXT     **,1            RESTORE INDEX REGISTERS
06616  0774 00 2 00000  3766  NX2   AXT     **,2
06617  0774 00 4 00000  3767  NX4   AXT     **,4
06620  0020 00 4 00001  3768        TRA     1,4                                     RDCX0053
06621  0 00001 0 07325  3769  KBPOS PZE     BUFFER,,1                               RDCX0055
                        3770                                                        LC339000
                        3771                                                        LC339100
                        3772 F        HED                                           RDCS0010
                        3773                                                        NUMB0000
                        3774            NUMBR CONVERTS PACKED BCD CHARACTERS TO A NUMBER WHICH   NUMB0001
                        3775            APPEARS IN MQ.  DBC CONVENTIONS ARE FOLLOWED.  OCTAL     NUMB0002
                        3776            NUMBERS ARE SIGNALLED BY Q AND MAY BE FOLLOWED BY A      NUMB0003
                        3777            SCALE FACTOR.                                            NUMB0004
                        3778                                                                     NUMB0005
                        3779            ROUTINE STOLEN FROM UADBC1                               NUMB0006
                        3780                                                                     NUMB0007
                        3781                                                                     NUMB0008
06622  0634 00 1 07155  3782  NUMBR SXA PX1,1          SAVE INDEX REGISTERS                    NUMB0009
06623  0634 00 2 07156  3783        SXA PX2,2                                                  NUMB0010
06624  0634 00 4 07157  3784        SXA PX4,4                                                  NUMB0011
06625  0602 00 0 77665  3785        SLW T                                                      NUMB0012
06626  0737 00 2 00000  3786        PAC ,2            IR2 HAS WORD COUNT                       NUMB0013
06627 -0737 00 1 00000  3787        PDC ,1            IR1 WILL GET CHARACTER COUNT             NUMB0014
06630  0771 00 0 00021  3788        ARS 17                                                     NUMB0015
06631  0601 00 0 77666  3789        STO N                                                      NUMB0016
06632  0767 00 0 00001  3790        ALS 1                                                      NUMB0017
06633  0400 00 0 77666  3791        ADD N                                                      NUMB0018
06634  0737 00 4 00000  3792        PAC ,4                                                     NUMB0019
```

```
06635  0560 00 2 00000   3793          LDQ 0,2          PUT BCD WORD IN MQ                          NUMB0020
06636 -0763 00 4 77772   3794          LGL -6,4         SHIFT OUT EXTRA CHARACTERS                  NUMB0021
06637 -0600 00 0 77662   3795          STQ MQ           SAVE FIRST BATCH OF CHARACTERS              NUMB0022
06640  1 00007 1 06641   3796          TXI *+1,1,7                                                  NUMB0023
                         3797                                                                       NUMB0024
                         3798              LOOK AT CHARACTERS UNTIL A Q OR NON-OCTAL CHARACTER APPEARS  NUMB0025
                         3799                                                                       NUMB0026
06641 -0754 00 0 00000   3800 CY3      PXD      ,0
06642 -0763 00 0 00006   3801          LGL 6                                                        NUMB0028
06643  0402 00 0 00400   3802          SUB Q8           TEST FOR OCTAL DIGIT                        NUMB0029
06644  0120 00 0 06651   3803          TPL CY4                                                      NUMB0030
06645  2 00001 1 06641   3804 CY2      TIX CY3,1,1      GET NEXT CHARACTER                          NUMB0031
06646  1 77777 2 06647   3805          TXI *+1,2,-1                                                 NUMB0032
06647  0560 00 2 00000   3806          LDQ 0,2                                                      NUMB0033
06650  1 00005 1 06641   3807          TXI CY3,1,5                                                  NUMB0034
06651  0400 00 0 00400   3808 CY4      ADD Q8                                                       NUMB0035
06652  0340 00 0 00426   3809          CAS Q                                                        NUMB0036
06653  0020 00 0 06666   3810          TRA DECNO                                                    NUMB0037
06654  0020 00 0 07170   3811          TRA OCTNO        IF Q, NUMBER IS OCTAL                       NUMB0038
06655  0340 00 0 00423   3812          CAS MINUS        IF CHARACTER IS MINUS, PLUS, OR DASH,       NUMB0039
06656  0020 00 0 06666   3813          TRA DECNO          LOOK AT MORE CHARACTERS,                  NUMB0040
06657  0020 00 0 06645   3814          TRA CY2            OTHERWISE NUMBER IS DECIMAL               NUMB0041
06660  0340 00 0 00420   3815          CAS PLUS                                                     NUMB0042
06661  0020 00 0 06666   3816          TRA DECNO                                                    NUMB0043
06662  0020 00 0 06645   3817          TRA CY2                                                      NUMB0044
06663  0340 00 0 00416   3818          CAS DASH                                                     NUMB0045
06664  0020 00 0 06666   3819          TRA DECNO                                                    NUMB0046
06665  0020 00 0 06645   3820          TRA CY2                                                      NUMB0047
                         3821                                                                       NUMB0048
06666  0535 00 2 77665   3822 DECNO    LAC T,2          IR2 HAS WORD COUNT                          NUMB0049
06667 -0535 00 1 77665   3823          LDC T,1          IR1 WILL GET CHARACTER COUNT                NUMB0050
06670  0560 00 0 77662   3824          LDQ MQ           RESTORE FIRST GROUP OF CHARACTERS           NUMB0051
06671 -0754 00 0 00000   3825          PXD      ,0
06672  0602 00 0 77662   3826 BN2      SLW BN           REGISTERS                                   NUMB0053
06673  0602 00 0 77663   3827 EX2      SLW EXPN                                                     NUMB0054
06674  0602 00 0 77666   3828 INTN     SLW N                                                        NUMB0055
06675 -0534 00 4 00402   3829          LXD Q10,4        SET DECIMAL COUNT TO ZERO                   NUMB0056
06676 -0500 00 0 06766   3830          CAL SW1          RESET SWITCHES FOR                          NUMB0057
06677  0630 00 0 07033   3831          STP CM2           FIXED POINT                                NUMB0058
06700  0630 00 0 07106   3832          STP CM6           X                                          NUMB0059
06701  0630 00 0 07011   3833          STP EXS           EXP                                        NUMB0060
06702  0630 00 0 07035   3834          STP CM3           POINT                                      NUMB0061
06703  0630 00 0 07020   3835          STP CX3           DECIMAL NUMBER                             NUMB0062
06704 -0500 00 0 06674   3836          CAL INTN         INITIALIZE CONVERSION                       NUMB0063
06705  1 00010 1 06720   3837          TXI BN3,1,8      FIX INITIAL CHARACTER COUNT                 NUMB0064
06706  0502 00 0 07035   3838 PT1      CLS CM3          INVERT SWITCH TO SIGNAL DECIMAL POINT       NUMB0065
06707  0601 00 0 07035   3839          STO CM3                                                      NUMB0066
06710 -0500 00 0 06743   3840          CAL CV3                                                      NUMB0067
06711  0621 00 0 06760   3841          STA CV5          ROUTINE TO COUNT                            NUMB0068
06712  0621 00 0 06763   3842          STA CV6          DECIMAL PLACES                              NUMB0069
06713  1 00001 4 06760   3843          TXI CV5,4,1                                                  NUMB0070
06714  1 77777 4 06743   3844 PT3      TXI CV3,4,-1     COUNT DECIMAL PLACES                        NUMB0071
06715  0502 00 0 07011   3845 EX1      CLS EXS          INVERT SWITCH TO SIGNAL EXPONENT            NUMB0072
06716  0601 00 0 07011   3846          STO EXS                                                      NUMB0073
```

```
06717 -0500 00 0 06673  3847        CAL EX2       SET UP EXPONENT CONVERSION                    NUMB0074
06720  0621 00 0 06751  3848  BN3   STORE CV7     STORE CONVERSION                              NUMB0075
06721  0621 00 0 06753  3849        STA CV8       ADDRESS                                       NUMB0076
06722  0621 00 0 06757  3850        STA CV9                                                     NUMB0077
06723 -0500 00 0 06714  3851        CAL PT3       INITIAL CONVERSION                            NUMB0078
06724  0621 00 0 06760  3852        STA CV5       WITHOUT DECIMAL COUNT                         NUMB0079
06725  0621 00 0 06763  3853        STA CV6                                                     NUMB0080
06726 -0500 00 0 06753  3854  PL1   CAL CV8                                                     NUMB0081
06727  0622 00 0 06755  3855  MN3   STD CV10                                                    NUMB0082
06730  0140 00 0 06760  3856        TOV CV5                                                     NUMB0083
06731 -3 00000 0 06760  3857        TXL CV5                                                     NUMB0084
06732  0500 00 0 07033  3858  BN1   CLA CM2       INVERT SWITCHES TO SIGNAL FIXED POINT         NUMB0085
06733  0630 00 0 07033  3859        STP CM2                                                     NUMB0086
06734  0630 00 0 07106  3860        STP CM6                                                     NUMB0087
06735 -0500 00 0 06672  3861        CAL BN2       SET UP B CONVERSION                           NUMB0088
06736 -3 00000 0 06720  3862        TXL BN3                                                     NUMB0089
06737  0500 00 0 00455  3863  MN1   CLA PBIT      START NEGATIVE ACCUMULATION WITH NEG. ZERO    NUMB1000
06740  0601 60 0 06751  3864        STO* CV7                                                    NUMB1001
06741 -0500 00 0 06742  3865        CAL MN2       OP CODE TO MAKE CV10 A SUB INSTRUCTION        NUMB1002
06742 -3 40200 0 06727  3866  MN2   TXL MN3,0,258*64                                            NUMB0091
06743 -0754 00 0 06714  3867 CV3    PXD     PT3,0
06744 -0763 00 0 00006  3868        LGL 6                                                       NUMB0093
06745  0340 00 0 00402  3869        CAS TEN       TEST FOR DIGIT                                NUMB0094
06746 -3 00000 0 06765  3870        TXL CM                                                      NUMB0095
06747 -3 00000 0 07007  3871        TXL CV2                                                     NUMB0096
06750  0602 00 0 77664  3872        SLW CH        PERFORM CODED                                 NUMB0097
06751  0500 00 0 77666  3873  CV7   CLA N         MULTIPLICATION                                NUMB0098
06752  0767 00 0 00002  3874        ALS 2         BY TEN AND ADD                                NUMB0099
06753  0400 00 0 77666  3875  CV8   ADD N         CURRENT DIGIT                                 NUMB0100
06754  0767 00 0 00001  3876        ALS 1                                                       NUMB0101
06755  0400 00 0 77664  3877  CV10  ADD CH                                                      NUMB0102
06756  0140 00 0 06764  3878        TOV OVF       TEST FOR OVERFLOW                             NUMB0103
06757  0601 00 0 77666  3879  CV9   STO N                                                       NUMB0104
06760  2 00001 1 06743  3880  CV5   TIX CV3,1,1   COUNT CHARACTERS                              NUMB0105
06761  1 77777 2 06762  3881        TXI CV4,2,-1  OBTAIN NEXT BCD                               NUMB0106
06762  0560 00 2 00000  3882  CV4   LDQ 0,2       WORD AND RESTORE                              NUMB0107
06763  1 00005 1 06743  3883  CV6   TXI CV3,1,5   CHARACTER COUNT                               NUMB0108
06764  1 00001 4 06760  3884  OVF   TXI CV5,4,1   COUNT DECIMAL OVERFLOWS                       NUMB0109
06765  0340 00 0 00423  3885  CM    CAS MINUS                                                   NUMB0110
06766 -3 00000 0 07007  3886  SW1   TXL CV2                                                     NUMB0111
06767 -3 00000 0 06737  3887        TXL MN1                                                     NUMB0112
06770  0340 00 0 00422  3888        CAS POINT                                                   NUMB0113
06771 -3 00000 0 07007  3889        TXL CV2                                                     NUMB0114
06772 -3 00000 0 06706  3890        TXL PT1                                                     NUMB0115
06773  0340 00 0 00410  3891        CAS E                                                       NUMB0116
06774 -3 00000 0 07007  3892        TXL CV2                                                     NUMB0117
06775 -3 00000 0 06715  3893        TXL EX1                                                     NUMB0118
06776  0340 00 0 00421  3894        CAS B                                                       NUMB0119
06777 -3 00000 0 07007  3895        TXL CV2                                                     NUMB0120
07000 -3 00000 0 06732  3896        TXL BN1                                                     NUMB0121
07001  0340 00 0 00420  3897        CAS PLUS                                                    NUMB0122
07002 -3 00000 0 07007  3898        TXL CV2                                                     NUMB0123
07003 -3 00000 0 06726  3899        TXL PL1                                                     NUMB0124
07004  0340 00 0 00416  3900        CAS DASH      DASH TREATED LIKE MINUS                       NUMB0125
```

```
07005  0020 00 0 07007          TRA CV2                                                                NUMB0126
07006  0020 00 0 06737          TRA MN1                                                                NUMB0127
07007  0500 00 0 77666    CV2   CLA N                                                                  NUMB0128
07010  0100 00 0 07161          TZE STZ            SEE IF ZERO FIXED OR FLOATING                       NUMB0129
07011 -3 00000 0 07020    EXS   TXL CX3            SWITCH - TXH INDICATES EXPONENT                     NUMB0130
07012 -0500 00 0 00455          CAL PBIT           PREPARE TRUE                                        NUMB0131
07013  0400 00 0 77663          ADD EXPN           DECIMAL EXPONENT                                    NUMB0132
07014  0767 00 0 00022          ALS 18                                                                 NUMB0133
07015  0622 00 0 07017          STD CM4                                                                NUMB0134
07016  0500 00 0 77666          CLA N                                                                  NUMB0135
07017  1 00000 4 07036    CM4   TXI      CM5,4,0
07020 -3 00000 0 07033    CX3   TXL CM2            SWITCH - TXH INDICATES OCTAL                        NUMB0137
                                    SCALE OCTAL NUMBER                                                 NUMB0138
07021  0500 00 0 77662          CLA BN             MULTIPLY SCALE FACTOR BY 3                          NUMB0139
07022  0767 00 0 00001          ALS 1               FOR NUMBER OF SHIFTS NEEDED                        NUMB0140
07023  0400 00 0 77662          ADD BN                                                                 NUMB0141
07024  0621 00 0 07026          STA CX5                                                                NUMB0142
07025  0500 00 0 77666          CLA N                                                                  NUMB0143
07026  0767 00 0 00000    CX5   ALS **                                                                 NUMB0144
07027 -0760 00 0 00001          PBT                ALLOW FOR P BIT                                     NUMB0145
07030  0020 00 0 07126          TRA ISTOR                                                              NUMB0146
07031 -0760 00 0 00003          SSM                                                                    NUMB0147
07032  0020 00 0 07126          TRA ISTOR                                                              NUMB0148
                                                                                                       NUMB0149
07033 -3 00000 0 07035    CM2   TXL CM3            SWITCH - INVERTED TO TXH INDICATES FIXED POINTNUMB0150
07034 -3 00000 0 07036          TXL CM5                                                                NUMB0151
07035 -3 00000 0 07126    CM3   TXL ISTOR          SWITCH - TXH INDICATES POINT                        NUMB0152
07036  0621 00 0 07243    CM5   STA FL1            35 BIT INTEGER                                      NUMB0153
07037  0771 00 0 00017          ARS 15                                                                 NUMB0154
07040 -0501 00 0 07244          ORA FL2                                                                NUMB0155
07041  0300 00 0 07244          FAD FL2                                                                NUMB0156
07042  0120 00 0 07045          TPL CMF1                                                               NUMB0157
07043  0302 00 0 07243          FSB FL1                                                                NUMB0158
07044 -3 00000 0 07046          TXL CMF2                                                               NUMB0159
07045  0300 00 0 07243    CMF1  FAD FL1                                                                NUMB0160
07046 -0600 00 0 77670    CMF2  STQ RESID                                                              NUMB0161
07047 -3 00000 4 07106          TXL      CM6,4,0
07050  3 00046 4 07071     SW2  TXH CM7,4,38       TEST FOR NEGATIVE EXP                               NUMB0163
07051  0634 00 4 07052          SXA *+1,4          COMPUTE ABSOLUTE VALUE OF EXPONENT                  NUMB0164
07052 -0774 00 4 00000          AXC **,4                                                               NUMB0165
07053  0601 00 0 77667          STO DATUM                                                              NUMB0166
07054  0560 00 4 07244          LDQ ONE,4          COMPUTE FLOATING                                    NUMB0167
07055  0260 00 0 77667          FMP DATUM          BINARY REPRESENTATION                               NUMB0168
07056  0601 00 0 77665          STO T              OF INTEGER TIMES THE
07057 -0600 00 0 77666          STQ T+1            POWER OF TEN GIVEN                                  NUMB0170
07060  0560 00 4 07244          LDQ ONE,4          BY THE TRUE EXPONENT                                NUMB0171
07061  0260 00 0 77670          FMP RESID                                                              NUMB0172
07062  0300 00 0 77666          FAD T+1                                                                NUMB0173
07063  0300 00 0 77665          FAD T                                                                  NUMB0174
07064  0361 00 0 07241          ACL EXC1                                                               NUMB0175
07065 -0760 00 0 00001          PBT                                                                    NUMB0176
07066 -3 00000 0 07106          TXL CM6                                                                NUMB0177
07067 -0754 00 0 00000    CM8   PXD      ,0
07070  0020 00 0 07155          TRA PX1            NUMBER OUT OF RANGE, EXIT WITH 0 IN AC              NUMB0179
```

```
07071 -3 77717 4 07067   3955  CM7    TXL  CM8,4,-49      TEST FOR ILLEGAL EXP                NUMB0180
07072  0161 00 0 07073   3956  CM13   TQO  CM13+1                                          NUMB0181
07073  0241 00 4 07244   3957         FDP  ONE,4          COMPUTE FLOATING                    NUMB0182
07074 -0600 00 0 77665   3958         STQ  T              BINARY EQUIVALENT                   NUMB0183
07075  0300 00 0 77670   3959         FAD  RESID          OF INTEGER TIMES                    NUMB0184
07076  0241 00 4 07244   3960         FDP  ONE,4          POWER OF TEN GIVEN                  NUMB0185
07077  0161 00 0 07067   3961         TQO  CM8                                                NUMB0186
07100 -0600 00 0 77666   3962         STQ  T+1            BY TRUE EXPONENT                    NUMB0187
07101  0500 00 0 77666   3963         CLA  T+1                                                NUMB0188
07102  0300 00 0 77665   3964         FAD  T                                                  NUMB0189
07103  0361 00 0 07242   3965         ACL  EXC2                                               NUMB0190
07104 -0760 00 0 00001   3966         PBT                                                     NUMB0191
07105 -3 00000 0 07067   3967         TXL  CM8                                                NUMB0192
07106 -3 00000 0 07131   3968  CM6    TXL  FSTOR          SWITCH - TXH INDICATES FIXED POINT  NUMB0193
07107  0601 00 0 77665   3969         STO  T                                                  NUMB0194
07110  0767 00 0 00002   3970         ALS  2                                                  NUMB0195
07111 -0760 00 0 00003   3971         SSM                 DETERMINE SHIFT                     NUMB0196
07112  0771 00 0 00035   3972         ARS  29             NECESSARY TO POSITION               NUMB0197
07113  0400 00 0 00415   3973         ADD  Q128           NUMBER AS INDICATED                 NUMB0198
07114  0400 00 0 77662   3974         ADD  BN             BY B                                NUMB0199
07115  0120 00 0 07117   3975         TPL  SHIFT                                              NUMB0200
07116 -0100 00 0 07067   3976         TNZ  CM8                                                NUMB0201
07117  0621 00 0 07125   3977  SHIFT  STA  CM12                                               NUMB0202
07120  0500 00 0 77665   3978         CLA  T              REMOVE CHARACTERISTICS              NUMB0203
07121  0763 00 0 00010   3979         LLS  8              FROM FLOATING NUMBER                NUMB0204
07122  0767 00 0 00002   3980         ALS  2                                                  NUMB0205
07123  0771 00 0 00012   3981         ARS  10                                                 NUMB0206
07124  0763 00 0 00010   3982         LLS  8                                                  NUMB0207
07125  0765 00 0 00000   3983  CM12   LRS  **
07126  0131 00 0 00000   3984  ISTOR  XCA                 RESULT TO MQ                        NUMB0209
07127 -0500 00 0 06766   3985  ISTO1  CAL  SW1            SET FIXED POINT INDICATOR SWITCH    NUMB0210
07130  0020 00 0 07133   3986         TRA  XT3                                                NUMB0211
07131  0131 00 0 00000   3987  FSTOR  XCA                 RESULT TO MQ                        NUMB0212
07132  0500 00 0 06766   3988         CLA  SW1            SET FLOAT INDICATOR SWITCH          NUMB0213
07133  0630 00 0 07153   3989  XT3    STP  XT1                                                NUMB0214
07134  2 00001 1 07137   3990         TIX  XT2,1,1        IF NO SIGNIFICANT CHARACTERS        NUMB0215
07135  1 77777 2 07136   3991         TXI  **+1,2,-1       LEFT IN WORD, MOVE TO  NEXT WORD   NUMB0216
07136  0774 00 1 00006   3992         AXT  6,1                                                NUMB0217
07137 -0754 00 1 00000   3993  XT2    PXD  ,1             SET POSITION INDICATORS             NUMB0218
07140  0402 00 0 00446   3994         SUB  QD7                                                NUMB0219
07141  0602 00 0 77665   3995         SLW  T                                                  NUMB0220
07142 -0500 00 0 07020   3996         CAL  CX3                  P BIT IN OUTPUT INDICATES OCTAL
07143 -0320 00 0 00455   3997         ANA  $SBIT
07144 -0602 00 0 77665   3998         ORS  T
07145  0760 00 0 00006   3999         COM
07146  0630 00 0 77665   4000         STP  T
07147  0634 00 2 07150   4001         SXA  **+1,2                                             NUMB0221
07150 -0774 00 2 00000   4002         AXC  **,2                                               NUMB0222
07151  0754 00 2 00000   4003         PXA  ,2                                                 NUMB0223
07152  0361 00 0 77665   4004         ACL  T                                                  NUMB0224
07153 -3 00000 0 07155   4005  XT1    TXL  **+2           SET SIGN + FOR FIXED,               NUMB0225
07154 -0760 00 0 00003   4006         SSM                  - FOR FLOATING                     NUMB0226
07155  0774 00 1 00000   4007  PX1    AXT  ,1             RESTORE INDEX REGISTERS             NUMB0227
07156  0774 00 2 00000   4008  PX2    AXT  ,2                                                 NUMB0228
```

```
07157  0774 00 4 00000   4009  PX4   AXT ,4                                          NUMB0229
07160  0020 00 4 00001   4010        TRA 1,4              EXIT                       NUMB0230
                         4011                                                        NUMB0231
                         4012              WE GET HERE IF NUMBER IS ZERO.            NUMB0232
                         4013              WE HERE DECIDE WHETHER WE ARE FACED WITH A FIXED OR FLOATING NUMB0233
                         4014               ZERO.                                    NUMB0234
                         4015                                                        NUMB0235
07161  0560 00 0 07033   4016  STZ   LDQ CM2                TXH (+) IF B             NUMB0236
07162  0162 00 0 07126   4017        TQP ISTOR                                       NUMB0237
07163  0560 00 0 07035   4018        LDQ CM3              TXH (+) IF DECIMAL POINT FOUND NUMB0238
07164  0162 00 0 07131   4019        TQP FSTOR                                       NUMB0239
07165  0560 00 0 07011   4020        LDQ EXS              TXH (+) IF E FOUND         NUMB0240
07166  0162 00 0 07131   4021        TQP FSTOR                                       NUMB0241
07167  0020 00 0 07126   4022        TRA ISTOR                                       NUMB0242
                         4023                                                        NUMB0246
                         4024              PROCESS OCTAL NUMBER                      NUMB0247
                         4025                                                        NUMB0248
07170  0535 00 2 77665   4026  OCTNO LAC T,2              IR2 HAS WORD COUNT         NUMB0249
07171 -0535 00 1 77665   4027        LDC T,1              IR1 WILL GET CHARACTER COUNT NUMB0250
07172  0560 00 0 77662   4028        LDQ MQ               RESTORE FIRST GROUP OF CHARACTERS NUMB0251
07173 -0754 00 0 00000   4029        PXD     ,0
07174  0621 00 0 06751   4030        STA CV7              SET SIGNAL FOR OCTAL NUMBER NUMB0253
07175  1 00010 1 07203   4031        TXI OCT9,1,8         FIX CHARACTER COUNT        NUMB0254
07176 -0754 00 0 00000   4032  OCT1  PXD     ,0
07177 -0763 00 0 00003   4033        LGL 3                                           NUMB0256
07200 -0100 00 0 07211   4034        TNZ OCT8                                        NUMB0257
07201  0500 00 0 77666   4035        CLA N                                           NUMB0258
07202 -0763 00 0 00003   4036        LGL 3                                           NUMB0259
07203  0601 00 0 77666   4037  OCT9  STO N                ALLOW FOR BOTH P BIT AND MINUS SIGN NUMB0260
07204 -0602 00 0 77666   4038        ORS N                                           NUMB0261
07205  2 00001 1 07176   4039  OCT6  TIX OCT1,1,1                                    NUMB0262
07206  1 77777 2 07207   4040        TXI OCT2,2,-1                                   NUMB0263
07207  0560 00 2 00000   4041  OCT2  LDQ 0,2              NEW PACKED WORD            NUMB0264
07210  1 00005 1 07176   4042        TXI OCT1,1,5                                    NUMB0265
07211 -0763 00 0 00003   4043  OCT8  LGL 3                                           NUMB0266
07212  0340 00 0 00426   4044        CAS Q                TEST FOR OCTAL SCALE FACTOR NUMB0267
07213  0020 00 0 07226   4045        TRA OCT3                                        NUMB0268
07214  0020 00 0 07232   4046        TRA OCT10                                       NUMB0269
07215  0340 00 0 00423   4047        CAS MINUS                                       NUMB0270
07216 -3 00000 0 07226   4048        TXL OCT3                                        NUMB0271
07217 -3 00000 0 07230   4049        TXL OCT5                                        NUMB0272
07220  0340 00 0 00420   4050        CAS PLUS                                        NUMB0273
07221 -3 00000 0 07226   4051        TXL OCT3                                        NUMB0274
07222 -3 00000 0 07205   4052        TXL OCT6                                        NUMB0275
07223  0340 00 0 00416   4053        CAS DASH             DASH TREATED LIKE -        NUMB0276
07224 -3 00000 0 07226   4054        TXL OCT3                                        NUMB0277
07225 -3 00000 0 07230   4055        TXL OCT5                                        NUMB0278
07226  0560 00 0 77666   4056  OCT3  LDQ N                                           NUMB0279
07227  1 00000 0 07127   4057        TXI ISTO1                                       NUMB0280
07230  0500 00 0 00455   4058  OCT5  CLA PBIT             SET NEGATIVE SIGN          NUMB0281
07231 -3 00000 0 07203   4059        TXL OCT9                                        NUMB0282
07232  0500 00 0 07020   4060  OCT10 CLA CX3              SET SWITCH FOR OCTAL SCALE FACTOR NUMB0283
07233  0630 00 0 07020   4061        STP CX3                                         NUMB0284
07234  0600 00 0 77662   4062        STZ BN               CLEAR SCALE FACTOR CELL    NUMB0285
```

```
07235 -0500 00 0 06766              CAL SW1          SET EXPONENT SWITCH TO OFF                 NUMB0286
07236  0630 00 0 07011              STP EXS                                                     NUMB0287
07237 -0500 00 0 06672              CAL BN2          SET UP Q CONVERSION                        NUMB0288
07240  0020 00 0 06720              TRA BN3                                                     NUMB0289
                                                                                                NUMB0290
                                                                                                NUMB0291
                                                                                                NUMB0292
                   00400       Q8   SYN $Q8
                   00402       Q10  SYN $Q10                                                    NUMB0294
                   00415       Q128 SYN $Q128
                   00446       QD7  SYN $QD7
                   00455       PBIT SYN $SBIT
                   00427       BLANK SYN $Q060
                   00423       MINUS SYN $Q040
                   00422       POINT SYN $Q033
                   00410       E    SYN $Q025
                   00421       B    SYN $Q022
                   00426       Q    SYN $Q050
                   00420       PLUS SYN $Q020
                   00416       DASH SYN $Q014
07241 +043000000000            EXC1 DEC 35B8     CHARACTERISTIC=35                              NUMB0306
07242 +335000000000            EXC2 DEC 221B8    CHAR.=COMPL. 35                                NUMB0307
07243 +233000000000            FL1  DEC 155B8                                                   NUMB0308
07244 +252000000000            FL2  DEC 170B8                                                   NUMB0309
07245 +141500000000                 OCT 141500000000,144620000000,147764000000,153470400000     NUMB0310
07246 +144620000000
07247 +147764000000
07250 +153470400000
07251 +156606500000                 OCT 156606500000,161750220000,165461132000,170575360400     NUMB0311
07252 +161750220000
07253 +165461132000
07254 +170575360400
07255 +173734654500                 OCT 173734654500,177452013710,202564416672,205721522451     NUMB0312
07256 +177452013710
07257 +202564416672
07260 +205721522451
07261 +211443023471                 OCT 211443023471,214553630410,217706576512,223434157116     NUMB0313
07262 +214553630410
07263 +217706576512
07264 +223434157116
07265 +226543212741                 OCT 226543212741,231674055532,235425434430,240532743536     NUMB0314
07266 +231674055532
07267 +235425434430
07270 +240532743536
07271 +243661534466                 OCT 243661534466,247417031702,252522640262,255647410336     NUMB0315
07272 +247417031702
07273 +252522640262
07274 +255647410336
07275 +261410545213                 OCT 261410545213,264512676456,267635456171,273402374714     NUMB0316
07276 +264512676456
07277 +267635456171
07300 +273402374714
07301 +276503074077                 OCT 276503074077,301623713116,304770675742,310473426555     NUMB0317
07302 +301623713116
```

```
07303 +304770675742
07304 +310473426555
07305 +313612334311     4095        OCT 313612334311,316755023373,322464114135,325601137164    NUMB0318
07306 +316755023373
07307 +322464114135
07310 +325601137164
07311 +330741367021     4096        OCT 330741367021,334454732313,337570120775,342726145174    NUMB0319
07312 +334454732313
07313 +337570120775
07314 +342726145174
07315 +346445677216     4097        OCT 346445677216,351557257061,354713132676,360436770626    NUMB0320
07316 +351557257061
07317 +354713132676
07320 +360436770626
07321 +363546566774     4098        OCT 363546566774,366700324573,372430204755,375536246150    NUMB0321
07322 +366700324573
07323 +372430204755
07324 +375536246150
                 00402  4099  TEN   SYN Q10                                                    NUMB0322
                 07244  4100  ONE   SYN FL2                                                    NUMB0323
07325                   4101  REORG BSS 0                                                      NUMB0324
                 77662  4102        ORG COMMON                                                 NUMB0325
77662                   4103  BN    BSS 1                                                      NUMB0326
                 77662  4104  MQ    SYN BN                                                     NUMB0327
77663                   4105  EXPN  BSS 1                                                      NUMB0328
77664                   4106  CH    BSS 1                                                      NUMB0329
77665                   4107  CHD   BSS 1                                                      NUMB0330
                 77665  4108  T     SYN CHD                                                    NUMB0331
77666                   4109  N     BSS 1                                                      NUMB0332
77667                   4110  DATUM BSS 1                                                      NUMB0333
77670                   4111  RESID BSS 1                                                      NUMB0334
                 07325  4112        ORG REORG                 RESTORE ORIGIN                 NUMB0335
07325                   4113 BUFFER BSS 14                                                     LC359300
                        4114                                                                   LC359400
                        4115                                                                   LC359500
                        4116 R      HED                                                        LC366700
                        4117                                                                   LC371500
                        4118            FUNCTION CP1                                           LC371600
                        4119            CP1(L)=(L=0 YIELDS 0,                                  LC371700
                        4120                 OTHERWISE CONS(CONSW(CWR(CAR(L)))),CP1(CDR(L))))  LC371800
                        4121                                                                   LC371900
                        4122 C      HED                                                        LC372000
07343  0100 00 4 00001  4123  CP1   TZE 1,4                                                    LC372100
07344 -0634 00 4 03361  4124        SXD CR1,4                                                  LC372200
07345 -0734 00 4 00000  4125        PDX ,4                                                     LC372300
07346  0500 00 4 00000  4126        CLA ,4                    CWR(L)                           LC372400
07347  0601 00 0 03363  4127        STO CWRL                                                   LC372500
07350  0734 00 4 00000  4128        PAX ,4                    CAR(L)                           LC372600
07351  0500 00 4 00000  4129        CLA ,4                    CWR(CAR(L))                      LC372700
07352  0074 00 4 03710  4130        TSX $CONSW,4                                               LC372800
07353  0074 00 4 02312  4131        TSX $SAVE,4                                                LC372900
07354 -3 03364 0 02377  4132        TXL     $END2,,CR2+2      SAVE 2 ITEMS
07355  0601 00 0 03362  4133        STO CR2
07356 -0534 00 4 03363  4134        LXD CWRL,4                CDR(L)                           LC373200
```

```
07357 -0754 00 4 00000   4135          PXD ,4                   IN DEC                       LC373300
07360  0074 00 4 07343   4136          TSX CP1,4                                             LC373400
07361  0601 00 0 03363   4137          STO CWRL                                              LC373500
07362  0560 00 0 03363   4138          LDQ CWRL                 C(MQ)=CP1(CDR(L))            LC373600
07363  0500 00 0 03362   4139          CLA CR2                                               LC373700
07364  0074 00 4 02326   4140          TSX UNSAVE,4                                          LC373800
07365 -0534 00 4 03361   4141          LXD CR1,4                                             LC374000
07366  0020 00 0 03730   4142          TRA $CONS                                             LC374100
                         4143                                                                LC552700
                         4144              SUBST                                             LC374600
                         4145                                                                LC374700
                         4146                   SUBST(L,V,M) =                               LC374800
                         4147                       (M = 0 YIELDS 0,                         LC374900
                         4148                        EQUAL(M,V) YIELDS COPY(L),              LC375000
                         4149                                   CAR(M)=-1 YIELDS M           LC375100
                         4150                        1 YIELDS CONS(SUBST(L,V,CAR(M)),SUBSTL,V,CDR(M))))  LC375200
                         4151                                                                LC375300
                         4152 R        HED
07367  0601 00 0 03475   4153   SUBST  STO      SX
07370 -0600 00 0 03476   4154          STQ      SY
07371  0500 00 0 03321   4155          CLA      $ARG3
07372 -0634 00 4 03473   4156   SUB1   SXD      SXT,4
07373  0601 00 0 03477   4157          STO      ST
07374  0560 00 0 03476   4158          LDQ      SY
07375  0074 00 4 04461   4159          TSX      $EQUAL,4
07376 -0100 00 0 07443   4160          TNZ      SUB4
07377 -0534 00 4 03477   4161          LXD      ST,4
07400  0500 00 4 00000   4162          CLA      0,4
07401  0734 00 4 00000   4163          PAX      0,4
07402  0500 00 0 03477   4164          CLA      ST
07403  3 77776 4 07441   4165          TXH      SUB2,4,-2
07404  0074 00 4 02312   4166          TSX      $SAVE,4
07405 -3 03476 0 02377   4167          TXL      $END2,,SZ+2
07406  0622 00 0 03474   4168          STD      SZ
07407 -0734 00 4 00000   4169          PDX      0,4
07410  0500 00 4 00000   4170          CLA      0,4
07411 -0734 00 4 00000   4171          PDX      0,4
07412  0634 00 4 03474   4172          SXA      SZ,4
07413  0734 00 4 00000   4173          PAX      0,4
07414 -0754 00 4 00000   4174          PXD      0,4
07415  0074 00 4 07372   4175          TSX      SUB1,4
07416  0534 00 4 03474   4176          LXA      SZ,4
07417  0771 00 0 00022   4177          ARS      18
07420  0621 00 0 03474   4178          STA      SZ
07421 -0754 00 4 00000   4179          PXD      0,4
07422  0074 00 4 07372   4180          TSX      SUB1,4
07423 -0534 00 4 03474   4181          LXD      SZ,4
07424  0622 00 0 03474   4182          STD      SZ
07425  0500 00 4 00000   4183          CLA      0,4
07426  0402 00 0 03474   4184          SUB      SZ
07427  0100 00 0 07437   4185          TZE      SUB3
07430 -0534 00 4 03751   4186          LXD      $FREE,4
07431  3 00000 4 07433   4187          TXH      *+2,4,0
07432  0074 00 4 04037   4188          TSX      $FROUT,4
```

```
07433  0500 00 4 00000   4189        CLA     0,4
07434  0622 00 0 03751   4190        STD     $FREE
07435  0500 00 0 03474   4191        CLA     SZ
07436  0601 00 4 00000   4192        STO     0,4
07437 -0754 00 4 00000   4193  SUB3  PXD     0,4
07440  0074 00 4 02326   4194        TSX     UNSAVE,4
07441 -0534 00 4 03473   4195  SUB2  LXD     SXT,4
07442  0020 00 4 00001   4196        TRA     1,4
07443  0500 00 0 03475   4197  SUB4  CLA     SX
07444  0020 00 0 07441   4198        TRA     SUB2
                         4199 B      HED                                        LC380500
                         4200                                                   LC380600
                         4201            FUNCTION SUBLIS                        LC380700
                         4202                                                   LC381100
07445 -0600 00 0 03472   4203  SUBLIS STQ E                                     LC381200
07446 -0100 00 0 07451   4204        TNZ SU1                                    LC381300
07447  0500 00 0 03472   4205        CLA E                  P=0                 LC381400
07450  0020 00 4 00001   4206        TRA 1,4                                    LC381500
07451  0601 00 0 03471   4207  SU1   STO P                                      LC381600
07452  0500 00 0 03472   4208        CLA E                                      LC381700
07453 -0100 00 0 07455   4209        TNZ SU2                                    LC381800
07454  0020 00 4 00001   4210        TRA 1,4                E=0                 LC381900
07455 -0634 00 4 03464   4211  SU2   SXD X1,4                                   LC382000
07456  0500 00 0 07465   4212        CLA F                  U                   LC382100
07457  0601 00 0 03322   4213        STO $ARG4              U                   LC382200
07460  0500 00 0 07466   4214        CLA F+1                F                   LC382300
07461  0601 00 0 03321   4215        STO $ARG3              F                   LC382400
07462  0560 00 0 07467   4216        LDQ F+2                P                   LC382500
07463  0500 00 0 03471   4217        CLA P                                      LC382600
07464  0020 00 0 04400   4218        TRA SEARCH                                 LC382700
07465 -3 00000 0 07470   4219  F     TXL NF,,0              U                   LC382800
07466 -3 00000 0 07535   4220        TXL NF1,,0             F                   LC382900
07467 -3 00000 0 07520   4221        TXL NF2,,0             P                   LC383000
07470 -0534 00 4 03472   4222  NF    LXD E,4                U                   LC383100
07471  0500 00 4 00000   4223        CLA ,4                                     LC383200
07472  0734 00 4 00000   4224        PAX ,4                 CAR(E)              LC383300
07473 -3 77776 4 07477   4225        TXL SU3,4,-2           E IS NOT AN OBJECT  LC383400
07474  0500 00 0 03472   4226        CLA E                                      LC383500
07475 -0534 00 4 03464   4227        LXD X1,4                                   LC383600
07476  0020 00 4 00001   4228        TRA 1,4                                    LC383700
07477  0074 00 4 02312   4229  SU3   TSX $SAVE,4                                LC383800
07500 -3 03471 0 02373   4230        TXL     $END4,,X4+2    SAVE 4 ITEMS
07501  0622 00 0 03465   4231        STD X2                                     LC384000
07502  0734 00 4 00000   4232        PAX ,4                                     LC384100
07503 -0634 00 4 03466   4233        SXD X3,4               CAR(E)              LC384200
07504  0560 00 0 03465   4234        LDQ X2                                     LC384300
07505  0500 00 0 03471   4235        CLA P                                      LC384400
07506  0074 00 4 07445   4236        TSX SUBLIS,4                               LC384500
07507  0601 00 0 03467   4237        STO X4                 SUBLIS(P,CDR(E))    LC384600
07510  0560 00 0 03466   4238        LDQ X3                                     LC384700
07511  0500 00 0 03471   4239        CLA P                                      LC384800
07512  0074 00 4 07445   4240        TSX SUBLIS,4                               LC384900
07513  0560 00 0 03467   4241        LDQ X4                                     LC385000
07514  0074 00 4 03730   4242        TSX $CONS,4                                LC385100
```

```
07515  0074 00 4 02326   4243          TSX UNSAVE,4                                                    LC385200
07516 -0534 00 4 03464   4244          LXD X1,4                                                        LC385400
07517  0020 00 4 00001   4245          TRA 1,4                                                         LC385500
07520 -0634 00 4 07537   4246  NE2     SXD N1,4          EQUAL(E,CAAR(J))                              LC385600
07521 -0734 00 4 00000   4247          PDX ,4            J                                             LC385700
07522  0500 00 4 00000   4248          CLA ,4                                                          LC385800
07523  0734 00 4 00000   4249          PAX ,4            CAR(J)                                        LC385900
07524  0500 00 4 00000   4250          CLA ,4                                                          LC386000
07525  0622 00 0 03470   4251          STD X5            CDAR(J)                                       LC386100
07526  0734 00 4 00000   4252          PAX ,4                                                          LC386200
07527 -0634 00 4 07540   4253          SXD N2,4                                                        LC386300
07530  0560 00 0 07540   4254          LDQ N2            CAAR(J) IN MQ                                 LC386400
07531  0500 00 0 03472   4255          CLA E                                                           LC386500
07532  0074 00 4 04461   4256          TSX $EQUAL,4                                                    LC386600
07533 -0534 00 4 07537   4257          LXD N1,4                                                        LC386700
07534  0020 00 4 00001   4258          TRA 1,4                                                         LC386800
07535  0500 00 0 03470   4259  NF1     CLA     X5                                                      4060
07536  0020 00 4 00001   4260          TRA 1,4                                                         LC387500
07537  0 00000 0 00000   4261  N1                        IR4 OF P OF SEARCH                            LC388300
07540  0 00000 0 00000   4262  N2                                                                      LC388400
                         4263                                                                        LC388500
                         4264              APPEND(L1,L2)=                                            LC388600
                         4265              (L1=0 YIELDS L2,1 YIELDS CONS(CAR(L1),APPEND(CDR(L1),L2)))  LC388700
                         4266 A       HED                                                            LC388800
07541 -0100 00 0 07544   4267 APPEND  TNZ APNP1                                                       LC388900
07542  0131 00 0 00000   4268          XCA                                                             1,500020
07543  0020 00 4 00001   4269          TRA 1,4                                                         LC389200
07544 -0634 00 4 03346   4270  APNP1   SXD AS1,4                                                       LC389300
07545  0074 00 4 02312   4271          TSX $SAVE,4                                                     LC389400
07546 -3 03351 0 02377   4272          TXL     $END2,,CWR1+2     SAVE 2 ITEMS
07547 -0734 00 4 00000   4273          PDX 0,4                                                         LC389600
07550  0500 00 4 00000   4274          CLA 0,4                                                         LC389700
07551  0601 00 0 03347   4275          STO CWR1                                                        LC389800
07552 -0320 00 0 00460   4276          ANA DECM                                                        LC389900
07553  0074 00 4 07541   4277          TSX APPEND,4                                                    LC390000
07554  0131 00 0 00000   4278          XCA                                                             1.500021
07555  0534 00 4 03347   4279          LXA CWR1,4                                                      LC390300
07556 -0754 00 4 00000   4280          PXD 0,4                                                         LC390400
07557  0074 00 4 02326   4281          TSX UNSAVE,4                                                    LC390500
07560 -0534 00 4 03346   4282          LXD AS1,4                                                       LC390700
07561  0020 00 0 03730   4283          TRA $CONS                                                       LC390800
                00460    4284  DECM    SYN     $DMASK                                                1.500010
                         4285                                                                        LC391300
                         4286              PAIR                                                      LC391400
                         4287 *                  RECODED TO MAKE LISTS IN DOT NOTATION             4070
                         4288                                                                        LC391500
                         4289 A       HED                                                            LC391600
07562  0634 00 4 07570   4290  PAIR    SXA     PAIRX,4           SAVE LINK IR                        4080
07563 -0600 00 0 03441   4291          STQ     LIS               ARG 2                               4090
07564  0560 00 0 07572   4292          LDQ     FARG              PICK UP FUNCTIONAL ARGUMENT         4100
07565  0074 00 4 04214   4293          TSX     MAPLIS,4          LET MAPLIST DO THE CONSING          4110
07566  0520 00 0 03441   4294          ZET     LIS               TEST FOR ARG 2 GONE TO END          4130
07567  0020 00 0 07612   4295          TRA     PERF              DID NOT, GO TO ERROR                4140
07570  0774 00 4 00000   4296  PAIRX   AXT     **,4              RESTORE LINK IR                     4150
```

```
07571  0020 00 4 00001         TRA     1,4               EXIT                                4160
                          *                                                                  4170
07572 -3 00001 0 07573   FARG  TXL     *+1,,1            PAIR FUNCTIONAL ARGUMENT FOR MAPLIST 4180
07573  0634 00 4 07610         SXA     FARGX,4           SAVE LINK IR                        4190
07574  0622 00 0 03440         STD     TEM               SAVE ARGUMENT                       4200
07575 -0534 00 4 03441         LXD     LIS,4             PICK UP 2ND ARG LIST                4210
07576 -3 00000 4 07615         TXL     PERS,4,0          GO IF NO MORE 2ND ARG               4220
07577  0500 00 4 00000         CLA     0,4               NEXT WORD                           4230
07600  0734 00 4 00000         PAX     0,4               CAR                                 4240
07601  0622 00 0 03441         STD     LIS               SAVE CDR                            4250
07602 -0754 00 4 00000         PXD     0,4               CAR INTO DECREMENT                  4260
07603  0131 00 0 00000         XCA                       INTO MQ                             4270
07604 -0534 00 4 03440         LXD     TEM,4             LIST 1                              4280
07605  0500 00 4 00000         CLA     0,4               TAKE CAR OF LIST                    4290
07606  0734 00 4 00000         PAX     0,4                                                   4300
07607 -0754 00 4 00000         PXD     0,4                                                   4310
07610  0774 00 4 00000   FARGX AXT     **,4              RESTORE LINK IR                     4320
07611  0020 00 0 03730         TRA     $CONS                                                 4330
                          *            FIRST ARG LIST TOO SHORT ERROR                        4430
07612 -0634 00 4 01562   PERF  SXD     $ERROR,4          SAVE LINK IR
07613  0074 00 4 01563         TSX     $ERROR+1,4        GO TO ERROR
07614  542660600254            BCI     1,*F  2*          FIRST ARG$ LIST TOO SHORT
                          *            ERROR, SECOND ARG LIST TOO SHORT                      4340
07615 -0634 00 4 01562   PERS  SXD     $ERROR,4          SAVE LINK IR                        4370
07616  0074 00 4 01563         TSX     $ERROR+1,4        GO TO ERROR                         4380
07617  542660600354            BCI     1,*F  3*          SECOND ARG. LIST TOO SHORT
                          *                                                                  4470
                          *
                          *
                                                                                         LC399800
                               MAPCAR(L,F) = (L=0 YIELDS 0,                              LC399900
                                                 F(L) YIELDS 0,                          LC400000
                                                 1 YIELDS MAPCAR(CDR(L),F))              LC400100
                                                                                         LC400200
                          D    HED                                                       LC400300
07620  0100 00 4 00001   MAPCAR TZE 1,4                                                  LC400400
07621 -0634 00 4 03421         SXD RET,4                                                 LC400500
07622  0074 00 4 02312         TSX $SAVE,4                                               LC400600
07623 -3 03425 0 02375         TXL     $END3,,F+2        SAVE 3 ITEMS
07624 -0600 00 0 03423         STQ F                                                     LC400800
07625  0601 00 0 03422   MCPR  STO L                                                     LC400900
07626 -0534 00 4 03423         LXD F,4                                                   LC401000
07627  3 00012 4 07632         TXH *+3,4,10                                              LC401100
07630  0074 00 4 03423         TSX F,4                                                   LC401200
07631  0020 00 0 07635         TRA *+4                                                   LC401300
07632 -0634 00 4 07634         SXD *+2,4                                                 LC401400
07633  0074 00 4 12007         TSX COMPAT,4                                              LC401500
07634  0 00000 0 00001             1,,**                                                 LC401600
07635 -0534 00 4 03422         LXD L,4                                                   LC401700
07636  0500 00 4 00000         CLA 0,4                                                   LC401800
07637 -0734 00 4 00000         PDX ,4                                                    LC401900
07640 -0754 00 4 00000         PXD ,4                                                    LC402000
07641 -0100 00 0 07625         TNZ     MCPR                                              1.5Q0022
07642  0074 00 4 02326   RTRN  TSX UNSAVE,4                                              LC402300
```

```
07643 -0534 00 4 03421   4351          LXD RET,4                                                  LC402600
07644  0020 00 4 00001   4352          TRA 1,4                                                    LC402700
                         4353              MAPCON(L,F)=                                           LC403100
                         4354              (L=0 YIELDS 0,,1 YIELDS NCONC(F(L),MAPCON(CDR(L),F)))  LC403200
                         4355 R        HED                                                        LC403300
07645  0100 00 4 00001   4356 MAPCON TZE 1,4                                                      LC403400
07646 -0634 00 4 03424   4357          SXD MCN5,4                                                 LC403500
07647  0074 00 4 02312   4358          TSX $SAVE,4                                                LC403600
07650 -3 03431 0 02373   4359          TXL      $END4,,MCN2+2        SAVE 4 ITEMS
07651  0601 00 0 03426   4360          STO MCN3                                                   LC403800
07652 -0600 00 0 03425   4361          STQ MCN4                                                   LC403900
07653 -0534 00 4 03425   4362          LXD MCN4,4                                                 LC404000
07654  3 00012 4 07657   4363          TXH **+3,4,10                                              LC404100
07655  0074 00 4 03425   4364          TSX MCN4,4                                                 LC404200
07656  0020 00 0 07662   4365          TRA *+4                                                    LC404300
07657 -0634 00 4 07661   4366          SXD *+2,4                                                  LC404400
07660  0074 00 4 12007   4367          TSX COMPAT,4                                               LC404500
07661  0 00000 0 00001   4368              1,,**                                                  LC404600
07662  0601 00 0 03427   4369          STO MCN2                                                   LC404700
07663 -0534 00 4 03426   4370          LXD MCN3,4                                                 LC404800
07664  0500 00 4 00000   4371          CLA 0,4                                                    LC404900
07665 -0320 00 0 00460   4372          ANA MCDM                                                   LC405000
07666  0560 00 0 03425   4373          LDQ MCN4                                                   LC405100
07667  0074 00 4 07645   4374          TSX MAPCON,4                                               LC405200
07670  0131 00 0 00000   4375          XCA                                                        1.5Q0023
07671  0500 00 0 03427   4376          CLA MCN2                                                   LC405500
07672  0074 00 4 02326   4377          TSX UNSAVE,4                                               LC405700
07673 -0534 00 4 03424   4378          LXD MCN5,4                                                 LC405900
07674  0020 00 0 07675   4379          TRA      $NCONC                                            1.5Q0024
                 00460   4380 MCDM     SYN      $DMASK                                                4540
                         4381              FUNCTION NCONC                                         LC406700
                         4382              /     L1=0 YIELDS RETURN(L2)                           LC406800
                         4383                    M=L1                                             LC406900
                         4384              A2    CDR(M)=0 YIELDS GO A1                            LC407000
                         4385                    M=CDR(M)                                         LC407100
                         4386                    GO A2                                            LC407200
                         4387              A1    CDR(M)=L2                                        LC407300
                         4388              //    RETURN(L1)                                       LC407400
                         4389 R        HED                                                        LC407500
07675 -0100 00 0 07700   4390 NCONC    TNZ NCI1                                                   LC407600
07676  0131 00 0 00000   4391          XCA                                                        1.5Q0025
07677  0020 00 4 00001   4392          TRA 1,4                                                    LC407900
07700  0634 00 4 07711   4393 NCI1     SXA      NCS1,4              SAVE LINK IR                  1.5Q0026
07701  0601 00 0 07713   4394          STO NCS3                                                   LC408200
07702 -0734 00 4 00000   4395   NCI2   PDX 0,4                                                    LC408300
07703  0500 00 4 00000   4396          CLA 0,4                                                    LC408400
07704 -0320 00 0 00460   4397          ANA NCDM                                                   LC408500
07705 -0100 00 0 07702   4398          TNZ NCI2                                                   LC408600
07706  0131 00 0 00000   4399          XCA                                                        1.5Q0027
07707  0622 00 4 00000   4400          STD 0,4                                                    LC408800
07710  0500 00 0 07713   4401          CLA NCS3                                                   LC408900
07711  0774 00 4 00000   4402 NCS1     AXT      **,4                RESTORE LINK IR               1.5Q0028
07712  0020 00 4 00001   4403          TRA 1,4                                                    LC409100
                 00460   4404 NCDM     SYN      $DMASK                                                4550
```

```
07713  0 00000 0 00000   4405   NCS3                                                    LC409500
                         4406                                                          LC772900
                         4407          REMPRP REMOVES THE PROPERTY GIVEN BY THE MQ FROM THE     LC773000
                                       OBJECT GIVEN BY THE AC                          LC773100
07714 -0634 00 4 07744   4408 REMPRP SXD RMPRX,4                                       LC773200
07715 -0600 00 0 03320   4409       STQ $ARG2                                          LC773300
07716 -0534 00 4 03320   4410       LXD $ARG2,4                                        LC773400
07717 -0634 00 4 07732   4411       SXD RMPRT+1,4                                      LC773500
07720  1 77777 4 07721   4412       TXI *+1,4,-1                                       LC773600
07721 -0634 00 4 07731   4413       SXD RMPRT,4                                        LC773700
07722 -0734 00 4 00000   4414       PDX 0,4                                            LC773800
07723  0020 00 0 07726   4415       TRA RMPR2                                          LC773900
07724  0500 00 0 03320   4416 RMPR1 CLA $ARG2                                         LC774000
07725  0601 00 0 03321   4417       STO $ARG3                                          LC774100
07726 -0634 00 4 03320   4418 RMPR2 SXD $ARG2,4                                       LC774200
07727  0500 00 4 00000   4419       CLA 0,4                                            LC774300
07730  0734 00 4 00000   4420       PAX 0,4                                            LC774400
07731 -3 00000 4 07733   4421 RMPRT TXL *+2,4,**                                      LC774500
07732 -3 00000 4 07737   4422       TXL RMPRE,4,**                                     LC774600
07733 -0734 00 4 00000   4423       PDX 0,4                                            LC774700
07734  3 00000 4 07724   4424       TXH RMPR1,4,0                                      LC774800
07735 -0534 00 4 07744   4425 RMPRO LXD RMPRX,4                                       LC774900
07736  0020 00 4 00001   4426       TRA 1,4                                            LC775000
07737 -0734 00 4 00000   4427 RMPRE PDX 0,4                                          LC775100
07740  0500 00 4 00000   4428       CLA 0,4                                            LC775200
07741 -0534 00 4 03321   4429       LXD $ARG3,4                                        LC775300
07742  0622 00 4 00000   4430       STD 0,4                                            LC775400
07743  0020 00 0 07726   4431       TRA RMPR2                                          LC775500
07744  0 00000 0 00000   4432 RMPRX                                                   LC409600
                         4433                                                          LC409700
                         4434                                                          LC424700
                         4435          PRINAR                                          LC424800
                         4436                                                          LC424900
                         4437          USES WOT AND PRINT                              LC425000
                         4438          CALLING SEQ IS..                                LC425100
                         4439                  TSX PRINAR,4                            LC425200
                         4440                      NOARG                               LC425300
                         4441                          BCD2 NAME OF FUN                LC425400
                         4442                            (RETURN)                      LC425500
                         4443          ARGUMENTS NOT ACCEPTABLE TO PRINT WILL CAUSE ERRORS   1.5Q0050
                         4444 * HAS BEEN CRIPPLED TO PRINT ONLY FIRST 2 ARGUMENTS      LC425600
                         4445                                                          LC425700
                         4446 P       HED                                             1.5Q0040
07745  0634 00 4 07774   4447 PRINAR SXA     PAS1,4          SAVE INDEX REGISTERS     1.5Q0041
07746  0634 00 2 07775   4448       SXA     PAS2,2                                     LC426000
07747  0601 00 0 03442   4449       STO PAS3                                           LC426100
07750 -0600 00 0 03443   4450       STQ PAS4                                           LC426200
07751  0500 00 4 00002   4451       CLA 2,4                                            LC426300
07752  0601 00 0 10001   4452       STO PAL1                                           LC426400
07753  0500 00 4 00003   4453       CLA 3,4                                            LC426500
07754  0601 00 0 10002   4454       STO PAL2                                           LC426600
07755  0500 00 4 00001   4455       CLA 1,4                                            LC426700
07756  0734 00 2 00000   4456       PAX 0,2                                            LC427000
07757  0074 00 4 01222   4457       TSX OUTPUT,4                                       LC427100
07760  0 00000 0 00364   4458           BCDOUT
```

```
07761  0 00011 0 07777   4459          PAL3,,PAL4-PAL3                                  LC427200
07762  0500 00 0 03442   4460      CLA PAS3                                             LC427300
07763  0074 00 4 04604   4461      TSX $PRINT,4                                         LC427400
07764 -2 00001 2 07767   4462      TNX PAP3,2,1                                         LC427500
07765  0500 00 0 03443   4463      CLA PAS4                                             LC427600
07766  0074 00 4 04604   4464 PAP2 TSX $PRINT,4                                        LC427700
07767  0074 00 4 01222   4465 PAP3 TSX OUTPUT,4                                       LC428100
07770  0 00000 0 00364   4466          BCDOUT                                           LC428200
07771  0 00001 0 10010   4467          PAL5,,1                                          LC428300
07772  0500 00 0 03442   4468      CLA PAS3                                             LC428600
07773  0560 00 0 03443   4469      LDQ PAS4                                             LC428700
07774  0774 00 4 00000   4470 PAS1 AXT     **,4          RESTORE INDEX REGISYERS      1.5Q0042
07775  0774 00 2 00000   4471 PAS2 AXT     **,2                                       1.5Q0043
07776  0020 00 4 00004   4472      TRA 4,4                                              LC428800
07777  006026644523      4473 PAL3 BCD 20 FUNCTION                                    LC429400
10000  633146456060
10001  0 00000 0 00000   4474 PAL1                                                     LC429500
10002  0 00000 0 00000   4475 PAL2                                                     LC429600
10003  603021626022      4476      BCD 5 HAS BEEN ENTERED, ARGUMENTS..                LC429700
10004  252545602545
10005  632551252473
10006  602151276444
10007  254563623333
10010                     4477 PAL4 BSS 0                                            LC429800
10010  606060606060      4478 PAL5 BCD 1                                            LC429900
```

```
                             4479         EJECT
                             4480                                                                       LC544100
                             4481              PROP AND SASSOC                                          LC544200
                             4482              SPECIALIZED SEARCH ROUTINES WHICH SHARE STORAGE          LC544300
                             4483                                                                       LC544400
                             4484 R       HED                                                           LC544500
                             4485                                                                       LC544600
                             4486              PROP(O,P,U)                                              LC544700
                             4487               = (NULL(O) YIELDS U, CAR(O) = P YIELDS CDR(O),          LC544800
                             4488                   T YIELDS PROP(CDR(O),P,U))                          LC544900
                             4489                                                                       LC545000
 10011  0634 00 4 10065      4490 PROP    SXA      SAST1,4              SAVE LINK IR
 10012  0131 00 0 00000      4491         XCA                           PROPERTY TO AC
 10013  0622 00 0 10024      4492         STD SASP1                     SET TXH                         LC545500
 10014  0402 00 0 00442      4493         SUB SASQ1                                                     LC545600
 10015  0622 00 0 10023      4494         STD SASP2                     SET TXL                         LC545700
 10016  0131 00 0 00000      4495         XCA                           OBJECT TO AC
 10017 -0734 00 4 00000      4496 SASL1   PDX 0,4                       L = CDR(L)                      LC546000
                             4497              INSERT TXH INSTRUCTION HERE IF NILL IS NADE NON-ZERO     LC546100
 10020 -3 00000 4 10030      4498         TXL SASP3,4,0                 NULL(L)                         LC546200
 10021  0500 00 4 00000      4499         CLA 0,4                       CWR(L)                          LC546300
 10022  0734 00 4 00000      4500         PAX 0,4                       CAR(L)                          LC546400
 10023 -3 00000 4 10017      4501 SASP2   TXL SASL1,4,**                                                LC546500
 10024  3 00000 4 10017      4502 SASP1   TXH SASL1,4,**                                                LC546600
 10025 -0320 00 0 00460      4503         ANA SASDM                                                     LC546700
 10026  0534 00 4 10065      4504         LXA      SAST1,4              RESTORE LINK IR
 10027  0020 00 4 00001      4505         TRA 1,4                                                       LC546900
                             4506                                                                       LC547000
 10030 -0754 00 0 00000      4507 SASP3   PXD      0,0                  CLEAR
 10031 -0534 00 4 03321      4508         LXD      $ARG3,4              INSPECT FUNCTIONAL ARGUMENT
 10032  3 00012 4 10035      4509         TXH      *+3,4,10             SKIP IF NOT A TXL
 10033  0534 00 4 10065      4510         LXA      SAST1,4
 10034  0020 00 0 03321      4511         TRA      $ARG3                                                 LC547400
 10035  0600 00 0 03321      4512         STZ      $ARG3                                                 LC547500
 10036  0560 00 0 03321      4513         LDQ      $ARG3                                                 LC547600
 10037 -0754 00 4 00000      4514         PXD      ,4                                                    LC547700
 10040  0534 00 4 10065      4515         LXA      SAST1,4              RESTORE LINK IR
 10041  0020 00 0 14663      4516         TRA      $APPLY                                               LC547900
                             4517                                                                       LC548000
                             4518              SASSOC(O,A,U)                                            LC548100
                             4519               = (NULL(A) YIELDS U, CAAR(A) YIELDS  CAR(A),            LC548200
                             4520                   T YIELDS SASSOC(O,CDR(A),U))                        LC548300
                             4521                                                                       LC548400
 10042  0634 00 4 10065      4522 SASSOC  SXA      SAST1,4              SAVE LINK IR
 10043  0634 00 2 10064      4523         SXA      SAST2,2              SAVE IR 2
 10044  0634 00 1 10062      4524         SXA      SAST3,1              SAVE IR 1                           6210
 10045  0622 00 0 10061      4525         STD SASP7                     SET TXH                         LC548900
 10046  0402 00 0 00442      4526         SUB SASQ1                                                     LC549000
 10047  0622 00 0 10060      4527         STD SASP6                     SET TXL                         LC549100
 10050  0131 00 0 00000      4528         XCA                           PAIR LIST TO AC
 10051 -0734 00 4 00000      4529         PDX      0,4                  TO INDEX 4
 10052 -3 00000 4 10067      4530 SASP5   TXL SASP4,4,0                 NULL(A)                         LC549200
                             4531              INSERT TXH INSTRUCTION HERE IF NILL IS NADE NON-ZERO     LC549300
 10053  0500 00 4 00000      4532         CLA 0,4                       CWR(A)                          LC549400
```

```
10054 -0734 00 4 00000   4533         PDX ,4                CDR(A)                                LC549500
10055  0734 00 2 00000   4534         PAX ,2                CAR(A)                                LC549600
10056  0500 00 2 00000   4535         CLA ,2                                                      LC549700
10057  0734 00 1 00000   4536         PAX      0,1          CAAR(A) TO INDX REGISTER
10060 -3 00000 1 10052   4537  SASP6  TXL      SASP5,1,**   LOOK FOR ITEM                             6230
10061  3 00000 1 10052   4538  SASP7  TXH      SASP5,1,**                                             6240
10062  0774 00 1 00000   4539  SAST3  AXT      **,1         FOUND ITEM, RESTORE IR 1                  6250
10063 -0754 00 2 00000   4540         PXD      0,2          POINTER TO WORD                           6260
10064  0774 00 2 00000   4541  SAST2  AXT      **,2         RESTORE IR 2
10065  0774 00 4 00000   4542  SAST1  AXT      **,4         RESTORE LINK IR
10066  0020 00 4 00001   4543         TRA 1,4                                                     LC550400
                         4544                                                                     LC550500
10067  0534 00 2 10064   4545  SASP4  LXA      SAST2,2      RESTORE IR 2
10070  0534 00 1 10062   4546         LXA      SAST3,1      RESTORE IR 1                              6270
10071  0020 00 0 10030   4547         TRA      $ASP3        EXECUTE SASSOC EXIT                       6280
                 00442   4548  SASQ1  SYN      $QD1                                                   6290
                 00460   4549  SASDM  SYN      $DMASK                                                 6300
                         4550                                                                     LC552200
10072  0100 00 4 00001   4551  SPREAD TZE      1,4          EXIT IF AGLIST IS NULL                    6310
10073  0634 00 4 10132   4552         SXA      SPRX,4       SAVE LINK IR                              6320
10074 -0734 00 4 00000   4553         PDX      0,4          POINTER TO ARG LIST                       6330
10075  0500 00 4 00000   4554         CLA      0,4          FIRST WORD                                6340
10076  0560 00 0 00370   4555         LDQ      $ZERO        ZERO THE MQ                               6350
10077 -0765 00 0 00022   4556         LGR      18           CAR TO CDR OF MQ                          6360
10100  0100 00 0 10131   4557         TZE      NLY          GO IF A  SINGLE ARGUMENT                  6370
10101  0734 00 4 00000   4558         PAX      0,4          POINTER TO NEXT WORD                      6380
10102  0500 00 4 00000   4559         CLA      0,4          NEXT WORD                                 6390
10103  0734 00 4 00000   4560         PAX      0,4          POINTER TO ARGUMENT                       6400
10104 -0320 00 0 00460   4561         ANA      $DMASK       MASK OUT ALL BUT DECREMENT                6410
10105  0100 00 0 10130   4562         TZE      TWA          GO IF 2 ARGUMENTS                         6420
10106 -0634 00 4 03320   4563         SXD      $ARG2,4      PUT AWAY                                  6430
10107  0634 00 2 10126   4564         SXA      SPRY,2       SAVE INDEX 1 AND 2                        6440
10110  0634 00 1 10125   4565         SXA      SPRZ,1                                                 6450
10111  0774 00 1 00022   4566         AXT      18,1         20 IS MAX NO OF ARGS
10112 -0734 00 4 00000   4567         PDX      0,4          REST OF ARG LIST TO IR 4
10113 -3 00000 4 10125   4568  SPP1   TXL      SPRZ,4,0     GO IF END OF LIST                         6470
10114  0500 00 4 00000   4569         CLA ,4                                                      LC553500
10115 -0734 00 4 00000   4570         PDX ,4                                                      LC553600
10116  0734 00 2 00000   4571         PAX ,2                                                      LC553700
10117 -0754 00 2 00000   4572         PXD ,2                                                      LC553800
10120  0601 00 1 03343   4573         STO      $ARG20+1,1
10121  2 00001 1 10113   4574         TIX SPP1,1,1                                                LC554000
10122 -0634 00 4 01562   4575  SPPERR SXD      $ERROR,4                                               6480
10123  0074 00 4 01563   4576         TSX $ERROR+1,4                                              LC554200
10124  542160600754      4577         BCI      1,*A  7*     TOO MANY ARGUMENTS---SPREAD*()
                         4578                                                                     LC554600
10125  0774 00 1 00000   4579  SPRZ   AXT      **,1         RESTORE IR 1                          1.5Q8000
10126  0774 00 2 00000   4580  SPRY   AXT      **,2         DITTO IR 2                            1.5Q8001
10127 -0534 00 4 03320   4581         LXD      $ARG2,4      ARG 2                                 1.5Q8002
10130 -0754 00 4 00000   4582  TWA    PXD      0,4          PUT IN DECREMENT AC                   1.5Q8003
10131  0131 00 0 00000   4583  NLY    XCA                   ARG 1 AND 2 TO RIGHT REGISTERS        1.5Q8004
10132  0774 00 4 00000   4584  SPRX   AXT      **,4         RESTORE LINK IR                       1.5Q8005
10133  0020 00 4 00001   4585         TRA      1,4          EXIT                                  1.5Q8006
                         4586                                                                     LC555700
```

```
                                        FUNCTION  ATTRIB(O,L)                               LC555800
                                        ATTRIB(O,L)=/ CDR(O)=O YIELDS (L REPLACES CDR(O))   LC555900
                                                     ELSE ATTRIB(CDR(O),L)  /               LC556000
                                                                                            LC556100
                                  R           HED                                           LC556200
10134  0634 00 4 10146              ATTRIB SXA AT1,4
10135 -0100 00 0 10140                     TNZ     ATRB           GO IF BEGINNING OF LIST   1.5Q8010
10136  0131 00 0 00000                     XCA                    OTHERWISE EXIT WITH ARG 2 1.5Q8011
10137  0020 00 4 00001                     TRA     1,4                                      1.5Q8012
10140 -0734 00 4 00000              ATRB   PDX ,4                 O                         LC556500
10141  0500 00 4 00000                     CLA ,4                                           LC556600
10142 -0320 00 0 00460                     ANA DMASK              CDR(O)                    LC556700
10143 -0100 00 0 10140                     TNZ ATRB                                         LC556800
10144  0131 00 0 00000                     XCA                    ARG 2 TO AC               1.5Q8013
10145  0622 00 4 00000                     STD ,4                                           LC557000
10146  0774 00 4 00000              AT1    AXT **,4
10147  0020 00 4 00001                     TRA 1,4                                          LC557200
                 00460              DMASK  SYN     $DMASK                                       6490
                                                                                            LC557700
                                                                                            LC576400
                                        NOT FUNCTION                                        LC576500
                                                                                            LC576600
                                  R           HED                                           LC576700
10150  0100 00 0 10153              NOTS   TZE *+3                                          LC576800
10151 -0754 00 0 00000                     PXD ,0                                           LC576900
10152  0020 00 4 00001                     TRA 1,4                                          LC577000
10153  0500 00 0 00442                     CLA NOTC1                                        LC577100
10154  0020 00 4 00001                     TRA 1,4                                          LC577200
                 00442              NOTC1  SYN     $QD1                                     LC577300
                                                                                            LC576200
                                        THE RPLACX FUNCTIONS  REPLACE THE X PART OF THE FIRST ARG  LC577400
                                        WITH THE SECOND ARGUMENT                            LC577500
                                        THE VALUE OF RPLACA,RPLACD, AND RPLACW IS ZERO      LC577600
                                  S           HED                                           LC577700
10155  0634 00 4 10162              RPLACA SXA REPL,4                                       LC577800
10156 -0734 00 4 00000                     PDX 0,4                                          LC577900
10157 -0763 00 0 00022                     LGL 18                                           LC578000
10160  0621 00 4 00000                     STA 0,4                                          LC578100
10161 -0754 00 4 00000              RPLEX  PXD     0,4            ARG1 TO AC AS ANSWER
10162  0774 00 4 00000              REPL   AXT     **,4           RESTORE LINK IR           1.5Q8023
10163  0020 00 4 00001                     TRA 1,4                                          LC578400
10164  0634 00 4 10162              RPLACD SXA REPL,4                                       LC578500
10165 -0734 00 4 00000                     PDX 0,4                                          LC578600
10166 -0620 00 4 00000                     SLQ 0,4                                          LC578700
10167  0020 00 0 10161                     TRA     RPLEX          EXIT                      1.5Q8022
10170  0634 00 4 10162              RPLACW SXA REPL,4                                       LC579100
10171 -0734 00 4 00000                     PDX 0,4                                          LC579200
10172 -0600 00 4 00000                     STQ 0,4                                          LC579300
10173  0020 00 0 10161                     TRA     RPLEX          EXIT                      1.5Q8021
                                                                                            LC580000
                                                                                            LC580400
                                        OBJECT GENERATOR                                    LC580500
                                                                                            LC580600
10174  0634 00 4 10214              GENSYM SXA     GENX,4         SAVE LINK IR              1.5Q8029
```

```
10175  0500 00 0 10217  4641        CLA    DIGIT              GET DIGITS
10176  0114 06 0 05313  4642        CVR    BCDAD1,,6          ADD 1 IN BCD
10177  0601 00 0 10217  4643        STO    DIGIT              UPDATE CELL
10200 -0501 00 0 10216  4644        ORA    LETTR
10201  0074 00 4 03710  4645        TSX $CONSW,4                                                  LC582700
10202  0560 00 0 00370  4646        LDQ GENZ                                                      LC582800
10203  0074 00 4 03730  4647        TSX $CONS,4                                                   LC582900
10204  0560 00 0 00370  4648        LDQ GENZ                                                      LC583000
10205  0074 00 4 03730  4649        TSX $CONS,4                                                   LC583100
10206  0131 00 0 00000  4650        XCA
10207  0500 00 0 00504  4651        CLA GENPN                                                     LC583400
10210  0074 00 4 03730  4652        TSX $CONS,4                                                   LC583500
10211  0131 00 0 00000  4653        XCA                                                           LC583700
10212  0500 00 0 00460  4654        CLA    GENC                                                   LC583800
10213  0074 00 4 03730  4655        TSX    $CONS,4                                                LC583900
10214  0774 00 4 00000  4656  GENX  AXT    **,4               RESTORE LINK IR                     1.5Q8033
10215  0020 00 4 00001  4657        TRA 1,4                                                       LC584400
                00370   4658  GENZ  SYN    $ZERO                                                 1.5Q8034
                00504   4659  GENPN SYN    PNAMED                                                1.5Q8035
                00460   4660  GENC  SYN    $DMASK                                                1.5Q8036
10216  270000000000     4661  LETTR BCI    1,G00000
10217  000000000000     4662  DIGIT BCI    1,000000
                        4663                                                                     LC580100
                        4664  *                                                                  9250
                        4665  * OVERLORD     THE TAPE HANDLING SECTION OF LISP. RECODED 20 FEBRUARY 9260
                        4666  *              1961 BY D. J. EDWARDS.                              9270
                        4667  *                                                                  9280
                        4668  * OVERLORD DIRECTION CARDS ARE PUNCHED IN FAP FORMAT WITH THE VARIABLE 9290
                        4669  *              FIELD BEGINNING IN COLUMN 16. DIRECTION CARDS ARE   9300
                        4670  *       ONE    (USE NO TAPES FOR THIS RUN)                         9310
                        4671  *       SET    ( SAVE RESULTS ON SYSTMP IF NO ERROR OCCURS)        9320
                        4672  *       TST    (GET NEW CORE IMAGE AFTER OPERATION)                9330
                        4673  *       TEST   (SAME AS ABOVE)                                     9340
                        4674  *       FIN    (ALL DONE, STOP MACHINE OR RETURN TO A HIGHER MONITOR) 9350
                        4675  *       SETSET (AVE RESULTS ON SYSTMP NO MATTER WHAT)              9360
                        4676  *       DEBUG  (SAME AS TEST BUT OBJECTLIST IS NOT SAVED AFTER READ IN) 9370
                        4677  *       SIZE   N1,N2,N3,N4  (GIVES SIZE OF BINPRG, PPDL, FWS AND FREE) 9380
                        4678  *       TAPE   SYSXXX,A7  (ASSIGNS SYSXXX TO UNIT A 7)             9390
                        4679  *       DUMP   BEG,END,TYPE    (MAKES OCTAL DUMP ON SYSPOT ACCORDING TO 9400
                        4680  *                                 TYPE. 0 FOR STRAIGHT OCTAL, NON-ZERO FOR 9410
                        4681  *                                 LISP (COMPLEMENT) DUMP.)       9420
                        4682  *       REMARK (LOG AS DIRECTION CARD AND LOKK FOR NEXT DIRECTION CARD)
                        4683  *       EXCISE I  (I IS COMPILER, INTERPRETER OR BOTH. TURNS ITEM INTO
                        4684  *            FREE STORAGE OR FULL WOTD SPACE)
                        4685  *                                                                  9430
                        4686  *                                                                  9440
10220  0604 00 0 10336  4687  OVBGN STI    OVSVI              BEGIN BY SAVING INDICATORS AND      9450
10221  0634 00 4 10511  4688        SXA    OVRLX,4            INDEX REGISTERS                     9460
10222  0634 00 2 10512  4689        SXA    OVRLY,2                                                9470
10223  0634 00 1 10513  4690        SXA    OVRLZ,1                                                9480
10224  0441 00 0 10337  4691        LDI    OVIND              PRESET INDICATORS                   9490
10225  0604 00 0 10340  4692        STI    SYSIND             AND SYSTEM INDICATORS               9500
10226  0500 00 0 00177  4693        CLA    FLAPCZ             CONTENTS OF CELL ZERO
10227  0601 00 0 00000  4694        STO    0                  FIX ANY CLOBBERING THAT MAT BE DONE
```

```
                                    4695 *                                                                  9510
10256 10230  0074 00 4 00663        4696 OVRLRD TSX     $INPUT,4    GET OVERLORD DIRECTION CARD             9520
      10231  0 00000 0 00000        4697                $BCDIN      FROM BCD INPUT TAPE                     9530
      10232  0 00016 0 10404        4698                OVBUF,,14   PUT IN OVERLORD CARD BUFFER             9540
      10233  0020 00 0 10254        4699          TRA   OVERR       ERROR RETURN                            9550
      10234  0020 00 0 10260        4700          TRA   OVEOF      END OF FILE RETURN                      9560
      10235  0560 00 0 10406        4701 OVGOR    LDQ   OVBUF+2     PICK UP OVERLORD DIRECTION              9570
      10236 -0500 00 0 10405        4702          CAL   OVBUF+1                                             9580
      10237 -0763 00 0 00006        4703          LGL   6           SHIFT DIRECTION IN LOGICAL AC           9590
      10240  0774 00 4 00030        4704          AXT   24,4        TWICE NUMBER OF DIRECTION CARDS
      10241 -0340 00 4 10336        4705 OVSRC    LAS   OVTBL,4     LOOK UP DIRECTION                       9610
      10242  0020 00 0 10244        4706          TRA   *+2         NOT THIS ONE                            9620
      10243  0020 00 0 10264        4707          TRA   OVPNT       FOUND IT GO PRINT CARD                  9630
      10244  2 00002 4 10241        4708          TIX   OVSRC,4,2   TRY AGAIN                               9640
      10245  3 00000 0 10230        4709 OVBSW    TXH   OVRLRD,,0   NOT IN TABLE, PRINT FIRST BAD CARD       9650
      10246  0502 00 0 10245        4710          CLS   OVBSW       AND GET NEXT CARD.                      9660
      10247  0601 00 0 10245        4711          STO   OVBSW       FLIP SWITCH                             9670
      10250  0074 00 4 01222        4712          TSX   OUTPUT,4    PRINT CARD OUT                          9680
      10251 -0 00000 0 00364        4713          MZE   BCDOUT      ON BCD OUTPUT TAPE, AND ON LINE         9690
      10252  0 00017 0 10403        4714                OVBUF-1,,15                                         9700
      10253  0020 00 0 10230        4715          TRA   OVRLRD      GET NEXT CARD                           9710
                                    4716 *                                                                  9720
      10254  0074 00 4 01222        4717 OVERR    TSX   OUTPUT,4    WRITE ERROR MESSAGE
      10255  0 00000 0 00364        4718                BCDOUT
      10256  0 00011 0 10362        4719                OVRDM,,9
      10257  0020 00 0 10235        4720          TRA   OVGOR       TRY TO MAKE SENSE OUT OF CARD
                                    4721 *
      10260  0074 00 4 01222        4722 OVEOF    TSX   OUTPUT,4    WRITE EOF REMARK
      10261  0 00000 0 00364        4723                BCDOUT
      10262  0 00007 0 10373        4724                OVALF,,7
      10263  0020 00 0 10472        4725          TRA   OVDN        GO AS IF A FIN CARD READ
                                    4726 *
      10264  0500 00 0 10245        4727 OVPNT    CLA   OVBSW       RESTORE PRINT SWITCH TO TXH             9730
      10265  0602 00 0 10245        4728          SLW   OVBSW                                               9740
      10266  0500 00 4 10337        4729          CLA   OVTBL+1,4   PICK UP TRA ADDRESS AND SAVE IT         9750
      10267  0621 00 0 10305        4730          STA   OVTRA                                               9760
      10270  0500 00 0 00200        4731          CLA   FLAPCX      SET CELLS IN LOWER CORE
      10271  0601 00 0 00010        4732          STO   8
      10272  0500 00 0 00201        4733          CLA   FLAPCY
      10273  0601 00 0 00002        4734          STO   2
      10274  0500 00 0 00177        4735          CLA   FLAPCZ
      10275  0601 00 0 00000        4736          STO   0
      10276  0074 00 4 01222        4737          TSX   OUTPUT,4    PRINT DIRECTION CARD                    9770
      10277 -0 00000 0 00364        4738          MZE   BCDOUT      ON BCD OUTPUT TAPE, AND ON LINE         9780
      10300  0 00017 0 10403        4739                OVBUF-1,,15                                         9790
      10301  0140 00 0 10302        4740          TOV   *+1         TURN OFF AC OVERFLOW LIGHT              9800
      10302  0441 00 0 10340        4741          LDI   SYSIND      PICK UP SYSTEM INDICATORS               9810
      10303  0057 00  000014        4742          RIR   14          RESET ERROR AND DEBIG INDICATORS        9820
      10304  0604 00 0 10340        4743          STI   SYSIND                                              9830
      10305  0020 00 0 00000        4744 OVTRA    TRA   **          EXECUTE SPECIFIC OVERLORD PROGRAM       9840
                          000010    4745 ERRORI   BOOL  10          ERROR INDICATOR
                                    4746 *                                                                  9850
                                    4747 *        DIRECTION CARD TABLE                                      9870
```



```
      10307  0020 00 0 10526        4749          TRA   OVONE                                               9890
      10310  622563606060           4750          BCI   1,SET                                               9900
      10311  0020 00 0 10451        4751          TRA   OVSET                                               9910
      10312  636263606060           4752          BCI   1,TST                                               9920
      10313  0020 00 0 10423        4753          TRA   OVTST                                               9930
```

```
10316  263145606060          4756             BCI    1,FIN                                                           9960
10317  0020 00 0 10472       4757             TRA    OVDN                                                            9970
10320  623171256060          4758             BCI    1,SIZE                                                          9980
10321  0020 00 0 10532       4759             TRA    OVSZE                                                           9990
10322  622563622563          4760             BCI    1,SETSET                                                    1.5M0010
10323  0020 00 0 10437       4761             TRA    OVSST                                                       1.5M0020
10324  242522642760          4762             BCI    1,DEBUG                                                     1.5M0030
10325  0020 00 0 10422       4763             TRA    OVDBG                                                       1.5M0040
10326  632147256060          4764             BCI    1,TAPE                                                      1.5M0050
10327  0020 00 0 11074       4765             TRA    OVTAP                                                       1.5M0060
10330  246444476060          4766             BCI    1,DUMP
10333  0020 00 0 10230       4769             TRA    OVRLRD
10334  256723316225          4770             BCI    1,EXCISE
10335  0020 00 0 11307       4771             TRA    OVEXS
10336  0 00000 0 00000       4772  OVSVI                              TEMPORARY STORAGE FOR INDICATORS           1.5M0090
                   10336     4773  OVTBL SYN         OVSVI            FOR INDEXING DIRECTION CARD TABLE          1.5M0100
10337 -1 00000 0 00000       4774  OVIND STR                          PRESET FOR LISP INDICATORS                 1.5M0110
10340  0 00000 0 00000       4775 SYSIND                              SYSTEM INDICATORES GO HERE                 1.5M0120
10341  002551514651          4776  OVCEM BCI         7,0ERROR IN SIZE CARD -OVERLORD-  *0 1*                     1.5M0130
10342  603145606231
10343  712560232151
10344  246040466525
10345  514346512440
10346  606054006001
10347  546060606060
10350  002163632544          4777  OVNSM BCI         9,0ATTEMPT TO OPERATE BEFORE SIZE CARD READ -OVERLORD-      1.5M0140
10351  476360634660
10352  464725512163
10353  256022252646
10354  512560623171
10355  256023215124
10356  605125212460
10357  404665255143
10360  465124406060
10361  605446600354          4778             BCI    1, *0 3*                                                    1.5M0150
10362  002551514651          4779  OVRDM BCI         9,0ERROR ON INPUT, BUT GOING ON ANYHOW -OVERLORD- *0  5*
10363  604645603145
10364  476463736022
10365  646360274631
10366  452760464560
10367  214570304666
10370  604046652551
10371  434651244060
10372  544660600554
10373  002545246046          4780  OVALF BCI         7,0END OF FILE ON INPUT -OVERLORD- *0  6*
```

```
10374  266026314325
10375  604645603145
10376  476463604046
10377  652551434651
10400  244060544660
10401  600654606060
10402  0 00004 0 10406   4781  OVPOS          OVBUF+2,,4          BEGINNING OF VARIABLE FIELD IN DIR CRD
10403  006060606060      4782        BCI      1,0                 DOUBLE SPACE PRINT OF DIRECTION CARD   1.5M0180
10404                    4783  OVBUF BSS      14                  OVERLORD DIRECTION CARD BUFFER         1.5M0190
                         4784  *                                                                         1.5M0200
                         4785  *     DEBUG    OVERLORD DIRECTION                                         1.5M0210
10422  0055 00  000004   4786  OVDBG SIR      4                   SET BEBUG INDICATOR                    1.5M0220
                         4787  *                                  PREFORM OVTST                          1.5M0230
                         4788  *                                                                         1.5M0240
                         4789  *                                                                         1.5M0250
                         4790  *     TEST OR TST OVERLORD DIRECTION                                     1.5M0260
10423  0056 00  000020   4791  OVTST RNT      20                  TEST FOR SETUP                         1.5M0270
10424  0020 00 0 10570   4792        TRA      OVNSZ               ERROR FOR NOO SIZE CARD HAS BEEN READ  1.5M0280
10425  0057 00  000100   4793        RIR      TAPIND              RESET TAPE INDICATOR                   1.5P0101
10426  0054 00  000002   4794        RFT      2                   WRITE TEST                             1.5M0290
10427  0074 00 4 00633   4795        TSX      TAPDMP,4            DUMP ON SYSTMP                         1.5M0300
10430  0054 00  000001   4796        RFT      1                   TEST FOR NEW CORE IMAGE                1.5M0310
10431  0074 00 4 00651   4797        TSX      OVLT,4              GET ONE                                1.5M0320
10432  0055 00  000001   4798        SIR      1                   SET READ INDICATOR                     1.5M0330
10433  0057 00  000002   4799        RIR      2                   TURN OFF WRITE INDICATOR               1.5M0340
10434  0604 00 0 10340   4800  OVTA  STI      SYSIND              UPDATE SYSTEM INDICATORS               1.5M0350
10435  0074 00 4 11310   4801        TSX      $EVALQ,4            PERFORM THE EVAL QUOTE OPERATOR        1.5M0360
10436  0020 00 0 10230   4802        TRA      OVRLRD              GET NEXT OVERLORD DIRECTION CARD       1.5M0370
            000004       4803  DEBUGI BOOL    4                   DEBUG INDICATOR                        1.5M0380
                         4804  *                                                                         1.5M0390
                         4805  *     SETSET DIRECTION CARD                                              1.5M0400
10437  0056 00  000020   4806  OVSST RNT      20                  TEST FOR SIZE                          1.5M0410
10440  0020 00 0 10570   4807        TRA      OVNSZ               ERROR, NO SIZE                         1.5M0420
10441  0057 00  000100   4808        RIR      TAPIND              RESET TAPE INDICATOR                   1.5P0102
10442  0054 00  000002   4809        RFT      2                   TEST FOR SAVE CORE                     1.5M0430
10443  0074 00 4 00633   4810        TSX      TAPDMP,4            SAVE IT                                1.5M0440
10444  0054 00  000001   4811        RFT      1                   TEST FOR NEW IMAGE                     1.5M0450
10445  0074 00 4 00651   4812        TSX      OVLT,4              GET ONE                                1.5M0460
10446  0055 00  000002   4813        SIR      2                   SET WRITE INDICATOR                    1.5M0470
10447  0057 00  000001   4814        RIR      1                   RESET READ INDICATOR                   1.5M0480
10450  0020 00 0 10434   4815        TRA      OVTA                PERFORM EVALQ AND GET NEXT CARD        1.5M0490
                         4816  *                                                                         1.5M0500
                         4817  *     SET      OVERLORD DIRECTION                                         1.5M0510
10451  0056 00  000020   4818  OVSET RNT      20                  TEST FOR SIZE                          1.5M0520
10452  0020 00 0 10570   4819        TRA      OVNSZ               ERROR, NO SIZE CARD                    1.5M0530
10453  0057 00  000100   4820        RIR      TAPIND              RESET TAPE INDICATOR                   1.5P0103
10454  0054 00  000002   4821        RFT      2                   CHECK WRITE INDICATOR                  1.5M0540
10455  0074 00 4 00633   4822        TSX      TAPDMP,4            DUMP ON SYSTMP                         1.5M0550
10456  0054 00  000001   4823        RFT      1                   TEST FOR NEW CORE IMAGE                1.5M0560
10457  0074 00 4 00651   4824        TSX      OVLT,4              GET ONE FROM SYSTMP                    1.5M0570
10460  0055 00  000002   4825        SIR      2                   SET WRITE INDICATOR                    1.5M0580
10461  0057 00  000001   4826        RIR      1                   RESET READ INDICATOR                   1.5M0590
10462  0604 00 0 10340   4827        STI      SYSIND              UPDATE SYSTEM INDICATORS               1.5M0600
10463  0074 00 4 11310   4828        TSX      $EVALQ,4            EVALUATE SET                           1.5M0610
```

```
10464  0441 00 0 10340   4829          LDI   SYSIND          GET SYSTEM INDICATORS                    1.5M0620
10465  0056 00  000010   4830          RNT   10              TEST ERROR INDICATOR                     1.5M0630
10466  0020 00 0 10230   4831          TRA   OVRLRD          OFF, GET NEXT DIRECTION CARD             1.5M0640
10467  0051 00  000003   4832          IIR   3               ON, INVERT READ AND WRITE INDICATORS     1.5M0650
10470  0604 00 0 10340   4833          STI   SYSIND
10471  0020 00 0 10230   4834          TRA   OVRLRD          GET NEXT DIRECTION CARD                  1.5M0660
                         4835 *                                                                      1.5M0670
                         4836 *        FIN   OVERLORD DIRECTION CARD                               1.5M0680
                         4837 *                                                                      1.5M0690
10472  0054 00  000002   4838  OVDN    RFT   2               TEST WRITE INDICATOR                     1.5M0700
10473  0074 00 4 00633   4839          TSX   TAPDMP,4        DUMP CORE ON SYSTMP                      1.5M0710
10474  0057 00  000002   4840          RIR   2               RESET WRITE INDICATOR                    1.5M0720
10475  0057 00  000100   4841          RIR   TAPIND          RESET TAPE INDICATOR                     1.5P0104
10476  0056 00  000040   4842          RNT   PPTIND          SEE IF PUNCH TAPE USED                   1.5M0730
10477  0020 00 0 10503   4843          TRA   *+4             SKIP IF NOT USED                         1.5M0740
10500  0500 00 0 00363   4844          CLA   SYSPPT          TAPE SPEC.                               1.5M0750
10501  0074 00 4 00276   4845          TSX   $(IOS),4        SET UP I-O COMMANDS                      1.5M0760
10502  0522 00 0 00353   4846          XEC   $WEF            WRITE EOF ON PPT                         1.5M0770
10503  0057 00  000040   4847          RIR   PPTIND          RESET INDICATOR                          1.5M0780
10504  0604 00 0 10340   4848          STI   SYSIND          UPDATE SYSTEM INDICATORS                 1.5M0790
10505  0500 00 0 00364   4849          CLA   SYSPOT          TAPE SPEC.                               1.5M0800
10506  0074 00 4 00276   4850          TSX   $(IOS),4        SET UP I-O COMMANDS                      1.5M0810
10507  0522 00 0 00353   4851          XEC   $WEF            WRITE EOF ON  SYSPOT                     1.5M0820
10510  0441 00 0 10336   4852          LDI   OVSVI           RESTORE ORIGINAL  INDICATORS AND       1.5M0830
10511  0774 00 4 00000   4853  OVRLX   AXT   **,4            INDEX REGISTERS                          1.5M0840
10512  0774 00 2 00000   4854  OVRLY   AXT   **,2                                                     1.5M0850
10513  0774 00 1 00000   4855  OVRLZ   AXT   **,1                                                     1.5M0860
10514  0500 00 0 10525   4856          CLA   OVTOV           PICK UP RESTART INSTRUCTION              1.5M0870
10515  0601 00 0 00000   4857          STO   0               STORE IN ZERO                            1.5M0880
10516 -0754 00 0 00000   4858          PXD   0,0             LIGHT THE PANEL                          1.5M0890
10517  0760 00 0 00006   4859          COM                                                            1.5M0900
10520 -0765 00 0 00045   4860          LGR   37                                                       1.5M0910
10521  0760 00 0 00006   4861          COM                                                            1.5M0920
10522 -0760 00 0 00003   4862          SSM                                                            1.5M0930
10523  0420 00 7 77777   4863          HPR   -1,7             STOP                                     1.5M0940
10524  0020 00 0 10523   4864          TRA   *-1              PRESS RESET AND START TO RESTART LISP    1.5M0950
10525  0020 00 0 10230   4865  OVTOV   TRA   OVRLRD          TRANSFER TO GET NEXT DIRECTION CARD      1.5M0960
              000040     4866  PPTIND  BOOL  40              PUNCH TAPE INDICATOR                     1.5M0970
                         4867 *                                                                      1.5M0980
                         4868 *        ONE   OVERLORD DIRECTION                                     1.5M0990
                         4869 *                                                                      1.5M1000
10526  0056 00  000020   4870  OVONE   RNT   20              TEST FOR SIZE                            1.5M1010
10527  0020 00 0 10570   4871          TRA   OVNSZ           ERROR, NO SIZE CARD READ                 1.5M1020
10530  0057 00  000003   4872          RIR   3               RESET READ AND WRITE INDICATORS          1.5M1030
10531  0020 00 0 10434   4873          TRA   OVTA            SAVE INDICATORS AND DO EVAL Q            1.5M1040
                         4874 *                                                                      1.5M1050
                         4875 *        SIZE  N1,N2,N3,N4     (OVERLORD DIRECTION CARD)                1.5M1060
                         4876 *        N1 = LENGTH OF BINARY PROGRAM, N2 = LENGTH OF PUBLIC PUSH DOWN 1.5M1070
                         4877 *        LIST, N3 = LENGTH OF FULL WORD SPACE, N4 = LENGTH OF FREE STORAGE1.5M1080
                         4878 *                                                                      1.5M1090
10532  0054 00  000002   4879  OVSZE   RFT   2               TEST FOR DUMP OF CURRENT CORE IMAGE      1.5M1100
10533  0074 00 4 00633   4880          TSX   TAPDMP,4        DUMP ON SYSTMP                           1.5M1110
10534  0500 00 0 10402   4381          CLA   OVPOS           SET TO TRANSLATE NUMBERS ON SIZE CARD    1.5M1120
10535  0074 00 4 06622   4382          TSX   $NUMBR,4        LENGTH OF BINARY PROGRAM                 1.5M1130
```

```
 10536  0100 00 0 10561   4883          TZE    OVCER                ERROR IF ZERO                        1.5M1140
 10537 -0600 00 0 02305   4884          STQ    LBINPG     2330      SAVE NUMBER                          1.5M1150
 10540  0074 00 4 06622   4885          TSX    $NUMBR,4             LENGTH OF PUBLIC PUSH DOWN LIST      1.5M1160
 10541  0100 00 0 10561   4886          TZE    OVCER                ZERO IS ERROR                        1.5M1170
 10542 -0600 00 0 02306   4887          STQ    LPBPDL               SAVE NUMBER                          1.5M1180
 10543  0074 00 4 06622   4888          TSX    $NUMBR,4             LENGTH OF FULL WORD SPACE            1.5M1190
 10544  0100 00 0 10561   4889          TZE    OVCER                ZERO IS ERROR                        1.5M1200
 10545 -0600 00 0 02307   4890          STQ    LFULWS               SAVE NUMBER                          1.5M1210
 10546  0074 00 4 06622   4891          TSX    $NUMBR,4             LENGTH OF FREE STORAGE               1.5M1220
 10547  0100 00 0 10561   4892          TZE    OVCER                ZERO IS ERROR                        1.5M1230
 10550 -0600 00 0 02310   4893          STQ    LFREES               SAVE NUMBER                          1.5M1240
 10551  0074 00 4 02077   4894          TSX    $SETUP,4             PERFORM SETUP                        1.5M1250
 10552  0441 00 0 10340   4895          LDI    SYSIND               SYSTEM INDICATORS                    1.5M1260
 10553  0054 00  000010   4896          RFT    10                   TEST FOR ERROR IN SETUP              1.5M1270
 10554  0020 00 0 10561   4897          TRA    OVCER                YES, DO ERROR PROCEDURE              1.5M1280
 10555  0055 00  000022   4898          SIR    22                   SET SIZE AND WRITE INDICATORS        1.5M1290
 10556  0057 00  000001   4899          RIR    1                    RESET READ INDICATOR                 1.5M1300
 10557  0604 00 0 10340   4900          STI    SYSIND               UPDATE SYSTEM INDICATORS             1.5M1310
 10560  0020 00 0 10230   4901          TRA    OVRLRD               GET NEXT DIRECTION CARD              1.5M1320
                          4902 *                                                                         1.5M1330
 10561  0441 00 0 10340   4903   OVCER  LDI    SYSIND               GETT SYSTEM INDICATORS               1.5M1340
 10562  0055 00  000001   4904          SIR    1                    CONVERSION ERROR IN SIZE, SET READ IND1.5M1350
 10563  0604 00 0 10340   4905          STI    SYSIND               UPDATE SYSTEM INDICATORS             1.5M1360
 10564  0074 00 4 01222   4906          TSX    OUTPUT,4             WRITE ERROR MESSAGE                  1.5M1370
 10565 -0 00000 0 00364   4907          MZE    BCDOUT               ON BCD OUTPUT TAPE AND ONLINE        1.5M1380
 10566  0 00007 0 10341   4908                 OVCEM,,7                                                  1.5M1390
 10567  0020 00 0 10230   4909          TRA    OVRLRD               GET NEXT DIRECTION CARD              1.5M1400
                          4910 *                                                                         1.5M1410
 10570  0074 00 4 01222   4911   OVNSZ  TSX    OUTPUT,4             WRITE ERROR MESSAGE                  1.5M1420
 10571 -0 00000 0 00364   4912          MZE    BCDOUT               ON BCD OUTPUT TAPE AND ONLINE        1.5M1430
 10572  0 00012 0 10350   4913                 OVNSM,,10                                                 1.5M1440
 10573  0020 00 0 10230   4914          TRA    OVRLRD               GET NEXT DIRECTION CARD              1.5M1450
                          4915 *                                                                         1.5M1460
                          4916 *        DUMP   BEGINNING,END,N      (OVERLORD DIRECTION)                 1.5M1470
                          4917 *               ALSO AVAILABLE TO LISP                                    1.5M1480
                          4918 *               BEGINNING IS A NUMBER TO START DUMP AT, END A NUMBER      1.5M1490
                          4919 *               (MEANING OBVIOUS) AND N IS A NUMBER IF ZERO GIVES A       1.5M1500
                          4920 *               STRAIGHT OCTAL DUMP AND IF NON-ZERO GIVES A COMPLEMENT    1.5M1510
                          4921 *               (LISP TYPE) DUMP.                                         1.5M1520
                          4922 *                                                                         1.5M1530
 10574  0634 00 4 10726   4923   OVDMP  SXA    OVDX,4               SAVE INDEX REGISTERS                 1.5M1540
 10575  0634 00 2 10727   4924          SXA    OVDY,2                                                    1.5M1550
 10576  0634 00 1 10730   4925          SXA    OVDZ,1                                                    1.5M1560
 10577  0600 00 0 11040   4926          STZ    OVDEX                INDICATE OVERLORD ENTRANCE           1.5M1570
 10600  0601 00 0 10723   4927          STO    OVDC                 SAVE AC
 10601 -0600 00 0 10724   4928          STQ    OVDQ                 SAVE MQ
 10602  0604 00 0 10725   4929          STI    OVDI                 SAVE SI
 10603  0500 00 0 10402   4930          CLA    OVPOS                POSITION OF VARIABLE FIELD           1.5M1580
 10604  0074 00 4 06622   4931          TSX    $NUMBR,4             BEGGINNING OF DUMP                   1.5M1590
 10605  0100 00 0 10770   4932          TZE    ODER                 ERROR IN CONVERSION                  1.5M1600
 10606 -0120 00 0 11002   4933          TMI    OVENK                IF FLOATING POINT NUMBER, LOOK AT KEYS
 10607 -0600 00 0 11042   4934          STQ    OBEG                                                      1.5M1610
 10610  0074 00 4 06622   4935          TSX    $NUMBR,4             NUMBER TO END DUMP AT                1.5M1620
 10611 -0600 00 0 11043   4936          STQ    OEND                                                      1.5M1630
```

```
10612  0100 00 0 10770           TZE     ODER          CONVERSION ERROR                         1.5M1640
10613  0074 00 4 06622           TSX     $NUMBR,4      TYPE OF DUMP                             1.5M1650
10614 -0600 00 0 11046           STQ     OLISD                                                  1.5M1670
10615  0100 00 0 10770           TZE     ODER          CONVERSION ERROR
10616  0500 00 0 11043   OVGE    CLA     OEND          END DUMP NUMBER
10617  0400 00 0 00371           ADD     $Q1                                                    1.5M1690
10620  0621 00 0 10641           STA     OLDQ          SET ADDRESS                              1.5M1700
10621  0402 00 0 11042           SUB     OBEG          GIVES COUNT OF WORDS TO BE DUMPED        1.5M1710
10622 -0120 00 0 10770           TMI     ODER          NEGATIVE NUMBER YIELDS ERROR             1.5M1720
10623  0734 00 1 00000           PAX     0,1           COUNT IN INDEX 1                         1.5M1730
10624  0534 00 4 11042           LXA     OBEG,4        GET BEGINNING                            1.5M1740
10625  1 77772 4 10626           TXI     *+1,4,-6      DECREMENT BY 6 (NUMBER OF WORDS /LINE)1.5M1750
10626 -0634 00 4 11042           SXD     OBEG,4        PUT IN DECREMENT FOR OCTAL CONVERSION 1.5M1760
10627  0020 00 0 10666           TRA     OVDSH         START THE DUMP
                         *
10630 -0500 00 0 11036   OAXT1   CAL     OVDSF         PICK UP STAR FLAG
10631  0602 00 0 11051   OAXT    SLW     OUP+1         PUT STARS OR BLANKS IN LINE
10632  0774 00 2 00022           AXT     18,2          SET IR 2
10633  0500 00 0 11042           CLA     OBEG          BEGININNING OF LINE                      1.5M1810
10634  0400 00 0 00445           ADD     $QD6          6 WORDS PER LINE                         1.5M1820
10635  0622 00 0 11042           STD     OBEG          UPDATE LINE NUMBER
10636  0131 00 0 00000           XCA                   NUMBER TO MQ                             1.5M1840
10637  0074 00 4 11021           TSX     OCTLP,4       CONVERT TO OCTAL                         1.5M1850
10640  0602 00 0 11050           SLW     OUP           BEGIN OUTPUT LINE                        1.5M1860
10641 -0500 00 1 00000   OLDQ    CAL     **,1          PICK UP WORD TO BE DUMPED                1.5M1870
10642  0100 00 0 10671           TZE     OSTZ          EASY IF ALL ZERO                         1.5M1880
10643 -0625 00 0 11037           STL     OVDZS         INDICATE SOMETHING NON-ZERO DUMPED
10644  0520 00 0 11046           ZET     OLISD         SKIP IF STRAIGHT DUMP                    1.5M1890
10645  0020 00 0 10673           TRA     OLID          DO LISP DUMP                             1.5M1900
10646 -0130 00 0 00000   ODXCL   XCL                   NUMBER TO MQ                             1.5M1910
10647  0074 00 4 11021           TSX     OCTLP,4       CONVERT LEFT HALF                        1.5M1920
10650  0602 00 2 11074           SLW     OUP+20,2      PUT IN OUTPUT LINE
10651  0074 00 4 11021           TSX     OCTLP,4       CONVERT RIGHT HALF                       1.5M1940
10652  0560 00 0 00472   OBQ     LDQ     BLANKS        BLANKS TO MQ                             1.5M1950
10653 -0765 00 0 00006           LGR     6             MAKE A HOLE                              1.5M1960
10654 -0501 00 0 00452           ORA     OBLANK        INSERT ONE BLANK                         1.5M1970
10655  0602 00 2 11075           SLW     OUP+21,2      PUT IN OUTPUT LINE
10656 -0600 00 2 11076           STQ     OUP+22,2      DITTO
10657 -2 00001 1 10713           TNX     OVDFN,1,1     EXIT IF DONE                             1.5M2000
10660  2 00003 2 10641           TIX     OLDQ,2,3      LOOP 6 TIMES                             1.5M2010
10661 -0520 00 0 11037           NZT     OVDZS         SKIP IF NOT ALL ZEROS
10662  0020 00 0 10630           TRA     OAXT1         GO BACK AND GET STAR FLAG FOR ZEROS
10663  0074 00 4 01222           TSX     OUTPUT,4      WRITE LINE OF DUMP                       1.5M2020
10664  0 00000 0 00364                   BCDOUT        ON BCDOUT                                1.5M2030
10665  0 00024 0 11050                   OUP,,20                                                1.5M2040
10666  0600 00 0 11037   OVDSH   STZ     OVDZS         SET SWITCH TO TEST FOR LINE OF ZEROS
10667 -0500 00 0 00472           CAL     BLANKS        BLANK THE FLAG FIELD
10670  0020 00 0 10631           TRA     OAXT          GET NEXT LINE                            1.5M2050
                         *                                                                      1.5M2060
10671  0600 00 2 11074   OSTZ    STZ     OUP+20,2      IF ZERO PUT ZERO S IN OUTPUT LINE
10672  0020 00 0 10652           TRA     OBQ           GO AS IF CONVERTED                       1.5M2080
                         *                                                                      1.5M2090
10673  0602 00 0 11045   OLID    SLW     ODLT          LISP TYPE (COMPLEMENT) DUMP
10674 -0320 00 0 11047           ANA     OLDM          MASK OUT ALL BUT TAG AND PREFIX          1.5M2110
```

```
10675  0100 00 0 10700   4991          TZE   ODC          TRANSFER IF LISP                          1.5M2120
10676 -0500 00 0 11045   4992          CAL   ODLT         HAS PREFIX AND/OR TAG, DUMP STRAIGHT      1.5M2130
10677  0020 00 0 10646   4993          TRA   ODXCL        GO TO NORMAL DUMP                         1.5M2140
10700 -0535 00 4 11045   4994  ODC     LDC   ODLT,4       COMPLEMENT DECREMENT                      1.5M2150
10701 -0634 00 4 11045   4995          SXD   ODLT,4       STORE                                     1.5M2160
10702  0535 00 4 11045   4996          LAC   ODLT,4       COMPLEMENT ADDRESS                        1.5M2170
10703  0634 00 4 11045   4997          SXA   ODLT,4       STORE                                     1.5M2180
10704  0560 00 0 11045   4998          LDQ   ODLT         PUT IN MQ                                 1.5M2190
10705  0074 00 4 11021   4999          TSX   OCTLP,4      CONVER LEFT HALF                          1.5M2200
10706 -0501 00 0 11044   5000          ORA   ODSAR        OR IN A *                                 1.5M2210
10707  0602 00 2 11074   5001          SLW   OUP+20,2     PUT IN OUTPUT LINE
10710  0074 00 4 11021   5002          TSX   OCTLP,4      CONVERT RIGHT HALF                        1.5M2230
10711 -0501 00 0 11044   5003          ORA   ODSAR        PUT IN *                                  1.5M2240
10712  0020 00 0 10652   5004          TRA   OBQ          PUT AWAY AS USUAL                         1.5M2250
                         5005 *                                                                   1.5M2260
10713 -2 00003 2 10717   5006  OVDFN   TNX   OVDLL,2,3    SKIP IF LINE FILLED OUT
10714 -0500 00 0 00472   5007          CAL   BLANKS       GET BLANKS IN AC                          1.5M1780
10715  0602 00 2 11074   5008          SLW   OUP+20,2     BLANK REST OF LINE
10716  2 00001 2 10715   5009          TIX   *-1,2,1
10717  0074 00 4 01222   5010  OVDLL   TSX   OUTPUT,4     WRITE LAST OUTPUT LINE                    1.5M2270
10720  0 00000 0 00364   5011          BCDOUT                                                       1.5M2280
10721  0 00024 0 11050   5012          OUP,,20                                                      1.5M2290
10722  0020 00 0 10726   5013          TRA   OVDX         GO TO EXIT
                         5014 *   FOLLOWING 6 SELLS CONTAIN AC, MQ , SI, AND IR S  UPON DUMP ENTRANCE
10723  0 00000 0 00000   5015  OVDC                       AC CONTENTS
10724  0 00000 0 00000   5016  OVDQ                       DITTO MQ
10725  0 00000 0 00000   5017  OVDI                       DITTO SI
10726  0774 00 4 00000   5018  OVDX    AXT   **,4         RESTORE INDEX REGISTERS                   1.5M2300
10727  0774 00 2 00000   5019  OVDY    AXT   **,2                                                   1.5M2310
10730  0774 00 1 00000   5020  OVDZ    AXT   **,1                                                   1.5M2320
10731  0520 00 0 11040   5021          ZET   OVDEX        TEST FOR LISP OR OVERLORD EXIT
10732  0020 00 4 00001   5022          TRA   1,4          LISP EXIT
10733  0520 00 0 11041   5023          ZET   OVDEK        TEST FOR ENK MODE
10734  0020 00 0 11002   5024          TRA   OVENK        GO TO KEEYS
10735  0020 00 0 10230   5025          TRA   OVRLRD       GO BACK FOR NEXT DIRECTION CARD
                         5026 *                                                                   1.5M2360
10736  0634 00 4 10726   5027 DUMPXX   SXA   OVDX,4       LISP ENTRANCE
10737  0634 00 2 10727   5028          SXA   OVDY,2       SAVE INDEX REGISTERS                      1.5M2380
10740  0634 00 1 10730   5029          SXA   OVDZ,1                                                 1.5M2390
10741 -0625 00 0 11040   5030          STL   OVDEX        SET FOR LISP EXIT                         1.5M2400
10742  0622 00 0 11040   5031          STD   OVDEX        SAVE ARG1                                 1.5M2410
10743  0500 00 0 03322   5032          CLA   $ARG4        PICK UP ID FOR DUMP                       1.5M2420
10744  0074 00 4 04604   5033          TSX   $PRINT,4     PRINT IT                                  1.5M2430
10745 -0534 00 2 11040   5034          LXD   OVDEX,2      ARG 1                                     1.5M2440
10746  0074 00 4 13075   5035          TSX   FIXVAL,4     EVALUATE AS FIXED POINT NUMBER            1.5M2450
10747  0601 00 0 11042   5036          STO   OBEG         STORE IN BEGINNING                        1.5M2460
10750  0131 00 0 00000   5037          XCA                ARG 2                                     1.5M2470
10751 -0734 00 2 00000   5038          PDX   0,2          ARG TO INDEX 2                            1.5M2480
10752  0074 00 4 13075   5039          TSX   FIXVAL,4     EVALUATE AS FIXED POINT NUMBER            1.5M2490
10753  0601 00 0 11043   5040          STO   OEND                                                   1.5M2500
10754 -0534 00 2 03321   5041          LXD   $ARG3,2      ARG 3                                     1.5M2510
10755  0074 00 4 13075   5042          TSX   FIXVAL,4     EVALUATE AS FIXED POINT NUMBER            1.5M2520
10756  0601 00 0 11046   5043          STO   OLISD
10757  0020 00 0 10616   5044          TRA   OVGE         EXECUTE DUMP                              1.5M2540
```

```
                                    5045 *
     10760  0634 00 4 10726         5046 DUMPYY SXA     OVDX,4
     10761  0634 00 2 10727         5047        SXA     OVDY,2
     10762  0634 00 1 10730         5048        SXA     OVDZ,1
     10763 -0625 00 0 11040         5049        STL     OVDEX
     10764 -0600 00 0 11043         5050        STO     OEND
     10765  0601 00 0 11042         5051        STO     OBEG
     10766  0600 00 0 11046         5052        STZ     OLISD
     10767  0020 00 0 10616         5053        TRA     OVGE
                                    5054 *                                                          1.5M2550
     10770  0074 00 4 01222         5055  ODER  TSX     OUTPUT,4      WRITE ERROR MESSAGE         1.5M2560
     10771 -0 00000 0 00364         5056        MZE     BCDOUT        ON BCD OUTPUT TAPE AND ONLINE 1.5M2570
     10772  0 00006 0 10774         5057                ODBAD,,6                                  1.5M2580
     10773  0020 00 0 10726         5058        TRA     OVDX          RESTORE AND EXIT            1.5M2590
     10774  002221246024            5059  ODBAD BCI     6,0BAD DUMP ARGUMENTS -OVERLORD- *O 4*    1.5M2600
     10775  644447602151
     10776  276444254563
     10777  626040466525
     11000  514346512440
     11001  605446600454
                                    5060 *                                                          1.5M2610
ID   11002  0420 77 7 77777         5061  OVENK HPR     -1,7,63       STOP FOR KEYS
     11003  0760 00 0 00004         5062        ENK                   PUT KEYS IN MQ
     11004 -0754 00 0 00000         5063        PXD     0,0           CLEAR AC
     11005 -0763 00 0 00001         5064        LGL     1             TYPE OF DUMP IN SIGN BIT
     11006  0601 00 0 11046         5065        STO     OLISD         PUT AWAY
     11007 -0754 00 0 00000         5066        PXD     0,0           CLEAR AC
     11010 -0763 00 0 00021         5067        LGL     17            BEGINNING
     11011  0601 00 0 11042         5068        STO     OBEG
     11012 -0754 00 0 00000         5069        PXD     0,0           CLEAR AC
     11013 -0763 00 0 00022         5070        LGL     18            END
     11014  0601 00 0 11043         5071        STO     OEND
     11015  0601 00 0 11041         5072        STO     OVDEK         SET SWITCH ON EXIT
     11016  0600 00 0 11040         5073        STZ     OVDEX         SET OVERLORD EXIT
     11017  0100 00 0 10726         5074        TZE     OVDX          EXIT ON ZERO REQUEST
     11020  0020 00 0 10616         5075        TRA     OVGE          PROCESS DUMP
                                    5076 *
     11021 -0754 00 0 00000         5077  OCTLP PXD     0,0           CONVERT LEFT HALF OF MQ TO OCTAL 1.5M2620
     11022 -0763 00 0 00003         5078        LGL     3             CLEAR AC AND DO SHIFT DANCE 1.5M2630
     11023  0767 00 0 00003         5079        ALS     3                                         1.5M2640
     11024 -0763 00 0 00003         5080        LGL     3                                         1.5M2650
     11025  0767 00 0 00003         5081        ALS     3                                         1.5M2660
     11026 -0763 00 0 00003         5082        LGL     3                                         1.5M2670
     11027  0767 00 0 00003         5083        ALS     3                                         1.5M2680
     11030 -0763 00 0 00003         5084        LGL     3                                         1.5M2690
     11031  0767 00 0 00003         5085        ALS     3                                         1.5M2700
     11032 -0763 00 0 00003         5086        LGL     3                                         1.5M2710
     11033  0767 00 0 00003         5087        ALS     3                                         1.5M2720
     11034 -0763 00 0 00003         5088        LGL     3                                         1.5M2730
     11035  0020 00 4 00001         5089        TRA     1,4           EXIT                        1.5M2740
                                    5090 *                                                          1.5M2750
                         11021      5091 OCTALP SYN     OCTLP
                         00651      5092  OVLT  SYN     OVLTXX
     11036  605454545460            5093  OVDSF BCI     1, ****       STAR FLAG AFTER DUMPING ZEROS
```

```
11037  0 00000 0 00000   5094  OVDZS                          SUPRESSES OUTPUT WHEN DUMPING ZEROS
11040  0 00000 0 00000   5095  OVDEX                          ZERO FOR OVERLORD EXIT NON-ZERO , LISP1.5M2760
11041  0 00000 0 00000   5096  OVDEK                          TEST CELL NON-ZERO FOR ENK MODE
11042  0 00000 0 00000   5097  OBEG                           BEGIN DUMP                                1.5M2770
11043  0 00000 0 00000   5098  OEND                           END DUMP                                  1.5M2780
11044  540000000000      5099  ODSAR BCI     1,*00000         A * FOR COMPLEMENT DUMPING                1.5M2790
11045  0 00000 0 00000   5100  ODLT                           TEMPORARY STORAGE                         1.5M2800
11046  0 00000 0 00000   5101  OLISD                          NON-ZERO FOR LISP TYPE DUMP               1.5M2810
11047 -3 00000 7 00000   5102  OLDM  SVN     ,4+2+1           MASK FOR TAG AND PREFIX                   1.5M2820
11050  606060606060      5103  OUP   BCI     2,               BLANKS FOR BEGINNING OF OUT PUT LINE      1.5M2830
11051  606060606060
11052                    5104        BSS     18               ROOM FOR REST OF LINE                     1.5M2840
                         5105 *                                                                         1.5M2850
                         5106 *                                                                         1.5M2860
                         5107 *        TAPE    SYSXXX,A6        (OVERLORD DIRECTION CARD)                1.5M2870
                         5108 *        SYSTAP, SYSTMP, SYSPIT AND SYSPOT ARE CURRENTLY                 1.5M2880
                         5109 *        RECOGINIZED LISP TAPES. UNIT DESIGNATION IS BY CHANNEL          1.5M2890
                         5110 *        (A, B, OR C) AND NUMBER (1 THRU 10).                            1.5M2900
                         5111 *                                                                         1.5M2910
11074  0634 00 4 11225   5112  OVTAP SXA     OVTPX,4          SAVE INDEX REGISTERS                      1.5M2920
11075  0634 00 2 11226   5113        SXA     OVTPY,2                                                    1.5M2930
11076  0634 00 1 11227   5114        SXA     OVTPZ,1                                                    1.5M2940
11077  0054 00  000100   5115        RFT     TAPIND           SKIP IF LAST CARD WAS NOT A TAPE CARD     1.5P0105
11100  0020 00 0 11107   5116        TRA     OVTJJ            SKIP READ AND WRITE SECTION               1.5P0106
11101  0054 00  000002   5117        RFT     2                TEST FOR TAPE DUMP ON SYSTMP              1.5M2950
11102  0074 00 4 00633   5118        TSX     TAPDMP,4         DO IT                                     1.5M2960
11103  0054 00  000001   5119        RFT     1                TEST FOR READ                             1.5M2970
11104  0074 00 4 00651   5120        TSX     OVLT,4           GET NEW IMAGE                             1.5M2973
11105  0057 00  000001   5121        RIR     1                RESET READ INDICATOR                      1.5M2975
11106  0055 00  000002   5122        SIR     2                SET WRITE INDICATOR                       1.5M2977
11107  0055 00  000100   5123  OVTJJ SIR     TAPIND           SET TAPE DIRECTION INDICATOR              1.5P0107
11110  0604 00 0 10340   5124        STI     SYSIND           UPDATE SYSTEM INDICATORS                  1.5M2980
11111  0774 00 4 00005   5125        AXT     5,4              NUMBER OF ENTRIES IN TAPE TABLE           1.5M2990
11112 -0500 00 0 10406   5126        CAL     OVBUF+2                                                    1.5M3000
11113  0560 00 0 10407   5127        LDQ     OVBUF+3          GET TAPE DESIGNATION IN AC AND MQ         1.5M3010
11114 -0763 00 0 00023   5128        LGL     19               SHIFT INTO AC                             1.5M3020
11115 -0765 00 0 00001   5129        LGR     1                DUMPING Q BIT                             1.5M3030
11116 -0340 00 4 11243   5130  OVLA  LAS     OVTTB,4          COMPARE WITH TAPE TABLE                   1.5M3040
11117  0020 00 0 11121   5131        TRA     *+2              NOT THIS ONE                              1.5M3050
11120  0020 00 0 11143   5132        TRA     OVTAA            THIS IS IT                                1.5M3060
11121  2 00001 4 11116   5133        TIX     OVLA,4,1         TRY AGAIN                                 1.5M3070
11122  0602 00 0 11131   5134  OVCMP SLW     OVTRM            NOT FOUND, COMPLAIN                       1.5M3080
11123  0074 00 4 01222   5135        TSX     OUTPUT,4                                                   1.5M3090
11124  0 00000 0 00364   5136                BCDOUT                                                     1.5M3100
11125  0 00014 0 11127   5137                OVTRN,,12                                                  1.5M3110
11126  0020 00 0 10230   5138        TRA     OVRLRD           GET NEXT DIRECTION CARD                   1.5M3120
11127  006062465151      5139  OVTRN BCI     2,0 SORRY,                                                 1.5M3130
11130  707360606060
11131  0 00000 0 00000   5140  OVTRM                                                                    1.5M3140
11132  603162604546      5141        BCI     9, IS NOT A VALID LISP TAPE DESIGNATION -OVERLORD- *0 2*  1.5M3150
11133  636021606521
11134  433124604331
11135  624760632147
11136  256024256231
```

```
11137  274521633146
11140  456040466525
11141  514346512440
11142  605446600254
11143 -0773 00 0 00006   5142 OVTAA  RQL   6          DUMP THE COMMA                          1.5M3160
11144 -0754 00 0 00000   5143        PXD   0,0        CLAER AC                                1.5M3170
11145 -0763 00 0 00006   5144        LGL   6          CHANELL LETTER IN AC                    1.5M3180
11146  0044 00 0 00000   5145        PAI              IN INDICATORS                           1.5M3190
11147  0774 00 2 00003   5146        AXT   3,2        TRY CHAN. C                             1.5M3200
11150  0056 00  000003   5147        RNT   3          SKIP IF C
11151  0774 00 2 00002   5148        AXT   2,2        TRY B                                   1.5M3220
11152  0056 00  000002   5149        RNT   2          SKIP IF B OR C
11153  0774 00 2 00001   5150        AXT   1,2        IF NO SKIP, MUST BE A                   1.5M3240
11154 -0763 00 0 00006   5151        LGL   6          TAPE NUMBER IN AC                       1.5M3250
11155 -0320 00 0 00417   5152        ANA   $QO17      MASK OUT ALL BUT 4 LOW ORDER BITS
11156  0441 00 0 10410   5153        LDI   OVBUF+4    NEXT WORD IN INDICATORS                 1.5M3270
11157 -0054 00  770000   5154        LFT   770000     SKIP IF LEFT MOST CHARACTER IS A 0       1.5M3280
11160  0020 00 0 11162   5155        TRA   *+2                                               1.5M3290
11161  0400 00 0 00401   5156        ADD   $Q9        IF LEFT MOST IS 0 ADD 9 TO THE 1        1.5M3300
11162  0734 00 1 00000   5157        PAX   0,1        RESULT TO INDEX 1                       1.5M3310
11163 -3 00000 1 11165   5158        TXL   *+2,1,0    ZERO UNIT DOES NOT GO
11164 -3 00012 1 11174   5159        TXL   OVTPS,1,10 UNITS OVER TEN DON T GO                 1.5M3320
11165  0500 00 0 00472   5160        CLA   BLANKS     OVER 10, COMPLAIN                       1.5M3330
11166  0560 00 0 10407   5161        LDQ   OVBUF+3                                           1.5M3340
11167 -0773 00 0 00030   5162        RQL   24         POSITION TAPE DESIG                     1.5M3350
11170 -0763 00 0 00014   5163        LGL   12                                                1.5M3360
11171  0560 00 0 10410   5164        LDQ   OVBUF+4                                          1.5M3370
11172 -0763 00 0 00006   5165        LGL   6          ALL IN AC                               1.5M3380
11173  0020 00 0 11122   5166        TRA   OVCMP      GO COMPLAIN                             1.5M3390
11174 -0501 00 4 11250   5167 OVTPS  ORA   OVTCT,4    OR IN BIN OR BCD FOR THAT TAPE          1.5M3400
11175 -0501 00 2 11253   5168        ORA   OVCHN,2    OR IN PROPER CHANEL DESIGNATION         1.5M3410
11176  0602 00 4 00370   5169        SLW   TAPASG,4   CHANGE TAPE ASSIGNMENT                  1.5M3420
11177  0560 00 4 11243   5170        LDQ   OVTTB,4    MAKE OUTPUT MESSAGE BY GETTING NAME     1.5M3430
11200 -0600 00 0 11234   5171        STQ   OVTPO      PUT INTO MESSAGE                        1.5M3440
11201  3 00001 4 11216   5172        TXH   OVTXX,4,1  SKIP FOLLOWING IF NOT SYSTAP            1.5M3450
11202  0500 00 0 00367   5173        CLA   SYSTAP                                            1.5M3460
11203  0074 00 4 00276   5174        TSX   $(IOS),4    SET UP I-O COMMANDS FOR SYSTAP          1.5M3470
11204  0560 00 0 00357   5175        LDQ   $TCO       MAKE PROPER SYSTEM CALL CARD            1.5M3480
11205 -0620 00 0 00145   5176        SLQ   BOTTOM+1    AND SET UP BOOT STRAP RECORD            1.5M3490
11206  0560 00 0 00350   5177        LDQ   $RDS                                              1.5M3510
11207 -0600 00 0 11273   5178        STQ   GCRDB                                             1.5M3520
11210  0560 00 0 00361   5179        LDQ   $RCH                                              1.5M3550
11211 -0620 00 0 11274   5180        SLQ   GCRDC                                             1.5M3560
11212  0560 00 0 00362   5181        LDQ   $LCH                                              1.5M3570
11213 -0620 00 0 11276   5182        SLQ   GCRDD                                             1.5M3580
11214  0766 00 0 01341   5183        WPUA                PUCH OUT THE 2 CARD CALLER          1.5M3590
11215  0540 00 0 11302   5184        RCHA  GCIOC        CHANNEL COMMANDS                        1.5M3600
11216  0500 00 2 11256   5185 OVTXX  CLA   OVCLT,2    TELL WHAT YOU HAVE DONE BY MAKING       1.5M3610
11217 -0501 00 1 11270   5186        ORA   OVCTN,1    A MESSAGE                               1.5M3620
11220  0621 00 0 11231   5187        STA   OVTPP                                             1.5M3630
11221  0625 00 0 11231   5188        STT   OVTPP                                             1.5M3640
11222  0074 00 4 01222   5189        TSX   OUTPUT,4   PRINT OUT THE NEW ASSIGNMENT           1.5M3650
11223  0 00000 0 00364   5190        BCDOUT                                                  1.5M3660
11224  0 00005 0 11231   5191        OVTPP,,5                                                1.5M3670
```

```
11225  0774 00 4 00000   5192  OVTPX AXT   **,4                RESTORE INDEX REGISTERS          1.5M3680
11226  0774 00 2 00000   5193  OVTPY AXT   **,2                                                 1.5M3690
11227  0774 00 1 00000   5194  OVTPZ AXT   **,1                                                 1.5M3700
11230  0020 00 0 10230   5195        TRA   OVRLRD              GET NEXT DIRECTION CARD          1.5M3710
11231  006060000000      5196  OVTPP BCI   3,0  000IS NOW LISP
11232  316260454666
11233  604331624760
11234  000000000000      5197  OVTPO BCI   2,000000.                                           1.5M3740
11235  336060606060
                         5198  *           TABLES FOR OVTAP                                     1.5M3750
11236  627062474763      5199        BCI   5,SYSPPTSYSPOTSYSPITSYSTMPSYSTAP                   1.5M3760
11237  627062474663
11240  627062473163
11241  627062634447
11242  627062632147
11243  0 00000 0 00000   5200  OVTTB PZE                       LOW DENS, BCD PPT                1.5M3770
11244  0 00000 0 00000   5201        PZE                       LOW DENS, BCD PIT                1.5M3780
11245  0 00000 0 00000   5202        PZE                       LOW DENS, BCD POT                1.5M3790
11246  0 00000 0 00020   5203        PZE   16                  HI DENS, BIN TMP                 1.5M3800
11247  0 00000 0 00020   5204        PZE   16                  HI DENS, BIN TMP                 1.5M3810
11250  0 00003 0 03200   5205  OVTCT PZE   3*512+2*64,,3       CHANNEL C                        1.5M3820
11251  0 00002 0 02200   5206        PZE   2*512+2*64,,2       B                                1.5M3830
11252  0 00001 0 01200   5207        PZE   1*512+2*64,,1       A                                1.5M3840
11253  000000230000      5208  OVCHN BCI   3,000C00000B00000A00                                 1.5M3850
11254  000000220000
11255  000000210000
11256  000000000100      5209  OVCLT BCI   9,00001000009 00008 00007 00006 00005 00004 00003 00002  1.5M3860
11257  000000001160
11260  000000001060
11261  000000000760
11262  000000000660
11263  000000000560
11264  000000000460
11265  000000000360
11266  000000000260
11267  000000000160      5210        BCI   1,00001                                            1.5M3870
11270                    5211  OVCTN BSS   0                                                    1.5M3880
                         5212  *                                                              1.5M3950
                         5213  *                                                              1.5M3960
                         5214  * SYSTEM CALL CARD PERFORMS A LOAD TAPE SEQUENCE ON THE SYSTAP  1.5M3970
                         5215  *                                                              1.5M3980
11270  0 00006 0 00011   5216  GCRD  IOCD  9,,6
11271  0060 00 0 00001   5217        TCOA  1
11272  0021 00 0 00011   5218        TTR   9
11273  0762 00 0 01221   5219  GCRDB RTBA  1                 SELECT THE SYSTEM TAPE           1.5M4020
11274  0540 00 0 00016   5220  GCRDC RCHA  14
11275  0600 00 0 00001   5221        STZ   1                 STOP IF TAPE DOES NOT LOAD       1.5M4040
11276  0544 00 0 00000   5222  GCRDD LCHA  0                 LOAD I-O COMMAND FROM TAPE       1.5M4050
11277  0021 00 0 00001   5223        TTR   1                 TRANSFER TO ONE                  1.5M4060
11300 -1 00003 0 00000   5224        IOCT  0,,3              LOAD FIRST 3 WORDS FROM TAPE     1.5M4065
                         5225  *                             SECOND CARD OF CALLER            1.5M4070
11301  0 00000 0 00174   5226  GCRDE HTR   CONTIN            BECOMES A TRANSFER CARD          1.5M4080
                         5227  *                             I-O COMMANDS TO PUNCH CALL CARDS 1.5M4090
11302  2 00011 0 11270   5228  GCIOC IORP  GCRD,,9                                            1.5M4100
```

```
11303  2 00001 0 11301            IORP    GCRDE,,1            TRANSFER CARD                          1.5M4110
11304  2 00000 0 11306            IORP    **+2,,0             2 BLANK CARDS                          1.5M4120
11305  2 00000 0 11306            IORP    **+1,,0                                                    1.5M4130
11306  0 00000 0 00000            IOCD    0,,0                DISCONNECT CHANNEL
                           *                                                                         1.5M4150
                000100     TAPIND BOOL    100                                                        1.5P0100
                           *
                           *      EXCISE  DIRECTION CARD TO THROW OUT THE COMPILER AND/OR THE INTER
                           *              PRETER GOES HERE
                           *
11307  0020 00 0 10230     OVEXS  TRA     OVRLRD              ROUTINE NOT WRITTEN YET.  8 APRIL 1961
                           *                                                                          7770
                           *      EVALQ   A SUCCESSOR TO THE APPLY OPERATOR, THE GRAND NEW
                           *              (AS OF 1 MARCH 1961) THE EVALQUOTE OPERATOR.                7790
                           *                                                                          7800
11310  0634 00 4 11416     EVALQ  SXA     EVLQX,4             SAVE LINK IR                            7810
11311  0634 00 2 11417            SXA     EVLQY,2             SAVE IR 2                               7820
11312  0074 00 4 01521            TSX     $TIME,4             PRINT TIME AND DATE                     7880
11313  0074 00 4 01222            TSX     OUTPUT,4            WRITE OPENNING MESSAGE                  7830
11314  0 00000 0 00364                    BCDOUT                                                      7840
11315  0 00014 0 11520                    EVQBM,,12                                                   7910
11316  0600 00 0 11516            STZ     EVQRTS              INITIALIZE TEST CELLS                   7860
11317  0600 00 0 03653            STZ     EVQB                DITTO                                   7870
11320  0774 00 2 00144            AXT     EVQBL,2             LENGTH OF EVAL QUOTE BUFFER             7890
11321  0634 00 2 11437     EVQRD  SXA     EVQRX,2             SAVE INDEX 2 INCASE OF READ ERROR
11322  0074 00 4 05732            TSX     $READ,4             READ THE INPUT LISTS
11323  0601 00 0 03506            STO     EVQAN               SAVE THE LIST                           7920
11324  0340 00 0 11517            CAS     EVQSP               COMPARE WITH STOP ATOM
11325  0020 00 0 11327            TRA     *+2                 IS NOT                                  7940
11326  1 00001 2 11341            TXI     EVQOP,2,1           SET IR 2 TO PROER VALUE
11327  0520 00 0 03653            ZET     EVQB                SKIP IF FIRST LIST OF DOUBLET           7960
11330  0020 00 0 11334            TRA     EVQA                IS SECOND LIST                          7970
11331 -0625 00 0 03653            STL     EVQB                FLIP SWITCH                             7980
11332  0601 00 2 03653            STO     EVQB,2              SAVE FIRST LIST OF DOUBLET IN BUFFER    7990
11333  0020 00 0 11321            TRA     EVQRD               GET NEXT LIST                           8000
11334 -0734 00 4 00000     EVQA   PDX     0,4                 LIST TO INDEX                           8010
11335  0754 00 4 00000            PXA     0,4                 MOVE TO ADDRESS                         8020
11336  0621 00 2 03653            STA     EVQB,2              SAVE SECOND LIST OF DOUBLET IN BUFFER   8030
11337  0600 00 0 03653            STZ     EVQB                FLIP SWITCH                             8040
11340  2 00001 2 11321            TIX     EVQRD,2,1           GET NEXT LIST                           8050
11341 -0634 00 2 11410     EVQOP  SXD     EVQTH,2             INDEX VALUE OF LAST LIST READ IN        8060
11342  0074 00 4 01521            TSX     $TIME,4             PRINT TIME
11343 -0625 00 0 11516            STL     EVQRTS              SET ERROR RETURN SWITCH                 8070
11344  0774 00 2 00144            AXT     EVQBL,2             LENGTH OF BUFFER                        8080
11345  0634 00 2 11407     EVQLP  SXA     EVQER,2             SAVE INDEX VALUE                        8090
11346  0074 00 4 01200     EVQS   TSX     SPACEX,4            WRITE OUT SOME BLANK LINES
11347  0 00000 0 01216                    6SPACE               3 DOUBLE SPACES
11350  0500 00 2 03653            CLA     EVQB,2              PICK UP FIRST ITEM IN BUFFER            8160
11351  0600 00 2 03653            STZ     EVQB,2              ZERO THE BUFFER ENTRY
11352  0600 00 0 03316            STZ     $ALIST              RESET ALIST
11353 -0734 00 4 00000            PDX     0,4                 MAKE AN ATOM TEST                       8170
11354  0560 00 0 00370            LDQ     $ZERO
11355 -0765 00 0 00022            LGR     18                  SECOND LIST INTO MQ
11356 -0754 00 4 00000            PXD     0,4                 FIRST LIST INTO AC
```

```
11357  0074 00 4 07745  5283          TSX   PRINAR,4      PRINT HEADING
11360  0 00000 0 00002  5284                2
11361  602565214350     5285          BCI   2, EVALQUOTE
11362  644663256060
11363 -0774 00 4 11377  5286          AXC   EVQFT,4       SET RETURN INDEX CELL
11364  0634 00 4 11376  5287          SXA   EVQD,4
11365  0774 00 4 14663  5288  EVQMP   AXT   $APPLY,4       SET CELL OF PROGRAM TO BE EXECUTED
11366  0634 00 4 11377  5289          SXA   EVQFT,4        INITIALIZE PROGRAM TO BE EXECUTED CELL
11367  0601 00 0 11513  5290          STO   EVQAC         SAVE AC
11370 -0734 00 4 00000  5291          PDX   0,4           FIRST LIST TO IR 4
11371  0500 00 4 00000  5292          CLA   0,4                                                    8180
11372  0734 00 4 00000  5293          PAX   0,4                                                    8190
11373  3 77776 4 11441  5294          TXH   EVQAT,4,-2    TRANSFER IF FIRST LIST IS ATOMIC         8200
11374  0500 00 0 11513  5295  EVQNF   CLA   EVQAC         RESTORE AC
11375  0600 00 0 03321  5296 EVQZ    STZ   $ARG3          NULL ALIST FOR APPLY
11376  0774 00 4 00000  5297  EVQD    AXT   **,4          RETURN INDEX REGISTER
11377  0020 00 0 00000  5298  EVQFT   TRA   **            PROGRAM TO BE EXECUTED
11400  0601 00 0 03506  5299  EVQE    STO   EVQAN         SAVE ANSWER                              8320
11401  0074 00 4 01222  5300          TSX   OUTPUT,4       PRINT END OF EVALQUOTE MESSAGE           8330
11402  0 00000 0 00364  5301          BCDOUT                                                       8340
11403  0 00005 0 11534  5302          EVQAM,,5                                                     8350
11404  0500 00 0 03506  5303          CLA   EVQAN         PICK UP ANSWER                           8360
11405  0074 00 4 04604  5304          TSX   $PRINT,4      PRINT IT                                 8370
11406  0600 00 0 03506  5305          STZ   EVQAN         ZERO TEMP STORAGE                        8380
11407  0774 00 2 00000  5306  EVQER   AXT   **,2          ERRORS COME BACK HERE, RESTORE IR 2      8390
11410 -3 00000 2 11412  5307  EVQTH   TXL   EVQDN,2,**    EXIT IF LAST DOUBLET EXECUTED            8400
11411  2 00001 2 11345  5308          TIX   EVQLP,2,1     EXECUTE NEXT DOUBLET
11412  0074 00 4 01521  5309  EVQDN   TSX   $TIME,4       ALL DONE, PRINT THE TIME                 8420
11413  0074 00 4 01222  5310          TSX   OUTPUT,4       PRINT COLSING MESSAGE                    8430
11414  0 00000 0 00364  5311          BCDOUT                                                       8440
11415  0 00005 0 11541  5312          EVQME,,5                                                     8450
11416  0774 00 4 00000  5313  EVLQX   AXT   **,4          RESTORE LINK IR                          8460
11417  0774 00 2 00000  5314  EVLQY   AXT   **,2                                                   8470
11420  0020 00 4 00001  5315          TRA   1,4           EXIT                                     8480
                        5316 *
                        5317 *       EVALQT  LISP ENTRANCE TO EVALQUOTE
                        5318 *
11421  0634 00 4 11376  5319 EVALQT  SXA   EVQD,4        SET RETURN INDEX CELL
11422  0020 00 0 11365  5320          TRA   EVQMP         GO TO MAIN PROGRAM
                        5321 *                                                                    8490
                        5322 * ERROR RETURNS CONTROL HERE                                       8500
                        5323 *                                                                    8510
11423  0074 00 4 06311  5324 EVQERR  TSX   TEREAD,4       CLEAN UP READ BUFFER
11424  0074 00 4 05214  5325          TSX   TERPRI,4       CLEAN UP PRINT BUFFER                    8530
11425  0074 00 4 05421  5326          TSX   TERPUN,4       CLEAN UP PUNCH BUFFER
11426  0074 00 4 02410  5327          TSX   TERPDL,4       RESET PUSH DOWN LIST                     8540
11427  0520 00 0 11516  5328          ZET   EVQRTS        SKIP IF IN READ IN SECTION OF EVALQUOT   8550
11430  0020 00 0 11407  5329          TRA   EVQER         EXECUTE NEXT DOUBLET                     8560
11431 -0625 00 0 11516  5330          STL   EVQRTS        MOVE TO OPERATE SECTION OF EVALQUOTE     8570
11432  0074 00 4 01222  5331          TSX   OUTPUT,4       MESSAGE THAT READ WAS ERROR TERMINATED   8580
11433  0 00000 0 00364  5332          BCDOUT                                                       8590
11434  0 00012 0 11546  5333          EVQRE,,10                                                    8600
11435  0500 00 0 03506  5334          CLA   EVQAN         PICK UP LAST LIST READ IN                8610
11436  0074 00 4 04604  5335          TSX   $PRINT,4                                               8620
```

```
11437  0774 00 2 00000  5336  EVQRX AXT   **,2          RESTORE IR 2 TO RIGHT VALUE
11440  1 00001 2 11341  5337        TXI   EVQOP,2,1     SET IR 2 TO PROER VALUE
                        5338 *                                                    8640
                        5339 * CASE FOR ATOMIC FIRST LIST OF DOUBLET              8650
                        5340 *                                                    8660
11441 -0734 00 4 00000  5341  EVQAT PDX   0,4                                     8670
11442 -3 00000 4 11374  5342        TXL   EVQNF,4,0     EXIT IF END OF ATOM       8680
11443  0500 00 4 00000  5343        CLA   0,4           NEXT WORD                 8690
11444  0734 00 4 00000  5344        PAX   0,4           CAR OF ATOM               8700
11445 -0625 00 0 11515  5345        STL   EVQST         SET SWITCH FOR SUBR OR EXPR
11446 -3 06732 4 11450  5346        TXL   **+2,4,$SUBR-1  LOOK FOR $SUBR
11447 -3 06733 4 11501  5347        TXL   EVQFS,4,$SUBR   TREAT AS FSUBR (ALMOST)
11450 -3 10156 4 11452  5348        TXL   **+2,4,$EXPR-1  LOOK FOR $EXPR
11451 -3 10157 4 11457  5349        TXL   EVQFX,4,$EXPR   TREAT AS FEXPR (ALMOST)
11452  0600 00 0 11515  5350        STZ   EVQST         SET SWITCH FOR FSUBR OR FEXPR
11453 -3 10102 4 11455  5351        TXL   **+2,4,$FSUBR-1 LOOK FOR FSUBR            8710
11454 -3 10103 4 11501  5352        TXL   EVQFS,4,$FSUBR                            8720
11455 -3 10141 4 11441  5353        TXL   EVQAT,4,$FEXPR-1 LOOK FOR FEXPR           8730
11456  3 10142 4 11441  5354        TXH   EVQAT,4,$FEXPR                           8740
11457 -0734 00 4 00000  5355  EVQFX PDX   0,4           FOUND AN FEXPR            8750
11460  0500 00 4 00000  5356        CLA   0,4                                       8760
11461  0734 00 4 00000  5357        PAX   0,4           THE EXPRESSION FOR THE FEXPR 8770
11462 -0754 00 4 00000  5358        PXD   0,4           EXPRESSION TO AC
11463  0520 00 0 11515  5359        ZET   EVQST         SKIP IF FEXPR
11464  0020 00 0 11375  5360        TRA   EVQZ          GO TO APPLY CALL FOR EXPR
11465  0601 00 0 03506  5361        STO   EVQAN         SAVE THE EXPRESSION
11466 -0600 00 0 11514  5362        STQ   EVQMQ         SAVE MQ
11467 -0754 00 0 00000  5363        PXD   0,0           CLEAR                     8820
11470  0131 00 0 00000  5364        XCA                 MQ AND                    8830
11471 -0754 00 0 00000  5365        PXD   0,0           AC                        8840
11472  0074 00 4 03730  5366        TSX   $CONS,4       NULL A LIST               8850
11473  0131 00 0 00000  5367        XCA                 INTO MQ                   8860
11474  0500 00 0 11514  5368        CLA   EVQMQ         PUT SECOND LIST IN AC
11475  0074 00 4 03730  5369        TSX   $CONS,4       CONS(L,A)                 8890
11476  0131 00 0 00000  5370        XCA                 ANSWER TO ARG 2           8900
11477  0500 00 0 03506  5371        CLA   EVQAN         FEXPR
11500  0020 00 0 11375  5372        TRA   EVQZ          GO TO APPLY FOR FEXPR
                        5373 *                                                    8940
11501 -0734 00 4 00000  5374  EVQFS PDX   0,4           FOUND FSUBR, GET TXL INSTRUCTION 8950
11502  0500 00 4 00000  5375        CLA   0,4                                       8960
11503  0734 00 4 00000  5376        PAX   0,4                                       8970
11504  0500 00 4 00000  5377        CLA   0,4                                       8980
11505  0621 00 0 11377  5378        STA   EVQFT         SAVE ADDRESS              8990
11506 -0754 00 0 00000  5379        PXD   0,0           ZERO                      9080
11507  0131 00 0 00000  5380        XCA                 THE MQ AND PUT LIST IN AC 9090
11510  0520 00 0 11515  5381        ZET   EVQST         SKIP IF FSUBR
11511  0074 00 4 10072  5382        TSX   SPREAD,4      SPREAD THE ARGUMENTS
11512  0020 00 0 11376  5383        TRA   EVQD          EXECUTE THE SUBR OR FSUBR
                        5384 *                                                    9120
11513  0 00000 0 00000  5385  EVQAC                     TEMPORARY STORAGE
11514  0 00000 0 00000  5386  EVQMQ                     DITTO
11515  0 00000 0 00000  5387  EVQST                     TEST CELL IS NON-ZERO FOR SUBR OR EXPR
11516  0 00000 0 00000  5388 EVQRTS                     TEST CEEL IS ZERO DURING READ IN
                  00144  5389  EVQBL EQU   100         LENGHT OF BUFFER          9140
```

```
11517  0 06772 0 00000   5390  EVQSP          ,,$STOP              STOP ATOM
11520  002565214350      5391  EVQ8M BCI      7,0EVALQUOTE OPERATOR AS OF 1 MARCH 1961.                    9160
11521  644663256046
11522  472551216346
11523  516021626046
11524  266001604421
11525  512330600111
11526  060133606060
11527  603145476463      5392        BCI      5, INPUT LISTS NOW BEING READ.                               9170
11530  604331626362
11531  604546666022
11532  253145276051
11533  252124336060
11534  002545246046      5393  EVQAM BCI      5,0END OF EVALQUOTE, VALUE IS ....                           9180
11535  266025652143
11536  506446632573
11537  606521436425
11540  603162603333
11541  012545246046      5394  EVQME BCI      5,1END OF EVALQUOTE OPERATOR                                 9190
11542  266025652143
11543  506446632560
11544  464725512163
11545  465160606060
11546  005125212431      5395  EVQRE BCI      9,0READING TERMINATED BY AN ERROR. LAST LIST READ IN IS      9200
11547  452760632551
11550  443145216325
11551  246022706021
11552  456025515146
11553  513360432162
11554  636043316263
11555  605125212460
11556  314560316260
11557  603333333333      5396        BCI      1, .....                                                     9210
                         5397 *
                         5398 H      HED
                         5399 *      ERRORSET(E,N,SW)
                         5400 *
                         5401 *      ERRORSET ATTEMPTS TO EVALUATE ITS FIRST ARGUMENT.  IF AN
                         5402 *      ERROR OCCURS DURING THE EVALUATION, OR IF MORE THAN N CONS-S
                         5403 *      OCCUR DURING THE EVALUATION, ERRORSET RETURNS WITH A VALUE OF F
                         5404 *      AFTER RESTORING CONDITIONS TO WHAT THEY WERE BEFORE THE
                         5405 *      ATTEMPTED EVALUATION.  IF THE EVALUATION SUCCEEDS, ERRORSET
                         5406 *      RETURNS LIST OF THE RESULT.  IF SW = F, ERROR DIAGNOSTICS ARE
                         5407 *      SUPPRESSED, AND IF SW = T, THEY ARE INCLUDED.
                         5408 *
11560 -0634 00 4 11662   5409 ERRSET SXD      HORN,4
11561  0074 00 4 02312   5410        TSX      $SAVE,4
11562 -3 11673 0 02363   5411        TXL      $END8,,HORN+9
11563 -0634 00 2 11663   5412        SXD      HORN+1,2
11564  0634 00 1 11663   5413        SXA      HORN+1,1
11565  0604 00 0 11666   5414        STI      HORN+4
11566 -0734 00 1 00000   5415        PDX      0,1              EXPRESSION TO BE EVALUATED
11567 -0534 00 4 03321   5416        LXD      $ARG3,4          ERROR BYPASS SWITCH
11570  0634 00 4 11664   5417        SXA      ERNULL,4
```

```
11571  0131 00 0 00000   5418          XCA
11572 -0734 00 2 00000   5419          PDX     0,2             GET CONS COUNTER LIMIT
11573  0074 00 4 13075   5420          TSX     FIXVAL,4
11574  0601 00 0 11670   5421          STO     HORN+6
11575  0500 00 0 03742   5422          CLA     $CNTR1          GET CURRENT CONS COUNT
11576 -0320 00 0 00457   5423          ANA     $AMASK
11577  0400 00 0 04106   5424          ADD     $CNTS
11600  0402 00 0 11670   5425          SUB     HORN+6          COMPARE WITH THE LIMIT
11601 -0120 00 0 11611   5426          TMI     OBOE            TRA IF COUNTER NEED NOT BE CHANGED
11602 -0760 00 0 00003   5427          SSM                     NEG. NUMBER FOR GARBAGE COLLECTOR
11603  0601 00 0 11667   5428          STO     HORN+5          SAVE (LIMIT - OLD COUNT)
11604  0500 00 0 11670   5429          CLA     HORN+6          SET CONS COUNTER TO LIMIT
11605  0621 00 0 03742   5430          STA     $CNTR1
11606 -0320 00 0 00465   5431          ANA     PDTMSK
11607  0601 00 0 04106   5432          STO     $CNTS
11610  0020 00 0 11612   5433          TRA     *+2
11611  0600 00 0 11667   5434  OBOE    STZ     HORN+5          TAKE LIMIT = OLD COUNT
11612  0560 00 0 00370   5435          LDQ     $ZERO           NULL P-LIST FOR EVALUATION
11613  0502 00 0 02317   5436          CLS     $CPPI           SAVE PUSHDOWN POINTER
11614  0601 00 0 11670   5437          STO     HORN+6
11615 -0625 00 0 11671   5438          STL     TCOUNT          TURN ON CONS COUNTER
11616  0774 00 4 11625   5439          AXT     BSOON,4         SET UP EXIT IN ERROR
11617  0634 00 4 11665   5440          SXA     EREXIT,4
                         5441 *        ATTEMPT TO PERFORM THE EVALUATION
11620 -0754 00 1 00000   5442          PXD     0,1             EXPRESSION TO BE EVALUATED
11621  0074 00 4 15454   5443          TSX     $EVAL,4
                         5444 *        WE GET HERE IF THE EVALUATION WORKED
11622  0560 00 0 00370   5445          LDQ     $ZERO           FORM LIST OF THE RESULT
11623  0074 00 4 03730   5446          TSX     $CONS,4
                         5447 *        AN ERROR IN THIS CONS ACTS LIKE AN ERROR IN THE EVALUATION
11624  0020 00 0 11643   5448          TRA     SHAWM           RESTORE PARAMETERS AND EXIT
                         5449 *        WE GET HERE IN CASE OF ERROR
11625 -0535 00 4 11670   5450  BSOON   LDC     HORN+6,4        UNSAVE ALL RECURSIVE FUNCTIONS
11626 -0634 00 4 11641   5451          SXD     TUBA,4           ENTERED SINCE THE ERROR
11627  0020 00 0 11640   5452          TRA     TUBA-1
11630 -0534 00 4 02317   5453 HARP    LXD     $CPPI,4
11631 -0500 00 4 77777   5454          CAL     -1,4
11632 -0320 00 0 00461   5455          ANA     $PMASK          TEST FOR STR FROM COMPILER
11633  0322 00 0 00451   5456          ERA     $QP5
11634  0100 00 0 11637   5457          TZE     *+3
11635  0074 00 4 02326   5458          TSX     UNSAVE,4
11636  0020 00 0 11640   5459          TRA     *+2
11637  0074 00 4 17330   5460          TSX     C$UNWND,4
11640 -0535 00 4 02317   5461          LDC     $CPPI,4
11641  3 00000 4 11630   5462 TUBA    TXH     HARP,4,**
11642 -0754 00 0 00000   5463          PXD     0,0             RETURN VALUE OF NIL
                         5464 *        RESTORE PARAMETERS FOR EITHER KIND OF EXIT
11643  0601 00 0 11670   5465  SHAWM   STO     HORN+6          SAVE EXIT VALUE
11644  0500 00 0 03742   5466          CLA     $CNTR1          RESTORE CONS COUNTER
11645 -0320 00 0 00457   5467          ANA     $AMASK
11646  0400 00 0 04106   5468          ADD     $CNTS
11647  0402 00 0 11667   5469          SUB     HORN+5
11650  0621 00 0 03742   5470          STA     $CNTR1
11651 -0320 00 0 00465   5471          ANA     PDTMSK
```

```
11652  0601 00 0 04106   5472          STO     $CNTS
11653  0534 00 1 11663   5473          LXA     HORN+1,1          RESTORE INDICATORS, IR1, AND IR2
11654 -0534 00 2 11663   5474          LXD     HORN+1,2
11655  0441 00 0 11666   5475          LDI     HORN+4
11656  0500 00 0 11670   5476          CLA     HORN+6            PICK UP EXIT VALUE
11657  0074 00 4 02326   5477          TSX     UNSAVE,4          RESTORE HORN BLOCK
11660 -0534 00 4 11662   5478          LXD     HORN,4            RESTORE IR4 AND EXIT
11661  0020 00 4 00001   5479          TRA     1,4
                         5480 *        PROTECTED TEMPORARY STORAGE FOR ERRORSET
                         5481          HEAD    H
11662 -0 00000 0 10211   5482 HORN     MZE     ERSETO            (+0) ERRORSET OBJECT IN A, IR4 IN D
11663 -0 00000 0 00000   5483          MZE                       (+1) IR1 IN A, IR2 IN D
11664 -0 00000 0 11664   5484 ERNULL   MZE     *                 (+2) ZERO MEANS SKIP DIAGNOSTICS
11665 -3 00000 0 11423   5485 EREXIT   TXL     EVQERR            (+3) EXIT INSTRUCTION FOR $ERROR
11666 -0 00000 0 00000   5486          MZE                       (+4) INDICATORS
11667 -0 00000 0 00000   5487          MZE                       (+5) CONS COUNTER INCREMENT
11670 -0 00000 0 00000   5488 NUBPDL   MZE                       (+6) PDL BACKUP POINT IN D
11671 -0 00000 0 00000   5489 TCOUNT   MZE                       (+7) NON-ZERO ACTIVATES CONS COUNTER
                         5490          HEAD    0
                 11665   5491 TERA2    SYN     EREXIT
                         5492 *
                         5493          HEAD    H
                         5494 *
                         5495 *        EXTENDED CAR S AND CDR S FOR THE INTERPRETER
                         5496 *
11672  0634 00 4 11703   5497 CAAARX   SXA     CAX,4             SAVE LINK IR
11673 -0734 00 4 00000   5498          PDX     0,4
11674  0500 00 4 00000   5499          CLA     0,4
11675  0734 00 4 00000   5500          PAX     0,4
11676  0500 00 4 00000   5501 AA       CLA     0,4
11677  0734 00 4 00000   5502          PAX     0,4
11700  0500 00 4 00000   5503 A        CLA     0,4
11701  0734 00 4 00000   5504          PAX     0,4
11702 -0754 00 4 00000   5505          PXD     0,4
11703  0774 00 4 00000   5506 CAX      AXT     **,4              RESTORE LINK IR
11704  0020 00 4 00001   5507          TRA     1,4               EXIT
                         5508 *
11705  0634 00 4 11703   5509 CAADRX   SXA     CAX,4
11706 -0734 00 4 00000   5510          PDX     0,4
11707  0500 00 4 00000   5511          CLA     0,4
11710 -0734 00 4 00000   5512 AAX      PDX     0,4
11711  0020 00 0 11676   5513          TRA     AA
                         5514 *
11712  0634 00 4 11703   5515 CADARX   SXA     CAX,4
11713 -0734 00 4 00000   5516          PDX     0,4
11714  0500 00 4 00000   5517          CLA     0,4
11715  0734 00 4 00000   5518          PAX     0,4
11716  0500 00 4 00000   5519 AD       CLA     0,4
11717 -0734 00 4 00000   5520          PDX     0,4
11720  0020 00 0 11700   5521          TRA     A
11721  0634 00 4 11703   5522 CADDRX   SXA     CAX,4
11722 -0734 00 4 00000   5523          PDX     0,4
11723  0500 00 4 00000   5524          CLA     0,4
11724 -0734 00 4 00000   5525 ADX      PDX     0,4
```

11672
11623
49

```
11725  0020 00 0 11716   5526          TRA     AD
                         5527 *
11726  0634 00 4 11703   5528 CAARXX   SXA     CAX,4
11727  0020 00 0 11710   5529          TRA     AAX
                         5530 *
11730  0634 00 4 11703   5531 CADRXX   SXA     CAX,4
11731  0020 00 0 11724   5532          TRA     ADX
                         5533 *
11732  0634 00 4 11742   5534 CDAARX   SXA     CDX,4
11733 -0734 00 4 00000   5535          PDX     0,4
11734  0500 00 4 00000   5536          CLA     0,4
11735  0734 00 4 00000   5537          PAX     0,4
11736  0500 00 4 00000   5538  DA      CLA     0,4
11737  0734 00 4 00000   5539          PAX     0,4
11740  0500 00 4 00000   5540  D       CLA     0,4
11741 -0320 00 0 00460   5541          ANA     $DMASK
11742  0774 00 4 00000   5542  CDX     AXT     **,4
11743  0020 00 4 00001   5543          TRA     1,4
11744  0634 00 4 11742   5544 CDADRX   SXA     CDX,4
11745 -0734 00 4 00000   5545          PDX     0,4
11746  0500 00 4 00000   5546          CLA     0,4
11747 -0734 00 4 00000   5547  DAX     PDX     0,4
11750  0020 00 0 11736   5548          TRA     DA
                         5549 *
11751  0634 00 4 11742   5550 CDDARX   SXA     CDX,4
11752 -0734 00 4 00000   5551          PDX     0,4
11753  0500 00 4 00000   5552          CLA     0,4
11754  0734 00 4 00000   5553          PAX     0,4
11755  0500 00 4 00000   5554  DD      CLA     0,4
11756 -0734 00 4 00000   5555          PDX     0,4
11757  0020 00 0 11740   5556          TRA     D
                         5557 *
11760  0634 00 4 11742   5558 CDDDRX   SXA     CDX,4
11761 -0734 00 4 00000   5559          PDX     0,4
11762  0500 00 4 00000   5560          CLA     0,4
11763 -0734 00 4 00000   5561  DDX     PDX     0,4
11764  0020 00 0 11755   5562          TRA     DD
                         5563 *
11765  0634 00 4 11742   5564 CDARXX   SXA     CDX,4
11766  0020 00 0 11747   5565          TRA     DAX
                         5566 *
11767  0634 00 4 11742   5567 CDDRXX   SXA     CDX,4
11770  0020 00 0 11763   5568          TRA     DDX
                         5569 *
                         5570          HEAD    C
11771  0634 00 4 12003   5571  GET     SXA     GETX,4          SAVE LINK IR
11772  0601 00 0 12006   5572          STO     GETL
11773  0500 00 0 12005   5573          CLA FCN31                       LC763600
11774  0601 00 0 03321   5574          STO $ARG3                       LC763700
11775  0500 00 0 12006   5575          CLA GETL                        LC763800
11776  0074 00 4 10011   5576          TSX $PRCP,4                     LC763900
11777 -0734 00 4 00000   5577          PDX 0,4                         LC764100
12000  0500 00 4 00000   5578          CLA 0,4                         LC764200
12001  0734 00 4 00000   5579          PAX 0,4                         LC764300
```

```
12002 -0754 00 4 00000  5580        PXD 0,4                                          LC764400
12003  0774 00 4 00000  5581 GETX   AXT     **,4          RESTORE  LINK IR
12004  0020 00 4 00001  5582        TRA 1,4                                          LC764600
12005 -3 00000 0 12003  5583 FCN31 TXL     GETX,,0
12006  0 00000 0 00000  5584 GETL                                                    LC877800
                        5585 *
                        5586 * COMPAT      FUNCTIONAL ARGUMENT LINKAGE PROGRAM BETWEEN COMPILED
                        5587 *             PROGRAMS AND APPLY FOR S-EXPRESSION FUNCTIONAL ARGUMENTS
                        5588 *
12007  0634 00 4 12026  5589 COMPAT SXA     CX,4          SAVE INDEX REGISTERS
12010  0634 00 2 12027  5590        SXA     CY,2
12011  0601 00 0 03317  5591        STO     $ARG1         SAVE AC
12012 -0600 00 0 03320  5592        STQ     $ARG2         DITTO MQ
12013  0560 00 0 00370  5593        LDQ     $ZERO         END OF ARGUMENT LIST
12014  0500 00 4 00001  5594        CLA     1,4           ARGUMENTS FOR COMPAT
12015  0622 00 0 12031  5595        STD     CA            S-EXPRESSION FUNCTIONAL ARGUMENT
12016  0737 00 2 00000  5596        PAC     0,2           COMPLEMENT NUMBER OF ARGUMENTS
12017 -3 00000 2 12024  5597 CL     TXL     CD,2,0        GO WHEN ALL DONE
12020  0500 00 2 03316  5598        CLA     $ARG1-1,2     PICK UP ARGUMENT
12021  0074 00 4 03730  5599        TSX     $CONS,4       CONS ON TO ARGUMENT LIST
12022  0131 00 0 00000  5600        XCA                   LIST TO MQ
12023  1 00001 2 12017  5601        TXI     CL,2,1        GO BACK FOR NEXT
12024  0500 00 0 12031  5602 CD     CLA     CA            FUNCTIONAL ARGUMENT
12025  0600 00 0 03321  5603        STZ     $ARG3         ZERO PAIR LIST
12026  0774 00 4 00000  5604 CX     AXT     **,4          RESTORE INDEX REGISTERS
12027  0774 00 2 00000  5605 CY     AXT     **,2
12030  1 77777 4 14663  5606        TXI     $APPLY,4,-1   GO TO APPLY AND ADJUST EXIT INDEX
12031  0 00000 0 00000  5607 CA                           S-EXPRESSION GOES HERE
                        5608 F      HED                                              RDCI2001
                        5609 *      PACK(CHAR)                                       RDCI0001
                        5610 *                                                       RDCI0002
                        5611 *      PACK ADDS ANOTHER CHARACTER TO THE CHARACTER BUFFER BOFFO RDCI0003
                        5612 *                                                       RDCI0004
                        5613 *                                                       RDCI0005
12032  0771 00 0 00022  5614 PACK   ARS     18            GET CHARACTER CODE FROM    RDCI0006
12033  0402 00 0 00521  5615        SUB     HORG            LOCATION OF OBJECT       RDCI0007
12034 -0765 00 0 00006  5616        LGR     6             PUT NEW CHARACTER INTO PACKED WORD RDCI0008
12035 -0500 00 0 12603  5617        CAL     CHARS                                    RDCI0009
12036  0140 00 0 12037  5618        TOV     *+1           SHUT OFF OVERFLOW LIGHT    RDCI0010
12037 -0763 00 0 00006  5619        LGL     6                                        RDCI0011
12040  0140 00 0 12044  5620        TOV     B5            IF WORD FULL, PUT IT IN BUFFER RDCI0012
12041  0602 00 0 12603  5621        SLW     CHARS                                    RDCI0013
12042 -0754 00 0 00000  5622        PXD     ,0            CLEAR AC FOR EXIT          RDCI0014
12043  0020 00 4 00001  5623        TRA     1,4           EXIT                       RDCI0015
12044  0634 00 4 12053  5624 B5     SXA     B1,4          SAVE IR4                   RDCI0016
12045  0774 00 4 00024  5625 BFLOC  AXT     20,4          ADDRESS HAS INDEX FOR BOFFO RDCI0017
12046  0602 00 4 12631  5626        SLW     BOFFO,4       STORE FULL WORD OF CHARACTERS RDCI0018
12047 -2 00001 4 12056  5627        TNX     B3,4,1        IF BUFFER FULL, TRANSFER   RDCI0019
12050  0500 00 0 12417  5628        CLA     A1            WHEN 1 SHIFTS PAST P BIT,  RDCI0020
12051  0601 00 0 12603  5629        STO     CHARS           NEW WORD HAS 6 CHARACTERS RDCI0021
12052  0634 00 4 12045  5630        SXA     BFLOC,4       SAVE BUFFER INDEX          RDCI0022
12053  0774 00 4 00000  5631 B1     AXT     ,4            RESTORE IR4                RDCI0023
12054 -0754 00 0 00000  5632        PXD     ,0            CLEAR AC FOR EXIT          RDCI0024
12055  0020 00 4 00001  5633        TRA     1,4           EXIT                       RDCI0025
```

```
12056 -3 00000 4 12061  5634  B3    TXL   B4,4,0          IF MORE THAN 120 CHARS, TRANSFER   RDCI0026
12057  0634 00 0 12045  5635        SXA   BFLOC,0         SET INDEX TO SHOW BUFFER FILLED    RDCI0027
12060  0020 00 0 12066  5636        TRA   B6                                                 RDCI0028
12061  0074 00 4 12147  5637  B4    TSX   $MKNAM,4        FORM OBJECT FOR ERROR PRINTOUT
12062  0074 00 4 06420  5638        TSX   INTRN1,4
12063 -0634 00 4 01562  5639        SXD   $ERROR,4
12064  0074 00 4 01563  5640        TSX   $ERROR+1,4
12065  542330600154     5641        BCI   1,*CH 1*        TOO MANY CHARACTERS IN PRINT NAME
12066  0500 00 0 00471  5642  B6    CLA   SEVENS          BIT 1 IN CHARS WILL MAKE           RDCI0037
12067  0601 00 0 12603  5643        STO   CHARS             WORD LOOK FULL                   RDCI0038
12070  0020 00 0 12053  5644        TRA   B1                                                 RDCI0039
                        5645  *     PACK USES $ERROR, $EROR1, AND $Q1                        RDCI0040
```

```
                        5647  *     NUMOB                                                    RDCI0042
                        5648  *                                                              RDCI0043
                        5649  *     NUMOB MAKES A NUMERICAL OBJECT CORRESPONDING TO THE BCD  RDCI0044
                        5650  *     CHARACTERS IN THE BUFFER BOFFO.                          RDCI0045
                        5651  *                                                              RDCI0046
                        5652  *     THIS ROUTINE HAS CROSS-REFERENCES TO THE INNARDS OF NUMBR RDCI0047
                        5653  *                                                              RDCI0048
12071  0634 00 4 12134  5654  NUMOB SXA   GV1,4           SAVE IR4                         RDCI0049
12072  0140 00 0 12073  5655        TOV   *+1             SHUT OFF OVERFLOW LIGHT          RDCI0050
12073 -0500 00 0 12603  5656        CAL   CHARS           SHIFT SEVENS INTO LAST PACKED WORD RDCI0051
12074  0560 00 0 00471  5657        LDQ   SEVENS                                           RDCI0052
12075 -0763 00 0 00006  5658        LGL   6                                                RDCI0053
12076 -0140 00 0 12075  5659        TNO   *-1             DONE WHEN 1 PASSES THROUGH P BIT RDCI0054
12077  0534 00 4 12045  5660        LXA   BFLOC,4         PUT LAST WORD INTO BOFFO         RDCI0055
12100  0602 00 4 12631  5661        SLW   BOFFO,4                                          RDCI0056
12101  0500 00 0 12573  5662        CLA   PARAM           INPUT PARAMETER FOR NUMBR IS     RDCI0057
12102  0074 00 4 06622  5663        TSX   NUMBR,4           BEGINNING OF BOFFO             RDCI0058
12103  0100 00 0 12136  5664        TZE   GV3             ERROR IF ZERO IN AC              RDCI0059
12104  0120 00 0 12112  5665        TPL   GV2             TRANSFER IF FIXED POINT OUTPUT   RDCI0060
12105  0131 00 0 00000  5666        XCA                   GET NUMBER FROM MQ               RDCI0061
12106  0560 00 0 00476  5667        LDQ   FLOS            FLOATING POINT SIGNAL            RDCI0062
12107  0074 00 4 12636  5668        TSX   $MKNO,4         FORM OBJECT                      RDCI0063
12110  0534 00 4 12134  5669        LXA   GV1,4           RESTORE IR4                      RDCI0064
12111  0020 00 0 12201  5670        TRA   CLEAR           RESET BOFFO AND EXIT             RDCI0065
12112 -0760 00 0 00001  5671  GV2   PBT                   OCTAL SIGNAL IN NUMBR OUTPUT
12113  0020 00 0 12121  5672        TRA   GV6             TRA IF NOT OCTAL
12114  0131 00 0 00000  5673        XCA
12115  0560 00 0 00503  5674        LDQ   $OCTD           MAKE OCTAL NUMBER                RDCZ0012
12116  0074 00 4 12636  5675        TSX   $MKNO,4                                          RDCI0069
12117  0534 00 4 12134  5676        LXA   GV1,4                                            RDCI0070
12120  0020 00 0 12201  5677        TRA   CLEAR           RESET BOFFO AND EXIT             RDCI0071
12121  0131 00 0 00000  5678  GV6   XCA                   BRING THE NUMBER TO THE AC       RDCI0072
12122 -0120 00 0 12132  5679        TMI   GV4             TEST FOR DIGITS 0 THRU 9         RDCI0073
12123  0340 00 0 00402  5680        CAS   $Q10                                           RDCI0074
12124  0020 00 0 12132  5681        TRA   GV4                                            RDCI0075
12125  0020 00 0 12132  5682        TRA   GV4                                            RDCI0076
```

```
12126  0361 00 0 00521   5683        ACL     HORG                   FORM OBJECT DIRECTLY                 RDCI0077
12127  0767 00 0 00022   5684        ALS     18                                                          RDCI0078
12130  0534 00 4 12134   5685        LXA     GV1,4                  RESTORE IR4                          RDCI0079
12131  0020 00 0 12201   5686        TRA     CLEAR                                                       RDCI0080
12132  0560 00 0 00475   5687  GV4   LDQ     FIXS                   FIXED POINT SIGNAL FOR $MKNO         RDCI0081
12133  0074 00 4 12636   5688        TSX     $MKNO,4                FORM NUMERICAL OBJECT                RDCI0082
12134  0774 00 4 00000   5689  GV1   AXT     ,4                     RESTORE IR4                          RDCI0083
12135  0020 00 0 12201   5690        TRA     CLEAR                  RESET BOFFO AND EXIT                 RDCI0084
12136  0074 00 4 01222   5691  GV3   TSX     OUTPUT,4
12137  0 00000 0 00364   5692                BCDOUT
12140  0 00004 0 12143   5693                GVA,,4
                         5694 *      BCI     1,*CH 2*               FLOATING POINT NUMBER OUT OF RANGE
12141 -0754 00 0 00000   5695        PXD     0,0                    RETURN NIL
12142  0020 00 0 12134   5696        TRA     GV1
12143  602551514651      5697  GVA   BCI     4, ERROR NUMBER  *CH 2*
12144  604564442225
12145  516060542330
12146  600254606060
                         5698 *                                                                      RDCI0091
                         5699 *      THIS ROUTINE USES $CONS, $MKNO,$ZERO,$ERROR, AND $EROR1         RDCI0092



                         5701 *      MKNAM AND CLEARBUFF                                             RDCI0094
                         5702 *                                                                      RDCI0095
                         5703 *                                                                      RDCI0096
                         5704 *      CLEARBUFF STARTS AT CLEAR AND RESETS THE BUFFER BOFFO TO        RDCI0097
                         5705 *      THE BEGINNING                                                   RDCI0098
                         5706 *                                                                      RDCI0099
                         5707 *      MKNAM() HAS AS OUTPUT A PNAME LIST STRUCTURE CORRESPONDING      RDCI0100
                         5708 *      TO THE CHARACTERS IN THE BUFFER BOFFO.  THE BEGINNING OF        RDCI0101
                         5709 *      BOFFO IS RESET.                                                 RDCI0102
                         5710 *                                                                      RDCI0103
                         5711 *      THIS ROUTINE HAS CROSS-REFERENCES TO THE INNARDS OF PACK.       RDCI0104
                         5712 *                                                                      RDCI0105
12147  0634 00 4 12207   5713  MKNAM SXA     BB1,4                  SAVE IR4                             RDCI0106
12150  0634 00 2 12177   5714        SXA     BBIR2,2                SAVE IR2                             RDCI0107
12151 -0500 00 0 12603   5715        CAL     CHARS                  IF C(CHARS) = 1, CHARS CONTAINS      RDCI0108
12152 -0340 00 0 12417   5716        LAS     A1                       NO SIGNIFICANT CHARACTERS          RDCI0109
12153  0020 00 0 12156   5717        TRA     BB5                                                         RDCI0110
12154 -0754 00 0 00000   5718        PXD     ,0
12155  0020 00 0 12167   5719        TRA     BB2                      NO SIGNIFICANT CHARACTERS IN CHARS RDCI0112
12156  0140 00 0 12157   5720  BB5   TOV     *+1                    SHUT OFF OVERFLOW LIGHT              RDCI0113
12157  0560 00 0 00471   5721        LDQ     SEVNS                  SHIFT SEVENS INTO LAST WORD          RDCI0114
12160 -0763 00 0 00006   5722        LGL     6                        OF LIST                            RDCI0115
12161 -0140 00 0 12160   5723        TNO     *-1                                                         RDCI0116
12162  0602 00 0 12574   5724        SLW     T1                     PUT P BIT INTO SIGN                  RDCI0117
12163  0500 00 0 12574   5725        CLA     T1                                                          RDCI0118
12164  0074 00 4 03710   5726        TSX     $CONSW,4               FORM POINTER TO LAST WORD OF LIST    RDCI0119
12165  0560 00 0 00370   5727        LDQ     ZERO                                                        RDCI0120
12166  0074 00 4 03730   5728        TSX     $CONS,4                                                     RDCI0121
```

```
12167  0534 00 2 12045   5729  BB2    LXA   BFLOC,2      LOC OF LAST SIGNIFICAN BUFFER WORD   RDCI0122
12170  3 00023 2 12177   5730  BB4    TXH   BBIR2,2,19   TRA IF BUFFER EXHAUSTED              RDCI0123
12171  0602 00 0 03654   5731         SLW   BBPNT        SAVE DECREMENT FOR FUTURE USE        RDCI0124
12172  0500 00 2 12630   5732         CLA   BOFFO-1,2     GET NEXT WORD OF BUFFER              RDCI0125
12173  0074 00 4 03710   5733         TSX   $CONSW,4      TACK IT ONTO FRONT OF LIST           RDCI0126
12174  0560 00 0 03654   5734         LDQ   BBPNT                                             RDCI0127
12175  0074 00 4 03730   5735         TSX   $CONS,4                                           RDCI0128
12176  1 00001 2 12170   5736         TXI   BB4,2,1      MOVE TO NEXT WORD OF BUFFER          RDCI0129
12177  0774 00 2 00000   5737  BBIR2  AXT   **,2         RESTORE IR2                          RDCI0130
12200  0020 00 0 12202   5738         TRA   BB3          RESET POSITION IN BOFFO              RDCI0131
12201  0634 00 4 12207   5739  CLEAR  SXA   BB1,4        ENTRANCE FOR CLEARING BUFFER         RDCI0132
12202  0560 00 0 12417   5740  BB3    LDQ   A1           RESET CHARS CELL TO 0 CHARACTERS     RDCI0133
12203 -0600 00 0 12603   5741         STQ   CHARS                                           RDCI0134
12204  0774 00 4 00024   5742         AXT   20,4         SET INDEX IN PACK FOR FIRST          RDCI0135
12205  0634 00 4 12045   5743         SXA   BFLOC,4        BUFFER WORD                        RDCI0136
12206  0600 00 0 03654   5744         STZ   BBPNT        AVOID UNNECESSARY GARBAGE COLL.      RDCI0137
12207  0774 00 4 00000   5745  BB1    AXT   ,4           RESTORE IR4                          RDCI0138
12210  0020 00 4 00001   5746         TRA   1,4          EXIT                                 RDCI0139
```

```
                         5748 *       ADVANCE, STARTREAD, AND ENDREAD PROGRAMS                RDCI0141
                         5749 *                                                               RDCI0142
                         5750 *       ADVANCE SETS CURCHAR TO THE NEXT CHARACTER              RDCI0143
                         5751 *       STARTREAD READS A NEW RECORD                            RDCI0144
                         5752 *       ENDREAD MOVES TO THE END OF THE CURRENT RECORD AND       RDCI0145
                         5753 *         GIVES ERROR OUTPUT, IF ANY                            RDCI0146
                         5754                                                                 RDCI0147
12211 -0634 00 4 12220   5755 ADVANC SXD  PORK,4                SAVE IR4                      RDCI0148
12212 -0534 00 4 12236   5756        LXD  CHPOS,4               FIND NO. OF CHARS. LEFT IN PACKED RDCI0149
12213  2 00006 4 12247   5757        TIX  CHOPS,4,6               WORD                        RDCI0150
12214 -0534 00 4 12237   5758        LXD  WDNUM,4               FIND NEW PACKED WORD          RDCI0151
12215  2 00001 4 12243   5759        TIX  LAMB,4,1              IF NEW RECORD NEEDED, CONTINUE RDCI0152
12216 -0520 00 0 12604   5760        NZT  EORTS                 IF NONZERO GIVE EOR AS OUTPUT CHAR- RDCI0153
12217  0020 00 0 12223   5761        TRA  VEAL                    ACTER, OTHERWISE READ NEW RECORD RDCI0154
12220  1 00000 0 12276   5762 PORK   TXI  STEW,,0              READ A NEW RECORD             RDCI0155
12221 -0634 00 4 12220   5763 STREAD SXD  PORK,4                SAVE IR4                      RDCI0156
12222  0020 00 0 12225   5764        TRA  *+3                                                 RDCI0157
12223 -0520 00 0 12517   5765  VEAL  NZT  ERSIG                                               RDCI0158
12224  0020 00 0 12233   5766        TRA  JOYCE                                               RDCI0159
12225  0600 00 0 12517   5767        STZ  ERSIG                 TURN OFF ERROR SIGNAL         RDCI0160
12226  0774 00 4 00014   5768        AXT  12,4                  PUT BLANKS IN ERROR BUFFER    RDCI0161
12227 -0500 00 0 00472   5769        CAL  BLANKS                                              RDCI0162
12230  0602 00 4 12572   5770  RUTH  SLW  ERBFL,4                                             RDCI0163
12231  0602 00 4 12535   5771        SLW  ERBFU,4                                             RDCI0164
12232  2 00001 4 12230   5772        TIX  RUTH,4,1                                            RDCI0165
12233  0074 00 4 00663   5773  JOYCE TSX  $INPUT,4              READ A NEW RECORD             RDCI0166
12234  0 00000 0 00000   5774             $BCDIN                                              RDCI0167
12235  0 00016 0 12536   5775             BUFF-12,,14                                         RDCI0168
12236  1 00000 0 12316   5776 CHPOS  TXI  RIBS,,0               ERROR RETURN                  RDCI0169
12237  1 00000 0 12271   5777 WDNUM  TXI  RUMP,,0               EOF RETURN                    RDCI0170
```

```
12240 -0625 00 0 12604  5778        STL EORTS          SET SIGNAL FOR EOR OUTPUT NEXT TIME   RDCI0171
12241  0600 00 0 12635  5779        STZ $CHACT         INITIALIZE CHARACTER COUNT            RDCI0172
12242  0774 00 4 00014  5780        AXT 12,4           SET INDEX FOR START OF INPUT BUFFER   RDCI0173
12243 -0634 00 4 12237  5781 LAMB   SXD WDNUM,4                                            RDCI0174
12244  0500 00 4 12552  5782        CLA BUFF,4         PICK UP NEW PACKED WORD FROM          RDCI0175
12245  0601 00 0 12572  5783        STO PWORD            INPUT BUFFER AND STORE IT           RDCI0176
12246  0774 00 4 00044  5784        AXT 36,4           INITIALIZE POSITION IN PACKED WORD    RDCI0177
12247 -0634 00 4 12236  5785 CHOPS  SXD CHPCS,4                                           RDCI0178
12250 -0754 00 0 00000  5786        PXD ,0             PICK OFF ONE CHARACTER                RDCI0179
12251  0560 00 0 12572  5787        LDQ PWORD                                             RDCI0180
12252 -0763 00 0 00006  5788 A6     LGL 6                                                 RDCI0181
12253 -0600 00 0 12572  5789        STQ PWORD          SAVE SHIFTED PACKED WORD           RDCI0182
12254  0734 00 4 00000  5790        PAX 0,4
12255  3 00014 4 12260  5791        TXH SHANK,4,12     CHECK FOR 8-4 MINUS
12256 -3 00013 4 12260  5792        TXL SHANK,4,11
12257  0774 00 4 00040  5793        AXT 32,4           CHANGE 8-4 MINUS TO 11 MINUS
12260  1 06127 4 12261  5794  SHANK TXI *+1,4,$H00      POINTER TO NEW CHARACTER OBJECT
12261  0500 00 0 12635  5795  BACON CLA $CHACT         BUMP CHARACTER COUNT                  RDCI0185
12262  0400 00 0 00371  5796        ADD $Q1                                               RDCI0186
12263  0601 00 0 12635  5797        STO $CHACT                                            RDCI0187
12264 -0754 00 4 00000  5798        PXD ,4             SET CURCHAR TO NEW CHARACTER       RDCI0188
12265  0602 00 0 12634  5799        SLW $CURC          POINTER IN DECREMENT FOR BIN       RDCI0189
12266  0634 00 4 12633  5800        SXA $CURC1,4       POINTER IN ADDRESS FOR APVAL1      RDCI0190
12267 -0534 00 4 12220  5801        LXD PORK,4         RESTORE IR4                        RDCI0191
12270  0020 00 4 00001  5802        TRA 1,4            RETURN                             RDCI0192
12271  0534 00 4 00522  5803 RUMP   LXA EOF,4          END OF FILE CHARACTER              RDCI0193
12272  0020 00 0 12314  5804        TRA JEAN                                              RDCI0194
12273 -0634 00 4 12220  5805 ENDRED SXD PORK,4         SAVE IR4 FOR EXIT (ENDREAD ENTRANCE) RDCI0195
12274 -0634 00 0 12236  5806        SXD CHPCS,0        SET CHARACTER POSITION AND WORD    RDCI0196
12275 -0634 00 0 12237  5807        SXD WDNUM,0        NUMBER AT END OF RECORD            RDCI0197
12276 -0520 00 0 12517  5808 STEW   NZT ERSIG          TEST IF ERROR PRINTOUT NEEDED      RDCI0198
12277  0020 00 0 12313  5809        TRA SUZIE                                             RDCI0199
12300  0074 00 4 05214  5810        TSX TERPRI,4       PRINT BLANK LINE                   RDCI0200
12301  0074 00 4 01222  5811        TSX OUTPUT,4       PRINT UPPER ERROR  BUFFER          RDCI0201
12302  0 00000 0 00364  5812            BCDOUT                                            RDCI0202
12303  0 00015 0 12520  5813            ERBFU-13,,13                                      RDCI0203
12304  0074 00 4 01222  5814        TSX OUTPUT,4       PRINT BAD LINE                     RDCI0204
12305  0 00000 0 00364  5815            BCDOUT                                            RDCI0205
12306  0 00015 0 12535  5816            BUFF-13,,13                                       RDCI0206
12307  0074 00 4 01222  5817        TSX OUTPUT,4       PRINT LOWER ERROR BUFFER           RDCI0207
12310  0 00000 0 00364  5818            BCDOUT                                            RDCI0208
12311  0 00015 0 12555  5819            ERBFL-13,,13                                      RDCI0209
12312  0074 00 4 05214  5820        TSX TERPRI,4       PRINT BLANK LINE                   RDCI0210
12313  0534 00 4 00523  5821  SUZIE LXA EOR,4          LOAD END OF RECORD CHARACTER       RDCI0211
12314  0600 00 0 12604  5822 JEAN   STZ EORTS          SIGNAL TO READ NEW RECORD NEXT TIME RDCI0212
12315  0020 00 0 12261  5823        TRA BACON                                             RDCI0213
12316 -0634 00 4 01562  5824  RIBS  SXD $ERROR,4
12317  0074 00 4 01563  5825        TSX $ERROR+1,4
12320  542330600354     5826        BCI 1,*CH 3*
                        5827 *      TAPE READING ERROR -ADVANCE, STARTREAD-
                 00471  5828  SEVNS SYN     SEVENS
```

```
                            5829        SPACE   5                                                RDCIØ219
                            5830            ALPHABETIC FUNCTIONS                                 RDCIØ220
                            5831                                                                 RDCIØ221
                            5832            LITER(CHAR)                                          RDCIØ233
12321 -0634 00 4 12336      5833 LITER  SXD AL1,4                                                RDCIØ234
12322 -0737 00 4 00000      5834        PDC 0,4                                                  RDCIØ235
12323  0500 00 0 12440      5835        CLA A2                                                   RDCIØ236
12324  0402 00 4 04270      5836 AL3    SUB CHTYP-$H00,4            COMPARE WITH TABLE ENTRY     RDCI0237
12325 -0534 00 4 12336      5837        LXD AL1,4                                                RDCI0238
12326 -0100 00 0 12331      5838        TNZ AL6                                                  RDCI0239
12327  0500 00 0 00442      5839        CLA $QD1                    EXIT WITH T                  RDCI0240
12330  0020 00 4 00001      5840        TRA 1,4                                                  RDCI0241
12331 -0754 00 0 00000      5841 AL6    PXD ,0                      EXIT WITH F                  RDCI0242
12332  0020 00 4 00001      5842        TRA 1,4                                                  RDCI0243
                            5843            OPCHAR(CHAR)                                         RDCI0244
12333 -0634 00 4 12336      5844 OPCHAR SXD AL1,4                                                RDCI0245
12334 -0737 00 4 00000      5845        PDC 0,4                                                  RDCI0246
12335  0500 00 0 12437      5846        CLA A3                                                   RDCI0247
12336  1 00000 0 12324      5847  AL1   TXI AL3,,0
                            5848            DIGIT(CHAR)                                          RDCI0249
12337  0340 00 0 00524      5849 DIGIT  CAS HOL9                                                 RDCI0250
12340  0020 00 0 12344      5850        TRA AL5                                                  RDCI0251
12341  0761 00 0 00000      5851        NOP                                                      RDCI0252
12342  0500 00 0 00442      5852        CLA $QD1                                                 RDCI0253
12343  0020 00 4 00001      5853        TRA 1,4                                                  RDCI0254
12344 -0754 00 0 00000      5854 AL5    PXD ,0                                                   RDCI0255
12345  0020 00 4 00001      5855        TRA 1,4                                                  RDCI0256


                            5857 *      ERROR1                                                   RDCI0258
                            5858 *                                                               RDCI0259
                            5859 *      ER1 CREATES A VISUAL POINTER IN ERBFU AND ERBFL          RDCI0260
                            5860 *      TO A READING ERROR                                       RDCI0261
                            5861 *                                                               RDCI0262
12346 -0625 00 0 12517      5862  ERORI STL      ERSIG         TURN ON ERROR SIGNAL              RDCI0263
12347  0634 00 4 12363      5863        SXA      ERIR,4        SAVE IR4                          RDCI0264
12350  0500 00 0 00375      5864        CLA      $Q5           V FOR UPPER BUFFER                RDCI0265
12351  0560 00 0 00424      5865        LDQ      OCT41         A FOR LOWER BUFFER                RDCI0266
12352 -0535 00 4 12236      5866        LDC      CHPOS,4       SHIFT BOTH LETTERS INTO POSITION  RDCI0267
12353 -0763 00 4 77772      5867        LGL      -6,4                                            RDCI0268
12354 -0534 00 4 12237      5868        LXD      WDNUM,4                                         RDCI0269
12355 -3 00000 4 12362      5869        TXL      ERX,4,0       DO NOTHING IF END OF RECORD       RDCI2269
12356 -0602 00 4 12535      5870        ORS      ERBFU,4       INSERT V INTO UPPER BUFFER        RDCI0270
12357 -0130 00 0 00000      5871        XCL                                                      RDCI0271
12360  0322 00 4 12572      5872        ERA      ERBFL,4       INSERT A INTO LOWER BUFFER        RDCI0272
12361  0602 00 4 12572      5873        SLW      ERBFL,4                                         RDCI0273
12362 -0754 00 0 00000      5874  ERX   PXD      ,0                                              RDCI0274
12363  0774 00 4 00000      5875  ERIR  AXT      **,4          RESTORE IR4                       RDCI0275
12364  0020 00 4 00001      5876        TRA      1,4           EXIT                              RDCI0276
```

```
                                   SPACE    5                                   RDCI0277
                          *        UNPACK(NAME)                                 RDCI0278
                          *                                                     RDCI0279
                          *        UNPACK(NAME) GIVES A LIST OF THE CHARACTER OBJECTS  RDCI0280
                          *        IN THE CELL -NAME-, UP TO THE FIRST 77.      RDCI0281
                          *                                                     RDCI0282
  12365  0634 00 4 12414    UNPACK SXA      UPI4,4        SAVE IR2 AND IR4      RDCI0283
  12366  0634 00 2 12415           SXA      UPI2,2                              RDCI0284
  12367 -0734 00 4 00000           PDX      ,4            PUT ARGUMENT CELL IN MQ  RDCI0285
  12370  0560 00 4 00000           LDQ      0,4                                 RDCI0286
  12371  0774 00 2 00006           AXT      6,2                                 RDCI0287
  12372 -0754 00 0 00000    UP2    PXD      ,0            LOOK AT A CHARACTER   RDCI0288
  12373 -0763 00 0 00006           LGL      6                                   RDCI0289
  12374  0340 00 0 00413           CAS      $Q63                                RDCI0290
  12375  1 00001 2 12401           TXI      UP1,2,1       ADJUST IR2 FOR CHARACTER  RDCI0291
  12376  1 00001 2 12401           TXI      UP1,2,1         COUNT               RDCI0292
  12377  0601 00 2 12602           STO      T1+6,2        STORE THE CHARACTER   RDCI0293
  12400  2 00001 2 12372           TIX      UP2,2,1                             RDCI0294
                                                                                RDCI0295
  12401  0600 00 0 03654    UP1    STZ      UPLST         SET END OF LIST TO NIL  RDCI0296
  12402  3 00006 2 12412    UP4    TXH      UP3,2,6       EXIT IF ALL CHARACTERS LISTED  RDCI0297
  12403  0500 00 2 12602           CLA      T1+6,2        PICK UP NEXT CHARACTER  RDCI0298
  12404  0400 00 0 00521           ADD      HORG            AND FORM OBJECT     RDCI0299
  12405  0767 00 0 00022           ALS      18                                  RDCI0300
  12406  0560 00 0 03654           LDQ      UPLST                               RDCI0301
  12407  0074 00 4 03730           TSX      $CONS,4       PUT CHAR AT HEAD OF LIST  RDCI0302
  12410  0601 00 0 03654           STO      UPLST                               RDCI0303
  12411  1 00001 2 12402           TXI      UP4,2,1                             RDCI0304
  12412  0500 00 0 03654    UP3    CLA      UPLST         RETURN WITH LOCATION OF LIST  RDCI0305
  12413  0600 00 0 03654           STZ      UPLST         AVOID UNNECESSARY GARBAGE COLL.  RDCI0306
  12414  0774 00 4 00000    UPI4   AXT      **,4          RESTORE IR4 AND IR2   RDCI0307
  12415  0774 00 2 00000    UPI2   AXT      **,2                                RDCI0308
  12416  0020 00 4 00001           TRA      1,4           EXIT                  RDCI0309
                          *                                                     RDCI0310
                          *        THIS ROUTINE USES $CONS                      RDCI0311

                                        * * * * * * * * * * * * * *  * * * * * * * * * * * * * * * * RDCI0313
                                                                                RDCI0314
                                             STORAGE                            RDCI0315
                                                                                RDCI0316
                  00521     HORG   SYN $H00A
                  00522     EOF    SYN $H12A
                  00523     EOR    SYN $H72A
                  00524     HOL9   SYN $H11D
                  00525     HOL14  SYN $H14D
                  00530     HOL40  SYN $H40D
                                   TITLE                                        RDCI0323
  12417 +000000000001       CHTYP  DEC 1,1,1,1,1,1,1,1    0 = ILLEGAL CHARACTER  RDCI0324
  12427 +000000000001              DEC 1,1,4,3,3,0,0,0    1 = DIGIT             RDCI0325
```

```
12437 +000000000003          5926          DEC 3,2,2,2,2,2,2,2      2 = LETTER                                RDCI0326
12447 +000000000002          5927          DEC 2,2,4,4,4,0,0,0      3 = OPERATION CHARACTER                   RDCI0327
12457 +000000000003          5928          DEC 3,2,2,2,2,2,2,2      4 = OTHER                                 RDCI0328
12467 +000000000002          5929          DEC 2,2,4,4,3,0,0,0                                                RDCI0329
12477 +000000000004          5930          DEC 4,3,2,2,2,2,2,2                                                RDCI0330
12507 +000000000002          5931          DEC 2,2,4,4,4,0,0,0                                                RDCI0331
                             5932          DETAIL                                                             RDCI0332
                    00370    5933  ZERO    SYN $ZERO
                    12417    5934  A1      SYN CHTYP                                                          RDCI0334
                    12440    5935  A2      SYN CHTYP+17                                                       RDCI0335
                    12437    5936  A3      SYN CHTYP+16                                                       RDCI0336
                    00424    5937  OCT41   SYN $Q041
                    00412    5938  A36     SYN $Q36
12517                        5939  ERSIG   BSS 1                    ERROR INDICATOR                         RDCI0339
12520  006060606060         5940          BCI     1,0              DOUBLE SPACE UNDER PROGRAM CONTROL        RDCI0340
12535                        5941  ERBFU   BES     12               UPPER ERROR BUFFER                        RDCI0341
12535  606060606060          5942          BCI     1,               SINGLE SPACE UNDER PROGRAM CONTROL        RDCI0342
12552                        5943  BUFF    BES     12               BUFFER FOR INPUT RECORD                   RDCI0343
12555                        5944          BES     3                ROOM FOR EXTRA WORDS IN READ-IN           RDCI0344
12555  606060606060          5945          BCI     1,               SINGLE SPACE UNDER PROGRAM CONTROL        RDCI0345
12572                        5946  ERBFL   BES     12               LOWER ERROR BUFFER                        RDCI0346
12572                        5947  PWORD   BSS 1                                                             RDCI0347
12573  0 00001 0 12605       5948  PARAM   PZE     BOFFO-20,,1                                                RDCI0348
                    00476    5949  FLOS    SYN     FLOATD
12574                        5950  T1      BSS     7                                                          RDCI0351
                    00475    5951  FIXS    SYN     $FIXD
12603                        5952  CHARS   BSS     1                                                          RDCI0353
12604                        5953  EORTS   BSS 1                    NONZERO INDICATES EOR OUTPUT CHAR         RDCI0356
12631                        5954  BOFFO   BES     20                                                         RDCI0357
12631                        5955          BSS     1                JUNK WORD FOR BOFFO REMNANTS              RDCI0358
                    03654    5956  UPLST   SYN     BBPNT            CUMULATIVE LIST OF CHARACTERS             RDCI0359
12632                        5957          BSS     1                                                          RDCI0360
12633  0 00000 0 00000       5958  CURC1   PZE                      POINTER APPEARS IN ADDRESS                RDCP0610
12634  0 00000 0 00000       5959  CURC    PZE                      POINTER APPEARS IN DECREMENT              RDCP0623
12635  0 00000 0 00000       5960  CHACT   PZE                      CHARACTER COUNT                           RDC80236
                             5961  *                                                                          RDCI0361
                             5962  *   MKNO    A FUNCTION OF TWO ARGUMENTS, THE FIRST IS A NUMBER, THE SECORDCI0362
                             5963  *           ND IS A TYPE (FLO OR FIX). MKNO FORMS A NON'UNIQUE NUMBER     RDCI0363
12636  0634 00 4 12660       5964  MKNO    SXA     MKIR,4           SAVE LINK IR
12637 -0600 00 0 03656       5965          STQ     MKT1             TYPE OF NUMBER TO MQ
12640  0074 00 4 03710       5966          TSX     $CONSW,4
12641  0131 00 0 00000       5967          XCA
12642  0500 00 0 00460       5968          CLA     $DMASK
12643  0074 00 4 03730       5969          TSX     $CONS,4
12644 -0534 00 4 03656       5970          LXD     MKT1,4           TYPE TO IR 4
12645  0622 00 0 03656       5971          STD     MKT1
12646  0500 00 0 00441       5972          CLA     $QT5             ASSUME IT IS OCTAL
12647 -3 10134 4 12652       5973          TXL     *+3,4,$FIX-1
12650  3 10135 4 12652       5974          TXH     *+2,4,$FIX
12651  0500 00 0 00436       5975          CLA     $QT1
12652 -3 10117 4 12655       5976          TXL     *+3,4,$FLOAT-1
12653  3 10120 4 12655       5977          TXH     *+2,4,$FLOAT
12654  0500 00 0 00437       5978          CLA     $QT2
12655 -0534 00 4 03656       5979          LXD     MKT1,4           LOCATION OF NUMBER
```

```
12656 -0602 00 4 00000  5980        ORS   0,4          PUT IN NUMBER FLAG
12657 -0754 00 4 00000  5981        PXD   0,4          ANSWER TO AC
12660  0774 00 4 00000  5982  MKIR  AXT   **,4         RESTORE LINK IR
12661  0020 00 4 00001  5983        TRA   1,4                                                    RDCI0368
                        5984 *                                                                 RDCI0421
                        5985 *                                                                 RDCI0423
                        5986 H      HED                                                        RDCI0454
                        5987 *      LOGOR, LOGAND, AND LOGXOR
                        5988 *                                                                 RDCI0458
                        5989 *      THESE FUNCTIONS TAKE THE LOGICAL AND, LOGICAL OR, AND LOGICAL
                        5990 *      EXCLUSIVE OR RESPECTIVELY OF THEIR ARGUMENTS, WHICH ARE NUMBER
                        5991 *      OBJECTS.  THE RESULT IS AN OCTAL NUMBER OBJECT.
                        5992 *                                                                 RDCI0459
12662  0100 00 4 00001  5993  LOGOR TZE   1,4          RETURN 0 IF 0 INPUT                    RDCI0460
12663 -0634 00 4 12756  5994        SXD   T1,4         SAVE IR4
12664  0774 00 4 07706  5995        AXT   -$)PJ37,4    LOGOR ATOM
12665  0634 00 4 12756  5996        SXA   T1,4         SET FUNCTION ON PDL
12666  0074 00 4 02312  5997        TSX   $SAVE,4                                              RDCI0461
12667 -3 12760 0 02401  5998        TXL   $END1,,T1+2  SAVE 1 ITEM
12670  0074 00 4 15774  5999        TSX   $EVLIS,4     EVALUATE LIST OF ARGUMENTS              RDCI0463
12671  0074 00 4 02326  6000        TSX   UNSAVE,4                                             RDCI0464
12672  0560 00 0 00370  6001        LDQ   $ZERO        OR OF NO ARGUMENTS                      RDCI0466
12673 -0600 00 0 12757  6002        STQ   T1+1                                                 RDCI0467
12674  0560 00 0 12747  6003        LDQ   ORS          INSTRUCTION FOR INNER LOOP              RDCI0468
12675  0020 00 0 12725  6004        TRA   LOG2                                                 RDCI0469
                        6005 *                                                                 RDCI0470
12676  0100 00 4 00001  6006 LOGAND TZE   1,4          EXIT WITH 0 IF 0 INPUT                  RDCI0471
12677 -0634 00 4 12756  6007        SXD   T1,4         SAVE IR4                                RDCI0472
12700  0774 00 4 07676  6008        AXT   -$)PJ36,4    LOGAND ATOM
12701  0634 00 4 12756  6009        SXA   T1,4         SET FUNCTION ON PDL
12702  0074 00 4 02312  6010        TSX   $SAVE,4                                              RDCI0473
12703 -3 12760 0 02401  6011        TXL   $END1,,T1+2  SAVE 1 ITEM
12704  0074 00 4 15774  6012        TSX   $EVLIS,4     EVALUATE LIST OF ARGUMENTS              RDCI0475
12705  0074 00 4 02326  6013        TSX   UNSAVE,4                                             RDCI0476
12706  0560 00 0 00471  6014        LDQ   SEVENS       AND OF NO ARGUMENTS                     RDCI0478
12707 -0600 00 0 12757  6015        STQ   T1+1                                                 RDCI0479
12710  0560 00 0 12750  6016        LDQ   ANS          INSTRUCTION FOR INNER LOOP              RDCI0480
12711  0020 00 0 12725  6017        TRA   LOG2                                                 RDCI0481
                        6018 *                                                                 RDCI0482
12712  0100 00 4 00001  6019 LOGXOR TZE   1,4          EXIT WITH 0 IF 0 INPUT
12713 -0634 00 4 12756  6020        SXD   T1,4         SAVE IR4                                RDCI0484
12714  0774 00 4 07666  6021        AXT   -$)PJ38,4    LOGXOR ATOM
12715  0634 00 4 12756  6022        SXA   T1,4         SET FUNCTION ON PDL
12716  0074 00 4 02312  6023        TSX   $SAVE,4                                              RDCI0485
12717 -3 12760 0 02401  6024        TXL   $END1,,T1+2  SAVE 1 ITEM
12720  0074 00 4 15774  6025        TSX   $EVLIS,4     EVALUATE LIST OF ARGUMENTS              RDCI0487
12721  0074 00 4 02326  6026        TSX   UNSAVE,4                                             RDCI0488
12722  0560 00 0 00370  6027        LDQ   $ZERO        RINGSUM OF NO ARGUMENTS                 RDCI0490
12723 -0600 00 0 12757  6028        STQ   T1+1                                                 RDCI0491
12724  0560 00 0 12751  6029        LDQ   ERS          TRA TO INSTRUCTIONS FOR INNER LOOP      RDCI0492
                        6030 *      COMMON PART OF LOGAND, LOGOR, AND LOGXOR
12725 -0600 00 0 12737  6031  LOG2  STQ   LOG5                                                 RDCI0494
12726  0634 00 2 12745  6032        SXA   LOG4,2       SAVE IR2                                RDCI0495
12727 -0734 00 2 00000  6033        PDX   ,2           POINTER TO ARGUMENT LIST                RDCI0496
```

```
                              6034 *     FORM THE PROPER LOGICAL COMBINATION OF THE ARGUMENTS           RDCI0497
 12730  0500 00 2 00000       6035 LOG1  CLA    0,2                L                                    RDCI0498
 12731 -0734 00 2 00000       6036       PDX    0,2                CDR(L)                               RDCI0499
 12732  0734 00 4 00000       6037       PAX    0,4                                                     RDCI0500
 12733 -0754 00 4 00000       6038       PXD    0,4                CAR(L)                               RDCI0501
 12734  0074 00 4 14342       6039       TSX    NUMVAL,4           GET NUMBER FOR THIS ELEMENT          RDCI0502
 12735 -0734 00 4 00000       6040       PDX    0,4                                                     RDCI0503
 12736 -0500 00 4 00000       6041       CAL    0,4                                                     RDCI0504
 12737  0 00000 0 00000       6042 LOG5         **                 INSTRUCTION SET EARLIER
 12740  3 00000 2 12730       6043       TXH    LOG1,2,0           LOOP AGAIN IF CDR(L) NOT NULL        RDCI0506
                              6044 *     RETURN A POINTER TO THE RESULT                                 RDCI0507
 12741 -0500 00 0 12757       6045 LOG6  CAL    T1+1               PICK UP RESULT                       RDCI0508
 12742  0560 00 0 00503       6046       LDQ    $OCTD              MAKE AN OBJECT OF IT                 RDCZ0013
 12743  0074 00 4 12636       6047       TSX    $MKNO,4                                                 RDCI2509
 12744 -0534 00 4 12756       6048       LXD    T1,4               RESTORE IR4 AND IR2                  RDCI0510
 12745  0774 00 2 00000       6049 LOG4  AXT    **,2                                                    RDCI0511
 12746  0020 00 4 00001       6050       TRA    1,4                                                     RDCI0512
                              6051 *     INSTRUCTIONS TO BE INSERTED IN INNER LOOP                      RDCI0513
 12747 -0602 00 0 12757       6052 ORS   ORS    T1+1                                                    RDCI0514
 12750  0320 00 0 12757       6053 ANS   ANS    T1+1                                                    RDCI0515
 12751  0020 00 0 12752       6054 ERS   TRA    *+1                TRA SINCE ERS TAKES 2 INSTRUCTIONS   RDCI0516
 12752  0322 00 0 12757       6055       ERA    T1+1                                                    RDCI0517
 12753  0602 00 0 12757       6056       SLW    T1+1                                                    RDCI0518
 12754  3 00000 2 12730       6057       TXH    LOG1,2,0                                                RDCI0519
 12755  0020 00 0 12741       6058       TRA    LOG6                                                    RDCI0520
                              6059 *                                                                    RDCI0522
 12756 -000000000000          6060 T1    OCT    -0,-0              STORAGE FOR LOGAND, ETC.
 12757 -000000000000
                              6061 *     THIS ROUTINE USES NUMVAL,$MKNO,$ZERO,AND SEVENS                RDCI0523



                              6063 *     LEFTSHIFT(X,N)                                                 RDC70020
                              6064 *                                                                    RDC70030
                              6065 *     IF N IS +, X IS SHIFTED LEFT N PLACES.                         RDC70040
                              6066 *     IF N IS -, X IS SHIFTED RIGHT -N PLACES.                       RDC70050
                              6067 *     BOTH INPUTS MUST BE NUMERICAL OBJECTS.                         RDC70060
                              6068 *                                                                    RDC70010
 12760  0634 00 4 13003       6069 LSHIFT SXA   LSH1,4             SAVE IR4                             RDC70070
 12761  0634 00 2 13002       6070       SXA    LSH4,2             SAVE IR2
 12762  0601 00 0 12756       6071       STO    T2                 SAVE X                               RDC70080
 12763  0131 00 0 00000       6072       XCA                                                            RDC70090
 12764 -0734 00 2 00000       6073       PDX    0,2                FIND VALUE OF N
 12765  0074 00 4 13075       6074       TSX    FIXVAL,4
 12766  0774 00 4 77100       6075       AXT    7*4096+7*512+1*64,4  SET UP ARS                         RDC70140
 12767 -0120 00 0 12771       6076       TMI    LSH2               IF NEGATIVE, SET UP ARS              RDC70110
 12770  0774 00 4 76700       6077       AXT    7*4096+6*512+7*64,4  SET UP ALS                         RDC70120
 12771 -0634 00 4 12777       6078 LSH2  SXD    LSH3,4             PUT OP CODE INTO INSTRUCTION         RDC70150
 12772  0621 00 0 12777       6079       STA    LSH3               PUT ADDRESS IN SHIFT INSTRUCTION     RDC70160
 12773  0500 00 0 12756       6080       CLA    T2                 FIND VALUE OF X                      RDC70170
 12774  0074 00 4 14342       6081       TSX    NUMVAL,4                                                RDC70180
```

```
12775 -0734 00 4 00000  6082        PDX   0,4                                          RDC70190
12776 -0500 00 4 00000  6083        CAL   0,4                                          RDC70200
12777  0767 00 0 00000  6084  LSH3  ALS   **      THIS INSTRUCTION WAS SET UP EARLIER  RDC70210
13000  0560 00 0 00503  6085        LDQ   $OCTD    FORM OCTAL NUMBER                   RDC70220
13001  0074 00 4 12636  6086        TSX   $MKNO,4                                      RDC70225
13002  0774 00 2 00000  6087  LSH4  AXT   **,2      RESTORE IR2
13003  0774 00 4 00000  6088  LSH1  AXT   **,4                                         RDC70230
13004  0020 00 4 00001  6089        TRA   1,4                                          RDC70240
                 12756   6090  T2    SYN   T1                                         RDC70270
                         6091  *                                                      RDC70280
                         6092  *     THIS ROUTINE USES $MKNO,$OCTD,AND NUMVAL         RDC70290
                         6093  Q     HED                                              RDCX0119
                         6094  *                                                         6880
                         6095  *                                                      1.5N3890
                         6096  * ARYGET     THE FUNCTION THAT GETS AND SETS THE VALUES OF ARRAYS  1.5N3900
                         6097  *           USED IN LISP AS FOLLOWS ...                1.5N3910
                         6098  *           TO GET A VALUE  (NAME,D1,D2,D3)            1.5N3920
                         6099  *           TO SET A VALUE   (NAME,SET,VALUE,D1,D2,D3) 1.5N3930
                         6100  *                                                      1.5N3940
                         6101  *           THE CALLING SEQUENCE IS  AS FOLLOWS        1.5N3950
                         6102  *     SXA   ARYGTX,4                                   1.5N3960
                         6103  *     TSX   ARYGET,4                                   1.5N3970
                         6104  *     PZE   LOCATION OF TABLE 1,,NUMBER OF DIMENSIONS  1.5N3980
                         6105  *                                                      1.5N3990
13005  0634 00 2 13044  6106 ARYGET SXA   ARYY,2    SAVE INDEX REGISTERS              1.5N4000
13006  0634 00 1 13045  6107        SXA   ARYZ,1                                     1.5N4010
13007  0601 00 0 13072  6108        STO   AGAO      SAVE ARGUMENT 1                   1.5N4020
13010  0500 00 4 00003  6109        CLA   3,4       TABLE ZERO PARAMETER WORD         1.5N4030
13011  0621 00 0 13042  6110        STA   AGXEX     ADDRESS OF END OF TABLE 1         1.5N4040
13012 -0734 00 2 00000  6111        PDX   0,2       NUMBER OF DIMENSIONS              1.5N4050
13013 -0600 00 0 13073  6112        STQ   AGAT      ARG 2                             1.5N4060
13014  0500 00 0 03321  6113        CLA   $ARG3                                      1.5N4070
13015  0601 00 0 13074  6114        STO   AGATH     ARGUMENT 3                        1.5N4080
13016  0500 00 0 13070  6115        CLA   AX        XEC INSTRUCTION                   1.5N4090
13017 -0534 00 4 13072  6116        LXD   AGAO,4    GET ARG 1                         1.5N4100
13020 -3 07031 4 13032  6117        TXL   AGN,4,$SET-1  TEST FOR SET OPERATION        1.5N4110
13021  3 07032 4 13032  6118        TXH   AGN,4,$SET    GO ON IF NOT $SET             1.5N4120
13022 -0600 00 0 13071  6119        STQ   AGV       IS SET SAVE VALUE                 1.5N4130
13023  0500 00 0 03321  6120        CLA   $ARG3                                      1.5N4140
13024  0601 00 0 13072  6121        STO   AGAO      DIMENSION 1                       1.5N4150
13025  0500 00 0 03322  6122        CLA   $ARG4                                      1.5N4160
13026  0601 00 0 13073  6123        STO   AGAT      DIMENSION 2                       1.5N4170
13027  0500 00 0 03323  6124        CLA   $ARG5                                      1.5N4180
13030  0601 00 0 13074  6125        STO   AGATH     DIMENSION 3                       1.5N4190
13031  0500 00 0 13067  6126        CLA   AXS       XEC* INSTRUCTION                  1.5N4200
13032  0622 00 0 13042  6127  AGN   STD   AGXEX     SET UP FETCH OR STORE INSTUCTION  1.5N4210
13033  3 00002 2 13047  6128        TXH   AGDTH,2,2 GO IF 3 D ARRAY                   1.5N4220
13034  3 00001 2 13056  6129        TXH   AGDT,2,1  GO IF 2 D ARRAY                   1.5N4230
13035 -0534 00 2 13072  6130        LXD   AGAO,2    DIMENSION 1                       1.5N4240
13036  0074 00 4 13075  6131        TSX   FIXVAL,4   EVALUATE THE FIXED POINT NUMBER   1.5N4250
13037  0734 00 1 00000  6132        PAX   0,1       INTO PROPER INDEX                 1.5N4260
13040  0774 00 6 00000  6133        AXT   0,6       ZERO INDEX  REGISTERS             1.5N4270
13041  0500 00 0 13071  6134  AGXE  CLA   AGV       GET THE VALUE                     1.5N4280
13042  0522 00 4 00000  6135  AGXEX XEC   **,4      FETCH BY XEC OR STORE BY XEC*     1.5N4290
```

```
  13043  0774 00 4 00000  ARYGTX AXT    **,4          RESTORE INDEX REGISTERS             1.5N4300
  13044  0774 00 2 00000  ARYY   AXT    **,2                                              1.5N4310
  13045  0774 00 1 00000  ARYZ   AXT    **,1                                              1.5N4320
  13046  0020 00 4 00001         TRA    1,4                                               1.5N4330
                          *                                                               1.5N4340
  13047 -0534 00 2 13074  AGDTH  LXD    AGATH,2       DIMENSION 3                         1.5N4350
  13050  0074 00 4 13075         TSX    FIXVAL,4      EVALUATE AS A FIXED POINT NUMBER    1.5N4360
  13051  0734 00 1 00000         PAX    0,1           INTO INDEX                          1.5N4370
  13052 -0534 00 2 13072         LXD    AGAO,2        DIMENSION 1                         1.5N4380
  13053  0074 00 4 13075         TSX    FIXVAL,4      EVALUATE IT                         1.5N4390
  13054  0621 00 0 13065         STA    AGR           SET UP AXT INSTRUCTION              1.5N4400
  13055  0020 00 0 13062         TRA    AGD           GO EVALUTE DIMENSUON 2              1.5N4410
                          *                                                               1.5N4420
  13056  0634 00 0 13065  AGDT   SXA    AGR,0         PRESET AXT INSTRUCTION              1.5N4430
  13057 -0534 00 2 13072         LXD    AGAO,2        DIMENSION 1                         1.5N4440
  13060  0074 00 4 13075         TSX    FIXVAL,4      FIXED POINT NUMBER EVALUATION       1.5N4450
  13061  0734 00 1 00000         PAX    0,1           INTO INDEX 1                        1.5N4460
  13062 -0534 00 2 13073  AGD    LXD    AGAT,2        DIMENSION 2                         1.5N4470
  13063  0074 00 4 13075         TSX    FIXVAL,4      FIXED POINT NUMBER EVALUATION       1.5N4480
  13064  0734 00 2 00000         PAX    0,2           INTO INDEX 2                        1.5N4490
  13065  0774 00 4 00000  AGR    AXT    **,4          ZERO OR DIMENSION 1                 1.5N4500
  13066  0020 00 0 13041         TRA    AGXE          GO BACK TO MAIN PROGRAM
                          *                                                               1.5N4520
A 13067  0522 60 0 00000  AXS    XEC*                 THE STORE INSTRUCTION               1.5N4530
A 13070  0522 00 0 00000  AX     XEC                  THE FETCH INSTRUCTION               1.5N4540
  13071  0 00000 0 00000  AGV                         VALUE TO BE STORED PUT HERE         1.5N4550
  13072  0 00000 0 00000  AGAO                        DIMENSION 1                         1.5N4560
  13073  0 00000 0 00000  AGAT                        DIMENSION 2                         1.5N4570
  13074  0 00000 0 00000  AGATH                       DIMENSION 3                         1.5N4580
                          *                                                               1.5N4590
                          *      FIXVAL
                          *
                          *      FIXVAL HAS AS INPUT A POINTER TO A FIXED POINT NUMBER OBJECT IN
                          *      IR2, AND HANDS BACK THE NUMERICAL VALUE OF THAT OBJECT.
                          *
  13075  0634 00 2 13106  FIXVAL SXA    FXVE,2        SAVE IR2 IN CASE OF ERROR
  13076  0500 00 2 00000         CLA    0,2
  13077  0734 00 2 00000         PAX    0,2
  13100 -3 77776 2 13106         TXL    FXVE,2,-2     ERROR IF NOT ATOMIC
  13101 -0734 00 2 00000         PDX    0,2
  13102 -0320 00 0 00436         ANA    $QT1
  13103  0100 00 0 13106         TZE    FXVE
  13104  0500 00 2 00000         CLA    0,2           PICK UP VALUE
  13105  0020 00 4 00001         TRA    1,4           NORMAL EXIT
  13106  0774 00 2 00000  FXVE   AXT    **,2          IR2 SHOULD LAND IN DECR. OF AC
  13107 -0634 00 4 01562         SXD    $ERROR,4
  13110 -0754 00 2 00000         PXD    0,2           IT DOES INDEED LAND THERE
  13111  0074 00 4 01563         TSX    $ERROR+1,4
  13112  543160600454            BCI    1,*I  4*      BAD ARGUMENT -- FIXVAL
                          *
                          *                                                               1.5N4600
                          * ARYMAK       THE FUNCTION THAT MAKES ARRAYS                       1.5N4610
                          *              THE ARGUMENT IS A SINGLE LIST WHOSE SUB-LISTS HAVE THE  1.5N4620
                          *              FORM  (NAME,(DIMENSION1,DIMENSION2,DIMENSION3),TYPE)    1.5N4630
```

```
                                    6190 *       ARRAYS MAY BE 1, 2, OR 3 DIMENSIONAL AND MAY BE OF LIST OR      1.5N4640
                                    6191 *              NON-LIST TYPE.                                           1.5N4650
                                    6192 *                                                                       1.5N4660
                                    6193 *              ARRAY IS STORED AS FOLLOWS ...                           1.5N4670
                                    6194 *       SXA    ARTGTX,4          ADDRESS OF SUBR TXL INSTRUCTION        1.5N4680
                                    6195 *       TSX    ARYGET,4                                                 1.5N4690
                                    6196 *       PZE    END + 1,, N OF DIMENSIONS  (ARRAY PROPERTY POINTS HERE)  1.5N4700
                                    6197 *       PZE    TOTAL LENGTH,,LIST LENGTH                                1.5N4710
                                    6198 *       PZE    TABLE ZERO,, NUMBER OF DIMENSIONS (ARYGET PARAMETER WORD)1.5N4720
                                    6199 *       CLA*   **,2             TABLE 1                                  1.5N4730
                                    6200 *       ************************                                        1.5N4740
                                    6201 *       STO    **,1              TABLE 2                                 1.5N4750
                                    6202 *       ****************************                                    1.5N4760
                                    6203 *                                 ARRAY PROPER GOES HERE                1.5N4770
                                    6204 *                                                                       1.5N4780
13113  0560 00 0 13115   6205 ARYMAK LDQ    AMFAG             PICK UP FUNCTIONAL ARGUMENT                        1.5N4790
13114  0020 00 0 04214   6206        TRA    MAPLIS            LET MAPLIST HANDLE ITERATION ALONG LIS1.5N4800
                         6207 *                                                                                  1.5N4810
13115 -3 00001 0 13116   6208  AMFAG TXL    *+1,,1            FUNCTIONAL ARGUMENT                                1.5N4820
13116  0634 00 4 13320   6209        SXA    AFRX,4            SAVE INDEX REGISTERS                               1.5N4830
13117  0634 00 2 13321   6210        SXA    AFRY,2                                                               1.5N4840
13120 -0734 00 4 00000   6211        PDX    0,4               POINTER TO LIST                                    1.5N4850
13121  0500 00 4 00000   6212        CLA    0,4                                                                  1.5N4860
13122  0734 00 4 00000   6213        PAX    0,4               POINTER TO SUBLIST                                 1.5N4870
13123 -0500 00 4 00000   6214        CAL    0,4                                                                  1.5N4880
13124  0734 00 4 00000   6215        PAX    0,4               NAME                                               1.5N4890
13125 -0634 00 4 03504   6216        SXD    AFAT,4            SAVE IT                                            1.5N4900
13126 -0734 00 4 00000   6217        PDX    0,4                                                                  1.5N4910
13127  0500 00 4 00000   6218        CLA    0,4                                                                  1.5N4920
13130  0734 00 2 00000   6219        PAX    0,2               POINTER TO DIMENSION LIST                          1.5N4930
13131 -0734 00 4 00000   6220        PDX    0,4                                                                  1.5N4940
13132  0500 00 4 00000   6221        CLA    0,4                                                                  1.5N4950
13133  0734 00 4 00000   6222        PAX    0,4               TYPE                                               1.5N4960
13134  0600 00 0 13336   6223        STZ    ATYP                                                                 1.5N4970
13135 -3 07735 4 13140   6224        TXL    ADA,4,$LIST-1     GO IF NOT $ LIST                                   1.5N4990
13136  3 07736 4 13140   6225        TXH    ADA,4,$LIST                                                          1.5N5000
13137 -0634 00 4 13336   6226        SXD    ATYP,4            MAKES ATYP NON-ZERO FOR LIST ARRAYS                1.5N5010
13140  0500 00 2 00000   6227  ADA   CLA    0,2               FIRST WORD ON DIMENSION LIST                       1.5N5020
13141  0734 00 2 00000   6228        PAX    0,2               DIMENSION 1                                        1.5N5030
13142  0622 00 0 03505   6229        STD    ATMP              POINTER TO REST                                    1.5N5040
13143  0074 00 4 13075   6230        TSX    FIXVAL,4          EVALUATE THE FIXED POINT NUMBER                    1.5N5050
13144  0601 00 0 13340   6231        STO    ADO               DIMENSION 1                                        1.5N5060
13145 -0534 00 4 03505   6232        LXD    ATMP,4            PICK UP POINTER TO REST OF LIST                    1.5N5070
13146 -3 00000 4 13164   6233        TXL    AOD,4,0           GO IF 1 D                                          1.5N5080
13147  0500 00 4 00000   6234        CLA    0,4               NEXT WORD                                          1.5N5090
13150  0622 00 0 03505   6235        STD    ATMP              SAVE POINTER                                       1.5N5100
13151  0734 00 2 00000   6236        PAX    0,2               DIMENSION 2                                        1.5N5110
13152  0074 00 4 13075   6237        TSX    FIXVAL,4          GET NUMBER VALUE                                   1.5N5120
13153  0601 00 0 13341   6238        STO    ADT               DIMENSION 2                                        1.5N5130
13154 -0534 00 4 03505   6239        LXD    ATMP,4            POINTER TO REST OF LIST                            1.5N5140
13155 -3 00000 4 13173   6240        TXL    ATD,4,0           GO IF 2 D ARRAY                                    1.5N5150
13156  0500 00 4 00000   6241        CLA    0,4                                                                  1.5N5160
13157  0734 00 2 00000   6242        PAX    0,2               DIMENSION 3                                        1.5N5170
13160  0074 00 4 13075   6243        TSX    FIXVAL,4          NUMBER VALUE                                       1.5N5180
```

```
13161  0601 00 0 13342   6244        STO    ADTH            DIMENSION 3                    1.5N5190
13162  0774 00 2 00003   6245        AXT    3,2             NUMBER OF DIMENSIONS           1.5N5200
13163  0020 00 0 13177   6246        TRA    AGA             GO TO NEXT PART OF PROGRAM     1.5N5210
13164  0500 00 0 13340   6247  ADD   CLA    ADO             1D, TREAT AS A 1 X 1 X D1 ARRAY 1.5N5220
13165  0601 00 0 13342   6248        STO    ADTH                                           1.5N5230
13166  0500 00 0 00371   6249        CLA    $Q1                                            1.5N5240
13167  0601 00 0 13341   6250        STO    ADT             DIMENSION 2                    1.5N5250
13170  0601 00 0 13340   6251        STO    ADO             DIMENSION 1                    1.5N5260
13171  0774 00 2 00001   6252        AXT    1,2             1 D ARRAY                      1.5N5270
13172  0020 00 0 13177   6253        TRA    AGA             GO NEXT PART                   1.5N5280
13173  0500 00 0 13340   6254  ATD   CLA    ADO             2 D, TREAT AS A 1 X D2 X D1 ARRAY 1.5N5290
13174  0500 00 0 00371   6255        CLA    $Q1                                            1.5N5300
13175  0601 00 0 13340   6256        STO    ADO             DIMENSION 1                    1.5N5310
13176  0774 00 2 00002   6257        AXT    2,2             2 D ARRAY                      1.5N5320
13177  0560 00 0 13340   6258  AGA   LDQ    ADO             DIMENSION 1                    1.5N5330
13200 -0754 00 0 00000   6259        PXD    0,0             ZERO AC                        1.5N5340
13201  0200 00 0 13341   6260        MPY    ADT             DIMENSION 2                    1.5N5350
13202 -0600 00 0 13335   6261        STQ    ADOT            D1 X D2                        1.5N5360
13203  0200 00 0 13342   6262        MPY    ADTH            DIMENSION 3                    1.5N5370
13204  0520 00 0 13336   6263        ZET    ATYP            SKIP NEXT IF NON-LIST ARRAY    1.5N5380
13205 -0600 00 0 13336   6264        STQ    ATYP            LIST LENGHT                    1.5N5390
13206  0131 00 0 00000   6265        XCA                    D1 X D2 X D3 TO AC             1.5N5400
13207  0400 00 0 13335   6266        ADD    ADOT            ADD INDEX TABLE LENGTHS        1.5N5410
13210  0400 00 0 13340   6267        ADD    ADO                                            1.5N5420
13211  0400 00 0 00375   6268        ADD    $Q5             CONSTANT LENGTH                1.5N5430
13212  0621 00 0 13333   6269        STA    APWT            PARAMETER WORD TWO             1.5N5440
13213  0621 00 0 13337   6270        STA    ATMQ            SAVE LENGTH                    1.5N5450
13214  0534 00 4 13336   6271        LXA    ATYP,4          ZERO OR LIST LENGTH            1.5N5460
13215  0634 00 4 13333   6272        SXA    APWT,4          PARAMETER WORD 2               1.5N5470
13216  0074 00 4 04004   6273        TSX    BLOCKR,4        RESERVE A BLOCK OF THIS LENGTH 1.5N5480
13217  0100 00 0 13323   6274        TZE    ARYTL           GO IF ARRAY WILL NOT FIT       1.5N5490
13220  0621 00 0 03505   6275        STA    ATMP            END OF BLOCK ADDRESS           1.5N5500
13221  0400 00 0 00371   6276        ADD    $Q1             ADD 1                          1.5N5510
13222  0621 00 0 13332   6277        STA    APWC            PARAMETER WORD 1               1.5N5520
13223 -0634 00 2 13334   6278        SXD    ATBZ,2          NUMBER OF DIMENSIONS           1.5N5540
13224 -0634 00 2 13332   6279        SXD    APWC,2                                         1.5N5550
13225 -0634 00 2 13343   6280        SXD    ASBR,2                                         1.5N5560
13226  0402 00 0 13337   6281        SUB    ATMQ            LENGTH OF BLOCK                1.5N5570
13227  0621 00 0 13343   6282        STA    ASBR            ADDRESS OF BEGINNING OG BLOCK  1.5N5580
13230  0737 00 4 00000   6283        PAC    0,4             POINTER IN IR 4                1.5N5590
13231  1 77776 4 13232   6284        TXI    *+1,4,-2        POINTER TO ARRAY PROPERTY      1.5N5600
13232 -0634 00 4 13344   6285        SXD    AARY,4          SAVE POINTER                   1.5N5610
13233  0737 00 4 00000   6286        PAC    0,4             POINTER TO BEGINNING OF ARRAY  1.5N5620
13234  0400 00 0 00374   6287        ADD    $Q4             LENGTH OF PREFIX - 1
13235  0400 00 0 13340   6288        ADD    ADO                                            1.5N5640
13236  0621 00 0 13334   6289        STA    ATBZ            LAST LOC. IN TAQBLE ONE        1.5N5650
13237  0774 00 2 00005   6290        AXT    5,2             LENGTH OF PREFIX TO ARRAY      1.5N5660
13240  0500 00 2 13335   6291  ACLA  CLA    ADOT,2          PICK UP PREFIX                 1.5N5670
13241  0601 00 4 00000   6292        STO    0,4             AND STORE IN CORE              1.5N5680
13242  1 77777 4 13243   6293        TXI    *+1,4,-1        UPDTAEC CORE LOCATION          1.5N5690
13243  2 00001 2 13240   6294        TIX    ACLA,2,1    GET REST OF PREFIX
13244 -0320 00 0 00457   6295        ANA    $AMASK          TABLE ZERO IN AC               1.5N5710
13245 -0501 00 0 13345   6296        ORA    ACLAS           OR IN CLA* INSTRUCTION         1.5N5720
13246  0534 00 2 13340   6297        LXA    ADO,2           LENGTH OF TABLE                1.5N5730
```

```
13247  0400 00 0 13341   6298  AADD  ADD   ADT          INCREMENT BY DIMENSION 2          1.5N5740
13250  0601 00 4 00000   6299        STO   0,4          PUT IN CORE                       1.5N5750
13251  1 77777 4 13252   6300        TXI   *+1,4,-1     UP DATE CORE COUNTER              1.5N5760
13252  2 00001 2 13247   6301        TIX   AADD,2,1     FINISH OFFF                       1.5N5770
13253  0534 00 2 13335   6302        LXA   ADOT,2       LENGTH OF TABLE 2                 1.5N5780
13254 -0320 00 0 00457   6303        ANA   $AMASK       CLEAR OUT ALL BUT ADDRESS         1.5N5790
13255 -0501 00 0 13346   6304        ORA   ARSTO        PUT INSTRUCTION
13256  0400 00 0 13342   6305  AAA   ADD   ADTH         ADD DIMENSION 3                   1.5N5800
13257  0601 00 4 00000   6306        STO   0,4          PUT IN CORE                       1.5N5810
13260  1 77777 4 13261   6307        TXI   *+1,4,-1     UPDATE CORE COUNTER               1.5N5820
13261  2 00001 2 13256   6308        TIX   AAA,2,1      CONTINUE TO CONSTRUCT TABLE       1.5N5830
                         6309  *           TABLE CONSTRUCTION ALL DONE.                  1.5N5840
                         6310  *           THE FOLLOWING ADDS PROPERTYS TO THE ARYATOM   1.5N5850
13262  0500 00 0 13344   6311        CLA   AARY         PICK UP POINTER TO TO ARRAY PROPERTY 1.5N5860
13263  0560 00 0 00370   6312        LDQ   $ZERO                                          1.5N5870
13264  0074 00 4 03730   6313        TSX   $CONS,4                                       1.5N5880
13265  0560 00 0 00370   6314        LDQ   $ZERO                                          1.5N5890
13266  0074 00 4 03730   6315        TSX   $CONS,4                                       1.5N5900
13267  0131 00 0 00000   6316        XCA                                                 1.5N5910
13270  0500 00 0 13347   6317        CLA   ARY          POINTER TO ATOMIC SYMBOL ARRAY    1.5N5920
13271  0074 00 4 03730   6318        TSX   $CONS,4      (ARRAY,(POINTER TO ARRAY PROPERTY)) 1.5N5930
13272  0601 00 0 03505   6319        STO   ATMP         SAVE IN TEMP STORAGE              1.5N5940
13273  0500 00 0 13343   6320        CLA   ASBR         TXL INSTRUCTIONM                  1.5N5950
13274  0074 00 4 03710   6321        TSX   $CONSW,4     PUT IN FULL WORD SPACE            1.5N5960
13275  0560 00 0 03505   6322        LDQ   ATMP         REST OF PROPERTIES                1.5N5970
13276  0074 00 4 03730   6323        TSX   $CONS,4                                       1.5N5980
13277  0131 00 0 00000   6324        XCA                                                 1.5N5990
13300  0500 00 0 00506   6325        CLA   ASB          POINTER TO $SUBR ATOMIC SYMBOL    1.5N6000
13301  0074 00 4 03730   6326        TSX   $CONS,4                                       1.5N6010
13302  0131 00 0 00000   6327        XCA                SAVE IN MQ                       1.5N6020
13303 -0534 00 4 03504   6328        LXD   AFAT,4       POINTER TO NAME                   1.5N6030
13304  0500 00 4 00000   6329        CLA   0,4          FIRST WORD                        1.5N6040
13305 -0734 00 4 00000   6330        PDX   0,4          SAVE POINTER TO REST              1.5N6050
13306 -0754 00 4 00000   6331        PXD   0,4          PUT IN AC                         1.5N6060
13307  0131 00 0 00000   6332        XCA                INTER CHANGE AC AND MQ            1.5N6070
13310  0074 00 4 07675   6333        TSX   $NCONC,4     SPLICE  2 LISTS TOGETHER          1.5N6080
13311 -0534 00 4 03504   6334        LXD   AFAT,4       POINTER TO FIRST WORD ON PROPERTY LIST1.5N6090
13312  0622 00 4 00000   6335        STD   0,4          REPLACE DECREMENT OPERATION       1.5N6100
13313 -0754 00 4 00000   6336        PXD   0,4          POINTER TO ARRY ATOM              1.5N6110
13314  0560 00 0 03305   6337        LDQ   ARYLIS       PICK UP ARRAY LIST                1.5N6120
13315  0074 00 4 03730   6338        TSX   $CONS,4      PUT ON AS ACTIVE ARRAY            1.5N6130
13316  0622 00 0 03305   6339        STD   ARYLIS       UPDATE ARRAY LIST                 1.5N6140
13317  0500 00 0 03504   6340        CLA   AFAT         FINAL ANSWER                      1.5N6150
13320  0774 00 4 00000   6341  AFRX  AXT   **,4         RESTORE INDEX REGISTERS           1.5N6160
13321  0774 00 2 00000   6342  AFRY  AXT   **,2                                          1.5N6170
13322  0020 00 4 00001   6343        TRA   1,4          EXIT                              1.5N6180
                         6344  *                                                       1.5N6190
13323 -0634 00 4 01562   6345  ARYTL SXD   $ERROR,4     SAVE INDEX 4                      1.5N6200
13324  0534 00 2 13321   6346        LXA   AFRY,2       RESTORE INDEX 2                   1.5N6210
13325  0500 00 0 03504   6347        CLA   AFAT         ARRAY NAME                        1.5N6220
13326  0074 00 4 01563   6348        TSX   $ERROR+1,4   GO TO ERROR                       1.5N6230
13327  543160600154      6349        BCI   1,*I  1*     NOT ENOUGH ROOM FOR ARRAY
                         6350  *           CONSTANTS AND STORAGE                         1.5N6280
13330  0634 00 4 13043   6351        SXA   ARYGTX,4     5 WORD PREFIX TO ARRAYS           1.5N6290
```

```
    13331  0074 00 4 13005    6352          TSX      ARYGET,4                                      1.5N6300
    13332  0 00000 0 00000    6353  APWD                                 END+1,,N OF D            1.5N6310
    13333  0 00000 0 00000    6354  APWT                                 LENGTH,,LIST LENGTH      1.5N6320
    13334  0 00000 0 00000    6355  ATBZ                                 TABLE ZERO,, N OF D      1.5N6330
    13335  0 00000 0 00000    6356  ADOT                                 D1 X D2                  1.5N6340
    13336  0 00000 0 00000    6357  ATYP                                 ZERO OR LIST LENGTH      1.5N6360
    13337  0 00000 0 00000    6358  ATMQ                                 TEMPORARY STORAGE
    13340  0 00000 0 00000    6359  ADD                                  D1                       1.5N6390
    13341  0 00000 0 00000    6360  ADT                                  D2                       1.5N6400
    13342  0 00000 0 00000    6361  ADTH                                 D3                       1.5N6410
    13343 -3 00000 0 00000    6362  ASBR  TXL      **,,**
    13344  0 00000 0 00000    6363  AARY                                 POINTER TO ARRAY PROPERTY
    13345  0500 60 2 00000    6364  ACLAS CLA*     **,2                  FETCH INSTRUCTION
    13346  0601 00 1 00000    6365  ARSTO STO      **,1                  PUT INSTRUCTION
    13347  0 10735 0 00000    6366  ARY            ,,$ARRAY
                     00506    6367  ASB   SYN      $SUBRD
                              6368 *                                                              1.5N6420
                              6369 *                                                              1.5M6390
                              6370 * UNUMIX        EVALUATES ITS 2 NUMERICAL ARGUMENTS AND FLOATS THE FIXED 1.5M6400
                              6371 *               POINT ARGUMENT IF A MIXED EXPRESSION.  THE NUMERICAL     1.5M6410
                              6372 *               VALUES ARE LEFT IN AC AND MQ WITH TYPE OF NUMBER IN $ARG31.5M6420
                              6373 *                                                              1.5M6430
    13350  0634 00 4 13371    6374 UNUMIX SXA      UNUX,4                SAVE LINK IR             1.5M6440
    13351 -0600 00 0 13416    6375        STQ      UNUT                  SAVE SECOND ARGUMENT     1.5M6450
    13352  0074 00 4 14342    6376        TSX      NUMVAL,4              NUMERICALLY EVALUATE THE FIRST ARG   1.5M6460
    13353 -0734 00 4 00000    6377        PDX      0,4                   POINTER TO FULL WORD     1.5M6470
    13354  0500 00 4 00000    6378        CLA      0,4                   NUMERICAL VALUE          1.5M6480
    13355  0601 00 0 13415    6379        STO      UNUS                  SAVE IT                  1.5M6490
    13356 -0600 00 0 13417    6380        STQ      UNUR                  SAVE TYPE OF NUMBER      1.5M6500
    13357  0500 00 0 13416    6381        CLA      UNUT                  PICK UP SECOND ARG       1.5M6510
    13360  0074 00 4 14342    6382        TSX      NUMVAL,4              NUMERICALLY EVALUATE IT  1.5M6520
    13361 -0734 00 4 00000    6383        PDX      0,4                   POINTER TO FULL WORD     1.5M6530
    13362  0500 00 4 00000    6384        CLA      0,4                   NUMERICAL VALUE          1.5M6540
    13363  0131 00 0 00000    6385        XCA                            VLUE TO MQ, TYPE TO AC   1.5M6550
    13364  0402 00 0 13417    6386        SUB      UNUR                  COMPARE WITH TYPE OF FIRST  1.5M6560
    13365 -0100 00 0 13373    6387        TNZ      UNMXA                 TRA IF NOT SAME
    13366  0500 00 0 13417    6388 UNUE   CLA      UNUR                  PICK UP NUMBER TYPE      1.5M6580
    13367  0601 00 0 03321    6389        STO      $ARG3                                          1.5M6590
    13370  0500 00 0 13415    6390        CLA      UNUS                  PICK UP FIRST NUMERICAL VALUE  1.5M6600
    13371  0774 00 4 00000    6391 UNUX   AXT      **,4                  RESTORE LINK IR          1.5M6610
    13372  0020 00 4 00001    6392        TRA      1,4                   EXIT                     1.5M6620
                              6393 *                                                              1.5M6630
    13373 -0600 00 0 13416    6394 UNMXA  STQ      UNUT                  MIXED TYPES, SAVE SECOND VALUE  1.5M6640
    13374  0634 00 2 13406    6395        SXA      UNUX2,2               SAVE IR 2                1.5M6650
    13375 -0534 00 2 13417    6396        LXD      UNUR,2                PICK UP TYPE OF FIRST NUMBER  1.5M6660
    13376  0074 00 4 14550    6397        TSX      FIXFLO,4              DISPATCH                 1.5M6670
    13377  0761 00 0 00000    6398        NOP                            IMPOSSIBLE RETURN        1.5M6680
    13400  0020 00 0 13410    6399        TRA      UNMXB                 FLOAT SECOND NUMBER      1.5M6690
    13401  0500 00 0 13415    6400        CLA      UNUS                  FIRST NUMBER             1.5M6700
    13402  0074 00 4 14565    6401        TSX      $UNFIX,4              FLOAT IT                 1.5M6710
    13403  0560 00 0 00476    6402        LDQ      UNFLT                 $FLOAT FOR TYPE          1.5M6720
    13404 -0600 00 0 03321    6403        STQ      $ARG3                                          1.5M6730
    13405  0560 00 0 13416    6404        LDQ      UNUT                  SECOND NUMBER            1.5M6740
    13406  0774 00 2 00000    6405 UNUX2  AXT      **,2                  RESTORE IR 2             1.5M6750
```

```
    13407  0020 00 0 13371   6406          TRA     UNUX                RESTORE LINK AND EXIT                  1.5M6760
                             6407 *                                                                          1.5M6770
    13410  0131 00 0 00000   6408  UNMXB XCA                           FLOAT SECOND NUMBER                    1.5M6780
    13411  0074 00 4 14565   6409          TSX     $UNFIX,4            FLOAT FUNCTION                         1.5M6790
    13412  0131 00 0 00000   6410          XCA                         BACK TO MQ                             1.5M6800
    13413  0534 00 2 13406   6411          LXA     UNUX2,2             RESTORE IR 2                           1.5M6810
    13414  0020 00 0 13366   6412          TRA     UNUE                GET FIRST NUMBER, RESTORE LINK + EXIT  1.5M6820
    13415  0 00000 0 00000   6413  UNUS                                FIRST NUMERICAL VALUE                  1.5M6830
    13416  0 00000 0 00000   6414  UNUT                                SECOND ARG AND VALUE                   1.5M6840
    13417  0 00000 0 00000   6415  UNUR                                TYPE OF FIRST ARG                      1.5M6850
                     00476   6416 UNFLT   SYN FLOATD                  FLOAT INDICATOR
                             6417 *                                                                          1.5M6870
                             6418 * THIS ROUTINE USES NUMVAL,$UNFIX,FIXFLO, AND $ARG3  + $FLOAT               1.5M6880
                             6419 *                                                                          1.5M6890
                             6420 *                                                                          1.5M6900
                             6421 * DIVIDE        DIVIDES THE FIRST NUMERICAL ARGUMENT BY THE SECOND. THE     1.5M6910
                             6422 *               ANSWER IS A LIST OF THE QUOTIENT AND THE REMAINDER.         1.5M6920
                             6423 *                                                                          1.5M6930
                             6424 * QUOTEN        GIVES THE QUOTIENT WHEN THE FIRST NUMERICAL ARGUMENT IS     1.5M6940
                             6425 *               DIVIDED BY THE SECOND.                                      1.5M6950
                             6426 *                                                                          1.5M6960
                             6427 * REMAIN        GIVES THE REMAINDER WHEN THE FIRST NUMERICAL ARGUMENT IS    1.5M6970
                             6428 *               DIVIDED BY THE SECOND.                                      1.5M6980
    13420  0604 00 0 13510   6429 DIVIDE STI      DIVND               SAVE INDICATORS                        1.5M6990
    13421  0057 00  000003   6430          RIR     3                    DIICE INDICATE                        1.5M7000
    13422  0020 00 0 13432   6431          TRA     DIVOP               DO OPERATION                           1.5M7010
                             6432 *                                                                          1.5M7020
    13423  0604 00 0 13510   6433 REMAIN STI      DIVND               SAVE INDICATORS                        1.5M7030
    13424  0057 00  000003   6434          RIR     3                   DIVICE INDICATE                        1.5M7040
    13425  0055 00  000002   6435          SIR     2                   SET REMAINDER INDICATOR                1.5M7050
    13426  0020 00 0 13432   6436          TRA     DIVOP               DO OPERATION                           1.5M7060
                             6437 *                                                                          1.5M7070
    13427  0604 00 0 13510   6438 QUOTEN STI      DIVND               SAVE INDICATORS                        1.5M7080
    13430  0057 00  000003   6439          RIR     3                   DIVIDE INDICATE                        1.5M7090
    13431  0055 00  000001   6440          SIR     1                   QUOTIENT INDICATOR                     1.5M7100
    13432  0634 00 4 13501   6441  DIVOP SXA      DIVX,4              SAVE LINK IR                           1.5M7110
    13433  0634 00 2 13500   6442          SXA     DIVX2,2             SAVE IR 2                              1.5M7120
    13434  0074 00 4 13350   6443          TSX     UNUMIX,4            NUMERICALLY EVALUATE THE ARGUMENTS     1.5M7130
    13435 -0534 00 2 03321   6444          LXD     $ARG3,2             PICK UP TYPE                           1.5M7140
    13436 -0600 00 0 13511   6445          STQ     DIVT                SECOND ARG                             1.5M7150
    13437  0074 00 4 14550   6446          TSX     FIXFLO,4            DISPATCH ON TYPE                       1.5M7160
    13440  0761 00 0 00000   6447          NOP                         IMPOSSIBLE RETURN                      1.5M7170
    13441  0241 00 0 13511   6448          FDP     DIVT                FLOATING DIVIDE                        1.5M7180
    13442  0020 00 0 13471   6449          TRA     DIVFX               DO FIXED POINT DIVIDE                  1.5M7190
    13443  0760 00 0 00012   6450  DIVDC DCT                           CHECK  FOR ILLEGAL DIVISION            1.5M7200
    13444  0074 00 4 01676   6451          TSX     $DCT,4              DIVIDE CHECK ERROR                     1.5M7210
    13445  0054 00  000001   6452          RFT     1                   SEE IF REMAINDER IS TO BE SAVED        1.5M7220
    13446  0020 00 0 13476   6453          TRA     DIVA                NO, SET UP QUOTIENT                    1.5M7230
    13447 -0600 00 0 13511   6454          STQ     DIVT                YES, SAVE QUOTEINT                     1.5M7240
    13450  0560 00 0 03321   6455          LDQ     $ARG3               PICK UP TYPE
    13451  0074 00 4 12636   6456          TSX     $MKNO,4             MAKE REMAINDER A NUMBER                1.5M7260
    13452  0054 00  000002   6457          RFT     2                   TEST TO SEE IF QUOTIENT IS WANTED      1.5M7270
    13453  0020 00 0 13504   6458          TRA     DIVEX               NO, RESTORE AND EXIT                   1.5M7280
    13454  0560 00 0 00370   6459          LDQ     $ZERO               NIL IN MQ                              1.5M7290
```

```
13455  0074 00 4 03730          TSX    $CONS,4      LIST OF REMAINDER                    1.5M7300
13456  0131 00 0 00000          XCA                 SHUTTLE INTO MQ                      1.5M7310
13457  0500 00 0 13511          CLA    DIVT         PICK UP QUOTIENT                     1.5M7320
13460 -0600 00 0 13511          STQ    DIVT         SAVE LIST OF REMAINDER               1.5M7330
13461  0560 00 0 03321          LDQ    $ARG3        PICK UP TYPE                         1.5M7340
13462  0074 00 4 12636          TSX    $MKNO,4      MAKE QUOTIENT A NUMBER               1.5M7350
13463  0560 00 0 13511          LDQ    DIVT         LIST(REMAINDER)                      1.5M7360
13464  0074 00 4 03730          TSX    $CONS,4      LIST(QUOTIENT,REMAINDER)             1.5M7370
13465  0534 00 4 13501          LXA    DIVX,4       RESTORE LINK IR                      1.5M7380
13466  0534 00 2 13500          LXA    DIVX2,2      RESTORE IR 2                         1.5M7390
13467  0441 00 0 13510          LDI    DIVND        RESTORE INDICATORS                   1.5M7400
13470  0020 00 4 00001          TRA    1,4          EXIT                                 1.5M7410
                          *                                                              1.5M7420
13471  0131 00 0 00000    DIVFX XCA                 FIXED POINT DIVISION. PUT ARG 1 IN MQ 1.5M7430
13472 -0754 00 0 00000          PXD    0,0          CLEAR AC                             1.5M7440
13473  0763 00 0 00000          LLS    0            MQ SIGN TO AC                        1.5M7450
13474  0221 00 0 13511          DVP    DIVT         DIVIDE BY ARG 2                      1.5M7460
13475  0020 00 0 13443          TRA    DIVDC        PREFORM DIVIDE CHECK AND CARRY ON    1.5M7470
13476  0131 00 0 00000    DIVA  XCA                 QUOTIENT TO AC                       1.5M7480
13477  0560 00 0 03321          LDQ    $ARG3        TYPE TO MQ                           1.5M7490
13500  0774 00 2 00000    DIVX2 AXT    **,2         RESTORE IR 2                         1.5M7500
13501  0774 00 4 00000    DIVX  AXT    **,4         RESTORE LINK IR                      1.5M7510
13502  0441 00 0 13510          LDI    DIVND        RESTORE INDICATORS                   1.5M7520
13503  0020 00 0 12636          TRA    $MKNO                                             1.5M7530
                          *                                                              1.5M7540
13504  0534 00 2 13500    DIVEX LXA    DIVX2,2      EXIT ROUTINE, RESTORE IR 2           1.5M7550
13505  0534 00 4 13501          LXA    DIVX,4       RESTORE LINK IR                      1.5M7560
13506  0441 00 0 13510          LDI    DIVND        RESTORE INDICATORS                   1.5M7570
13507  0020 00 4 00001          TRA    1,4                                               1.5M7580
                          *                                                              1.5M7590
13510  0 00000 0 00000    DIVND                     INDICATORS STORAGE                   1.5M7600
13511  0 00000 0 00000    DIVT                      LIST AND NON-LIST TEMPORARY STORAGE  1.5M7610
                          *                                                              1.5M7620
                          * THIS ROUTINE USES $MKNO,$DCT,$CONS,$ARG3 AND UNUMIX          1.5M7630
                          *                                                              1.5M7640
                          *                                                              1.5M7650
                          * DIFFER        COMPUTES THE DIFFERENCE BETWEEN ITS 2 NUMERICAL ARGUMENTS1.5M7660
                          *                                                              1.5M7670
13512  0634 00 4 13525    DIFFER SXA   DIFX,4       SAVE LINK IR                         1.5M7680
13513  0634 00 2 13524          SXA    DIFX2,2      SAVE IR 2                            1.5M7690
13514  0074 00 4 13350          TSX    UNUMIX,4     NUMERICALLY EVALUATE THE ARGUMENTS   1.5M7700
13515 -0534 00 2 03321          LXD    $ARG3,2      PICK UP TYPE OF NUMBERS              1.5M7710
13516 -0600 00 0 13527          STQ    DIFT         STORE SECOND NUMBER                  1.5M7720
13517  0074 00 4 14550          TSX    FIXFLO,4     DISPATCH ON TYPE                     1.5M7730
13520  0761 00 0 00000          NOP                 IMPOSSIBLE RETURN                    1.5M7740
13521  0302 00 0 13527          FSB    DIFT         FLOATING POINT                       1.5M7750
13522  0402 00 0 13527          SUB    DIFT         FIXED POINT                          1.5M7760
13523  0560 00 0 03321          LDQ    $ARG3        TYPE OF NUMBER                       1.5M7770
13524  0774 00 2 00000    DIFX2 AXT    **,2         RESTORE IR 2                         1.5M7780
13525  0774 00 4 00000    DIFX  AXT    **,4         RESTORE LINK IR                      1.5M7790
13526  0020 00 0 12636          TRA    $MKNO        MAKE RESULT A NUMBER                 1.5M7800
                          *                                                              1.5M7810
13527  0 00000 0 00000    DIFT                      TEMPORARY STORAGE                    1.5M7820
                          *                                                              1.5M7830
```

```
                              * THIS ROUTINE USES UNUMIX,FIXFLO,$ARG3 AND $MKNO                1.5M7840
                              *                                                                1.5M7850
                              *                                                                    6500
                              * EXPT TAKES 2 FIXED OR FLOATING POINT NUMBERS AS ARGUMENTS AND RAISES 6510
                              *                THE FIRST TO THE POWER INDICATED BY THE SECOND.     6520
                              *                                                                    6530
 13530  0634 00 4 13567        EXPT  SXA      EXPX,4            SAVE LINK IR                       6540
 13531  0634 00 2 13570              SXA      EXPY,2            SAVE IR 2                          6550
 13532  0074 00 4 13350              TSX      UNUMIX,4          EVALUATE THE 2 ARGUMENTS AS NUMBERS 6560
 13533 -0534 00 2 03321              LXD      $ARG3,2           PICK UP TYPE OF NUMBERS            6570
 13534  0074 00 4 14550              TSX      FIXFLO,4          DISPATCH ON FIX OR FLOAT           6580
 13535  0761 00 0 00000              NOP                        IMPOSSIBLE RETURN                  6590
 13536  0020 00 0 13564              TRA      EXPA              IS FLOATING POINT                  6600
 13537  0120 00 0 13546              TPL      EXPB                                                 6610
 13540  0534 00 2 13570        EXPC  LXA      EXPY,2            RESTORE IR 2                       6620
 13541  0534 00 4 13567              LXA      EXPX,4            RESTORE IR 4                       6630
 13542 -0634 00 4 01562              SXD      $ERROR,4          SAVE IN $ERROR                     6640
 13543 -0754 00 0 00000              PXD      0,0               CLEAR AC
 13544  0074 00 4 01563              TSX      $ERROR+1,4        GO TO ERROR                        6650
 13545  543160600254                 BCI      1,*I  2*          FIRST ARGUMENT IS NEGATIVE -EXPT-
 13546  0131 00 0 00000        EXPB  XCA                        INTERCHANGED FIXED POINT ARGUMENTS 6680
 13547 -0600 00 0 77662              STQ      COMMON            TEMPORARY STORAGE                  6690
 13550  0734 00 4 00000              PAX      0,4               EXPONENT                           6700
 13551 -3 00000 4 13561              TXL      OUT,4,0           GO IF ZERO POWER                   6710
 13552 -2 00001 4 13556              TNX      OUT1,4,1          GO IF TO FIRST POWER
 13553 -0754 00 0 00000              PXD      0,0               CLEAR AC                           6730
 13554  0200 00 0 77662              MPY      COMMON            RAISE TO GIVEN POWER               6740
 13555  2 00001 4 13554              TIX      *-1,4,1           IN LOOP                            6750
 13556  0131 00 0 00000        OUT1  XCA                        ANSWER TO AC                       6760
 13557  0560 00 0 00475              LDQ      $FIXD             $FIX TO DECREMENT                  6770
 13560  0020 00 0 13567              TRA      EXPX              RESTORE INDEX REGISYERS AND MAKE NUMBR 6780
 13561  0500 00 0 00371        OUT   CLA      $Q1               ANSWER IS 1                        6790
 13562  0560 00 0 00475              LDQ      $FIXD             $FIX TO MQ
 13563  0020 00 0 13567              TRA      EXPX              EXIT                               6810
 13564 -0120 00 0 13540        EXPA  TMI      EXPC                                                 6820
 13565  0074 00 4 13572              TSX      $POWR,4           POWER ROUTINE                      6830
 13566  0560 00 0 00476              LDQ      FLOATD            $FLOAT TO MQ                       6840
 13567  0774 00 4 00000        EXPX  AXT      **,4              RESTORE INDEX REGISTERS            6850
 13570  0774 00 2 00000        EXPY  AXT      **,2                                                 6860
 13571  0020 00 0 12636              TRA      $MKNO             MAKE ANSWER A NUMBER               6870
                                         POWER                                              PKLC620300
                               G     HED                                                      LC620400
 13572 -0600 00 0 13714        POWR  STQ N                                                    LC620500
 13573 -0634 00 1 77662              SXD COMMON,1                                             LC620600
 13574 -0634 00 2 77663              SXD COMMON+1,2                                           LC620700
 13575  0534 00 1 00370        P19   LXA ZERO,1                                               LC620800
 13576  0534 00 2 00370              LXA ZERO,2                                               LC620900
 13577  0765 00 0 00033              LRS 27                                                   LC621000
 13600  0402 00 0 00415              SUB L200                                                 LC621100
 13601 -0600 00 0 13715              STQ FN                                                   LC621200
 13602  0560 00 0 00370              LDQ ZERO                                                 LC621300
 13603 -0100 00 0 13606              TNZ P01                                                  LC621400
 13604  0601 00 0 13716              STO E                                                    LC621500
 13605  0020 00 0 13620              TRA P02                                                  LC621600
```

```
13606  0765 00 0 00001   6568  P01   LRS 1                    LC621700
13607  1 00001 1 13610   6569        TXI P03,1,1              LC621800
13610 -0100 00 0 13606   6570  P03   TNZ P01                  LC621900
13611 -0754 00 1 00000   6571        PXD 0,1                  LC622000
13612  0771 00 0 00022   6572        ARS 18                   LC622100
13613  0760 00 0 00003   6573        SSP                      LC622200
13614  0400 00 0 00415   6574        ADD L200                 LC622300
13615  0763 00 0 00033   6575        LLS 27                   LC622400
13616  0601 00 0 13716   6576        STO E                    LC622500
13617  0760 00 0 00000   6577        CLM                      LC622600
13620  0560 00 0 13715   6578  P02   LDQ FN                   LC622700
13621  0763 00 0 00033   6579        LLS 27                   LC622800
13622  0400 00 0 00435   6580        ADD LL200                LC622900
13623  0300 00 0 13717   6581        FAD RSQ                  LC623000
13624  0601 00 0 13720   6582        STO P04                  LC623100
13625  0302 00 0 13726   6583        FSB SQ                   LC623200
13626  0240 00 0 13720   6584        FDH P04                  LC623300
13627 -0600 00 0 13721   6585        STQ P05                  LC623400
13630  0260 00 0 13721   6586        FMP P05                  LC623500
13631  0601 00 0 13722   6587        STO P06                  LC623600
13632  0560 00 0 13722   6588  P08   LDQ P06                  LC623700
13633  0260 00 2 13733   6589        FMP C7,2                 LC623800
13634  0300 00 2 13732   6590        FAD C5,2                 LC623900
13635  0601 00 2 13732   6591        STO C5,2                 LC624000
13636  1 00001 2 13637   6592        TXI P07,2,1              LC624100
13637 -3 00002 2 13632   6593  P07   TXL P08,2,2              LC624200
13640  0560 00 0 13730   6594        LDQ C1                   LC624300
13641  0260 00 0 13721   6595        FMP P05                  LC624400
13642  0302 00 0 13727   6596        FSB R2                   LC624500
13643  0300 00 0 13716   6597        FAD E                    LC624600
13644  0601 00 0 13716   6598  P18   STO E                    LC624700
13645  0560 00 0 13714   6599        LDQ N                    LC624800
13646  0260 00 0 13716   6600        FMP E                    LC624900
13647  0601 00 0 13714   6601        STO N                    LC625000
13650  0020 00 0 14023   6602        TRA P09                  LC625100
13651  0 00000 0 00000   6603  M1                             LC625200
13652  0 00000 0 00000   6604  M2                             LC625300
13653  0 00000 0 00001   6605  M3        1                    LC625400
13654  0 00400 0 00000   6606  M4        0,0,256              LC625500
13655  0534 00 1 00370   6607  P41   LXA ZERO,1               LC625600
13656  0560 00 0 13725   6608  P11   LDQ W                    LC625700
13657  0260 00 1 13746   6609        FMP A6,1                 LC625800
13660  0300 00 1 13745   6610        FAD A5,1                 LC625900
13661  0601 00 1 13745   6611        STO A5,1                 LC626000
13662  1 00001 1 13663   6612        TXI P10,1,1              LC626100
13663 -3 00005 1 13656   6613  P10   TXL P11,1,5              LC626200
13664  0601 00 0 13725   6614        STO W                    LC626300
13665  0534 00 2 00370   6615        LXA ZERO,2               LC626400
13666  0500 00 2 13755   6616  P13   CLA AP6,2                LC626500
13667  0601 00 2 13746   6617        STO A6,2                 LC626600
13670  1 00001 2 13671   6618        TXI P12,2,1              LC626700
13671 -3 00006 2 13666   6619  P12   TXL P13,2,6              LC626800
13672  0534 00 1 00370   6620        LXA ZERO,1               LC626900
13673  0500 00 1 13737   6621  P15   CLA CP7,1                LC627000
```

```
13674  0601 00 1 13733   6622          STO C7,1                    LC627100
13675  1 00001 1 13676   6623          TXI P14,1,1                 LC627200
13676 -3 00003 1 13673   6624  P14     TXL P15,1,3                 LC627300
13677  0560 00 0 13725   6625          LDQ W                       LC627400
13700  0260 00 0 13725   6626          FMP W                       LC627500
13701  0601 00 0 13725   6627          STO W                       LC627600
13702  0560 00 0 13725   6628          LDQ W                       LC627700
13703  0260 00 0 13725   6629          FMP W                       LC627800
13704  0601 00 0 13725   6630          STO W                       LC627900
13705  0020 00 0 13756   6631          TRA P16                     LC628000
13706  0 00000 0 00000   6632  EA                                  LC628100
13707  0020 00 0 13763   6633  P171    TRA P17                     LC628200
13710  0 00000 0 00000   6634  P24                                 LC628300
13711  0601 00 0 13716   6635  P21     STO E                       LC628400
13712  0 00000 0 00000   6636  S1                                  LC628500
13713  0 00000 0 00000   6637  S2                                  LC628600
13714  0 00000 0 00000   6638  N                                   LC628700
                 00370   6639  ZERO    SYN $ZERO
                 00415   6640  L200    SYN $QQ200
13715  0 00000 0 00000   6641  FN                                  LC629000
13716  0 00000 0 00000   6642  E                                   LC629100
                 00435   6643  LL200   SYN QQ2C11
13717 +200552023632      6644  RSQ     OCT +200552023632           LC629300
13720  0 00000 0 00000   6645  P04                                 LC629400
13721  0 00000 0 00000   6646  P05                                 LC629500
13722  0 00000 0 00000   6647  P06                                 LC629600
13723 +200542710300      6648  LOG     OCT +200542710300           LC629700
13724  0 00000 0 00000   6649  S3                                  LC629800
13725  0 00000 0 00000   6650  W                                   LC629900
13726 +201552023632      6651  SQ      OCT +201552023632           LC630000
13727 +200400000000      6652  R2      OCT +200400000000           LC630100
13730 +202561250731      6653  C1      OCT +202561250731           LC630200
13731 +200754342231      6654          OCT +200754342231           LC630300
13732 +200447154100      6655  C5      OCT +200447154100           LC630400
13733 +177674535132      6656  C7      OCT +177674535132           LC630500
13734 +202561250731      6657          OCT +202561250731           LC630600
13735 +200754342231      6658          OCT +200754342231           LC630700
13736 +200447154100      6659          OCT +200447154100           LC630800
13737 +177674535132      6660  CP7     OCT +177674535132           LC630900
13740 +201400000000      6661          OCT +201400000000           LC631000
13741 +176777776476      6662          OCT +176777776476           LC631100
13742 +174400037635      6663          OCT +174400037635           LC631200
13743 +170523517764      6664          OCT +170523517764           LC631300
13744 +164547625227      6665          OCT +164547625227           LC631400
13745 +157554324201      6666  A5      OCT +157554324201           LC631500
13746 +154562606535      6667  A6      OCT +154562606535           LC631600
13747 +201400000000      6668  L1      OCT +201400000000           LC631700
13750 +176777776476      6669          OCT +176777776476           LC631800
13751 +174400037635      6670          OCT +174400037635           LC631900
13752 +170523517764      6671          OCT +170523517764           LC632000
13753 +164547625227      6672          OCT +164547625227           LC632100
13754 +157554324201      6673          OCT +157554324201           LC632200
13755 +154562606535      6674  AP6     OCT +154562606535           LC632300
13756  0601 00 0 14022   6675  P16     STO EW                      LC632400
```

```
13757  0500 00 0 13707   6676        CLA P171                    LC632500
13760  0601 00 0 13644   6677        STO P18                     LC632600
13761  0500 00 0 14022   6678        CLA EW                      LC632700
13762  0020 00 0 13575   6679        TRA P19                     LC632800
13763  0020 00 0 14123   6680  P17   TRA P20                     LC632900
13764  0500 00 0 13711   6681  P42   CLA P21                     LC633000
13765  0601 00 0 13644   6682        STO P18                     LC633100
13766  0534 00 1 00370   6683        LXA ZERO,1                  LC633200
13767  0500 00 1 13737   6684  P23   CLA CP7,1                   LC633300
13770  0601 00 1 13733   6685        STO C7,1                    LC633400
13771  1 00001 1 13772   6686        TXI P22,1,1                 LC633500
13772 -3 00003 1 13767   6687  P22   TXL P23,1,3                 LC633600
13773  0560 00 0 13710   6688        LDQ P24                     LC633700
13774  0260 00 0 13723   6689        FMP LOG                     LC633800
13775  0302 00 0 13724   6690        FSB S3                      LC633900
13776  0140 00 0 14013   6691        TOV P25                     LC634000
13777  0601 00 0 13712   6692        STO S1                      LC634100
14000  0560 00 0 13712   6693        LDQ S1                      LC634200
14001  0260 00 0 13727   6694        FMP R2                      LC634300
14002  0302 00 0 13747   6695        FSB L1                      LC634400
14003  0601 00 0 13713   6696        STO S2                      LC634500
14004  0560 00 0 13712   6697        LDQ S1                      LC634600
14005  0260 00 0 13713   6698        FMP S2                      LC634700
14006  0300 00 0 13747   6699        FAD L1                      LC634800
14007  0601 00 0 13712   6700        STO S1                      LC634900
14010  0560 00 0 14022   6701        LDQ EW                      LC635000
14011  0260 00 0 13712   6702        FMP S1                      LC635100
14012  0601 00 0 14022   6703        STO EW                      LC635200
14013  0560 00 0 13651   6704  P25   LDQ M1                      LC635300
14014  0260 00 0 14022   6705        FMP EW                      LC635400
14015  0601 00 0 14022   6706        STO EW                      LC635500
14016  0500 00 0 13714   6707        CLA N                       LC635600
14017  0120 00 0 14113   6708        TPL P26                     LC635700
14020  0500 00 0 13747   6709        CLA L1                      LC635800
14021  0020 00 0 14111   6710        TRA P27                     LC635900
14022  0 00000 0 00000   6711  EW                                LC636000
14023  0560 00 0 00370   6712  P09   LDQ ZERO                    LC636100
14024  0760 00 0 00003   6713        SSP                         LC636200
14025  0765 00 0 00033   6714        LRS 27                      LC636300
14026  0402 00 0 00415   6715        SUB L200                    LC636400
14027  0020 00 0 14106   6716        TRA P28                     LC636500
14030  0500 00 0 00370   6717  P40   CLA ZERO                    LC636600
14031  0763 00 0 00000   6718 P39    LLS      **
14032  0400 00 0 00415   6719        ADD L200                    LC636800
14033  0400 00 0 13653   6720        ADD M3                      LC636900
14034  0767 00 0 00033   6721        ALS 27                      LC637000
14035  0400 00 0 13654   6722        ADD M4                      LC637100
14036  0601 00 0 13651   6723        STO M1                      LC637200
14037 -0600 00 0 13652   6724        STO M2                      LC637300
14040  0500 00 0 13652   6725        CLA M2                      LC637400
14041 -0100 00 0 14060   6726        TNZ P29                     LC637500
14042  0500 00 0 13714   6727        CLA N                       LC637600
14043  0120 00 0 14047   6728        TPL P30                     LC637700
14044  0500 00 0 13747   6729        CLA L1                      LC637800
```

```
14045  0240 00 0 13651  6730        FDH M1                                  LC637900
14046 -0600 00 0 13651  6731        STQ M1                                  LC638000
14047  0534 00 1 00370  6732  P30   LXA ZERO,1                              LC638100
14050  0500 00 1 13737  6733  P32   CLA CP7,1                               LC638200
14051  0601 00 1 13733  6734        STO C7,1                                LC638300
14052  1 00001 1 14053  6735        TXI P31,1,1                             LC638400
14053 -3 00003 1 14050  6736  P31   TXL P32,1,3                             LC638500
14054  0500 00 0 13651  6737        CLA M1                                  LC638600
14055 -0534 00 1 77662  6738        LXD COMMON,1                            LC638700
14056 -0534 00 2 77663  6739        LXD COMMON+1,2                          LC638800
14057  0020 00 4 00001  6740        TRA 1,4                                 LC638900
14060  0760 00 0 00000  6741  P29   CLM                                     LC639000
14061  0534 00 2 00370  6742        LXA ZERO,2                              LC639100
14062  0763 00 0 00001  6743  P34   LLS 1                                   LC639200
14063  1 00001 2 14064  6744        TXI P33,2,1                             LC639300
14064  0100 00 0 14062  6745  P33   TZE P34                                 LC639400
14065  0765 00 0 00001  6746        LRS 1                                   LC639500
14066 -0754 00 2 00000  6747        PXD 0,2                                 LC639600
14067  0771 00 0 00022  6748        ARS 18                                  LC639700
14070 -0760 00 0 00003  6749        SSM                                     LC639800
14071  0400 00 0 00415  6750        ADD L200                                LC639900
14072  0400 00 0 13653  6751        ADD M3                                  LC640000
14073  0763 00 0 00033  6752        LLS 27                                  LC640100
14074  0601 00 0 13652  6753  P36   STO M2                                  LC640200
14075  0560 00 0 13723  6754        LDQ LOG                                 LC640300
14076  0260 00 0 13652  6755        FMP M2                                  LC640400
14077  0601 00 0 13725  6756        STO W                                   LC640500
14100  0020 00 0 14121  6757        TRA P35                                 LC640600
14101  0500 00 0 13747  6758  P37   CLA L1                                  LC640700
14102  0601 00 0 13651  6759        STO M1                                  LC640800
14103  0500 00 0 13714  6760        CLA N                                   LC640900
14104  0760 00 0 00003  6761        SSP                                     LC641000
14105  0020 00 0 14074  6762        TRA P36                                 LC641100
14106  0100 00 0 14101  6763  P28   TZE P37                                 LC641200
14107 -0120 00 0 14101  6764        TMI P37                                 LC641300
14110  0020 00 0 14117  6765        TRA P38                                 LC641400
14111  0240 00 0 14022  6766  P27   FDH EW                                  LC641500
14112 -0600 00 0 14022  6767        STQ EW                                  LC641600
14113  0500 00 0 14022  6768  P26   CLA EW                                  LC641700
14114 -0534 00 1 77662  6769        LXD COMMON,1                            LC641800
14115 -0534 00 2 77663  6770        LXD COMMON+1,2                          LC641900
14116  0020 00 4 00001  6771        TRA 1,4                                 LC642000
14117  0621 00 0 14031  6772  P38   STA P39                                 LC642100
14120  0020 00 0 14030  6773        TRA P40                                 LC642200
14121  0601 00 0 13724  6774  P35   STO S3                                  LC642300
14122  0020 00 0 13655  6775        TRA P41                                 LC642400
14123  0760 00 0 00003  6776  P20   SSP                                     LC642500
14124  0601 00 0 13710  6777        STO P24                                 LC642600
14125  0020 00 0 13764  6778        TRA P42                                 LC642700
                        6779        HEAD    Q
                        6780 * ADD  ADDS A STRING OF FIXED POINT OR FLOATING POINT NUMBERS   RDCX0120
14126 -0634 00 4 03500  6781  ADDP  SXD     AMIR,4          SAVE LINK IR
14127  0774 00 4 07355  6782        AXT     $PLUS,4
14130  0604 00 0 03501  6783        STI     AMIND           SAVE INDICATORS   RDCX0122
```

```
14131  0057 00  000177        RIR   177              RESET FIRST 7 INDICATORS                RDCX0123
14132  0055 00  000001        SIR   1                SET ADD INDICATOR (1)                   RDCX0124
14133  0020 00 0 14155        TRA   AMMMF            GO TO MAIN FUNCTION                     RDCX0125
                       *                                                                     RDCX0126
14134 -0634 00 4 03500  MULT  SXD   AMIR,4           SAVE LINK IR                            RDCX0127
14135  0774 00 4 06657        AXT   $TIMES,4
14136  0604 00 0 03501        STI   AMIND            SAVE INDICATORS                         RDCX0128
14137  0057 00  000177        RIR   177              RESET FIRST 7 INDICATORS                RDCX0129
14140  0055 00  000002        SIR   2                SET MULTIPLY INDICATOR (2)              RDCX0130
14141  0020 00 0 14155        TRA   AMMMF            GO TO MAIN FUNCTION                     RDCX0131
                       *                                                                     RDCX0132
14142 -0634 00 4 03500  MIN   SXD   AMIR,4           SAVE LINK IR                            RDCX0133
14143  0774 00 4 07604        AXT   $MINP,4
14144  0604 00 0 03501        STI   AMIND            SAVE INDICATORS                         RDCX0134
14145  0057 00  000177        RIR   177              RESET FIRST 7 INDICATORS                RDCX0135
14146  0055 00  000010        SIR   10               SET MINIMUM FUNCTION INDICATOR (10)     RDCX0136
14147  0020 00 0 14155        TRA   AMMMF            GO TO MAIN FUNCTION                     RDCX0137
                       *                                                                     RDCX0138
14150 -0634 00 4 03500  MAX   SXD   AMIR,4           SAVE LINK IR                            RDCX0139
14151  0774 00 4 07614        AXT   $MAXP,4
14152  0604 00 0 03501        STI   AMIND            SAVE INDICATORS                         RDCX0140
14153  0057 00  000177        RIR   177              RSET FIRST 7 INDICATORS                 RDCX0141
14154  0055 00  000004        SIR   4                SET MAXIMUN FUNCTION INDICATOR (4)      RDCX0142
14155  0634 00 4 03500  AMMMF SXA   AMIR,4           PUT PROGRAM NAME WITH LINK IR
14156  0074 00 4 02312        TSX   $SAVE,4          OTHER 3 FUNCTIONS ENTER AT *-1
14157 -3 03503 0 02377        TXL   $END2,,AMIND+2   SAVE 2 ITEMS
14160  0074 00 4 15774        TSX   $EVLIS,4         EVALUATE THE LIST OF ARGUMENTS          RDCX0145
14161  0074 00 4 02326        TSX   UNSAVE,4         RESTORE IR 4 AND INDICATORS             RDCX0146
14162  0634 00 2 14336        SXA   AMIR2,2          SAVE IR 2                               RDCX0148
14163  0600 00 0 14341        STZ   AMSUM            ZERO FINAL ANSWER REGISTER              RDCX0149
14164 -0734 00 4 00000  AMLP  PDX   0,4              PUT POINTER TO ARG LIST IN IR 4         RDCX0150
14165 -3 00000 4 14330        TXL   AMEND,4,0        GO TO EXIT IF NULL                      RDCX0151
14166  0500 00 4 00000        CLA   0,4              GET FIRST WORD                          RDCX0152
14167  0601 00 0 03502        STO   AMLIS            SAVE THE WORD                           RDCX0153
14170  0734 00 4 00000        PAX   0,4              CAR OF LIST                             RDCX0154
14171 -0754 00 4 00000        PXD   0,4              TO DECREMENT                            RDCX0155
14172  0074 00 4 14342        TSX   NUMVAL,4         EVALUATE THE ITEM                       RDCX0156
14173 -0600 00 0 03503        STQ   AMQ              SAVE CHARACTERISTIC ($FIX OR $FLOAT)    RDCX0157
14174  0056 00  000100        RNT   100              TEST FOR FIRST TIME THROUGH             RDCX0158
14175  0020 00 0 14220        TRA   AMFRS            IS FIRST TIME GO TO INITIALIZE AMSUM    RDCX0159
14176  0054 00  000002        RFT   2                TEST FOR MULT FUNCTION                  RDCX0160
14177  0020 00 0 14240        TRA   AMLT             EXECUTE MULT FUNCTION                   RDCX0161
14200 -0734 00 4 00000        PDX   0,4              POINTER TO FULL WORD                        7110
14201  0500 00 4 00000        CLA   0,4              GET NUMERICAL VALUE                         7120
14202  0056 00  000001        RNT   1                SKIP NEXT INSTRUCTION IF ADD FUNCTION   RDCX0163
14203  0020 00 0 14300        TRA   AMM              EXECCUTE MAX OR MIN FUNCTION            RDCX0164
14204 -0534 00 2 03503        LXD   AMQ,2            ADD FUNCTION. PICK UP TYPE OF NUMBER    RDCX0165
14205  0074 00 4 14550        TSX   FIXFLO,4         TEST FOR FIX OR FLOAT                   RDCX0166
14206  0761 00 0 00000        NOP                    IMPOSSIBLE RETURM                       RDCX0167
14207  0020 00 0 14233        TRA   AFLL             EXECUTE FAD                             RDCX0168
14210  0055 00  000020        SIR   20               IS FIXED POINT. SET FIXED POINT IND.    RDCX0169
14211 -0774 00 4 14235        AXC   AFLR,4           PRESET IR 4                             RDCX0170
14212  0054 00  000040        RFT   40               SKIP NEXT INSTRUCTION IF NOT MIXED EXPRDCX0171
14213  0020 00 0 14266        TRA   UNFX             IS MIXED, FLOAT THIS NUMBER             RDCX0172
```

```
14214  0400 00 0 14341  6838        ADD   AMSUM     FIXED ADD OF SUM                          RDCX0173
14215  0601 00 0 14341  6839  AMRT  STO   AMSUM     STORE NEW SUM                             RDCX0174
14216  0500 00 0 03502  6840        CLA   AMLIS     PICK UP ARG LIST                          RDCX0175
14217  0020 00 0 14164  6841        TRA   AMLP      DO NEXT ITEM                              RDCX0176
14220 -0734 00 4 00000  6842  AMFRS PDX   0,4       POINTER TO FULL WORD                         7100
14221  0500 00 4 00000  6843        CLA   0,4       GET NUMERICAL VALUE                          7130
14222  0601 00 0 14341  6844        STO   AMSUM     STORE NUMERICAL VALUE IN AMSUM            RDCX0178
14223 -0534 00 2 03503  6845        LXD   AMQ,2     PICK UP TYPE OF NUMBER                    RDCX0179
14224  0074 00 4 14550  6846        TSX   FIXFLO,4  TEST FOR FIX OR FLOAT                     RDCX0180
14225  0761 00 0 00000  6847        NOP             IMPOSSIBLE EXIT                           RDCX0181
14226  0055 00  000040  6848        SIR   40        SET FLOAT INDICATOR                       RDCX0182
14227  0055 00  000020  6849        SIR   20        SET FIX INDICATOR                         RDCX0183
14230  0055 00  000100  6850        SIR   100       SET INDICATOR SO IT WILL NOT GET BACK     RDCX0184
14231  0500 00 0 03502  6851        CLA   AMLIS     PICK UP REST OF ARG LIST                  RDCX0185
14232  0020 00 0 14164  6852        TRA   AMLP      DO NEXT ITEM                              RDCX0186
14233  0055 00  000040  6853  AFLL  SIR   40        IS FLOATING POINT, SET PROPER INDICATOR   RDCX0187
14234  0054 00  000020  6854        RFT   20        SKIP NEXT INSTRUCTION IF NOT MIXED EXP    RDCX0188
14235  0074 00 4 14270  6855  AFLR  TSX   MIXFL,4   UNMIX THE EXPRESSION                     RDCX0189
14236  0300 00 0 14341  6856        FAD   AMSUM     FLOATING ADD THE CURRENT SUM              RDCX0190
14237  0020 00 0 14215  6857        TRA   AMRT      STORE AND DO NEXT ITEM ON LIST            RDCX0191
14240 -0734 00 4 00000  6858  AMLT  PDX   0,4       POINTER TO FULL WORD                         7060
14241  0500 00 4 00000  6859        CLA   0,4       GET NUMERICAL VALUE                          7140
14242 -0534 00 2 03503  6860        LXD   AMQ,2     PICK UP TYPE                              RDCX0195
14243  0074 00 4 14550  6861        TSX   FIXFLO,4  TEST FOR FIX OR FLOAT                     RDCX0196
14244  0761 00 0 00000  6862        NOP             IMPOSSIBLE RETURN                         RDCX0197
14245  0020 00 0 14260  6863        TRA   AFMP      DO FMP                                    RDCX0198
14246  0055 00  000020  6864        SIR   20        SET FIXED POINT INDICATOR                 RDCX0199
14247 -0774 00 4 14262  6865        AXC   AFLT,4    PRESET IR 4                               RDCX0200
14250  0054 00  000040  6866        RFT   40        SKIP NEXT INSTRUCTION IF NOT MIXED EXP    RDCX0201
14251  0020 00 0 14266  6867        TRA   UNFX      IS MIXED, FLOAT THIS NUMBER               RDCX0202
14252  0131 00 0 00000  6868        XCA             NUMBER TO MQ                              RDCX0203
14253  0200 00 0 14341  6869        MPY   AMSUM     MPY BY CURRENT ANSWER                     RDCX0204
14254  0131 00 0 00000  6870        XCA             PUT LEAST SIGNIFICANT BITS IN AC          RDCX0205
14255  0601 00 0 14341  6871  AMRU  STO   AMSUM     STORE NEW ANSWER                          RDCX0206
14256  0500 00 0 03502  6872        CLA   AMLIS     PICK UP ARG LIST                          RDCX0207
14257  0020 00 0 14164  6873        TRA   AMLP      DO NEXT ITEM                              RDCX0208
14260  0055 00  000040  6874  AFMP  SIR   40        SET FLOATING POINT INDICATOR              RDCX0209
14261  0054 00  000020  6875        RFT   20        TEST FOR MIXED EXP                        RDCX0210
14262  0074 00 4 14270  6876  AFLT  TSX   MIXFL,4   UNMIX THE EXPRESSION                     RDCX0211
14263  0131 00 0 00000  6877        XCA             NUMBER TO MQ                              RDCX0212
14264  0260 00 0 14341  6878        FMP   AMSUM     FMP BY CURRENT ANSWER                     RDCX0213
14265  0020 00 0 14255  6879        TRA   AMRU      STORE NEW ANSER AND DO NEXT ITEM          RDCX0214
14266  0057 00  000020  6880  UNFX  RIR   20        RESET FIXED POINT INDICATOR               RDCX0215
14267  0020 00 0 14565  6881        TRA   $UNFIX    FLOAT THE NUMBER IN THE AC                RDCX0216
14270  0634 00 4 14276  6382  MIXFL SXA   MXIR,4    FIX MIXED EXPRESSION                      RDCX0217
14271  0601 00 0 14340  6883        STO   AMR       SAVE AC                                   RDCX0218
14272  0500 00 0 14341  6884        CLA   AMSUM     PICK UP CURRENT ANSWER                    RDCX0219
14273  0074 00 4 14266  6885        TSX   UNFX,4    FLOAT IT                                  RDCX0220
14274  0601 00 0 14341  6886        STO   AMSUM     PUT IT AWAY                               RDCX0221
14275  0500 00 0 14340  6887        CLA   AMR       RESTORE AC                                RDCX0222
14276  0774 00 4 00000  6888  MXIR  AXT   **,4      RESTORE IR 4                              RDCX0223
14277  0020 00 4 00001  6889        TRA   1,4       RETURN                                    RDCX0224
14300 -0534 00 2 03503  6890  AMM   LXD   AMQ,2     MAX OR MIN FUNCTION. GET TYPE             RDCX0255
14301  0074 00 4 14550  6891        TSX   FIXFLO,4  TEST FOR FIX OR FLOAT                     RDCX0256
```

```
14302  0761 00 0 00000  6892          NOP                    IMPOSSIBLE RETURN                          RDCX0257
14303  0020 00 0 14316  6893          TRA    AFL             EXECUTE FLOATING SECTION                   RDCX0258
14304  0055 00  000020  6894          SIR    20              SET FIXED PONT INDICATOR                   RDCX0259
14305  0054 00  000040  6895          RFT    40              TEST FOR MIXED EXP                         RDCX0260
14306  0074 00 4 14266  6896          TSX    UNFX,4          FLOAT THE ARGUMENT IF MIXED                RDCX0261
14307  0056 00  000004  6897  AMRNT   RNT    4               TEST FORMAX FUNCTION                       RDCX0262
14310  0020 00 0 14322  6898          TRA    AMIN            EXECUTE MIN FUNCTION                       RDCX0263
14311  0340 00 0 14341  6899          CAS    AMSUM           COMPARE WITH CURRENT ANSWER                RDCX0264
14312  0601 00 0 14341  6900          STO    AMSUM           IS GREATER, STORE AS NEW ANSWER            RDCX0265
14313  0761 00 0 00000  6901          NOP                    THEY ARE EQUAL                             RDCX0266
14314  0500 00 0 03502  6902          CLA    AMLIS           IS LESS, PICK UP ARGUMENT LIST             RDCX0267
14315  0020 00 0 14164  6903          TRA    AMLP            DO NEXT ITEM                               RDCX0268
14316  0055 00  000040  6904  AFL     SIR    40              SET FLOATING POINT INDICATOR               RDCX0269
14317  0054 00  000020  6905          RFT    20              TEST FOR MIXED EXPRESSION                  RDCX0270
14320  0074 00 4 14270  6906          TSX    MIXFL,4         UNMIX THE EXPRESSION                       RDCX0271
14321  0020 00 0 14307  6907          TRA    AMRNT           COMPARE AND DO NEXT ITEM                   RDCX0272
14322  0340 00 0 14341  6908  AMIN    CAS    AMSUM           MIN FUNCTION, COMPARE WITH CURRENT VAL     RDCX0273
14323  0020 00 0 14326  6909          TRA    *+3             IS GREATER                                 RDCX0274
14324  0020 00 0 14326  6910          TRA    *+2             IS EQUAL                                   RDCX0275
14325  0601 00 0 14341  6911          STO    AMSUM           IS LESS, STORE AS NEW ANSWER               RDCX0276
14326  0500 00 0 03502  6912          CLA    AMLIS           PICK UP NEXT ITEM                          RDCX0277
14327  0020 00 0 14164  6913          TRA    AMLP            EXECUTE IT                                 RDCX0278
14330  0500 00 0 14341  6914  AMEND   CLA    AMSUM           ALL DONE. PICK UP CURRENT ANSWER           RDCX0279
14331  0560 00 0 00475  6915          LDQ    AMFXC           PRESET MQ                                  RDCX0280
14332  0054 00  000040  6916          RFT    40              SKIP NEXT IF FIXED POINT                   RDCX0281
14333  0560 00 0 00476  6917          LDQ    AMFLC           PICK UP FIX IN MQ                          RDCX0282
14334  0441 00 0 03501  6918          LDI    AMIND           RESTORE INDICATORS                         RDCX0283
14335 -0534 00 4 03500  6919          LXD    AMIR,4          RESTORE IR 4                               RDCX0284
14336  0774 00 2 00000  6920  AMIR2   AXT    **,2            RESTORE IR 2                               RDCX0285
14337  0020 00 0 12636  6921          TRA    $MKNO           MAKE THE ANSWER A NUMBER                   RDCX0286
                 00476  6922  AMFLC   SYN    FLOATD          FLAOT CONSTANT                             RDCX0287
                 00475  6923  AMFXC   SYN    $FIXD           FIX CONSTANT                               RDCX0288
14340  0 00000 0 00000  6924  AMR                            TEMP STORAGE                               RDCX0290
14341  0 00000 0 00000  6925  AMSUM                          CURRENT ANSWER STORAGE                     RDCX0294
                        6926  * NUMVAL        NUMERICAL VALUE TAKES ANY LIST AND DECIDES IF IT       RDCX0297
                        6927  *       REPRESENTS A FIXED POINT OR FLOATING POINT NUMBER. IF IT DOES NOTRDCX0298
                        6928  *       THE ROUTINE CLEARS THE AC AND MQ DOES AN XEC 1,4 AND THEN GOES RDCX0299
                        6929  *       TO ERROR WITH A BAD ARGUMENT COMPLAINT. IF THE LIST DOES       RDCX0300
                        6930  *       REPRESENT A NUMBER, UPON EXIT THE FOLLOWING THINGS ARE LEFT    RDCX0301
                        6931  *       AS INDICATED                  POINTER TO FULL WORD IN AC       RDCX0302
                        6932  *                                     $FIX OR $FLOAT IN MQ             RDCX0303
14342  0634 00 4 14372  6933  NUMVAL  SXA    NVIR4,4         SAVE LINK IR                               RDCX0309
14343  0601 00 0 03321  6934          STO    $ARG3           SAVE ORIGINAL ARGUMENT                        7220
14344 -0734 00 4 00000  6935          PDX    0,4             POINTER TO NUMBER IN IR 4                  RDCX0314
14345 -3 00000 4 14351  6936  NVLP    TXL    NVNO,4,0        NULL  LIST IS NOT A NUMBER                 RDCX0315
14346  0500 00 4 00000  6937          CLA    0,4             FIRST ELEMENT                              RDCX0316
14347  0734 00 4 00000  6938          PAX    0,4             CAR LIST                                   RDCX0317
14350  3 77776 4 14362  6939          TXH    NVATM,4,-2      GO IF AN ATOM                              RDCX0318
                        6940  *                                                                        RDCX0331
14351 -0754 00 0 00000  6941  NVNO    PXD    0,0             IS NOT NUMBER, CLEAR AC                    RDCX0332
14352  0131 00 0 00000  6942          XCA                    PUT IN MQ                                  RDCX0333
14353 -0754 00 0 00000  6943          PXD    0,0             CLEAR AC AGAIN                             RDCX0334
14354  0534 00 4 14372  6944          LXA    NVIR4,4         RESTORE LINK IR                            RDCX0335
14355  0522 00 4 00001  6945          XEC    1,4             EXECUTE POSSIBLE EXIT INSTRUCTION          RDCX0338
```

```
14356  0500 00 0 03321   6946          CLA    $ARG3          MUST BE AN ERROR, PICK UP ORIGINAL ARG    7230
14357 -0634 00 4 01562   6947          SXD    $ERROR,4                                                 RDCX0340
14360  0074 00 4 01563   6948          TSX    $ERROR+1,4     GO TO ERROR                               RDCX0341
14361  543160600354      6949          BCI    1,*I  3*       BAD ARGUMENT NUMVAL
                         6950 *                                                                        RDCX0346
14362 -0734 00 4 00000   6951 NVATM    PDX    0,4
14363 -0320 00 0 00470   6952          ANA    TAGMSK
14364  0100 00 0 14351   6953          TZE    NVNO
14365  0771 00 0 00017   6954          ARS    15
14366  0621 00 0 14370   6955          STA    **+2
14367 -0754 00 4 00000   6956          PXD    0,4
14370 -0774 00 4 00000   6957          AXC    **,4
14371  0560 00 4 14373   6958          LDQ    NVTBL,4
14372  0774 00 4 00000   6959  NVIR4   AXT    **,4           RESTORE IR 4                              RDCX0369
14373  0020 00 4 00001   6960 NVTBL    TRA    1,4
14374  0 10135 0 00000   6961                 0,,$FIX
14375  0 10120 0 00000   6962                 0,,$FLOAT
14376  0 00000 0 00000   6963                 0,,0
14377  0 00000 0 00000   6964                 0,,0
14400  0 10135 0 00000   6965                 0,,$FIX
                         6966 *
                         6967 *                                                                        RDCX0372
                         6968 * ADD1          ADD 1 ADDS ONE TO ANY FIXED POINT OR FLOATING POINT    RDCX0418
                         6969 *        NUMBER AND EXITS WITH THE NEW NUMBER                            RDCX0419
14401  0634 00 1 14417   6970  ADD1    SXA    A1IR1,1        SAVE IR 1                                 RDCX0420
14402  0774 00 1 00000   6971          AXT    0,1            ZERO IR 1(INDICATES ADD OP)               RDCX0421
14403  0634 00 2 14420   6972  AD1     SXA    A1IR2,2        SAVE IR 2                                 RDCX0422
14404  0634 00 4 14421   6973          SXA    A1IR4,4        SAVE LINK IR                              RDCX0423
14405  0074 00 4 14342   6974          TSX    NUMVAL,4       EVALUTE NUMERICAL ARGUMENT
14406 -0600 00 0 14423   6975          STQ    A1T            SAVE $FIX OR $FLOAT                       RDCX0425
14407 -0734 00 4 00000   6976          PDX    0,4            POINTER TO FULL WORD                        7090
14410  0500 00 4 00000   6977          CLA    0,4            GET NUMERICAL VALUE                         7150
14411 -0534 00 2 14423   6978          LXD    A1T,2          PICK UP $FIX OR $FLOAT                    RDCX0427
14412  0074 00 4 14550   6979          TSX    FIXFLO,4                                                 RDCX0428
14413  0761 00 0 00000   6980          NOP                   IMPOSSIBLE RETURN                         RDCX0429
14414  0522 00 1 14424   6981          XEC    FAD,1          IS FLOAT, DO FLOATING POINT OP            RDCX0430
14415  0522 00 1 14426   6982          XEC    ADDF,1         DO FIXED POINT OP                         RDCX0431
14416  0560 00 0 14423   6933          LDQ    A1T            RESTORE $FLOAT AFTER FAD                  RDCX0432
14417  0774 00 1 00000   6984  A1IR1   AXT    **,1           RESTORE IR 1                              RDCX0433
14420  0774 00 2 00000   6985  A1IR2   AXT    **,2           RESTORE IR 2                              RDCX0434
14421  0774 00 4 00000   6986  A1IR4   AXT    **,4           RESTORE LINK IR                           RDCX0435
14422  0020 00 0 12636   6987          TRA    $MKNO          MAKE RESULT A NUMBER                      RDCX0436
                         6988 *                                                                        RDCX0437
14423  0 00000 0 00000   6989  A1T                          TEMPORARY STORAGE                         RDCX0438
14424  0300 00 0 00454   6990  FAD     FAD    $QF1           FLOATING ADD FOR ADD1                     RDCX0439
14425  0302 00 0 00454   6991          FSB    $QF1           FOR SUB1                                  RDCX0440
14426  0400 00 0 00371   6992  ADDF    ADD    $Q1            FOR ADD1                                  RDCX0441
14427  0402 00 0 00371   6993          SUB    $Q1            FOR SUB1                                  RDCX0442
                         6994 *                                                                          7250
                         6995 * SUB1          SUBTRACT 1 SUBTRACTS ONE FROM A FIXED POINT OR FLOATING  RDCX0444
                         6996 *        POINT NUMBER. USES CODING OF ADD1 WITH AN INITIALIZATION.       RDCX0445
14430  0634 00 1 14417   6997  SUB1    SXA    A1IR1,1        SAVE IR 1                                 RDCX0446
14431  0774 00 1 77777   6998          AXT    -1,1           SET FOR SUBTRACT OPERATIONS               RDCX0447
14432  0020 00 0 14403   6999          TRA    AD1            PERFORM ADD1 CODING                       RDCX0448
```

```
                                7000 * SUB1 USES THE CODING OF ADD1                                          RDCX0449
                                7001 *                                                                       7240
                                7002 *                                                                       6900
14433  0634 00 4 14437          7003 GRTRTP SXA     GRTIR,4          SAVE LINK IR                            6910
14434  0074 00 4 13350          7004        TSX     UNUMIX,4         EVALUATE NUMERICAL ARGUMENTS            6920
14435  0040 00 0 14441          7005        TLQ     GRTT             PREDICATE TRUE                          6930
14436 -0754 00 0 00000          7006        PXD     0,0              FALSE, CLEAR AC                         6940
14437  0774 00 4 00000          7007  GRTIR AXT     **,4                                                     6950
14440  0020 00 4 00001          7008        TRA     1,4              EXIT                                    6960
                                7009 *                                                                       6970
14441  0500 00 0 00442          7010  GRTT  CLA     $QD1             GET TRUE VALUE                          6980
14442  0020 00 0 14437          7011        TRA     GRTIR            RESTORE LINK IR AND EXIT                6990
                                7012 *                                                                       7000
                                7013 *                                                                       7260
                                7014 * LESSTP       LESS THAN PREDICATE.  SIMPLE DOES GREATER THAN  PREDICATERDCX0495
                                7015 *      WITH THA ARGUMENT REVERSED.                                      RDCX0496
                                7016 *                                                                       7270
14443  0131 00 0 00000          7017 LESSTP XCA                      INTERCHANGE ARGUMENTS                   RDCX0497
14444  0020 00 0 14433          7018        TRA     GRTRTP           DO GREATER THAN PREDICATE               RDCX0498
                                7019 *                                                                       7280
                                7020 * THE FOLLOWING IS A NUMBER PREDICATE PACKAGE WHICH INCLUDES NUMBER     RDCX0500
                                7021 *      PREDICATE, ZERO PREDICATE, MINUS PREDICATE, ONE PREDICATE, FIX   RDCX0501
                                7022 *      PREDICATE AND FLOAT PREDICATE. ALL THESE PREDICATES SHARE CERTAINRDCX0502
                                7023 *      BLOCKS OF CODING AND TEMPORARY STORAGE.                          RDCX0503
                                7024 * NUMBRP       NUMBER PREDICATE TESTS ITS ARGUMENT FOR A NUMBER.       RDCX0504
14445  0634 00 4 14451          7025 NUMBRP SXA     NPIR,4           SAVE LINK IR                            RDCX0505
14446  0074 00 4 14342          7026        TSX     NUMVAL,4         EVALUATE ARGUMENT                       RDCX0506
14447  0100 00 0 14451          7027        TZE     NPIR             IF ZERO NOT A NUMBER                    RDCX0507
14450  0500 00 0 00442          7028  NPT   CLA     $QD1             IS A NUMBER, PICK UP TRUTH              RDCX0508
14451  0774 00 4 00000          7029  NPIR  AXT     **,4             RESTORE LINK IR                         RDCX0509
14452  0020 00 4 00001          7030        TRA     1,4              EXIT                                    RDCX0510
                                7031 *                                                                       RDCX0511
                                7032 * FLOATP       FLOATING POINT NUMBER PREDICATE TESTS TO SEE IF ITS      RDCX0512
                                7033 *      ARGUMENT IS A FLOATING POINT NUMBER                              RDCX0513
14453  0634 00 4 14451          7034 FLOATP SXA     NPIR,4           SAVE LINK IR                            RDCX0514
14454  0634 00 2 14525          7035        SXA     ZPIR,2           SAVE IR 2                               RDCX0515
14455  0074 00 4 14342          7036        TSX     NUMVAL,4         EVALUATE ARGUMENT                       RDCX0516
14456  0131 00 0 00000          7037        XCA                      GET TYPE IN AC                          RDCX0518
14457 -0734 00 2 00000          7038        PDX     0,2              TYPE IN IR 2                            RDCX0519
14460  0074 00 4 14550          7039        TSX     FIXFLO,4         TEST FOR $FIX OR $FLOAT                 RDCX0520
14461  0761 00 0 00000          7040        NOP                      IMPOSSIBLE RETURN                       RDCX0521
14462  0020 00 0 14464          7041        TRA     FLT              IS FLOATING POINT                       RDCX0522
14463  0020 00 0 14524          7042        TRA     ZPF              IS NOT FLOATING POINT, EXIT FALSE       RDCX0523
14464  0500 00 0 00442          7043  FLT   CLA     $QD1             GET TRUTH VALUE                         RDCX0524
14465  0020 00 0 14525          7044        TRA     ZPIR             RESTORE IR S AND EXIT                   RDCX0525
                                7045 *                                                                       RDCX0526
                                7046 * FIXP         FIXED POINT PREDICATE TESTS FOR FIXED POINT NUMBERS.     RDCX0527
14466  0634 00 4 14451          7047  FIXP  SXA     NPIR,4           SAVE LINK IR                            RDCX0528
14467  0634 00 2 14525          7048        SXA     ZPIR,2           SAVE IR 2                               RDCX0529
14470  0074 00 4 14342          7049        TSX     NUMVAL,4         EVALUATE ARGUMENT                       RDCX0530
14471  0131 00 0 00000          7050        XCA                      GET TYPE IN AC                          RDCX0532
14472 -0734 00 2 00000          7051        PDX     0,2              TYPE IN IR 2                            RDCX0533
14473  0074 00 4 14550          7052        TSX     FIXFLO,4         TEST FOR $FIX OR $FLOAT                 RDCX0534
14474  0761 00 0 00000          7053        NOP                      IMPOSSIBLE EXIT                         RDCX0535
```

```
14475  0020 00 0 14524            TRA     ZPF                IS FLOAT, EXIT FALSE                   RDCX0536
14476  0500 00 0 00442            CLA     $QD1               IS FIX, GET TRUTH VALUE                RDCX0537
14477  0020 00 0 14525            TRA     ZPIR               RESTORE IR S AND RETURN                RDCX0538
                           *                                                                        RDCX0539
                           * MINUSP       MINUS PREDICATE TESTS TO SEE IF ITS ARGUMENT IS A         RDCX0540
                           *        NEGATIVE NUMBER.                                                RDCX0541
14500  0634 00 4 14451     MINUSP SXA     NPIR,4             SAVE LINK IR                           RDCX0542
14501  0074 00 4 14342            TSX     NUMVAL,4           EVALUATE ARGUMENT                      RDCX0543
14502 -0734 00 4 00000            PDX     0,4                                                       RDCX0545
14503  0500 00 4 00000            CLA     0,4                PICK UP NUMBER                         RDCX0546
14504 -0120 00 0 14450            TMI     NPT                EXIT TRUE IF MINUS                         7310
14505 -0754 00 0 00000            PXD     0,0                IS NOT, EXIT FALSE                     RDCX0550
14506  0020 00 0 14451            TRA     NPIR               RESTORE LINK IR AND EXIT               RDCX0551
                           *                                                                        RDCX0552
                           * ZEROP        ZERO PREDICATE TESTS ITS ARGUMENT FOR A FIXED POINT       RDCX0553
                           *        ZERO    OR                                                      RDCX0554
                           *        ZERO OR A FLOATING POINT ZERO + OR - A TOLERENCE (FLOTOL).      RDCX0555
14507  0634 00 4 14451      ZEROP SXA     NPIR,4             SAVE LINK IR                           RDCX0556
14510  0634 00 2 14525            SXA     ZPIR,2             SAVE IR 2                              RDCX0557
14511  0074 00 4 14342            TSX     NUMVAL,4           EVALUATE ARGUMENT                      RDCX0558
14512 -0734 00 4 00000            PDX     0,4                GET POINTER TO IR 4                    RDCX0560
14513  0500 00 4 00000            CLA     0,4                FULL WORD                              RDCX0561
14514  0760 00 0 00003     ZPG    SSP                        GET MAGNITUDE OF N
14515  0100 00 0 14527            TZE     ZPT                EXIT TRUE IF ZERO
14516  0131 00 0 00000            XCA                        PUT NUMBER IN MQ                       RDCX0565
14517 -0734 00 2 00000            PDX     0,2                PUT TYPE IN IR 2                       RDCX0566
14520  0500 00 0 14623            CLA     FLOTOL             PICK UP FLOATING POINT TOLERENCE       RDCX0567
14521  0074 00 4 14550            TSX     FIXFLO,4           TEST FOR FIX OR FLOAT                  RDCX0568
14522  0020 00 0 14531            TRA     ZPTS               NOT FIX OR FLO MEANS FLO FROM ONEP
14523  0020 00 0 14531            TRA     ZPTS               IS FLOATING POINT, COMPARE WITH FLOTOLRDCX0570
14524 -0754 00 0 00000      ZPF   PXD     0,0                IS FIXED POINT, EXIT FALSE             RDCX0571
14525  0774 00 2 00000      ZPIR  AXT     **,2               RESTORE IR 2                           RDCX0572
14526  0020 00 0 14451            TRA     NPIR               RESTORE IR 4 AND EXIT                  RDCX0573
14527  0500 00 0 00442      ZPT   CLA     $QD1               GET TRUTH VALUE                        RDCX0574
14530  0020 00 0 14525            TRA     ZPIR               RESTORE IR S AND EXIT                  RDCX0575
14531  0040 00 0 14527      ZPTS  TLQ     ZPT                IS FLOATING POINT, EXIT TRUE IF LESS   RDCX0581
14532  0020 00 0 14524            TRA     ZPF                OTHERWISE EXIT FALSE                   RDCX0582
                           * ONEP         ONE PREDICATE TESTS TO SEE IF ITS ARGUMENT IS ONE         RDCX0583
                           *        BY SUBTRACTING ONE AND TESTING THE RESULT WITH ZEROP.           RDCX0584
14533  0634 00 4 14451      ONEP  SXA     NPIR,4             SAVE LINK IR                           RDCX0585
14534  0634 00 2 14525            SXA     ZPIR,2             SAVE IR 2                              RDCX0586
14535  0074 00 4 14342            TSX     NUMVAL,4           EVALUATE ARGUMENT                      RDCX0587
14536 -0734 00 4 00000            PDX     0,4                POINTER TO AC                          RDCX0589
14537  0500 00 4 00000            CLA     0,4                FULL WORD TO AC                        RDCX0590
14540  0131 00 0 00000            XCA                        TYPE TO AC                             RDCX0593
14541 -0734 00 2 00000            PDX     0,2                TYPE TO IR 2                           RDCX0594
14542  0131 00 0 00000            XCA                                                               RDCX0595
14543  0074 00 4 14550            TSX     FIXFLO,4           DISPATCH ON FIX OR FLOAT               RDCX0596
14544  0761 00 0 00000            NOP                        IMPOSSIBLE RETURN                      RDCX0597
14545  0302 00 0 00454            FSB     $QF1                                                      RDCX0598
14546  0402 00 0 00371            SUB     $Q1                SUBTRACT 1                             RDCX0599
14547  0020 00 0 14514            TRA     ZPG                APPLY ZERO PREDICATE                   RDCX0600
                           *                                                                        RDCX0601
                           *        FIXFLO                   SUBROUTINE TO DISPATCH ON FIX OR FLO,      7320
```

```
                                7108 *                                  ARGUMENT IN IR 2.                     7330
                                7109 *                                                                        RDCX0698
 14550 -3 10134 2 14552         7110 FIXFLO TXL    *+2,2,$FIX-1        TXL - TXL FILTER FOR $FIX             RDCX0699
 14551 -3 10135 2 14564         7111        TXL    FX,2,$FIX           GO IF $FIX                            RDCX0700
 14552 -3 10117 2 14554         7112        TXL    *+2,2,$FLOAT-1      TXL - TXL FILTER FOR $FLOAT           RDCX0701
 14553 -3 10120 2 14560         7113        TXL    FL,2,$FLOAT         GO IF $FLOAT                          RDCX0702
 14554  0522 00 4 00001         7114        XEC    1,4                 EXCEUTE IF NEITHER FIX OR FLOAT       RDCX0703
 14555  0020 00 4 00004         7115        TRA    4,4                 RETURN                                RDCX0704
 14556  0020 00 4 00005         7116        TRA    5,4                 SKIP EXIT                             RDCX0705
 14557  0020 00 4 00006         7117        TRA    6,4                 SKIP 2 EXIT                           RDCX0706
 14560  0522 00 4 00002         7118 FL     XEC    2,4                 EXECUTE IF $FLOAT                     RDCX0707
 14561  0020 00 4 00004         7119        TRA    4,4                 RETURN                                RDCX0708
 14562  0020 00 4 00005         7120        TRA    5,4                 SKIP EXIT                             RDCX0709
 14563  0020 00 4 00006         7121        TRA    6,4                 SKIP 2 EXIT                           RDCX0710
 14564  0020 00 4 00003         7122 FX     TRA    3,4                                                       RDCX0711
                                7123 *      FIXFLO USES $FIX AND $FLAOT                                      RDCX0712
                                7124 * UNFIX       UNFIX MAKES A FIXED POINT ARGUMENT IN THE AC A FLOATING   RDCX0713
                                7125 *      POINT NUMBER LEFT IN AC. MQ IS PRESERVED.                        RDCX0714
 14565  0601 00 0 14621         7126 UNFIX  STO    UFC                 SAVE ARGUMENT                         RDCX0715
 14566 -0320 00 0 00434         7127        ANA    UFMSK               MASK OUT ALL BUT CHARACTERISTIC       RDCX0716
 14567 -0100 00 0 14576         7128        TNZ    UFE                 IF ANY THING LEFT IT MUST BE NORMALIZDRDCX0717
 14570  0500 00 0 14621         7129        CLA    UFC                 NOTHING LEFT, RESTORE ARGUMENT        RDCX0718
 14571 -0501 00 0 00433         7130        ORA    UFMC                OR IN CHARACTERISTIC                  RDCX0719
 14572 -0600 00 0 14620         7131        STQ    UFQ                 SAVE MQ                               RDCX0720
 14573  0300 00 0 00433         7132        FAD    UFMC                ESSENTIALLY FAD OF ZERO TO NORMALIZE  RDCX0721
 14574  0560 00 0 14620         7133        LDQ    UFQ                 RESTORE MQ                            RDCX0722
 14575  0020 00 4 00001         7134        TRA    1,4                 EXIT                                  RDCX0723
                                7135 *                                                                   RDCX0724
 14576  0634 00 4 14616         7136 UFE    SXA    UFXR,4              NUMBER GREATER THAN 2 TO 27. SAVE IR4 RDCX0725
 14577  0774 00 4 00234         7137        AXT    2*64+3*8+4,4         CHARACTERISTIC SO FAR                RDCX0726
 14600  0600 00 0 14622         7138        STZ    UFS                 INITIALIZE SIGN PORTION               RDCX0727
 14601  0120 00 0 14604         7139        TPL    UFF                 SKIP IF +                             RDCX0728
 14602  0760 00 0 00003         7140        SSP                        MAKE IT +                             RDCX0729
 14603 -0625 00 0 14622         7141        STL    UFS                 RECORD FACT BY MAKING UFS NON-ZERO    RDCX0730
 14604  0771 00 0 00001         7142 UFF    ARS    1                   DIVIDE NUMBER BY 2                    RDCX0731
 14605  0340 00 0 00432         7143        CAS    UFNC                SEE IF NORMALIZED YET                 RDCX0732
 14606  1 00001 4 14604         7144        TXI    UFF,4,1             ADD 1 TO CHARACTERISTIC AND TRY AGAIN RDCX0733
 14607  1 00001 4 14604         7145        TXI    UFF,4,1             DITTO                                 RDCX0734
 14610  0601 00 0 14621         7146        STO    UFC                 IS NORMALIZED                         RDCX0735
 14611 -0754 00 4 00000         7147        PXD    0,4                 CHARACTERISTIC TO AC                  RDCX0736
 14612  0767 00 0 00011         7148        ALS    9                   POSITION CHARACTERISTIC               RDCX0737
 14613 -0501 00 0 14621         7149        ORA    UFC                 OR IN NORMALIZED NUMBER               RDCX0738
 14614  0520 00 0 14622         7150        ZET    UFS                 TEST FOR SIGN, 0 MEANS +              RDCX0739
 14615 -0760 00 0 00003         7151        SSM                        NOT ZERO SO MAKE MINUS                RDCX0740
 14616  0774 00 4 00000         7152 UFXR   AXT    **,4                RESTORE IR 4                          RDCX0742
 14617  0020 00 4 00001         7153        TRA    1,4                 EXIT                                  RDCX0743
                    00434       7154 UFMSK  SYN Q777Q9                 CHARACTERISTIC MASK
                    00433       7155 UFMC   SYN Q233Q9                 GENERAL CHARACTERISTIC
                    00432       7156 UFNC   SYN $Q01Q9
 14620  0 00000 0 00000         7157 UFQ                               MQ                                    RDCX0747
 14621  0 00000 0 00000         7158 UFC                               AC TEMPORARY STORAGE                  RDCX0748
 14622  0 00000 0 00000         7159 UFS                               SIGN STORAGE                          RDCX0749
                                7160 * UNFIX USES NO EXTERNAL CONSTANTS.                                     RDCX0750
                                7161 * FLOTOL         FLOATING POINT TOLERENCE USED IN DESIDING IF FLOATING  RDCX0751
```

```
                                    7162 *       POINT NUMBERS ARE INTEGERS.                                    RDCX0752
14623 +156622516334                 7163 FLOTOL  DEC     3E-6              FLOATING POINT TOLERENCE VALUE      RDCX0754
                                    7164 * MNSPRG        MINUS PROGRAM MAKES A LIST OF MINUS AND ITS ARGUMENT
                                    7165 *                                                                        7340
                                    7166 * MNSPRG        CREATES A NUMBER OF OPPOSITE SIGN OF NUMERICAL ARGUMENT 7350
                                    7167 *                                                                        7290
14624  0634 00 4 14631              7168 MNSPRG  SXA     MRXR,4            SAVE LINK IR                          7360
14625  0074 00 4 14342              7169         TSX     NUMVAL,4          EVALUATE THE NUMERICAL ARGUMENT       7370
14626 -0734 00 4 00000              7170         PDX     0,4               POINTER TO FULL WORD                  7380
14627  0500 00 4 00000              7171         CLA     0,4               NUMERICAL VALUE                       7390
14630  0760 00 0 00002              7172         CHS                       MAKE OPPOSITE SIGN                    7400
14631  0774 00 4 00000              7173  MRXR   AXT     **,4              RESTORE LINK IR                       7410
14632  0020 00 0 12636              7174         TRA     $MKNO             MAKE IT A NUMBER                      7420
                                    7175 *                                                                        7430
                                    7176 * RCPPRG        CALCULATES THE RECIPORICAL OF A NUMBER.                7440
14633  0634 00 4 14654              7177 RCPPRG  SXA     RRXR,4            SAVE LINK IR
14634  0634 00 2 14655              7178         SXA     RRXR2,2           SAVE IR 2                             7460
14635  0074 00 4 14342              7179         TSX     NUMVAL,4          EVALUTE THE NUMERICAL ARGUMENT        7470
14636 -0734 00 4 00000              7180         PDX     0,4               POINTER TO FULL WORD                  7480
14637  0500 00 4 00000              7181         CLA     0,4               NUMERICAL VALUE                       7490
14640  0601 00 0 14662              7182         STO     RCPT              SAVE VALUE                            7500
14641  0131 00 0 00000              7183         XCA                       TYPE TO AC                            7510
14642 -0734 00 2 00000              7184         PDX     0,2               TYPE TO IR 2                          7520
14643  0074 00 4 14550              7185         TSX     FIXFLO,4          DISPATCH ON FIX OR FLOAT              7530
14644  0761 00 0 00000              7186         NOP                       IMPOSSIBLE RETURN                     7540
14645  0500 00 0 00454              7187         CLA     $QF1              IS FLOAT, PICK UP FLOATING POINT 1    7550
14646  0020 00 0 14657              7188         TRA     RCPFX             IS FIXED POINT                        7560
14647  0241 00 0 14662              7189         FUP     RCPT              DIVICE BY ARGUMENT                    7570
14650  0760 00 0 00012              7190         DCT                       CHECK FOR ILLEGAL DIVISION            7580
14651  0074 00 4 01676              7191         TSX     $DCT,4            DIVIDE CHECK ERROR                    7590
14652  0131 00 0 00000              7192         XCA                       QUOTENT TO AC                         7600
14653  0560 00 0 00476              7193         LDQ     RCPS              $FLOAT TO MQ                          7610
14654  0774 00 4 00000              7194  RRXR   AXT     **,4              RESTORE LINK IR                       7620
14655  0774 00 2 00000              7195  RRXR2  AXT     **,2              RESTORE IR 2                          7630
14656  0020 00 0 12636              7196         TRA     $MKNO             MAKE ANSWER A NUMBER                  7640
                                    7197 *                                                                        7650
14657  0131 00 0 00000              7198  RCPFX  XCA                       FIXED POINT RECIP, ANSWER IS ZERO     7660
14660 -0754 00 0 00000              7199         PXD     0,0               CLEAR AC                              7670
14661  0020 00 0 14654              7200         TRA     RRXR              RESTORE IR S AND MAKE A NUMBER        7680
                                    7201 *                                                                        7690
14662  0 00000 0 00000              7202  RCPT                             TEMPORARY STORAGE                     7700
              00476                 7203  RCPS   SYN     FLOATD            FLOAT INDICATOR                       7710
                                    7204 *                                                                        7720
```

```
                                    EJECT
                                        APPLY                                                  LC430100
                                                                                               LC430200
                                        APPLY(F,L,A) =                                         LC430300
                                           SELECT(CAR(L).,                                     LC430400
                                                 -1,APP2(F,L,A).,                              LC430500
                                                 LAMBDA,EVAL(F,APPEND(PAIR(CADR(F),L),A)).,    LC430600
                                                 LABEL,APPLY(CADDR(F),L,APPEND(                LC430700
                                                      PAIR1(CADR(F),CADDR(F))),A).,            LC430800
                                                 APPLY(EVAL(F,A),L,A))                         LC430900
                                                                                               LC431000
                           A        HED                                                        LC431100
14663 -0634 00 4 03350       APPLY  SXD ASS1,4                                                 LC431800
14664  0100 00 4 00001              TZE 1,4                                                    LC431900
14665  0601 00 0 03353              STO AST1                   F                               LC432000
14666 -0734 00 4 00000              PDX 0,4                                                    LC432100
14667  0634 00 4 03350              SXA      ASS1,4            SAVE FUNCTION ALONG WITH INDEX REGISTE
14670  0500 00 4 00000              CLA 0,4                    CWR(F)                          LC432200
14671  0734 00 4 00000              PAX 0,4                    CAR(F)                          LC432300
14672  3 77776 4 14722              TXH ASP1,4,-2              =-1                             LC432400
14673 -0754 00 4 00000              PXD 0,4                                                    LC432500
14674  0340 00 0 00502              CAS ASLMD                  = LAMBDA                        LC432600
14675  0020 00 0 14677              TRA *+2                                                    LC432700
14676  0020 00 0 14725              TRA ASP2                                                   LC432800
14677  0340 00 0 00500              CAS ASFUN                                                  LC432900
14700  0020 00 0 14702              TRA *+2                                                    LC433000
14701  0020 00 0 15000              TRA ASP4                                                   LC433100
14702  0340 00 0 00501              CAS ASLBL                  = LABEL                         LC433200
14703  0020 00 0 14705              TRA *+2                                                    LC433300
14704  0020 00 0 14750              TRA ASP3                                                   LC433400
14705  0074 00 4 02312              TSX $SAVE,4                                                LC433500
14706 -3 03354 0 02375              TXL      $END3,,ASSA+2     SAVE 3 ITEMS
14707 -0600 00 0 03351              STQ ASSL                                                   LC433700
14710  0560 00 0 03321              LDQ $ARG3                                                  LC433800
14711 -0600 00 0 03352              STQ ASSA                                                   LC433900
14712  0500 00 0 03353              CLA AST1                   F                               LC434000
14713  0074 00 4 15454              TSX $EVAL,4                EVAL(F,A)                       LC434100
14714  0560 00 0 03352              LDQ ASSA                                                   LC434200
14715 -0600 00 0 03321              STQ $ARG3                                                  LC434300
14716  0560 00 0 03351              LDQ ASSL                                                   LC434400
14717  0074 00 4 02326              TSX UNSAVE,4                                               LC434500
14720 -0534 00 4 03350              LXD ASS1,4                                                 LC434700
14721  0020 00 0 14663              TRA APPLY                  APPLY(EVAL(F,A),L,A)            LC434800
                                                                                               LC434900
14722  0500 00 0 03353       ASP1   CLA AST1                   F                               LC435000
14723 -0534 00 4 03350              LXD ASS1,4                                                 LC435100
14724  0020 00 0 15016              TRA $APP2                  P APP2(F,L,A)                   LC435200
                           *              LAMBDA BRANCH                                        1.5Q0060
14725 -0534 00 4 03353       ASP2   LXD AST1,4                 F                               LC435400
14726  0500 00 0 03321              CLA $ARG3                                                  LC435600
14727  0601 00 0 03355              STO AST3                                                   LC435700
14730  0500 00 4 00000              CLA 0,4                    CWR(F)                          LC435800
14731 -0734 00 4 00000              PDX 0,4                    CDR(F)                          LC435900
14732  0500 00 4 00000              CLA 0,4                   CWDR(F)                          LC436000
```

```
 14733  0601 00 0 03356          STO AST4                                          LC436100
 14734  0734 00 4 00000          PAX 0,4               CADR(F)                     LC436200
 14735 -0754 00 4 00000          PXD 0,4                                           LC436300
 14736  0074 00 4 07562          TSX $PAIR,4           PAIR(CADR(F),L)             LC436400
 14737  0560 00 0 03355          LDQ AST3              A                           LC436500
 14740  0074 00 4 07675          TSX     $NCCNC,4
 14741  0131 00 0 00000          XCA
 14742 -0534 00 4 03356          LXD AST4,4            CDDR(F)                     LC436800
 14743  0500 00 4 00000          CLA 0,4                                           LC436900
 14744  0734 00 4 00000          PAX 0,4                                           LC437000
 14745 -0754 00 4 00000          PXD 0,4                                           LC437100
 14746 -0534 00 4 03350          LXD ASS1,4                                        LC437300
 14747  0020 00 0 15454          TRA $EVAL      EVAL(CADDR(F),APPEND(PAIR(CADR(F),L),A))  LC437400
   26                                                                              LC437500
14775                  *            LABEL BRANCH                                   1.5Q0061
 14750 -0534 00 4 03353    ASP3  LXD AST1,4            F                           LC437600
 14751 -0600 00 0 03354          STQ AST2              L                           LC437700
 14752  0560 00 0 03321          LDQ $ARG3             A                           LC437800
 14753 -0600 00 0 03355          STQ AST3                                          LC437900
 14754  0500 00 4 00000          CLA 0,4               CWR(F)                      LC438000
 14755 -0734 00 4 00000          PDX 0,4               CDR(F)                      LC438100
 14756  0500 00 4 00000          CLA 0,4                                           LC438200
 14757  0601 00 0 03356          STO AST4              CWDR(F)                     LC438300
 14760 -0734 00 4 00000          PDX 0,4               CDDR(F)                     LC438400
 14761  0500 00 4 00000          CLA 0,4                                           LC438500
 14762  0734 00 4 00000          PAX 0,4               CADDR(F)                    LC438600
 14763 -0754 00 4 00000          PXD 0,4                                           LC438700
 14764  0601 00 0 03353          STO AST1                                          LC438800
 14765  0131 00 0 00000          XCA                                                   4580
 14766  0534 00 4 03356          LXA AST4,4                                        LC439100
 14767 -0754 00 4 00000          PXD 0,4               CADR(F)                     LC439300
 14770  0074 00 4 03730          TSX $CONS,4           CONS(CADR(F),CONS(CADDR(F),0))  LC439500
 14771  0560 00 0 03355          LDQ AST3              A                           LC439600
 14772  0074 00 4 03730          TSX $CONS,4           APPEND( ABOVE,A)            LC439700
 14773  0601 00 0 03321          STO $ARG3                                         LC439800
 14774  0560 00 0 03354          LDQ AST2                                          LC439900
 14775  0500 00 0 03353          CLA AST1              CADDR(F)                    LC440000
 14776 -0534 00 4 03350          LXD ASS1,4                                        LC440100
 14777  0020 00 0 14663          TRA APPLY   APPLY(CADDR(F),L,APPEND(PAIR(CADR(F),CADDR(F)),A))  LC440200
                                                                                   LC440300
                       *            FUNARG BRANCH                                  1.5Q0062
 15000 -0534 00 4 03353    ASP4  LXD AST1,4            F                           LC440400
 15001  0500 00 4 00000          CLA ,4                                            LC440500
 15002 -0734 00 4 00000          PDX ,4                CDR(F)                      LC440600
 15003  0500 00 4 00000          CLA ,4                                            LC440700
 15004  0601 00 0 03353          STO AST1              CWDR(F)                     LC440800
 15005 -0734 00 4 00000          PDX ,4                CDDR(F)                     LC440900
 15006  0500 00 4 00000          CLA ,4                                            LC441000
 15007  0734 00 4 00000          PAX ,4                CADDR(F)                    LC441100
 15010 -0754 00 4 00000          PXD ,4                                            LC441200
 15011  0601 00 0 03321          STO $ARG3             A                           LC441300
 15012  0534 00 4 03353          LXA AST1,4            CADR(F)                     LC441400
 15013 -0754 00 4 00000          PXD ,4                F                           LC441500
 15014 -0534 00 4 03350          LXD ASS1,4                                        LC441600
```

```
15015  0020 00 0 14663   7313          TRA $APPLY                                                    LC441700
                         7314                                                                        LC441800
                 00501   7315  ASLBL SYN LABELD
                 00502   7316  ASLMD SYN LAMDAD
                 00500   7317  ASFUN SYN     FNARGD                                                  LC442700
                 00370   7318  ASZRO SYN     $ZERO                                                     4590
                         7319                                                                        LC443000
                         7320          APP2(F,L,A)=SELECT(F,,CAR,CAAR(L),,CDR,                     LC443100
                         7321          CDAR(L),,CONS,CONS(CAR(L),CADR(L)),,LIST,COPY(L),,SEARCH(F, LC443200
                         7322          LAMBDA(J,CAR(J)=SUBR OR CAR(J)=EXP),                        LC443300
                         7323          LAMBDA(J,CAR(J)=SUBR YIELDS APP3(CWADR                      LC443400
                         7324          (J),DISTRIB(L)),1 YIELDS APPLY(CADR(J),L,A)))               LC443500
                         7325          ERROR)                                                      LC443600
                         7326                                                                        LC443700
                         7327 A        HED                                                         LC443800
15016 -0634 00 4 15147   7328  APP2    SXD     ATS1,4          SAVE LINK IR                         4600
15017 -0534 00 4 03321   7329          LXD     $ARG3,4         GET ALIST
15020 -0634 00 4 15153   7330          SXD     A,4             SAVE IT
15021 -0600 00 0 15152   7331          STQ     AL              ARGUMENT LIST                        4610
15022  0601 00 0 15151   7332          STO     F               FUNCTION  (IS ATOMIC SYMBOL)         4620
15023  0600 00 0 15145   7333          STZ     APTRT           INITIALIZE TRACE TEST CELL
15024 -0734 00 4 00000   7334  APSES   PDX     0,4             ARG TO IR                            4630
15025 -3 00000 4 15071   7335          TXL     APSAL,4,0       GO IF NO MORE PROPERTY LIST          4640
15026  0500 00 4 00000   7336          CLA     0,4             FIRST WORD                           4650
15027  0734 00 4 00000   7337          PAX     0,4             CAR                                  4660
15030 -3 06646 4 15032   7338          TXL     *+2,4,$TRACE-1
15031 -3 06647 4 15121   7339          TXL     APTRK,4,$TRACE  LOOK FOR TRACE
15032 -3 06732 4 15034   7340          TXL     *+2,4,$SUBR-1   LOOK FOR                             4670
15033 -3 06733 4 15046   7341          TXL     R2,4,$SUBR      $SUBR OR                             4680
15034 -3 10156 4 15024   7342          TXL     APSES,4,$EXPR-1 $EXPR                                4690
15035  3 10157 4 15024   7343          TXH     APSES,4,$EXPR                                        4700
                         7344 *                EXPR BRANCH IN APPLY                                 4710
15036 -0734 00 4 00000   7345  R21     PDX     0,4             POINTER TO NEXT WORD AFTER $EXPR     4720
15037  0500 00 4 00000   7346          CLA     0,4             NEXT WORD                            4730
15040  0734 00 4 00000   7347          PAX     0,4             CAR                                  4740
15041 -0754 00 4 00000   7348          PXD     0,4             IS FUNCTION                          4750
15042  0520 00 0 15145   7349          ZET     APTRT           TEST FOR TRACE MODE
15043  0020 00 0 15111   7350          TRA     APTXP           TRACE THIS EXPRESSION
15044 -0534 00 4 15147   7351          LXD     ATS1,4          RESTORE LINK IR                      4760
15045  0020 00 0 14663   7352          TRA     $APPLY          GO TO APPLY                          4770
                         7353 *                R2 THE SUBR BRANCH OF APPLY                          4780
15046 -0734 00 4 00000   7354  R2      PDX     0,4             GET THE TXL INSTRUCTION BT  TAKING   4790
15047  0500 00 4 00000   7355          CLA     0,4             CWR (CADR L))                        4800
15050  0734 00 4 00000   7356          PAX     0,4                                                  4810
15051  0500 00 4 00000   7357          CLA     0,4                                                  4820
15052  0601 00 0 15146   7358          STO     CWADR           TXL INSTRUCTION                      4830
15053  0500 00 0 03350   7359          CLA     ASS1
15054  0601 00 0 03315   7360          STO     CSV
15055  0500 00 0 15152   7361          CLA     AL              GET THE ARGUMENT LIST                4840
15056  0074 00 4 10072   7362          TSX     SPREAD,4        SPREAD IT INTO AC, MQ, ARG3, ETC.    4850
15057  0520 00 0 15145   7363          ZET     APTRT           TEST FOR TRACE MODE
15060  0020 00 0 15131   7364          TRA     APTS8           TRACE THIS SUBROUTINE
15061  0074 00 4 02312   7365          TSX     $SAVE,4
15062 -3 03320 0 02377   7366          TXL     $END2,,$ALIST+2
```

```
15063 -0534 00 4 15153   7367          LXD     A,4
15064 -0634 00 4 03316   7368          SXD     $ALIST,4
15065  0074 00 4 15146   7369          TSX     CWADR,4
15066  0074 00 4 02326   7370          TSX     UNSAVE,4
15067 -0534 00 4 03315   7371          LXD     CSV,4
15070  0020 00 4 00001   7372          TRA     1,4
                         7373 *                                                  4880
15071  0500 00 0 15150   7374 APSAL    CLA     FAS     WHERE TO GO IF NOT FOUND ON PAIR LIST
15072  0601 00 0 03321   7375          STO     $ARG3                           4920
15073  0500 00 0 15151   7376          CLA     F       ATOMIC FUNCTION         4930
15074  0560 00 0 15153   7377          LDQ     A
15075  0074 00 4 10042   7378          TSX     SASSOC,4  SEARCH PAIR LIST FOR LABEL DEFINITION  4940
15076 -0734 00 4 00000   7379          PDX     0,4     POINTER TO ASSOCIATED ITEM  4950
15077  0500 00 4 00000   7380          CLA     0,4                             4960
15100 -0734 00 4 00000   7381          PDX     0,4     POINTER TO ITEM         4970
15101 -0754 00 4 00000   7382          PXD     0,4                             4980
15102  0560 00 0 15153   7383          LDQ     A       RESTORE PAIR LIST       4990
15103 -0600 00 0 03321   7384          STQ     $ARG3                           5000
15104  0560 00 0 15152   7385          LDQ     AL      RESTORE ARGUMENT LIST   5010
15105  0520 00 0 15145   7386          ZET     APTRT   TEST FOR TRACE MODE
15106  0020 00 0 15111   7387          TRA     APTXP   TRACE THIS EXPRESSION
15107 -0534 00 4 15147   7388          LXD     ATS1,4  RESTORE LINK IR         5020
15110  0020 00 0 14663   7389          TRA     $APPLY  GO TO APPLY WITH ITEM ASSOCIATED WITH  5030
                         7390 *                  THE ATOMIC FUNCTION             5040
15111  0074 00 4 02312   7391 APTXP    TSX     $SAVE,4 TRACE EXPR
15112 -3 03317 0 02401   7392          TXL     $END1,,CSV+2
15113  0074 00 4 14663   7393          TSX     $APPLY,4
15114  0020 00 0 15136   7394          TRA     APEXC   FINISH UP
                         7395 *                                                  5050
15115 -0634 00 4 01562   7396  R33     SXD     $ERROR,4                        5060
15116  0500 00 0 15151   7397          CLA     F       PICK UP FUNCTION        5070
15117  0074 00 4 01563   7398          TSX     $ERROR+1,4  GO TO ERROR         5080
15120  542160600254      7399          BCI     1,*A  2*  FUNCTION OBJECT HAS NO DEFINITION
                         7400 *
15121 -0625 00 0 15145   7401  APTRK   STL     APTRT
15122  0601 00 0 15144   7402          STO     APA     SAVE THE AC
15123  0534 00 4 03350   7403          LXA     ASS1,4  ATOM NAME
15124 -0754 00 4 00000   7404          PXD     0,4
15125  0074 00 4 16050   7405          TSX     ARGOF,4 PRINT ARGUMENTS OF
15126  0560 00 0 15152   7406          LDQ     AL      RESTORE MQ AFTER PRINTING
15127  0500 00 0 15144   7407          CLA     APA     RESTORE AC
15130  0020 00 0 15024   7408          TRA     APSES   CONTINUE PROPERTY LIST SEARCH
                         7409 *
15131  0074 00 4 02312   7410 APTSB    TSX     $SAVE,4 TRACE SUBR
15132 -3 03320 0 02377   7411          TXL     $END2,,$ALIST+2
15133 -0534 00 4 15153   7412          LXD     A,4
15134 -0634 00 4 03316   7413          SXD     $ALIST,4
15135  0074 00 4 15146   7414          TSX     CWADR,4
15136  0074 00 4 02326   7415 APEXC    TSX     UNSAVE,4
15137  0131 00 0 00000   7416          XCA             VALUE TO MQ
15140  0534 00 4 03315   7417          LXA     CSV,4
15141 -0754 00 4 00000   7418          PXD     0,4     TO AC
15142 -0534 00 4 03315   7419          LXD     CSV,4
15143  0020 00 0 16104   7420          TRA     VALOF   PRINT VALUE OF
```

26

15171

```
                                7421 *
15144  0 00000 0 00000   7422 APA                                         AC STORAGE
15145  0 00000 0 00000   7423 APTRT                                       TRACE MODE TEST SWITCH
15146  0 00000 0 00000   7424 CWADR                                       TXL INSTRUCTION FOR SUBR                   5130
15147  0 00000 0 00000   7425 ATS1                                        LINK INDEX REGISTER                        5140
15150 -3 00000 0 15115   7426 FAS     TXL      R33,,0                     NOT FOUND ON PAIR LIST SO CALL ERROR       5150
15151  0 00000 0 00000   7427 F                                           ATOMIC FUNCTION GOES HERE                  5160
15152  0 00000 0 00000   7428 AL                                          ARGUMENT LIST                              5170
15153  0 00000 0 00000   7429 A                                           A OR PAIR LIST                             5180
                         7430 *                                                                                      5190
                         7431                                                                                    LC469200
                         7432                                                                                    LC469300
                         7433 A       HED                                                                        LC469400
15154  0100 00 0 15205   7434 EVCON TZE E3                                                                       LC469500
15155 -0634 00 4 03364   7435         SXD ECS1,4                                                                 LC470100
15156  0074 00 4 02312   7436         TSX $SAVE,4                                                                LC470200
15157 -3 03371 0 02373   7437         TXL      $END4,,ECS4+2              SAVE 4 ITEMS
15160 -0600 00 0 03365   7438         STQ ECS2                                                                   LC470400
15161 -0734 00 4 00000   7439         PDX 0,4                                                                    LC470500
15162  0500 00 4 00000   7440 E1      CLA 0,4                                                                    LC470600
15163  0601 00 0 03366   7441         STO ECS3                                                                   LC470700
15164  0734 00 4 00000   7442         PAX 0,4                                                                    LC470800
15165  0500 00 4 00000   7443         CLA 0,4                                                                    LC470900
15166  0601 00 0 03367   7444         STO ECS4                                                                   LC471000
15167  0734 00 4 00000   7445         PAX 0,4                                                                    LC471100
15170 -0754 00 4 00000   7446         PXD 0,4                                                                    LC471200
15171  0074 00 4 15454   7447         TSX $EVAL,4                                                                LC471300
15172  0560 00 0 03365   7448         LDQ ECS2                                                                   LC471400
15173  0100 00 0 15203   7449         TZE E2                                                                     LC471500
15174 -0534 00 4 03367   7450         LXD ECS4,4                                                                 LC471600
15175  0500 00 4 00000   7451         CLA 0,4                                                                    LC471700
15176  0734 00 4 00000   7452         PAX 0,4                                                                    LC471800
15177 -0754 00 4 00000   7453         PXD 0,4                                                                    LC471900
15200  0074 00 4 02326   7454         TSX UNSAVE,4                                                               LC472000
15201 -0534 00 4 03364   7455         LXD ECS1,4                                                                 LC4722S0
15202  0020 00 0 15454   7456         TRA $EVAL                                                                  LC472300
15203 -0534 00 4 03366   7457 E2      LXD ECS3,4                                                                 LC472400
15204  3 00000 4 15162   7458         TXH E1,4,0                                                                 LC472500
15205 -0634 00 4 01562   7459 E3      SXD $ERROR,4                                                               LC469600
15206  0534 00 4 03366   7460         LXA      ECS3,4
15207 -0754 00 4 00000   7461         PXD      0,4                        PRINT LAST CONDITION
15210  0074 00 4 01563   7462         TSX $ERROR+1,4                                                             LC469700
15211  542160600354      7463         BCI      1,*A  3*                   CONDITIONAL UNSATISFIED
                         7464             BASIC LISP FUNCTIONS FOR APPLY                                         LC473400
                         7465                                                                                    LC473500
                         7466                                                                                    LC473600
                         7467 R       HED                                                                        LC473700
                         7468             CAR                                                                    LC473800
                         7469                                                                                    LC473900
15212  0634 00 4 15217   7470 CARP    SXA      CARX,4
15213 -0734 00 4 00000   7471         PDX ,4                                                                     LC474100
15214  0500 00 4 00000   7472         CLA ,4                                                                     LC474200
15215  0734 00 4 00000   7473         PAX ,4                                                                     LC474300
15216 -0754 00 4 00000   7474         PXD ,4                                                                     LC474400
```

```
15217  0774 00 4 00000  CARX   AXT      **,4
15220  0020 00 4 00001         TRA 1,4                                          LC474600
15221  0 00000 0 00000   BFS1                                                   LC474700
                                                                                LC474800
15222  0634 00 4 15226  CDRP   SXA      CDRX,4
15223 -0734 00 4 00000         PDX ,4                                           LC475000
15224  0500 00 4 00000         CLA ,4                                           LC475100
15225 -0320 00 0 00460         ANA BFDM                                         LC475200
15226  0774 00 4 00000  CDRX   AXT      **,4
15227  0020 00 4 00001         TRA 1,4                                          LC475400
                 00460   BFDM  SYN      $DMASK                                      5200
                                                                                LC475600
                                                                                LC475700
15230  0634 00 4 15241  ATOMP  SXA      ATMX,4
15231  0100 00 0 15236         TZE ATP1                                         LC475900
15232 -0734 00 4 00000         PDX ,4                                           LC476000
15233  0500 00 4 00000         CLA ,4                                           LC476100
15234  0734 00 4 00000         PAX ,4                                           LC476200
15235 -3 77776 4 15240         TXL **3,4,-2                                     LC476300
15236  0500 00 0 00442   ATP1  CLA BFQ1                                         LC476400
15237  0020 00 0 15241         TRA *+2                                          LC476500
15240 -0754 00 0 00000         PXD ,0                                           LC476600
15241  0774 00 4 00000  ATMX   AXT      **,4
15242  0020 00 4 00001         TRA 1,4                                          LC476800
                 00442   BFQ1  SYN      $QD1                                        5210
                                                                                LC477000
15243  0100 00 0 15246   NULLP TZE *+3                                          LC477100
15244 -0754 00 0 00000         PXD ,0                                           LC477200
15245  0020 00 4 00001         TRA 1,4                                          LC477300
15246  0500 00 0 00442         CLA BFQ1                                         LC477400
15247  0020 00 4 00001         TRA 1,4                                          LC477500
                                                                                LC477600
                                                                                LC477800
                                                                                LC477900
                                   LAMBDA FOR FUNCTIONAL ARGUMENTS              LC478000
                                                                                LC478100
15250 -0634 00 4 15221   LAMP  SXD BFS1,4                                       LC478200
15251  0601 00 0 03415         STO BFS2                 L                       LC478300
15252  0131 00 0 00000         XCA
15253  0560 00 0 00370         LDQ BFZRO                                        LC478600
15254  0074 00 4 03730         TSX $CONS,4              CONS(A,0)               LC478700
15255  0131 00 0 00000         XCA
15256  0500 00 0 03415         CLA BFS2                                         LC478900
15257  0074 00 4 07541         TSX APPEND,4                                     LC479100
15260  0131 00 0 00000         XCA
15261  0500 00 0 00500         CLA BFFAG                                        LC479400
15262 -0534 00 4 15221         LXD BFS1,4                                       LC479500
15263  0020 00 0 03730         TRA $CONS                LIST(FUNARG,L,A)        LC479600
                 00500   BFFAG SYN      FNARGD                                  LC479700
                 00370   BFZRO SYN      $ZERO                                   LC480000
                                                                                LC480100
                                   LABEL FSUBR                                  LC480200
                                                                                LC480300
15264 -0634 00 4 15221   LABP  SXD BFS1,4                                       LC480400
```

```
15265 -0600 00 0 03416  7529        STO BFS3             A                           LC480500
15266 -0734 00 4 00000  7530        PDX ,4               L                           LC480600
15267  0500 00 4 00000  7531        CLA ,4                                           LC480700
15270  0601 00 0 03415  7532        STO BFS2             CWR(L)                      LC480800
15271 -0734 00 4 00000  7533        PDX ,4               CDR(L)                      LC480900
15272  0500 00 4 00000  7534        CLA ,4                                           LC481000
15273  0734 00 4 00000  7535        PAX ,4               CADR(L)                     LC481100
15274 -0754 00 4 00000  7536        PXD ,4                                           LC481200
15275  0601 00 0 03414  7537        STO BFS4                                         LC481300
15276  0131 00 0 00000  7538        XCA                                                  5220
15277  0534 00 4 03415  7539        LXA BFS2,4           CAR(L)                      LC481600
15300  0131 00 0 00000  7540        XCA                                                  5230
15301 -0754 00 4 00000  7541        PXD ,4                                           LC482000
15302  0074 00 4 03730  7542        TSX $CONS,4          LIST(CAR(L),CADR(L))        LC482100
15303  0560 00 0 03416  7543        LDQ BFS3                                         LC482200
15304  0074 00 4 03730  7544        TSX $CONS,4          CONS(LIST,A)                LC482300
15305  0131 00 0 00000  7545        XCA                                              LC482400
15306  0500 00 0 03414  7546        CLA BFS4             CADR(L)                     LC482600
15307 -0534 00 4 15221  7547        LXD BFS1,4                                       LC482700
15310  0020 00 0 15454  7548        TRA $EVAL                                        LC482800
                        7549                                                         LC482900
                        7550                                                         LC483100
                        7551                                                         LC483200
                        7552               SETC                                      LC483300
                        7553                                                         LC483400
15311 -0634 00 4 03461  7554  SETQP SXD REPS1,4                                      LC483500
15312  0074 00 4 02312  7555        TSX $SAVE,4                                      LC483600
15313 -3 03464 0 02377  7556        TXL     $END2,,REPV+2
15314 -0734 00 4 00000  7557        PDX ,4               L                           LC483800
15315  0500 00 4 00000  7558        CLA ,4                                           LC483900
15316  0734 00 4 00000  7559        PAX ,4               CAR(L)                      LC484000
15317 -0634 00 4 03462  7560        SXD REPV,4                                       LC484100
15320 -0734 00 4 00000  7561        PDX ,4               CDR(L)                      LC484200
15321  0500 00 4 00000  7562        CLA ,4                                           LC484300
15322  0734 00 4 00000  7563        PAX ,4               CADR(L)                     LC484400
15323 -0754 00 4 00000  7564        PXD ,4                                           LC484500
15324  0074 00 4 15454  7565        TSX $EVAL,4          EVAL(CADR(L),A)             LC484600
15325  0601 00 0 03463  7566        STO REPT1                                        LC484700
15326  0500 00 0 15341  7567        CLA REPP1                                        LC484800
15327  0601 00 0 03321  7568        STO $ARG3                                        LC484900
15330  0560 00 0 03447  7569        LDQ PRGVAR                                       LC485000
15331  0500 00 0 03462  7570        CLA REPV                                         LC485100
15332  0074 00 4 10042  7571        TSX SASSOC,4         SASSOC(CAR(L),PV,ERROR)     LC485200
15333 -0734 00 4 00000  7572        PDX ,4                                           LC485300
15334  0500 00 0 03463  7573        CLA REPT1                                        LC485400
15335  0622 00 4 00000  7574        STD     0,4          REPLACE DECREMENT               5240
15336  0074 00 4 02326  7575        TSX UNSAVE,4                                     LC485700
15337 -0534 00 4 03461  7576        LXD REPS1,4                                      LC485900
15340  0020 00 4 00001  7577        TRA 1,4                                          LC486000
                        7578                                                         LC486100
15341 -3 00000 0 15342  7579  REPP1 TXL *+1,,0                                       LC486200
15342 -0634 00 4 01562  7580        SXD $ERROR,4                                     LC486300
15343  0500 00 0 03462  7581        CLA REPV                                         LC486400
15344  0074 00 4 01563  7582        TSX $ERROR+1,4                                   LC486500
```

```
15345  542160600454          7583          BCI     1,*A  4*          SETQ GIVEN ON NON-EXISTENT VARIBLE
                             7584                                                                    LC487000
                             7585                                                                    LC489800
                             7586            SET                                                     LC489900
                             7587                                                                    LC490000
15346 -0634 00 4 15221       7588  SETP      SXD BFS1,4                                              LC490100
15347  0601 00 0 15367       7589            STQ BFS5                                                LC490200
15350 -0600 00 0 03415       7590            STQ BFS2                                                LC490300
15351  0560 00 0 15362       7591            LDQ SETP1                                               LC490400
15352 -0600 00 0 03321       7592            STQ $ARG3                                               LC490500
15353  0560 00 0 03447       7593            LDQ PRGVAR                                              LC490600
15354  0074 00 4 10042       7594            TSX SASSOC,4                                            LC490700
15355 -0734 00 4 00000       7595            PDX ,4                                                  LC490800
15356  0500 00 0 03415       7596            CLA BFS2                                                LC490900
15357  0622 00 4 00000       7597            STD 0,4                                                 LC491000
15360 -0534 00 4 15221       7598            LXD BFS1,4                                              LC491200
15361  0020 00 4 00001       7599            TRA 1,4                                                 LC491300
                             7600                                                                    LC491400
15362 -3 00000 0 15363       7601  SETP1     TXL *+1,,0                                              LC491500
15363 -0634 00 4 01562       7602            SXD $ERROR,4                                            LC491600
15364  0500 00 0 15367       7603            CLA BFS5                                                LC491700
15365  0074 00 4 01563       7604            TSX $ERROR+1,4                                          LC491800
15366  542160600554          7605            BCI     1,*A  5*          SET  GIVEN ON NON-EXISTENT VARIBLE
15367  0 00000 0 00000       7606 BFS5
                             7607                                                                    LC492300
                             7608 *                AND SPECIAL FORM                                  LC494200
15370 -0100 00 0 15373       7609  EVA8      TNZ EVA6                                                LC494300
15371  0500 00 0 00442       7610            CLA EVCT                                                LC494400
15372  0020 00 4 00001       7611            TRA 1,4                                                 LC494500
15373 -0634 00 4 03343       7612  EVA6      SXD EVA1,4                                              LC494600
15374  0074 00 4 02312       7613            TSX $SAVE,4                                             LC494700
15375 -3 03347 0 02375       7614            TXL     $END3,,EVA9+2     SAVE 3 ITEMS
15376 -0734 00 4 00000       7615            PDX ,4                                                  LC494900
15377  0500 00 4 00000       7616  EVA4      CLA ,4                                                  LC495000
15400  0601 00 0 03344       7617            STQ EVA2                                                LC495100
15401  0734 00 4 00000       7618            PAX ,4                                                  LC495200
15402 -0754 00 4 00000       7619            PXD ,4                                                  LC495300
15403 -0600 00 0 03345       7620            STQ EVA9                                                LC495400
15404  0074 00 4 15454       7621            TSX $EVAL,4                                             LC495500
15405  0560 00 0 03345       7622            LDQ EVA9                                                LC495600
15406 -0100 00 0 15412       7623            TNZ EVA3                                                LC495800
15407  0074 00 4 02326       7624  EVA5      TSX UNSAVE,4                                            LC496000
15410 -0534 00 4 03343       7625            LXD EVA1,4                                              LC496200
15411  0020 00 4 00001       7626            TRA 1,4                                                 LC496300
15412 -0534 00 4 03344       7627  EVA3      LXD EVA2,4                                              LC496400
15413  3 00000 4 15377       7628            TXH EVA4,4,0                                            LC496500
15414  0500 00 0 00442       7629            CLA EVCT                                                LC496600
15415  0020 00 0 15407       7630            TRA EVA5                                                LC496700
                             7631 *                OR SPECIAL FORM                                   LC497100
15416 -0100 00 0 15421       7632  EVR8      TNZ EVR6                                                LC497200
15417  0500 00 0 00370       7633            CLA EVCF                                                LC497300
15420  0020 00 4 00001       7634            TRA 1,4                                                 LC497400
15421 -0634 00 4 03435       7635  EVR6      SXD EVR1,4                                              LC497500
15422  0074 00 4 02312       7636            TSX $SAVE,4                                             LC497600
```

```
15423 -3 03441 0 02375  7637          TXL     $END3,,EVR9+2      SAVE 3 ITEMS
15424 -0734 00 4 00000  7638          PDX ,4                                    LC497800
15425  0500 00 4 00000  7639  EVR4    CLA ,4                                    LC497900
15426  0601 00 0 03436  7640          STO EVR2                                  LC498000
15427  0734 00 4 00000  7641          PAX ,4                                    LC498100
15430 -0754 00 4 00000  7642          PXD ,4                                    LC498200
15431 -0600 00 0 03437  7643          STQ EVR9                                  LC498300
15432  0074 00 4 15454  7644          TSX $EVAL,4                               LC498400
15433  0560 00 0 03437  7645          LDQ EVR9                                  LC498500
15434  0100 00 0 15441  7646          TZE EVR3                                  LC498700
15435  0500 00 0 00442  7647          CLA EVCT                                  LC498800
15436  0074 00 4 02326  7648  EVR5    TSX UNSAVE,4                              LC498900
15437 -0534 00 4 03435  7649          LXD EVR1,4                                LC499100
15440  0020 00 4 00001  7650          TRA 1,4                                   LC499200
15441 -0534 00 4 03436  7651  EVR3    LXD EVR2,4                                LC499300
15442  3 00000 4 15425  7652          TXH EVR4,4,0                              LC499400
15443  0500 00 0 00370  7653          CLA EVCF                                  LC499500
15444  0020 00 0 15436  7654          TRA EVR5                                  LC499600
                00442    7655  EVCT    SYN     $QD1                              5250
                00370    7656  EVCF    SYN     $ZERO                         LC500100
                         7657                                                  LC500200
15445 -0600 00 0 15221  7658  EQP     STQ BFS1                                  LC500300
15446  0402 00 0 15221  7659          SUB BFS1                                  LC500400
15447 -0100 00 0 15452  7660          TNZ *+3                                   LC500500
15450  0500 00 0 00442  7661          CLA BFQ1                                  LC500600
15451  0020 00 4 00001  7662          TRA 1,4                                   LC500700
15452 -0754 00 0 00000  7663          PXD ,0                                    LC500800
15453  0020 00 4 00001  7664          TRA 1,4                                   LC500900
                         7665                                                  LC501000
                         7666              EVAL(E,A)  5/6/59                   LC501100
                         7667                                                  LC501200
                         7668 A       HED                                      LC501300
15454 -0634 00 4 03372  7669  EVAL    SXD EVS1,4                                LC502000
15455  0100 00 4 00001  7670          TZE 1,4                                   LC502100
15456  0601 00 0 16121  7671          STO EVTE                  E               LC502200
15457 -0734 00 4 00000  7672          PDX ,4                                    LC502300
15460  0500 00 4 00000  7673          CLA ,4                                    LC502400
15461  0625 00 0 16126  7674          STT     EVLNS             SEE IF A NUMBER
15462  0520 00 0 16126  7675          ZET     EVLNS             SKIP IF NOT A NUMBER
15463  0020 00 0 15542  7676          TRA     EVIN              IS A NUMBER(CONSTANT)
15464  0734 00 4 00000  7677          PAX ,4                    CAR(E)          LC502500
15465  3 77776 4 15545  7678          TXH EVP1,4,-2             = - 1           LC502600
15466 -0634 00 4 16122  7679          SXD EVTAE,4               CAR(E)          LC502700
15467  0634 00 4 03372  7680          SXA     EVS1,4            SAVE FUNCTION WITH INDEX REGISTER
15470  0622 00 0 03411  7681          STD EVTDE                 CDR(E)          LC502800
15471  0500 00 4 00000  7682          CLA ,4                                    LC502900
15472  0625 00 0 16126  7683          STT     EVLNS             SEE IF A NUMBER
15473  0520 00 0 16126  7684          ZET     EVLNS             TEST FOR A NUNBER
15474  0020 00 0 16007  7685          TRA     EVP26             UNDEFINED FUNCTION IF A NUMBER
15475  0734 00 4 00000  7686          PAX ,4                    CAAR(E)         LC503000
15476 -3 77776 4 15756  7687          TXL     EVP27,4,-2        GO IF CAR(E) NOT AN ATOM
                         7688 *
                         7689 *               CAAR(E) = -1
                         7690 *
```

```
15477  0634 00 0 03375   7691        SXA     EVTRK,0                 ZERO THE ADDRESS
15500 -0634 00 0 03375   7692        SXD     EVTRK,0                 ZERO DECREMENT
15501 -0734 00 4 00000   7693  EVP2  PDX ,4                          CDAR(E)                          LC510100
15502 -3 00000 4 15642   7694        TXL EVP25,4,0                   NULL(J)                          LC510200
15503  0500 00 4 00000   7695        CLA ,4                                                           LC510300
15504  0734 00 4 00000   7696        PAX ,4                          CAR(J)                           LC510400
15505  3 06647 4 15507   7697        TXH     *+2,4,$TRACE
15506  3 06646 4 15540   7698        TXH     EVTRT,4,$TRACE-1        =TRACE
15507  3 06733 4 15511   7699        TXH *+2,4,$SUBR                                                  LC510500
15510  3 06732 4 15756   7700        TXH     EVP27,4,$SUBR-1         OF IF A SUBR
15511  3 10103 4 15513   7701        TXH *+2,4,$FSUBR                                                 LC510700
15512  3 10102 4 15613   7702        TXH EVP22,4,$FSUBR-1            =FSUBR                           LC510800
15513  3 10157 4 15515   7703        TXH *+2,4,$EXPR                                                  LC510900
15514  3 10156 4 15634   7704        TXH EVP23,4,$EXPR-1             =EXPR                            LC511000
15515  3 10142 4 15501   7705        TXH EVP2,4,$FEXPR                                                LC511100
15516 -3 10141 4 15501   7706        TXL EVP2,4,$FEXPR-1             /= FEXPR                         LC511200
15517  0622 00 0 03412   7707        STD EVD2                        CDR(J)                           LC511300
15520 -0600 00 0 03321   7708        STQ $ARG3                       A                                LC511400
15521  0500 00 0 03321   7709        CLA $ARG3                                                        LC511500
15522  0560 00 0 00370   7710        LDQ EVZRO                       0                                LC511600
15523  0074 00 4 03730   7711        TSX $CONS,4                     CONS(A,0)                        LC511700
15524  0131 00 0 00000   7712        XCA
15525  0500 00 0 03411   7713        CLA EVTCE                                                        LC512000
15526  0074 00 4 03730   7714        TSX $CONS,4                     LIST(CDR(E),A)                   LC512100
15527  0131 00 0 00000   7715        XCA
15530 -0534 00 4 03412   7716        LXD EVD2,4                      CDR(J)                           LC512400
15531  0500 00 4 00000   7717        CLA ,4                                                           LC512500
15532  0734 00 4 00000   7718        PAX ,4                          CADR(J)                          LC512600
15533 -0754 00 4 00000   7719        PXD ,4                                                           LC512700
15534  0520 00 0 03375   7720        ZET     EVTRK                   TEST FOR TRACE MODE
15535  0020 00 0 16031   7721        TRA     EVTXP
15536 -0534 00 4 03372   7722        LXD EVS1,4                                                       LC512800
15537  0020 00 0 14663   7723        TRA $APPLY                      APPLY(CADR(J),LIST(CDR(E),A),A)  LC512900
                         7724 *
15540 -0625 00 0 03375   7725  EVTRT STL     EVTRK                   SET THE TRACE SWITCH
15541  0020 00 0 15501   7726        TRA     EVP2                    GO SEARCH MORE
                         7727 *
                         7728 *
                         7729 *                 CAR(E) = -1
                         7730 *
15542  0500 00 0 16121   7731  EV1N  CLA     EVTE                    GET THE NUMBER
15543 -0534 00 4 03372   7732        LXD     EVS1,4                  RESTORE LINK INDEX
15544  0020 00 4 00001   7733        TRA     1,4
                         7734 *
15545 -0734 00 4 00000   7735  EVP1  PDX ,4                          J                                LC505100
15546 -3 00000 4 15563   7736        TXL EVP11,4,0                   = 0                              LC505200
15547  0500 00 4 00000   7737        CLA ,4                                                           LC505300
15550  0734 00 4 00000   7738        PAX ,4                          CAR(J)                           LC505400
15551  3 10742 4 15545   7739        TXH EVP1,4,$APVAL               = APVAL                          LC505700
15552 -3 10741 4 15545   7740        TXL EVP1,4,$APVAL-1                                              LC505800
15553 -0734 00 4 00000   7741  EVP13 PDX ,4                          CDR(J)                           LC505900
15554  0500 00 4 00000   7742        CLA ,4                                                           LC506000
15555  0734 00 4 00000   7743        PAX ,4                          CADR(J)                          LC506100
15556  0500 00 4 00000   7744        CLA ,4                                                           LC506200
```

```
15557  0734 00 4 00000   7745          PAX ,4                        CAADR(J)                     LC506300
15560 -0754 00 4 00000   7746          PXD ,4                                                     LC506400
15561 -0534 00 4 03372   7747          LXD EVS1,4                                                 LC506500
15562  0020 00 4 00001   7748          TRA 1,4                                                    LC506600
                         7749 *
15563 -0600 00 0 16123   7750  EVP11 STQ EVTA                        A                            LC506800
15564  0500 00 0 16121   7751          CLA EVTE                      E                            LC506900
15565  0622 00 0 15600   7752          STD EVI1                                                   LC507000
15566  0402 00 0 00442   7753          SUB EVQC1                                                  LC507100
15567  0622 00 0 15601   7754          STD EVI2                                                   LC507200
15570 -0634 00 2 16125   7755          SXD EVD1,2                                                 LC507300
15571 -0534 00 4 16123   7756          LXD EVTA,4                                                 LC507400
15572 -3 00000 4 15607   7757  EVL1  TXL EVP12,4,0                   NULL(J)                      LC507500
15573  0500 00 4 00000   7758          CLA ,4                                                     LC507600
15574  0734 00 2 00000   7759          PAX ,2                        CAR(J)                       LC507700
15575 -0734 00 4 00000   7760          PDX ,4                        CDR(J)                       LC507800
15576  0500 00 2 00000   7761          CLA ,2                                                     LC507900
15577  0734 00 2 00000   7762          PAX ,2                        CAAR(J)                      LC508000
15600  3 00000 2 15572   7763  EVI1  TXH EVL1,2,**                   CAAR(J) = E                  LC508100
15601 -3 00000 2 15572   7764  EVI2  TXL EVL1,2,**                                                LC508200
15602 -0734 00 4 00000   7765          PDX ,4                        CDAR(J)                      LC508300
15603 -0754 00 4 00000   7766          PXD ,4                                                     LC508600
15604 -0534 00 2 16125   7767          LXD EVD1,2                                                 LC508700
15605 -0534 00 4 03372   7768          LXD EVS1,4                                                 LC508800
15606  0020 00 4 00001   7769          TRA 1,4                                                    LC508900
                         7770 *
15607 -0634 00 4 01562   7771  EVP12 SXD $ERROR,4                                                 LC509100
15610  0500 00 0 16121   7772          CLA EVTE                                                   LC509200
15611  0074 00 4 01563   7773          TSX $ERROR+1,4                                             LC509300
15612  542160601054      7774          BCI      1,*A  8*           UNBOUND VARIBLE MENTIONED -EVAL-
                         7775 *
15613 -0734 00 4 00000   7776  EVP22 PDX ,4                        CDR(J)      FSUBR            LC516300
15614  0500 00 4 00000   7777          CLA ,4                                                     LC516400
15615  0734 00 4 00000   7778          PAX ,4                        CADR(J)                      LC516500
15616  0500 00 4 00000   7779          CLA ,4                        CWADR(J)                     LC516600
15617  0601 00 0 16124   7780          STO EVT1                                                   LC516700
15620  0500 00 0 03372   7781          CLA      EVS1                 ATOM AND IR4 FOR SAVING $ALIST
15621  0601 00 0 03315   7782          STO      CSV
15622  0074 00 4 02312   7783          TSX      $SAVE,4
15623 -3 03320 0 02377   7784          TXL      $END2,,$ALIST+2
15624 -0600 00 0 03316   7785          STQ      $ALIST
15625  0520 00 0 03375   7786          ZET      EVTRK                TEST WHETERT TO TRACT
15626  0020 00 0 16014   7787          TRA      EVTFS                YES,TRACE FSUBR
15627  0500 00 0 03411   7788          CLA      EVTDE                GET BACK ARGUMENTS
15630  0074 00 4 16124   7789          TSX      EVT1,4
15631  0074 00 4 02326   7790          TSX      UNSAVE,4
15632 -0534 00 4 03315   7791          LXD      CSV,4
15633  0020 00 4 00001   7792          TRA      1,4
                         7793 *
                         7794 *                 EVP23 THE EXPR BRANCH FOR EVAL
                         7795 *
15634 -0734 00 4 00000   7796  EVP23 PDX      0,4                  REST OF PROPERTY LIST
15635  0500 00 4 00000   7797          CLA      0,4                  GET THE EXPR
15636  0734 00 4 00000   7798          PAX      0,4
```

```
15637 -0634 00 4 16122   7799          SXD     EVTAE,4          SAVE IN TEMPORARY STORAGE
15640 -0534 00 4 02317   7800          LXD     $CPPI,4          PUSH DOWN COUNTER
15641  1 77773 4 15665   7801          TXI     EVP28,4,-5       SAVE 5 ITEMS
                         7802 *
15642  0500 00 0 16122   7803  EVP25   CLA     EVTAE            CAR(E)                          LC517200
15643  0622 00 0 15657   7804          STD     EVI3             TXH                             LC517300
15644  0402 00 0 00442   7805          SUB     EVQD1                                            LC517400
15645  0622 00 0 15660   7806          STD     EVI4             TXL                             LC517500
15646 -0634 00 2 16124   7807          SXD     EVT1,2                                           LC517600
15647 -0600 00 0 16125   7808          STQ     EVD1                                             LC517700
15650 -0534 00 4 16125   7809          LXD     EVD1,4           A                               LC517800
15651 -3 00000 4 16007   7810  EVL2    TXL     EVP26,4,0        NULL(J)                         LC517900
15652  0500 00 4 00000   7811          CLA     ,4                                               LC518000
15653 -0734 00 4 00000   7812          PDX     ,4               CDR(J)                          LC518100
15654  0734 00 2 00000   7813          PAX     ,2               CAR(J)                          LC518200
15655  0500 00 2 00000   7814          CLA     ,2                                               LC518300
15656  0734 00 2 00000   7815          PAX     ,2               CAAR(J)                         LC518400
15657  3 00000 2 15651   7816  EVI3    TXH     EVL2,2,**        /= CAR(E)                       LC518500
15660 -3 00000 2 15651   7817  EVI4    TXL     EVL2,2,**                                        LC518600
15661 -0534 00 2 16124   7818          LXD     EVT1,2                                           LC518700
15662  0622 00 0 16122   7819          STD     EVTAE            SAVE FUNCTION
15663 -0534 00 4 02317   7820  EV27    LXD     $CPPI,4
15664  1 77773 4 15665   7821          TXI     **+1,4,-5        SAVE TOTAL OF 5 ITEMS
15665  0522 00 0 02414   7822  EVP28   XEC     ENDPDL           TEST FOR OUT OF PUSH DOWN LIST
15666 -0634 00 4 02317   7823          SXD     $CPPI,4                                          LC519400
15667  0500 00 0 03372   7824          CLA     EVS1                                             LC519900
15670  0601 00 4 77773   7825          STO     -5,4
15671  0500 00 0 03373   7826          CLA     EVSE                                             LC519500
15672  0601 00 4 77774   7827          STO     -4,4
15673  0500 00 0 03374   7828          CLA     EVSA                                             LC519700
15674  0601 00 4 77775   7829          STO     -3,4                                             LC519600
15675  0500 00 0 03375   7830          CLA     EVTRK
15676  0601 00 4 77776   7831          STO     -2,4                                             LC519800
15677  0500 00 0 16127   7832          CLA     EVCM
15700  0601 00 4 77777   7833          STO     -1,4                                             LC520000
15701  0500 00 0 16122   7834          CLA     EVTAE            GET THE FUNCTION
15702  0622 00 0 03373   7835          STD     EVSE                                               6100
15703 -0600 00 0 03374   7836          STQ     EVSA             A                               LC520500
15704  0500 00 0 03411   7837          CLA     EVTDE            CDR(E)                          LC520600
15705  0560 00 0 15763   7838          LDQ     ELP1         FUNCTIONAL ARGUMENT                 LC526500
15706  0074 00 4 04214   7839          TSX     MAPLIS,4     MAPLIST(L,EVAL(CAR(L),A))           LC526600
15707  0601 00 0 16124   7840          STO     EVT1                                             LC520800
15710  0500 00 0 03374   7841          CLA     EVSA                                             LC520900
15711  0601 00 0 03321   7842          STO     $ARG3                                            LC521000
15712  0500 00 0 03373   7843          CLA     EVSE                                             LC521100
15713 -0534 00 4 02317   7844          LXD     $CPPI,4          START OPEN UNSAVE               LC521200
15714  0560 00 4 77773   7845          LDQ     -5,4
15715 -0600 00 0 03372   7846          STQ     EVS1                                             LC521800
15716  0560 00 4 77774   7847          LDQ     -4,4
15717 -0600 00 0 03373   7848          STQ     EVSE                                             LC521400
15720  0560 00 4 77775   7849          LDQ     -3,4                                             LC521300
15721 -0600 00 0 03374   7850          STQ     EVSA                                             LC521600
15722  0560 00 4 77776   7851          LDQ     -2,4                                             LC521500
15723 -0600 00 0 03375   7852          STQ     EVTRK
```

```
15724  1 00005 4 15725   7853          TXI   *+1,4,5
15725 -0634 00 4 02317   7854          SXD   $CPPI,4                                          LC522000
15726  0560 00 0 16124   7855          LDQ   EVT1                                             LC522100
15727  0520 00 0 03375   7856          ZET   EVTRK                  TEST RACE SWITCH
15730  0020 00 0 15733   7857          TRA   EVDCO                 DECODE EVTRK
15731 -0534 00 4 03372   7858 EVAPG   LXD   EVS1,4
15732  0020 00 0 14663   7859          TRA $APPLY                 APPLY(CADAR(J),EVLIS(CDR(E),A),A)   LC522300
                         7860 *
                         7861 *              IF CAR E IS A SUBR, THE POINTER TO THE TXL INSTRUCTION
                         7862 *              IS SAVED IN THE DECREMENT OF EVTRK.  THE ADDRESS OF
                         7863 *              EVTRK IS THE TRACE SWITCH.
                         7864 *
15733 -0534 00 4 03375   7865 EVDCO  LXD   EVTRK,4                LOOK FOR SUBR POINTER
15734 -3 00000 4 16031   7866          TXL   EVTXP,4,0            THERE ISNT ANY. SO GO AND TRACE EXPR
15735  0534 00 4 03375   7867          LXA   EVTRK,4              SEE IF THE SUBR IS TRACED
15736  3 00000 4 15731   7868          TXH   EVAPG,4,0            YES IT IS. LET APPLY HANDLE IT
15737 -0534 00 4 03375   7869          LXD   EVTRK,4              GET THE TXL SUBR WORD
15740  0500 00 4 00000   7870          CLA   0,4
15741  0601 00 0 16124   7871          STO   EVT1                 READY TO EXECUTE
15742  0500 00 0 03372   7872          CLA   EVS1                 GET RETURN INDEX AND ATOM NAME
15743  0601 00 0 03315   7873          STO   CSV                  AND SAVE THEM ALONG WITH $ALIST
15744  0074 00 4 02312   7874          TSX   $SAVE,4
15745 -3 03320 0 02377   7875          TXL   $END2,,$ALIST+2
15746  0500 00 0 03321   7876          CLA   $ARG3
15747  0601 00 0 03316   7877          STO   $ALIST               POST CURRENT ALIST
15750  0131 00 0 00000   7878          XCA                        ARGUMENT LIST TO AC
15751  0074 00 4 10072   7879          TSX   $SPREAD,4            SMEAR IT OUT
15752  0074 00 4 16124   7880          TSX   EVT1,4               EXECUTE SUBR
15753  0074 00 4 02326   7881          TSX   UNSAVE,4             RESTORE ALIST AND IX
15754 -0534 00 4 03315   7882          LXD   CSV,4
15755  0020 00 4 00001   7883          TRA   1,4                  AND RETURN
                         7884 *
15756 -0734 00 4 00000   7885 EVP27   PDX   0,4                  SUBR BRANCH
15757  0500 00 4 00000   7886          CLA   0,4
15760  0734 00 4 00000   7887          PAX   0,4                  POINTER TO TXL WORD
15761 -0634 00 4 03375   7888          SXD   EVTRK,4              TO SAVE POSITION
15762  0020 00 0 15663   7889          TRA   EV27                 EVALUATE ARGUMENTS
                         7890 *
15763 -3 00000 0 15764   7891  ELP1   TXL *+1,,0                                            LC527900
15764  0634 00 4 15772   7892          SXA   ELT1,4               SAVE LINK IR
15765 -0734 00 4 00000   7893          PDX ,4                     J                        LC528100
15766  0500 00 4 00000   7894          CLA ,4                                              LC528200
15767  0734 00 4 00000   7895          PAX ,4                                              LC528300
15770 -0754 00 4 00000   7896          PXD ,4                     CAR(J)                   LC528400
15771  0560 00 0 03374   7897          LDQ   EVSA                 GET CURRENT A LIST
15772  0774 00 4 00000   7898  ELT1   AXT   **,4                 RESTORE LINK IR
15773  0020 00 0 15454   7899          TRA $EVAL                                           LC528700
                         7900 *
                         7901 *       EVLIS
                         7902 *
15774 -0634 00 4 03372   7903  EVLIS  SXD   EVS1,4               SAVE LINK IR
15775  0774 00 4 10167   7904          AXT   EVLISL,4             ATOM EVLIS
15776  0634 00 4 03372   7905          SXA   EVS1,4               FOR BACKTRACE
15777  0074 00 4 02312   7906          TSX   $SAVE,4              SAVE EVAL STORAGE
```

```
16000 -3 03376 0 02375   7907          TXL     $END3,,EVSA+2
16001 -0600 00 0 03374   7908          STQ     EVSA
16002  0560 00 0 15763   7909          LDQ     ELP1
16003  0074 00 4 04214   7910          TSX     MAPLIS,4
16004  0074 00 4 02326   7911          TSX     UNSAVE,4
16005 -0534 00 4 03372   7912          LXD     EVS1,4
16006  0020 00 4 00001   7913          TRA     1,4
                         7914 *
16007 -0634 00 4 01562   7915  EVP26   SXD $ERROR,4                                    LC522500
16010 -0534 00 2 16124   7916          LXD     EVT1,2                                  LC522600
16011  0500 00 0 16121   7917          CLA EVTE                                        LC522700
16012  0074 00 4 01563   7918          TSX $ERROR+1,4                                  LC522800
16013  542160601154      7919          BCI     1,*A  9*        FUNCTION OBJECT HAS NO DEFINITION EVAL
                         7920 *
16014  0734 00 4 00000   7921 EVTFS    PAX     0,4             ATOM NAME
16015 -0754 00 4 00000   7922          PXD     0,4             TO PRINT POSITION
16016  0560 00 0 03411   7923          LDQ     EVTDE
16017  0074 00 4 16050   7924          TSX     ARGOF,4         PRINT ARGUMENT MESSAGE
16020  0560 00 0 03316   7925          LDQ     $ALIST          RESTORE ALIST AFTER ARGOF
16021  0500 00 0 03411   7926          CLA     EVTDE           AND ARGUMENT LIST
16022  0074 00 4 16124   7927          TSX     EVT1,4          DO THE FSUBR
16023  0074 00 4 02326   7928          TSX     UNSAVE,4        RESTORE THE IR
16024  0131 00 0 00000   7929          XCA                     VALUE TO MQ
16025  0534 00 4 03315   7930          LXA     CSV,4           GET ATOM NAME FOR VALUE MESSAGE
16026 -0754 00 4 00000   7931          PXD     0,4             TO AC
16027 -0534 00 4 03315   7932          LXD     CSV,4           AND RETURN IR4
16030  0020 00 0 16104   7933          TRA     VALOF           PRINT VALUE MESSAGE
                         7934 *
16031  0622 00 0 03411   7935 EVTXP    STD     EVTDE           SAVE LAMBDA EXPRESSION
16032  0534 00 4 03372   7936          LXA     EVS1,4          GET ATOMIC FUNCTION
16033 -0754 00 4 00000   7937          PXD     0,4             TO PRINT POSITION
16034  0074 00 4 16050   7938          TSX     ARGOF,4         PRINT ARGUMENT MESSAGE
16035  0074 00 4 02312   7939          TSX     $SAVE,4         SAVE THERETURN IX
16036 -3 03374 0 02401   7940          TXL     $END1,,EVS1+2
16037  0560 00 0 16124   7941          LDQ     EVT1            RESTORE THE LIST OF ARGUMENTS
16040  0500 00 0 03411   7942          CLA     EVTDE           AND THE LAMBDA EXPRESSION
16041  0074 00 4 14663   7943          TSX     $APPLY,4        APPLY THE FUNCTION TO ITS ARGS
16042  0074 00 4 02326   7944          TSX     UNSAVE,4
16043  0131 00 0 00000   7945          XCA                     PUT VALUE IN MQ
16044  0534 00 4 03372   7946          LXA     EVS1,4          NAME OF ROUTINE TRACED
16045 -0754 00 4 00000   7947          PXD     0,4             PUT IN AC
16046 -0534 00 4 03372   7948          LXD     EVS1,4          LINK IR
16047  0020 00 0 16104   7949          TRA     VALOF           PRINT VALUE OF STATEMENT
                         7950 *
                         7951 *       ARGOF   PRINTS ARGUMENTS OF  NAME FOLLOWED BY THE LIST OF ARGUMEN
                         7952 *
16050  0634 00 4 16074   7953  ARGOF   SXA     PRX,4           SAVE INDEX REGISTERS
16051  0634 00 2 16073   7954          SXA     PRY,2
16052  0601 00 0 16076   7955          STO     AGA             SAVE ATOM NAME
16053 -0600 00 0 16077   7956          STQ     AGQ             SAVE LIST OF ARGUMENTS
16054  0074 00 4 05214   7957          TSX     TERPRI,4        PRINT A BLANK LINE
16055  0774 00 2 00003   7958          AXT     3,2             PRINT2 OUT 3 WORDS
16056  0500 00 2 16103   7959          CLA     AGM+3,2
16057  0074 00 4 05110   7960          TSX     $PRIN2,4
```

```
16060  2 00001 2 16056  7961          TIX    *-2,2,1          LOOP
16061  0500 00 0 16076  7962          CLA    AGA
16062  0074 00 4 04604  7963          TSX    $PRINT,4         PRINT OUT THE LINE
16063 -0534 00 2 16077  7964          LXD    AGQ,2            START THE PRINLIS
16064 -3 00000 2 16073  7965  PLL     TXL    PRY,2,0          EXIT IF END OF LIST
16065  0500 00 2 00000  7966          CLA    0,2              NEXT ITEM
16066 -0734 00 2 00000  7967          PDX    0,2              CDR OF LIST
16067  0734 00 4 00000  7968          PAX    0,4              CAR
16070 -0754 00 4 00000  7969          PXD    0,4
16071  0074 00 4 04604  7970          TSX    $PRINT,4
16072  0020 00 0 16064  7971          TRA    PLL              GET NEXT ITEM
16073  0774 00 2 00000  7972  PRY     AXT    **,2             RESTORE INDEX REGISTERS
16074  0774 00 4 00000  7973  PRX     AXT    **,4
16075  0020 00 4 00001  7974          TRA    1,4              EXIT
                        7975  *
16076  0 00000 0 00000  7976  AGA                             TEMPORARY STORAGE
16077  0 00000 0 00000  7977  AGQ
16100  215127644425     7978  AGM     BCI    1,ARGUME
16101 -056362607777     7979          OCT    456362607777     ARGUMENTS
16102 -062660777777     7980  AGO     OCT    462660777777     OF
16103  652143642560     7981  VALV    BCI    1,VALUE
                        7982  *
                        7983  *       VALOF  PRINTS VALUE OF NAME FOLLOWED BY ONE LIST
                        7984  *              SHARES STORAGE WITH ARGOF ROUTINE
                        7985  *
16104  0634 00 4 16117  7986  VALOF   SXA    VAX,4            SAVE LINK IR
16105  0601 00 0 16076  7987          STO    AGA              ATOM NAME
16106 -0600 00 0 16077  7988          STQ    AGQ              VALUE OF EXPRESSION
16107  0074 00 4 05214  7989          TSX    TERPRI,4         PRINT A BLANK LINE
16110  0500 00 0 16103  7990          CLA    VALV             WORD VALUE
16111  0074 00 4 05110  7991          TSX    $PRIN2,4         PUT IN OUTPUT LINE
16112  0500 00 0 16102  7992          CLA    AGO              WORD OF
16113  0074 00 4 05110  7993          TSX    $PRIN2,4
16114  0500 00 0 16076  7994          CLA    AGA              ATOM
16115  0074 00 4 04604  7995          TSX    $PRINT,4         PRINT OUT THE LINE
16116  0500 00 0 16077  7996          CLA    AGQ              VALUE
16117  0774 00 4 00000  7997  VAX     AXT    **,4             RESTORE LINK IR
16120  0020 00 0 04604  7998          TRA    $PRINT           PRINT OUT VALUE AND RETURN
16121  0 00000 0 00000  7999  EVTE                            E                LC523600
16122  0 00000 0 00000  8000  EVTAE                           CAR(E)           LC523700
16123  0 00000 0 00000  8001  EVTA                            A                LC523900
16124  0 00000 0 00000  8002  EVT1                                             LC524000
16125  0 00000 0 00000  8003  EVD1                                             LC524100
16126  0 00000 0 00000  8004  EVLNS                           TEST CELL FOR NUMBERS
16127 -3 03377 0 02373  8005  EVCM    TXL    $END4,,EVTRK+2
                 00370  8006  EVZRO   SYN    $ZERO                            6110
                 00442  8007  EVQD1   SYN    $QD1                             6120
                        8008  * INTER        MULTIPLE LISP STATEMENT PROGRAM FEATURE INTERPRETER  1.5R0020
                        8009  *              RECODED TO MAKE THE INTERPRETER AND COMPILER PROGRAM  1.5R0030
                        8010  *              FEATURE UNDER STAND THE SAME LANGUAGE                1.5R0040
                        8011  *                                                                   1.5R0050
                        8012  R       HED                                                        LC531700
16130 -0634 00 4 03444  8013  INTER   SXD    INTRX,4          SAVE LINK IR                       1.5R0060
16131  0074 00 4 02312  8014          TSX    $SAVE,4          SAVE PROTECTED TEMPORARY STORAGE   1.5R0070
```

```
16132 -3 03452 0 02371  8015        TXL   $END5,,INTGS+2   SAVE 5 ITEMS
16133  0634 00 2 03446  8016        SXA   INTGL,2           SAVE  INDEX REGISTER 2
16134 -0600 00 0 03447  8017        STQ   INTPL             SAVE PAIR LIST
16135  0600 00 0 03450  8018        STZ   INTGS             ZERO THE GO SWITCH
16136 -0734 00 4 00000  8019        PDX   0,4               POINTER TO PROGRAM
16137  0500 00 4 00000  8020        CLA   0,4               FIRST WORD
16140  0622 00 0 03445  8021        STD   INTB              POINTER TO BEGINNING OF PROGRAM
16141  0622 00 0 16271  8022        STD   INTE              DITTO
16142  0734 00 4 00000  8023        PAX   0,4               POINTER TO LIST OF PROGRAM VARIBL
16143 -0754 00 4 00000  8024        PXD   0,4               TO DECREMENT
16144  0560 00 0 16242  8025        LDQ   INTFB             FUNCTIONAL ARGUMENT
16145  0074 00 4 04214  8026        TSX   MAPLIS,4          (MAPLIST PV (LAMBDA (L) (CONS (CA
16146  0560 00 0 03447  8027        LDQ   INTPL             NIL)))   PICK UP PAIR LIST
16147  0074 00 4 07675  8028        TSX   $NCONC,4          ATTACH PROGARM VARIBLES TO PAIR L
16150  0601 00 0 03447  8029        STO   INTPL             PUT IN PAIR LISDT REGISTER
16151  0560 00 0 00370  8030        LDQ   $ZERO             ZERO THE MQ
16152 -0534 00 4 16271  8031 INTGM  LXD   INTE,4            SEARCH PROGRAM FOR GO TO POINTS
16153 -3 00000 4 16166  8032        TXL   INTAA,4,0         GO IF END OF PROGRAM
16154  0500 00 4 00000  8033        CLA   0,4               NEXT WORD
16155  0622 00 0 16271  8034        STD   INTE              SAVE CDR
16156  0734 00 2 00000  8035        PAX   0,2               CAR
16157  0500 00 2 00000  8036        CLA   0,2               MAKE ATOM TEST
16160  0734 00 2 00000  8037        PAX   0,2
16161 -3 77776 2 16152  8038        TXL   INTGM,2,-2        GO IF NOT AN ATOM
16162 -0754 00 4 00000  8039        PXD   0,4               IS AN ATOM, PUT POINTER TO CURREN
16163  0074 00 4 03730  8040        TSX   $CONS,4           PUT ON GO LOST
16164  0131 00 0 00000  8041        XCA                     ANSWER TO MQ
16165  0020 00 0 16152  8042        TRA   INTGM             NEXT ITEM
16166 -0620 00 0 03446  8043 INTAA  SLQ   INTGL             ALL DONE, STORE GO LIST
16167 -0534 00 4 03445  8044 INTGA  LXD   INTB,4,0          NEXT PROGRAM LOCATION
16170 -3 00000 4 16262  8045        TXL   INTRN,4,0         RETURN WITH NIL IF RAN OUT OF STA
16171  0500 00 4 00000  8046        CLA   0,4               NEXT WORD
16172  0622 00 0 03445  8047        STD   INTB              SAVE CDR
16173  0734 00 4 00000  8048        PAX   0,4               CAR
16174  0500 00 4 00000  8049        CLA   0,4               FIRST WORD
16175  0734 00 2 00000  8050        PAX   0,2               CHECK FOR ATOM OR $COND
16176  3 77776 2 16167  8051        TXH   INTGA,2,-2        GO TO NEXT STEP IF ATOM
16177 -3 10457 2 16221  8052        TXL   INTEV,2,$COND-1   GO TO EVAL IF NOT $COND
16200  3 10460 2 16221  8053        TXH   INTEV,2,$COND
16201 -0734 00 2 00000  8054        PDX   0,2               IS $COND DO AN EVCOND
16202 -3 00000 2 16167  8055 INTEB  TXL   INTGA,2,0         GO TO NEXT STEP IF COND UNSATISFIE
16203  0500 00 2 00000  8056        CLA   0,2               FIRST COND STATEMENT
16204 -0734 00 2 00000  8057        PDX   0,2               CDR
16205  0734 00 4 00000  8058        PAX   0,4               FIRST SUB COND
16206  0500 00 4 00000  8059        CLA   0,4
16207 -0734 00 4 00000  8060        PDX   0,4               POINTER TO THEN PART
16210  0634 00 4 03445  8061        SXA   INTB,4            SAVE IN PROTECTED STORAGE
16211  0734 00 4 00000  8062        PAX   0,4               POINTER TO IF PART
16212 -0754 00 4 00000  8063        PXD   0,4               PUT IN DECREMENT
16213  0560 00 0 03447  8064        LDQ   INTPL             PAIR LIST
16214  0074 00 4 15454  8065        TSX   $EVAL,4           EVALUATE IT
16215  0100 00 0 16202  8066        TZE   INTEB             GO IF IF PART IS FALSE
16216  0534 00 4 03445  8067        LXA   INTB,4            GET THEN PART
16217  0500 00 4 00000  8068        CLA   0,4
```

```
16220  0734 00 4 00000  8069          PAX   0,4          PPINTER TPO THEN PART
16221 -0754 00 4 00000  8070  INTEV   PXD   0,4          LIST TO BE EVALUATED
16222  0560 00 0 03447  8071          LDQ   INTPL        GET PAIR LIST
16223  0074 00 4 15454  8072          TSX   $EVAL,4      EVALUATE IT
16224 -0520 00 0 03450  8073          NZT   INTGS        SEE IF GO SWITCH SET
16225  0020 00 0 16167  8074          TRA   INTGA        GO TO NEXT STATEMENT
16226  0534 00 4 03450  8075          LXA   INTGS,4      WAS SET, SEE IF GO OR RETURN
16227  3 77776 4 16262  8076          TXH   INTRN,4,-2   TRA IF RETURN
16230 -0754 00 4 00000  8077          PXD   0,4          POINTER TO ITEM
16231  0560 00 0 16253  8078          LDQ   INTFC        GET SASSOC FUNCTIONAL ARGUMENT
16232 -0600 00 0 03321  8079          STQ   $ARG3        PUT IN $ARG3
16233  0560 00 0 03446  8080          LDQ   INTGL        GET GO LIST
16234  0074 00 4 10042  8081          TSX   SASSOC,4     SEARCH FOR ATOM
16235 -0734 00 4 00000  8082          PDX   0,4          POINTER TP  PROGRAM POINT
16236  0500 00 4 00000  8083          CLA   0,4          TAKE CDR
16237  0622 00 0 03445  8084          STD   INTB         SET PROGRAM POINT
16240  0600 00 0 03450  8085          STZ   INTGS        ZERO THE GO SWITCH
16241  0020 00 0 16167  8086          TRA   INTGA        GO TO THAT STATEMENT
                        8087 *
16242 -3 00001 0 16243  8088  INTFB   TXL   **+1,,1      MAPLIST FUNCTIONAL ARGUMENT
16243  0634 00 4 16251  8089          SXA   INTFX,4      (LAMBDA (L) (CONS (CAR L) NIL))
16244 -0734 00 4 00000  8090          PDX   0,4
16245  0500 00 4 00000  8091          CLA   0,4
16246  0734 00 4 00000  8092          PAX   0,4
16247 -0754 00 4 00000  8093          PXD   0,4
16250  0560 00 0 00370  8094          LDQ   $ZERO
16251  0774 00 4 00000  8095  INTFX   AXT   **,4
16252  0020 00 0 03730  8096          TRA   $CONS
                        8097 *
16253 -3 00001 0 16254  8098  INTFC   TXL   **+1,,1      UNLABELED GO TO POINT ERROR
16254 -0634 00 4 01562  8099          SXD   $ERROR,4     SAVE LINK IR
16255  0534 00 4 03450  8100          LXA   INTGS,4      POINTER TO GO POINT LABEL
16256 -0754 00 4 00000  8101          PXD   0,4          PUT IN DECREMENT
16257  0534 00 2 03446  8102          LXA   INTGL,2      RESTORE INDEX REGISTER 2
16260  0074 00 4 01563  8103          TSX   $ERROR+1,4   GO TO ERROR
16261  542160600654     8104          BCI   1,*A  6*           GO TO POINT NOT LABELED
                        8105 *
16262 -0534 00 4 03450  8106  INTRN   LXD   INTGS,4      RETURN VALUE
16263 -0754 00 4 00000  8107          PXD   0,4          PUT IN DECREMENT
16264  0600 00 0 03450  8108          STZ   INTGS        ZERO THE GO SWITCH
16265  0534 00 2 03446  8109          LXA   INTGL,2      RESTORE INDEX REGISTER 2
16266  0074 00 4 02326  8110          TSX   UNSAVE,4     RESTORE PROTECTED STORAGE
16267 -0534 00 4 03444  8111          LXD   INTRX,4      RESTORE LINK IR
16270  0020 00 4 00001  8112          TRA   1,4
                        8113 *                 TEMPORARY STORAGE FOR INTERPRETER
16271  0 00000 0 00000  8114  INTE                       TEMPORARY STORAGE
                  03447  8115 PRGVAR  SYN     INTPL
                        8116 *
                        8117 *
                        8118 * RETURN                   SPECIAL PROGRAM SETS RETURN SWITCH
                        8119 *                           IN PROGRAM INTERPRETER
                        8120 *
16272 -0501 00 0 00457  8121 RETURN   ORA     $AMASK     SIGNAL THAT IT IS A RETURN
16273  0601 00 0 03450  8122          STO     INTGS      SET UP GO SWITCH
```

```
16274  0500 00 0 00442   8123         CLA    $QD1                  PICK UP TRUTH VALUE                 1.5R1220
16275  0020 00 4 00001   8124         TRA    1,4                   EXIT                                1.5R1230
                         8125 *                                                                        1.5R1240
                         8126 * GO           SPECIAL FORM FOR PROGRAM INTERPRETER, GIVES GO TO POINT  1.5R1250
                         8127 *                                                                        1.5R1260
16276 -0634 00 4 03413   8128 GOGOGO SXD    GOX,4                 SAVE LINK IR
16277 -0734 00 4 00000   8129         PDX    0,4                   POINTER TO ARGUMENT LIST            1.5R1280
16300  0500 00 4 00000   8130         CLA    0,4                                                       1.5R1290
16301  0621 00 0 03450   8131         STA    INTGS                 PUT CAR IN GO SWITCH                1.5R1300
16302  0734 00 4 00000   8132         PAX    0,4                   CAR TO IR                           1.5R1310
16303  0500 00 4 00000   8133         CLA    0,4                   GET FIRST WORD                      1.5R1320
16304  0734 00 4 00000   8134         PAX    0,4                   SEE IF ATOMIC                       1.5R1330
16305  3 77776 4 16316   8135         TXH    GOT,4,-2              EXIT TRUE IF ATIMIC                 1.5R1340
16306  0534 00 4 03450   8136         LXA    INTGS,4               OTHERWISE GET ARGUMENT              1.5R1350
16307 -0754 00 4 00000   8137         PXD    0,4                   PUT INDECREMENT                     1.5R1360
16310  0074 00 4 02312   8138         TSX    $SAVE,4               SAVE LINK IR                        1.5R1370
16311 -3 03415 0 02401   8139         TXL    $END1,,GOX+2          SAVE 1 ITEM
16312  0074 00 4 15454   8140         TSX    $EVAL,4               EVALUATE THE ARGUMENT               1.5R1390
16313  0074 00 4 02326   8141         TSX    UNSAVE,4              RSTORE LINK IR                      1.5R1400
16314 -0734 00 4 00000   8142         PDX    0,4                   VALUE                               1.5R1420
16315  0634 00 4 03450   8143         SXA    INTGS,4               PU IN GO SWITCH                     1.5R1430
16316  0500 00 0 00442   8144  GOT    CLA    $QD1                  TRUTH VALUE                         1.5R1440
16317 -0534 00 4 03413   8145         LXD    GOX,4                 RESTORE LINK IR                     1.5R1450
16320  0020 00 4 00001   8146         TRA    1,4                   EXIT                                1.5R1460
                         8147 *                                                                        1.5R1480
                              DECK                         LAP PART ONE
                            1 HEAD    C                    THIS IS THE COMPILER AND ASMBLR
                            2 *
                            3 * LAP IS THE ASSEMBLER. ONE ARG IS LISTING.  IT IS LIST OF INSTRUC-
                            4 * TIONS, NON-ATOMIC OR NIL. THE ATOMIC SYMBOLS ARE LOCATION SYMBOLS
                            5 * SECOND ARG IS START OF SYMBIL TABLE WHICH IS AN A-LIST.
                            6 * THE FIRST ITEM IS ORG AS FOLLOWS-
                            7 *       NIL= IN BPS
                            8 *       ATOM= AT SYMBOLIC LOCATION
                            9 *       NUM= ATTHIS NUMBER
                           10 *       (NAME TYPE NUM) = IN BPS, AND PUT TXL ON PROP LIST OF NAME
                           11 *       WITH FLAG TYPE AND NUM IB DEC. OF TXL.
                           12 * INSTRUCTION FORMAT IS (OP ADDR TAG DEC)
                           13 * FIELD FORMAT IS AS FOLLOWS-
                           14 *       TEMP SYMBOL
                           15 *       NUMBER
                           16 *       SYM SUBR OR FSUBR
                           17 *       (E NAME) FOR IMMEDIATE AS IN TXL FILTER
                           18 *       (QUOTE NAME) FOR ITEM IN DEC OF WORD ON QTLST
                           19 *       POINTER TO COMMON WORD.MAKES ONE IF NONE ALREADY
                           20 *       SUM OF ANY OF ABOVE
                           21 * LAP IS IDENTITY FUNCTION
                           22 *       LAP DOES NOT USE IX1. IX2,4 ARE SCARTCH
                           23 * ERRORS IN LAP AS FOLLOWS-
                           24 *       *L  1*  UNABLE TO EVALUATE ORIGIN
                           25 *       *L  2*  OUT OF BPS DISCOVERED AFTER PASS I
                           26 *       *L  3* UNDEFINED SYMBOL
                           27 *       *L  4*  FIELD WAS RECURSIVE
                           28 *
```

```
16321  0634 00 4 16470    29 LAP   SXA   LAX,4
16322  0634 00 2 16471    30       SXA   LAX+1,2
16323  0601 00 0 16477    31       STO   LIST      THIS IS THE INPUT
16324 -0600 00 0 16501    32       STO   TAB       START OF SYMBOL TABLE
16325 -0734 00 4 00000    33       PDX   0,4
16326  0500 00 4 00000    34       CLA   0,4
16327  0622 00 0 16505    35       STD   REST      SAVE REST OF LISTING
16330  0734 00 2 00000    36       PAX   0,2       ORIGIN IN IX2
16331 -3 00000 2 16356    37       TXL   INBP,2,0  NIL MEANS  BPS ASSEMBLY
16332  0500 00 2 00000    38       CLA   0,2
16333  0734 00 4 00000    39       PAX   0,4       CAR OF ORIGIN
16334 -3 77776 4 16356    40       TXL   INBP,4,-2 NOT ATOM MEANS BPS MODE SO GO
16335 -0625 00 0 16511    41       STL   MODE      NOISE = NOT BPS
16336 -0754 00 2 00000    42       PXD   0,2       MAKE NUMBER TEST
16337  0074 00 4 14445    43       TSX   NUMBRP,4
16340 -0100 00 0 16351    44       TNZ   LSQ       IF A NUMBER
16341 -0754 00 2 00000    45       PXD   0,2       ORIGIN TO AC
16342  0560 00 4 00510    46       LDQ   $QSYMD,4  (QUOTE SYM)
16343  0074 00 4 11771    47       TSX   GET,4
16344 -0100 00 0 16350    48       TNZ   *+4       ORIGIN WAS FIOUND
16345 -0634 00 4 01562    49       SXD   $ERROR,4
16346 -0754 00 2 00000    50       PXD   0,2       SHOW IT
16347  0074 00 4 01563    51       TSX   $ERROR+1,4 UNDEFINED ORIGIN
16350  544360600154       52       BCI   1,*L  1*
16351 -0754 00 2 00000    53 LSQ   PXD   0,2
16352  0074 00 4 14342    54       TSX   NUMVAL,4  GET NUMERICAL VALUE
16353 -0734 00 4 00000    55 LSO   PDX   0,4
16354  0500 00 4 00000    56       CLA   0,4       PUTS SYM IN AC FOR NOT BPS MODE
16355  0020 00 0 16361    57       TRA   *+4
16356  0500 00 0 02304    58 INBP  CLA   $ORG      PUTS ORG IN AC FOR BPS MODE
16357  0600 00 0 16511    59       STZ   MODE      INDICATES BPS MODE
16360  0074 00 4 16535    60       TSX   JUST,4    JUSTIFY AC
16361  0601 00 0 16506    61       STO   STAR      UPDATE MARKER
16362  0601 00 0 16507    62       STO   START     RESET MARKER
16363  0600 00 0 16510    63       STZ   PASWD     INDICATE PASS 1
16364  0074 00 4 16543    64       TSX   PASS,4
16365  0500 00 0 16501    65       CLA   TAB
16366  0074 00 4 04604    66       TSX   $PRINT,4  PRINT SYMBOL TABLE
16367  0520 00 0 16511    67       ZET   MODE
16370  0020 00 0 16373    68       TRA   *+3       IF NOT IN BPS MODE
16371  0534 00 4 16506    69       LXA   STAR,4
16372  0522 00 0 16526    70       XEC   LBPTP     TEST FOR OUT OF BPS
16373  0534 00 4 16507    71       LXA   START,4    RESET STAR FOR SECOND PASS
16374  0634 00 4 16506    72       SXA   STAR,4
16375 -0534 00 4 16477    73       LXD   LIST,4
16376  0500 00 4 00000    74       CLA   0,4
16377  0622 00 0 16505    75       STD   REST      USED BY PASS AGAIN
16400 -0625 00 0 16510    76       STL   PASWD     NOISE MEANS PASS 2
16401  0074 00 4 16543    77       TSX   PASS,4    FOR PASS 2
16402  0520 00 0 16511    78       ZET   MODE
16403  0020 00 0 16464    79       TRA   LEND      IF NOT IN BPS MODE
16404  0534 00 4 16506    80       LXA   STAR,4    RSET ORG FOR NEXT ASSEMBLY
16405  0634 00 4 02304    81       SXA   $ORG,4
16406 -0534 00 4 16477    82       LXD   LIST,4
```

```
16407  0500 00 4 00000     83          CLA     0,4          CWR OF LISTING
16410  0734 00 4 00000     84          PAX     0,4
16411  0500 00 4 00000     85          CLA     0,4          GETS CWR OF ORIGIN
16412  0734 00 2 00000     86          PAX     0,2          CAR OF ORIGIN
16413 -0734 00 4 00000     87          PDX     0,4          CDR OF ORIGIN
16414  3 77776 2 16464     88          TXH     LEND,2,-2    IF ATOM THEN NO TXL NEEDED
16415 -0634 00 2 16473     89          SXD     NAME,2       CAR OF ORG IS NAME
16416  0500 00 4 00000     90          CLA     0,4
16417  0734 00 2 00000     91          PAX     0,2          CADR OF ORIGIN IS TYPE
16420 -0634 00 2 16474     92          SXD     TYPE,2       STORE TYPE
16421 -0320 00 0 00460     93          ANA     $DMASK       CDDR IS NOE IN AC
16422  0074 00 4 11712     94          TSX     CADARX,4     CADAR PUTS PART OF NUM IN DECR OF AC
16423  0622 00 0 16475     95          STD     INDC         FOR TXL WORD
16424  0534 00 4 16507     96          LXA     START,4
16425  0634 00 4 16475     97          SXA     INDC,4       COMPLETES TXL WORD
16426  0500 00 0 16473     98          CLA     NAME
16427  0074 00 4 17034     99          TSX     PRO,4
16430  0560 00 0 16474    100          LDQ     TYPE
16431  0074 00 4 11771    101          TSX     GET,4
16432  0100 00 0 16444    102          TZE     MKIND        IF THERE WAS NO OLD TXL
16433 -0734 00 2 00000    103          PDX     0,2          SAVE POINTER TO TXL
16434  0500 00 2 00000    104          CLA     0,2          CWR OF OLD TXL
16435  0737 00 4 00000    105          PAC     0,4          POINTER TO OLD BIN PTROG.
16436  0500 00 0 16507    106          CLA     START        START OF NEW PROGRAM
16437 -0501 00 0 16476    107          ORA     PATCH        MAKE TRA INSTRUCTION
16440  0601 00 4 00000    108          STO     0,4          CLOBBER OLD PROG.
16441  0500 00 0 16475    109          CLA     INDC
16442  0601 00 2 00000    110          STO     0,2          ON TOP OF OLD TXL
16443  0020 00 0 16464    111          TRA     LEND
16444  0500 00 0 16475    112 MKIND    CLA     INDC
16445 -0534 00 4 16474    113          LXD     TYPE,4       SYM SHOULD HAVE NO TXL ON POINTER
16446 -3 06705 4 16451    114          TXL     IND2,4,$SYM-1
16447  3 06706 4 16451    115          TXH     IND2,4,$SYM
16450 -0320 00 0 00457    116          ANA     $AMASK
16451  0074 00 4 03710    117  IND2    TSX     $CONSW,4
16452  0131 00 0 00000    118          XCA                  SAVE AC
16453 -0534 00 2 16473    119          LXD     NAME,2       NAME OF SUBR OR TYOE
16454  0500 00 2 00000    120          CLA     0,2
16455 -0320 00 0 00460    121          ANA     $DMASK       CDR OF NAME NOW IN AC
16456  0131 00 0 00000    122          XCA
16457  0074 00 4 03730    123          TSX     $CONS,4      CONS (TXL,RESTOF PROPERTY LIST)
16460  0131 00 0 00000    124          XCA
16461  0500 00 0 16474    125          CLA     TYPE
16462  0074 00 4 03730    126          TSX     $CONS,4      CONS,TYPE,RST OF ATM)
16463  0622 00 2 00000    127          STD     0,2          RPLACD OF PROPERTY 9IST
16464  0500 00 0 16477    128 LEND     CLA     LIST
16465  0600 00 0 16477    129          STZ     LIST
16466  0600 00 0 16501    130          STZ     TAB
16467  0600 00 0 16504    131          STZ     INST
                          132 *        DONT STORE ZERO IN QTLST
16470  0774 00 4 00000    133 LAX      AXT     **,4
16471  0774 00 2 00000    134          AXT     **,2
16472  0020 00 4 00001    135          TRA     1,4
                          136 * ALL LAP REGISTERS FOLLOW,INCL. THOSE USED BY SUBROUTINES
```

```
16473   0 00000 0 00000     137 NAME                                NAME OF FUNCTION
16474   0 00000 0 00000     138 TYPE                                SUBR FSUBR ETC
16475  -3 00000 0 00000     139 INDC    TXL     **,,**              FOR TSL WORD
16476   0020 00 0 00000     140 PATCH   TRA     **                  FOR CLOBBER INSTRUCTION
                                DECK                                PERM PROTECTED LAP STORAGE
                    16477     1 PROBE   SYN     *                   BEGINNING OF PROTECTED AREA
16477   0 00000 0 00000       2 LIST                                MAIN LISTING GOES HERE
16500   0 00000 0 00000       3 QTLST                               THE LIST OF QUOTES.NEVER ERASE
16501   0 00000 0 00000       4 TAB                                 TEMPORARY SYM TABLE
16502   0 00000 0 00000       5 LCOM                                STORAGE FOR COMMON ONLY.PROTECTED
16503   0 00000 0 00000       6 PROS                                PROTECTED FUNCTION NAMES AND SPECIALS
                    16503     7 PROEN   SYN     *-1                 END OF PROTECTED AREA
                                DECK                                LAP PART TWO
16504   0 00000 0 00000       1 INST                                HOLDS CURRENT INSTRUCTION OR FRACTION
16505   0 00000 0 00000       2 REST                                REMAINDER OF LISTING. PASS ALTERS THIS
16506   0 00000 0 00000       3 STAR                                * DIRECT ADDRESS POINTER TO CURRENT LO
16507   0 00000 0 00000       4 START                               RESET CELL FOR *
16510   0 00000 0 00000       5 PASWD                               ZERO MEANS PASS 1. NOISE = PASS 2
16511   0 00000 0 00000       6 MODE                                ZERO MEANS BPS ASSEMBLY
16512   0 00000 0 00000       7 HOLD                                SCRATCH CELL FOR AFELD ONLY.WATCH OUT
16513   0 00000 0 00000       8 SUM                                 FOR USE BY AFELD LIST ONLY
16514   0 00000 0 00000       9 NOCUR                               FOR AFELD LIST ONLY.PREVENTS RECURSION
16515   0 00000 0 00000      10 REM                                 FOR AFELD LIST ONLY.
16516   0 00000 0 03316      11 ALST            $ALIST
16517   0 00000 0 00000      12 ERCC
16520  -3 00000 0 16521      13 LSAC   TXL     *+1,,0
16521 -0754 00 0 00000      14        PXD     0,0
16522   0020 00 4 00001      15        TRA     1,4
                                DECK                                ATOM PIECES
16523   0 00000 0 17357       1 MOV             MOVE                THE WORD POINTED TO BY SYM ON *MOVE
16524   0 00000 0 17255       2 LSTR            LST                 POINTED TO BY SYM ON ATOM *LIST
16525   0 00000 0 17454       3 RTRN            RESTOR
                                DECK                                LAP PART THREE
                              1 *       ADDR(REM)=IX4 SAVED.DECR=REST OF LIST FIELD
                              2 *
                              3 * LBPTP CHECKS FOR OUT OF BPS AND MAKES ERROR IF D SO.
16526   3 00000 4 16527       4 LBPTP   TXH     *+1,4,**            SETUP FILLS THIS CELL
16527 -0634 00 4 01562       5        SXD     $ERROR,4
16530 -0754 00 4 00000       6        PXD     0,4
16531   0560 00 0 00503       7        LDQ     $OCTD
16532   0074 00 4 12636       8        TSX     $MKNO,4
16533   0074 00 4 01563       9        TSX     $ERROR+1,4
16534   544360600254         10        BCI     1,*L  2*
                             11 *
                             12 *  JUST REDUCES THE AC MOD 2**15.THE RESULT IS 15 BITS IN ADDR OF AC
                             13 *    IT IS ALWAYS POSITIVE
16535   0120 00 0 16540      14 JUST   TPL     *+3
16536   0760 00 0 00006      15        COM
16537   0402 00 0 00371      16        SUB     $Q1
16540 -0320 00 0 00457      17        ANA     $AMASK
16541 -0140 00 4 00001      18        TNO     1,4
16542   0020 00 4 00001      19        TRA     1,4
                             20 *
                             21 *  PASS DOES BOTH PASSES FOR LAP
```

```
                                    22 *       FIRST PASS MAKES SYMBOL TABLE AND UPDATES ON INSTRUCTIONS
                                    23 *       SECOND PASS IGNORES SYMBOLS ASSEMBLES AND UPDTS INSTRUCTIONS
16543  0634 00 4 16600              24 PASS    SXA     PAUX,4
16544 -0534 00 4 16505              25 LOP1    LXD     REST,4
16545 -3 00000 4 16600              26         TXL     PAUX,4,0        IF NO MORE LISTING
16546  0500 00 4 00000              27         CLA     0,4
16547  0622 00 0 16505              28         STD     REST            RESET REST OF LISTING
16550  0734 00 4 00000              29         PAX     0,4
16551 -0634 00 4 16504              30         SXD     INST,4
16552 -3 00000 4 16572              31         TXL     AMBL,4,0        IF NIL
16553  0500 00 4 00000              32         CLA     0,4
16554  0734 00 4 00000              33         PAX     0,4
16555 -3 77776 4 16572              34         TXL     AMBL,4,-2       IF NOT ATOM
16556  0520 00 0 16510              35         ZET     PASWD
16557  0020 00 0 16544              36         TRA     LOP1            IF PASS 2
16560  0500 00 0 16506              37         CLA     STAR            OTHERWISE ADD    TO TABLE
16561  0560 00 0 00503              38         LDQ     $OCTD
16562  0074 00 4 12636              39         TSX     $MKNO,4         MAKE A NUMBER
16563  0131 00 0 00000              40         XCA
16564  0500 00 0 16504              41         CLA     INST
16565  0074 00 4 03730              42         TSX     $CONS,4         (NAME.VALUE)
16566  0560 00 0 16501              43         LDQ     TAB
16567  0074 00 4 03730              44         TSX     $CONS,4
16570  0601 00 0 16501              45         STO     TAB
16571  0020 00 0 16544              46         TRA     LOP1
16572  0520 00 0 16510              47 AMBL    ZET     PASWD           LAND HERE IF INSTRUCTION NOT SYMBOL
16573  0074 00 4 16602              48         TSX     AINS,4          ON PASS 2 ONLY
16574  0534 00 4 16506              49         LXA     STAR,4
16575  1 00001 4 16576              50         TXI     *+1,4,1         UPDATE * AFTER INSTRUCTION IS ASSEMBLE
16576  0634 00 4 16506              51         SXA     STAR,4
16577  0020 00 0 16544              52         TRA     LOP1
16600  0774 00 4 00000              53 PAUX    AXT     **,4
16601  0020 00 4 00001              54         TRA     1,4
                                    55 *
                                    56 * AINS IS THE INSTRUCTION ASSEMBLER. ARG IS IN INST. VAL IS IN AC
16602  0634 00 4 16620              57 AINS    SXA     AINX,4
16603  0074 00 4 16622              58         TSX     AFELD,4
16604  0601 60 0 16506              59         STO*    STAR
16605  0074 00 4 16622              60         TSX     AFELD,4
16606  0074 00 4 16535              61         TSX     JUST,4
16607 -0602 60 0 16506              62         ORS*    STAR            THIS IS ADDRESS FIELD
16610  0074 00 4 16622              63         TSX     AFELD,4
16611  0767 00 0 00017              64         ALS     15
16612  0140 00 0 16613              65         TOV     *+1
16613 -0602 60 0 16506              66         ORS*    STAR            TAG FIELD
16614  0074 00 4 16622              67         TSX     AFELD,4
16615  0074 00 4 16535              68         TSX     JUST,4
16616  0767 00 0 00022              69         ALS     18              NO OVERFLOW AFTER JUST
16617 -0602 60 0 16506              70         ORS*    STAR
16620  0774 00 4 00000              71 AINX    AXT     **,4
16621  0020 00 4 00001              72         TRA     1,4
                                    73 *
                                    74 * AFELD IS THE FIELD EVALUATOR. A LIST OF FIELDS IS EXPECTED IN INST.
                                    75 * IT EVALUATES THE FIRST AND SETS INST TO THE REST. IF NO MORE FIELDS LE
```

```
                                        76 * ARE LEFT, IT GOES TOAINX, THE EXIT POINT OF AINS
                                        77 * AFELD HAS CERTAIN PRIVATE CELLS,SEE AFTER LAP.) THE LIST AFELD IS A
                                        78 * SLIGHTLY RECURSIVE DEVISE WHICH HAS SPECIAL CELLS AND CANNOT REENTER I
                                        79 * ITSELF WITHOUT ERROR.
16622   0634 00 4 17032      80 AFELD   SXA     FELX,4
16623   0600 00 0 16514      81         STZ     NOCUR
16624  -0534 00 4 16504      82         LXD     INST,4
16625  -3 00000 4 16620      83         TXL     AINX,4,0          IF NO MORE FIELDS
16626   0500 00 4 00000      84         CLA     0,4
16627   0622 00 0 16504      85         STD     INST              REST OF FIELDS
16630   0734 00 2 00000      86         PAX     0,2
16631   0500 00 2 00000      87 LEM     CLA     0,2
16632   0734 00 4 00000      88         PAX     0,4
16633  -3 77776 4 16707      89         TXL     NATM,4,-2         IF NOT ATOMIC FIELD
16634   3 00000 2 16637      90         TXH     *+3,2,0
16635   0500 00 0 02304      91         CLA     $ORG              NIL SYMBOL MEANS ORIGIN
16636   0020 00 0 17032      92         TRA     FELX
16637  -0754 00 2 00000      93         PXD     0,2
16640   0560 00 0 16520      94         LDQ     LSAC              FN ARG FOR SASSOC
16641  -0600 00 0 03321      95         STQ     $ARG3
16642   0560 00 0 16501      96         LDQ     TAB
16643   0074 00 4 10042      97         TSX     SASSOC,4          LOOK UP IN SYM TABLE
16644   0100 00 0 16652      98         TZE     NTAB              NOT IN TAB
16645   0074 00 4 15222      99         TSX     $CDRP,4
16646   0074 00 4 14342     100 NEVAL   TSX     NUMVAL,4
16647  -0734 00 4 00000     101         PDX     0,4
16650   0500 00 4 00000     102         CLA     0,4
16651   0020 00 0 17032     103         TRA     FELX
16652  -0754 00 2 00000     104 NTAB    PXD     0,2
16653   0074 00 4 14445     105         TSX     NUMBRP,4
16654   0100 00 0 16657     106         TZE     *+3               IF NOT A NUMBER
16655  -0754 00 2 00000     107         PXD     0,2               LISP NUMBER IN AC
16656   0020 00 0 16646     108         TRA     NEVAL
16657  -0634 00 2 16517     109         SXD     ERCC,2            SAVE ATOM
16660   0500 00 2 00000     110 LOP2    CLA     0,2     LOOP FOR SYM,SUBR,FSUBR
16661  -0734 00 2 00000     111         PDX     0,2
16662   0734 00 4 00000     112         PAX     0,4
16663   3 00000 2 16670     113         TXH     PA,2,0            IF NOT NIL
16664  -0634 00 4 01562     114         SXD     $ERROR,4
16665   0500 00 0 16517     115         CLA     ERCC
16666   0074 00 4 01563     116         TSX     $ERROR+1,4
16667   544360600354        117         BCI     1,*L  3*          UNDEFINED SYMBOL
16670  -3 06705 4 16672     118 PA      TXL     *+2,4,$SYM-1
16671  -3 06706 4 16703     119         TXL     FINX,4,$SYM
16672  -3 06732 4 16674     120         TXL     *+2,4,$SUBR-1
16673  -3 06733 4 16676     121         TXL     FIND,4,$SUBR
16674  -3 10102 4 16660     122         TXL     LOP2,4,$FSUBR-1
16675   3 10103 4 16660     123         TXH     LOP2,4,$FSUBR
16676   0500 00 2 00000     124 FIND    CLA     0,2
16677   0734 00 4 00000     125         PAX     0,4
16700   0500 00 4 00000     126         CLA     0,4
16701  -0320 00 0 00457     127         ANA     $AMASK
16702   0020 00 0 17032     128         TRA     FELX
                            129 *
```

```
16703  0500 00 2 00000    130 FINX   CLA     0,2
16704  0734 00 4 00000    131        PAX     0,4
16705  0500 00 4 00000    132        CLA     0,4
16706  0020 00 0 17032    133        TRA     FELX
                           134 *
16707 -3 06153 4 16715     135 NATM   TXL     NTE,4,$H25-1
16710  3 06154 4 16715     136        TXH     NTE,4,$H25      FOR (E EXP)
16711 -0754 00 2 00000     137        PXD     0,2             ENTIRE FIELD
16712  0074 00 4 11730     138        TSX     CADRXX,4
16713  0771 00 0 00022     139        ARS     18
16714  0020 00 0 17032     140        TRA     FELX
16715 -3 07247 4 16754     141 NTE    TXL     NQT,4,$QUOTE-1  LAND HERE FOR NOT (E...
16716  3 07250 4 16754     142        TXH     NQT,4,$QUOTE    ABOVE AND THIS FOR (QUOTE...
16717 -0734 00 2 00000     143        PDX     0,2             AC HAS CWR OF FIELD
16720  0500 00 2 00000     144        CLA     0,2
16721  0734 00 2 00000     145        PAX     0,2             POINTER TO EQ QUANTITY
16722 -0534 00 4 16500     146        LXD     QTLST,4
16723 -3 00000 4 16737     147        TXL     NON,4,0         TEST FOR NO LIST
16724  0500 00 4 00000     148 FLOOP  CLA     0,4             AN EQUAL TYPE SEARCH
16725  0601 00 0 16512     149        STO     HOLD            TEMPORARY SAVING OF REST
16726  0734 00 4 00000     150        PAX     0,4
16727  0500 00 4 00000     151        CLA     0,4
16730 -0320 00 0 00460     152        ANA     $DMASK          LITERAL QUANTITY FOR EQUAL COMPARISON
16731  0131 00 0 00000     153        XCA
16732 -0754 00 2 00000     154        PXD     0,2             THE NEW ITEM
16733  0074 00 4 04461     155        TSX     $EQUAL,4        TEST FOR EQUALITY
16734 -0100 00 0 16752     156        TNZ     ONQT            IF ALREADY ON LIST
16735 -0534 00 4 16512     157        LXD     HOLD,4
16736  3 00000 4 16724     158        TXH     FLOOP,4,0       IF NOT HEAD OF QTLIST
16737 -0754 00 2 00000     159 NON    PXD     0,2             NEED TO MAKE ENTRY
16740  0131 00 0 00000     160        XCA
16741  0754 00 0 00000     161        PXA     0,0
16742  0074 00 4 03730     162        TSX     $CONS,4         CONS(NIL EXP)
16743  0601 00 0 16512     163        STO     HOLD            NEEDS NO PROTECTION AS SEEN BY WHAT FO
                           164 *              FOLLOWS
16744  0560 00 0 16500     165        LDQ     QTLST
16745  0074 00 4 03730     166        TSX     $CONS,4         CONS((NIL.EXP, ...
16746  0601 00 0 16500     167        STO     QTLST
16747 -0535 00 4 16512     168        LDC     HOLD,4          WANT TRUE POINTER
16750  0754 00 4 00000     169 TRP    PXA     0,4
16751  0020 00 0 17032     170        TRA     FELX
                           171 *      THIS IS POINTER TO A NIL.EXP WORD IN FREE STORAGE
16752  0535 00 4 16512     172 ONQT   LAC     HOLD,4
16753  0020 00 0 16750     173        TRA     TRP
16754 -3 07107 4 17004     174 NQT    TXL     FDLST,4,SPECAL-1
16755  3 07110 4 17004     175        TXH     FDLST,4,SPECAL  (SPECIAL NAME)
16756  0560 00 0 00507     176        LDQ     QSPECD          SPECIAL IN MQ
16757 -0320 00 0 00460     177        ANA     $DMASK          (NAME) IN AC
16760  0074 00 4 15212     178        TSX     $CARP,4
16761  0074 00 4 11771     179        TSX     GET,4
16762 -0100 00 0 17001     180        TNZ     SPP             JUST NEED TO ASSURE PROTECTION
16763  0560 00 0 00370     181        LDQ     $ZERO
16764  0074 00 4 03730     182        TSX     $CONS,4         AC HAS ZERO IF YOU ARE HERE
16765  0601 00 0 16502     183        STO     LCOM            PROTECTED TEMP CELL
```

```
16766 -0754 00 2 00000    184          PXD     0,2              (SPECIAL NAME)
16767  0074 00 4 11705    185          TSX     CAADRX,4         CDR(NAME)
16770 -0734 00 2 00000    186          PDX     0,2              SAVE ABOVE
16771  0131 00 0 00000    187          XCA
16772  0500 00 0 16502    188          CLA     LCOM
16773  0074 00 4 03730    189          TSX     $CONS,4
16774  0131 00 0 00000    190          XCA
16775  0500 00 0 00507    191          CLA     QSPECD
16776  0074 00 4 03730    192          TSX     $CONS,4
16777  0622 00 2 00000    193          STD     0,2              RPLACD OF NAME
17000  0074 00 4 11730    194          TSX     CADRXX,4         POINTER TO (NIL)
17001  0074 00 4 17034    195 SPP      TSX     PRO,4
17002 -0737 00 4 00000    196          PDC     0,4
17003  0020 00 0 16750    197          TRA     TRP
17004 -0520 00 0 16514    198 FDLST    NZT     NOCUR            NO RE-ENTRY TO AFELD LIST IS ALLOWED
17005  0020 00 0 17011    199          TRA     *+4
17006 -0634 00 4 01562    200          SXD     $ERROR,4
17007  0074 00 4 01563    201          TSX     $ERROR+1,4
17010  544360600454       202          BCI     1,*L  4*         NO RECURSIVE FIELDS ALLOWED
17011 -0625 00 0 16514    203          STL     NOCUR            PREVENT RECURSION
17012  0600 00 0 16513    204          STZ     SUM              RESET SUM WORD
17013  0534 00 4 17032    205          LXA     FELX,4
17014  0634 00 4 16515    206          SXA     REM,4            SAVES THE RETURN FOR AFELD
17015  0500 00 2 00000    207 LOPL     CLA     0,2
17016  0622 00 0 16515    208          STD     REM
17017  0734 00 2 00000    209          PAX     0,2
17020 -0774 00 4 17022    210          AXC     *+2,4
17021  0634 00 4 17032    211          SXA     FELX,4           REENTER THE EVALUATOR
17022  0020 00 0 16631    212          TRA     LEM
17023  0400 00 0 16513    213          ADD     SUM
17024  0601 00 0 16513    214          STO     SUM
17025 -0534 00 2 16515    215          LXD     REM,2            REST OF FIELDS
17026  3 00000 2 17015    216          TXH     LOPL,2,0         IF THERE ARE MORE FIELDS (SUBFLDS)
17027  0600 00 0 16514    217          STZ     NOCUR            ALLOWS ENTRY TO LIST AFELD AGAIN
17030  0534 00 4 16515    218          LXA     REM,4
17031  0020 00 4 00001    219          TRA     1,4
17032  0774 00 4 00000    220 FELX     AXT     **,4
17033  0020 00 4 00001    221          TRA     1,4
                          222 *
17034  0634 00 4 17050    223 PRO      SXA     PX,4
17035  0601 00 0 17060    224          STO     PTR              SAVE ARGUMENT
17036  0622 00 0 17047    225          STD     PH               SET UP TXH
17037  0402 00 0 00442    226          SUB     $QD1             AND
17040  0622 00 0 17046    227          STD     PL               TXL SIEVE
17041  0500 00 0 16503    228          CLA     PROS             GET PROTECTED LIST
17042 -0734 00 4 00000    229 PNL      PDX     0,4
17043 -3 00000 4 17053    230          TXL     PMK,4,0          END OF LIST, SO MAKE NEW ENTRY
17044  0500 00 4 00000    231          CLA     0,4
17045  0734 00 4 00000    232          PAX     0,4
17046 -3 00000 4 17042    233 PL       TXL     PNL,4,**
17047  3 00000 4 17042    234 PH       TXH     PNL,4,**         FALL THROUGH IF FOUND
17050  0774 00 4 00000    235 PX       AXT     **,4
17051  0500 00 0 17060    236          CLA     PTR              RESTORE AC
17052  0020 00 4 00001    237          TRA     1,4
```

```
                                  238 *
17053  0560 00 0 16503            239 PMK     LDQ     PROS            MAKE A NEW ITEM
17054  0500 00 0 17060            240         CLA     PTR
17055  0074 00 4 03730            241         TSX     $CONS,4
17056  0601 00 0 16503            242         STO     PROS            STORE NEW LIST
17057  0020 00 0 17050            243         TRA     PX              AND RETURN
                                  244 *
17060  0 00000 0 00000            245 PTR
                                  246 *
                                  247 *
                                          DECK                        PERMANENT COMPILER SUBROUTINES
                                    1 *           LINK HANDLES ALL SUBROUTINE CALLS FROM COMPILED FUNCTION
                                    2 *           IT REPLACES STR WITH TSX IF SUBROUTINE BEING CALLED
                                    3 *           IS A SUBR OR FSUBR
                                    4 *           IT GOES TO APPLY IF THE CALL IS TO EXPR OR FEXPR WITH
                                    5 *           $ALIST AS THIRD ARGUMENT
                                    6 *           LINK EXPECTS A TAG OF 7 IN THE STR INST, NAME OF FUNCTION
                                    7 *           IN THE ADDRESS, AND THE NUMBER OF ARGUMENTS IN THE DECREM
                                    8 *           ENT             LINK WILL GO TO THE ROUTINE WHICH
                                    9 *           HANDLES ERROR TRAPS IF THE CALLING INST DOESNT HAVE A 7
                                   10 *           TAG
                                   11 *
17061   0601 00 0 03417            12 LINK,    STO     LNKA
17062  -0600 00 0 03420            13          STQ     LNKB            SAVE AC AND MQ
17063   0634 00 4 17243            14          SXA     LER,4           SAVE IR4
17064   0535 00 4 00000            15          LAC     0,4             COMP POINTER TO STR+1
17065   1 00001 4 17066            16          TXI     *+1,4,1         MAKE ORDINARY TSX POINTER
17066   0500 00 4 00000            17          CLA     0,4             GET STR INST  7
17067   0601 00 0 17253            18          STO     LNKD            SAVE IT
17070  -0320 00 0 00470            19          ANA     TAGMSK          CHECK FOR 7 TAG
17071   0322 00 0 00470            20          ERA     TAGMSK
17072  -0100 00 0 17243            21          TNZ     LER             IF NOT 7 TAG
17073  -0634 00 4 17252            22          SXD     LNKC,4          SAVE POINTER
17074   0500 00 0 00177            23          CLA     B$ZERC          RESTORE NIL
17075   0601 00 0 00000            24          STO     0
17076   0600 00 0 17246            25          STZ     LNTRS           RESET TRACE SWITCH
17077   0534 00 4 17253            26          LXA     LNKD,4          FUNCTION ATOM
17100   0500 00 4 00000            27          CLA     0,4             START PROPERTY LIST SEARCH
17101  -0734 00 4 00000            28 LNLP     PDX     0,4
17102  -3 00000 4 17134            29          TXL     LNNF,4,0        NO DEFINITION SO FN VARIABLE
17103   0500 00 4 00000            30          CLA     0,4
17104   0734 00 4 00000            31          PAX     0,4
17105  -3 06732 4 17107            32          TXL     *+2,4,$SUBR-1
17106  -3 06733 4 17171            33          TXL     LNSBR,4,$SUBR
17107  -3 10102 4 17111            34          TXL     *+2,4,$FSUBR-1
17110  -3 10103 4 17171            35          TXL     LNSBR,4,$FSUBR
17111  -3 06646 4 17113            36          TXL     *+2,4,$TRACE-1
17112  -3 06647 4 17136            37          TXL     LNTR,4,$TRACE
17113  -3 10156 4 17115            38          TXL     *+2,4,$EXPR-1
17114  -3 10157 4 17117            39          TXL     LNEXP,4,$EXPR
17115  -3 10141 4 17101            40          TXL     LNLP,4,$FEXPR-1
17116   3 10142 4 17101            41          TXH     LNLP,4,$FEXPR
17117  -0734 00 4 00000            42 LNEXP    PDX     0,4             EXPR-FEXPR BRANCH
17120   0500 00 4 00000            43          CLA     0,4
```

1706,
1835,
516

```
17121  0734 00 4 00000     44          PAX     0,4             LAMBDA EXPRESSION
17122 -0634 00 4 17247     45 LNGN     SXD     LNFN,4          SAVE IT
17123  0500 00 0 03316     46          CLA     $ALIST
17124  0601 00 0 03321     47          STO     $ARG3           PROPER ALIST
17125  0520 00 0 17246     48          ZET     LNTRS           TRACE TEST
17126  0020 00 0 17153     49          TRA     LNTEX           TRACE EXPR OF FEXPR
17127  0074 00 4 17206     50          TSX     LNARS,4         LIST ARGUMENTS
17130  0131 00 0 00000     51          XCA
17131  0500 00 0 17247     52          CLA     LNFN            LAMBDA EXPRESSION
17132 -0534 00 4 17252     53          LXD     LNKC,4          RETURN IR
17133  0020 00 0 14663     54          TRA     $APPLY          DO
                           55 *
17134  0534 00 4 17253     56 LNNF     LXA     LNKD,4          FUNCTION DEFN IS ON ALIST
17135  0020 00 0 17122     57          TRA     LNGN            APPLY WILL TAKE CARE OF THIS
                           58 *
17136 -0625 00 0 17246     59 LNTR     STL     LNTRS           SET TRACE SWITCH
17137  0601 00 0 17250     60          STO     LNAC            SAVE AC
17140  0074 00 4 17206     61          TSX     LNARS,4         LIST ARGUMENTS
17141  0601 00 0 17251     62          STO     LNRGL           AND SAVE THEM
17142  0131 00 0 00000     63          XCA                     TO PRINTING POSITION
17143  0534 00 4 17253     64          LXA     LNKD,4          ATOM NAME
17144  0634 00 4 17252     65          SXA     LNKC,4          SAVE WITH INDEX REGISTER
17145 -0754 00 4 00000     66          PXD     0,4             ALSO FOR TRACE MESSAGE
17146  0074 00 4 02312     67          TSX     $SAVE,4         SAVE NAME AND RETRN
17147 -3 17254 0 02401     68          TXL     $END1,,LNKC+2
17150  0074 00 4 16050     69          TSX     A$ARGOF,4       PRINT ARGUMENTS
17151  0500 00 0 17250     70          CLA     LNAC            RESTORE AC
17152  0020 00 0 17101     71          TRA     LNLP            AND CONTINUE PROPERTY LIST SEARCH
                           72 *
17153  0500 00 0 17247     73 LNTEX    CLA     LNFN            TRACE EXPR OR FEXPR
17154  0560 00 0 17251     74          LDQ     LNRGL           SET UP ARGUMENTS OF APPLY
17155  0074 00 4 14663     75          TSX     $APPLY,4        AND DO THE FUNCTION
17156  0074 00 4 02326     76 LNTEN    TSX     UNSAVE,4        GET BACK IR4 AND FN NAME
17157  0131 00 0 00000     77          XCA
17160  0534 00 4 17252     78          LXA     LNKC,4          ATOM NAME TO AC
17161 -0754 00 4 00000     79          PXD     0,4
17162 -0534 00 4 17252     80          LXD     LNKC,4          RESTORE INDEX
17163  0020 00 0 16104     81          TRA     A$VALOF         PRINT VALUE MESSAGE
                           82 *
17164  0621 00 0 17167     83 LNTSB    STA     LNDIS           TRACE SUBR OF FSUBR
17165  0500 00 0 03417     84          CLA     LNKA            RESTORE AC
17166  0560 00 0 03420     85          LDQ     LNKB            AND MQ
17167  0074 00 4 00000     86 LNDIS    TSX     **,4            EXECUTER SUBROUTINE
17170  0020 00 0 17156     87          TRA     LNTEN           AND REPORT VALUE
                           88 *
17171 -0734 00 4 00000     89 LNSBR    PDX     0,4             SUBR OR FSUBR BRANCH
17172  0500 00 4 00000     90          CLA     0,4
17173  0734 00 4 00000     91          PAX     0,4
17174  0500 00 4 00000     92          CLA     0,4             TXL SUBR,,N WORD
17175  0520 00 0 17246     93          ZET     LNTRS           TEST FOR TRACING
17176  0020 00 0 17164     94          TRA     LNTSB
17177  0621 00 0 17254     95          STA     LNTSX           MAKE A TSX
17200  0500 00 0 17254     96          CLA     LNTSX           GET IT
17201 -0534 00 4 17252     97          LXD     LNKC,4          RETURN IR
```

```
17202  0601 00 4 00000     98          STO   0,4          CHANGE THE STR TO TSX
17203  0500 00 0 03417     99          CLA   LNKA         RESTORE AC
17204  0560 00 0 03420    100          LDQ   LNKB
17205  0020 00 4 00000    101          TRA   0,4          GO TO NEW TSX
                           102 *
17206  0634 00 4 17237    103 LNARS    SXA   LNLX,4       SUBROUTINE WHICH LISTS ARGS
17207 -0534 00 4 17253    104          LXD   LNKD,4       NUMBER OF ARGS
17210 -3 00000 4 17241    105          TXL   LNN,4,0      LST WONT WORK ON ZERO THINGS
17211 -0634 00 4 17213    106          SXD   LNKP,4       PUT IN LST ARG POSITION
17212  0074 00 4 17255    107          TSX   LST,4        LIST THEM
17213  3 00000 0 03417    108 LNKP     TXH   LNKA,0,**
17214  0734 00 0 03420    109          PAX   LNKB,0
17215  0734 00 0 03321    110          PAX   $ARG3,0
17216  0734 00 0 03322    111          PAX   $ARG4,0
17217  0734 00 0 03323    112          PAX   $ARG5,0
17220  0734 00 0 03324    113          PAX   $ARG6,0
17221  0734 00 0 03325    114          PAX   $ARG7,0
17222  0734 00 0 03326    115          PAX   $ARG8,0
17223  0734 00 0 03327    116          PAX   $ARG9,0
17224  0734 00 0 03330    117          PAX   $ARG10,0
17225  0734 00 0 03331    118          PAX   $ARG11,0
17226  0734 00 0 03332    119          PAX   $ARG12,0
17227  0734 00 0 03333    120          PAX   $ARG13,0
17230  0734 00 0 03334    121          PAX   $ARG14,0
17231  0734 00 0 03335    122          PAX   $ARG15,0
17232  0734 00 0 03336    123          PAX   $ARG16,0
17233  0734 00 0 03337    124          PAX   $ARG17,0
17234  0734 00 0 03340    125          PAX   $ARG18,0
17235  0734 00 0 03341    126          PAX   $ARG19,0
17236  0734 00 0 03342    127          PAX   $ARG20,0
17237  0774 00 4 00000    128 LNLX     AXT   **,4         RESTORE INTEX
17240  0020 00 4 00001    129          TRA   1,4
17241 -0754 00 0 00000    130 LNN      PXD   0,0          NIL
17242  0020 00 0 17237    131          TRA   LNLX
                           132 *
17243  0774 00 4 00000    133 LER      AXT   **,4         RESTORE IR4
17244  0500 00 0 03417    134          CLA   LNKA
17245  0020 00 0 01766    135          TRA   STRPNT       GO TO EREOR HANDLING ROUTINEPP
                           136 *                LINK STORAGE
                           137 *                IS HERE, EXCEPT FOR LINKA NAD LINKB WHICH ARE IN GARB
17246  0 00000 0 00000    138 LNTRS                       TRACE SWITCH
17247  0 00000 0 00000    139 LNFN                        FUNCTION DEFINITION
17250  0 00000 0 00000    140 LNAC                        TEMPORARY AC STORAGE
17251  0 00000 0 00000    141 LNRGL                       ARGS LISTED DURNING TRACE INTERLUD
17252  0 00000 0 00000    142 LNKC                        IX4 POINTER TO STR WORD
17253  0 00000 0 00000    143 LNKD                        CONTAINS STR NAME,7,NUM
17254  0074 00 4 00000    144 LNTSX    TSX   **,4         INSTRUCTION TO BE PLANTED
                           145 *                LST IS THE SUBROUTINE WHICH DOES LISTING IN COMPILED
                           146 *                FUNCTIONS          N ELEMENTS WHERE N IS IN AC, ARE
                           147 *                LISTED             ARGUMENTS ARE GOTTEN BY CLA*
                           148 *                FROM THE N REGISTERS SUCCEEDING THE CALL
                           149 *
17255  0634 00 2 17316    150 LST      SXA   LX2,2        SAVE IR2
17256  0500 00 4 00001    151          CLA   1,4          TO GET N FROM FIRSTDECREMENT
```

```
17257  0622 00 0 17261    152          STD     LSN          TO DECREMENT IR4 FOR POINT EXIT
17260  0622 00 0 17275    153          STD     LSC          TO DECREMENT THE CONS COUNTER
17261 -2 00000 4 17262    154 LSN      TNX     **+1,4,**
17262 -0734 00 2 00000    155          PDX     0,2          N TO IR2
17263 -0754 00 4 00000    156          PXD     0,4          START TO COMPLEMENT IR4
17264 -0737 00 4 00000    157          PDC     0,4          OH FOR A 7094
17265  1 00001 4 17266    158          TXI     **+1,4,1     ONE MORE FOR EXIT
17266  0634 00 4 17302    159          SXA     LSP,4        SET UP GET INST
17267  0634 00 4 17320    160          SXA     LSE,4        AND RETURN
17270 -0534 00 4 03751    161          LXD     $FREE,4      FIRST FREE WORD
17271  3 00000 4 17273    162          TXH     **+2,4,0     TEST FOR OUT OF FREE
17272  0074 00 4 04037    163          TSX     $FROUT,4     WILL RETURN -2,4
17273 -0634 00 4 17327    164          SXD     LAN,4        THE ANSWER TO THIS SAUSAGE CONS
17274  0534 00 4 03742    165          LXA     $CNTR1,4     GET CONS COUNTER
17275  2 00000 4 17300    166 LSC      TIX     **+3,4,**    REDUCE IT BY N
17276  0074 00 4 03752    167          TSX     ARREST,4     OUT OF CONSES
17277  0774 00 4 77777    168          AXT     -1,4         RESET COUNTER (UP TO N CONSES MAY BE
17300  0634 00 4 03742    169          SXA     $CNTR1,4     LOST EVERY 7777 OCTAL CONSES)
17301 -0534 00 4 17327    170          LXD     LAN,4        RESTORE  IR4 TO FREE WORD POINTER
17302  0500 60 2 00000    171 LSP      CLA*    **,2         GET ARGUMENT
17303  0771 00 0 00022    172          ARS     18           TO ADDRESS
17304  0621 00 4 00000    173          STA     0,4          PUT IT IN THE FREE WORD ADDR
17305  0500 00 4 00000    174          CLA     0,4          NEXT  FREE WORD
17306  0634 00 4 17314    175          SXA     LFX,4        SAVE PRECEDING WORD TO CUT OFF
17307 -0734 00 4 00000    176 LSR      PDX     0,4          NEXT FREE WORD TO IR
17310 -3 00000 4 17321    177          TXL     LFIX,4,0     OUT OF FREE STORAGE7
17311  2 00001 2 17302    178          TIX     LSP,2,1      COUNT DOWN
17312  0622 00 0 03751    179          STD     $FREE        RESTORE FREE
17313 -0754 00 0 00000    180          PXD     0,0          CLEAR
17314  0774 00 4 00000    181 LFX      AXT     **,4         LAST WORD IN LIST
17315  0622 00 4 00000    182          STD     0,4          GETS NIL IN ITS DECREMENT
17316  0774 00 2 00000    183 LX2      AXT     **,2         RESTORE IR2
17317  0500 00 0 17327    184          CLA     LAN          GET THE ANSWER
17320  0020 00 0 00000    185 LSE      TRA     **           RETURN
17321  0500 00 0 17327    186 LFIX     CLA     LAN          TO GET IT PROTECTED DURING MOP UP
17322  0074 00 4 02522    187          TSX     RECLAM,4
17323  0500 00 0 03751    188          CLA     $FREE        FIX UP THE SAUSAGE
17324  0522 00 0 17314    189          XEC     LFX          GET LAST WORD TO IR
17325  0622 00 4 00000    190          STD     0,4          FIX ITS DECREMENT
17326  0020 00 0 17307    191          TRA     LSR
17327  0 00000 0 00000    192 LAN      PZE
                          193 *        UNWND IS UNSAVE FOR COMPILED FUNCTIONS,USED BY ERRORSET
                          194 *        TO RESTORE THE PDL TO PRISTINE STATE
17330  0634 00 4 17354    195 UNWND    SXA     UNR,4        SAVE RETURN
17331  0634 00 2 17355    196          SXA     UNR+1,2      SAVE IR2
17332 -0534 00 4 02317    197          LXD     $CPPI,4      $CPPI IS COMPLEMENT OF PDL POSITOIN
17333  0500 00 4 77777    198          CLA     -1,4         SO THIS GETS  STR 0,,N
17334  0622 00 0 17352    199          STD     UNJ          SAVE N TO RESTORE PDL
17335  0402 00 0 00442    200          SUB     $QD1         AND SET UP TEST WHICH SAYS THAT
17336  0622 00 0 17343    201          STD     UNH          WE HABE CRAWLED UP THE PDL ALL WAY
17337 -0535 00 4 02317    202          LDC     $CPPI,4      NEED TRUE POINTER FOR CALLING WORDS
17340  0634 00 4 17344    203          SXA     UNG,4        IN REVERSE ORDER FROM PDL
17341  0774 00 4 00001    204          AXT     1,4          INITIALIZE THE RECALL LOOP
17342  1 00001 4 17343    205 UNF      TXI     **+1,4,1     INCREMENT THE GET IR
```

```
17343  3 00000 4 17351   206 UNH   TXH   UND,4,**        TEST FOR LAST WORD RESTORED
17344  0500 00 4 00000   207 UNG   CLA   **,4            GET SAVED ITEM (GOING FROM BOT TO TOP)
17345  0734 00 2 00000   208         PAX   0,2            ZERO ADDRESS INTICATES NOT NECESS RES
17346 -2 00000 2 17342   209         TNX   UNF,2,0        FALL THROUGH IS TO RESTORE WORD
17347  0737 00 2 00000   210         PAC   0,2            ADDR IS TRUE POINTER TO LOCATION
17350  1 00001 4 17343   211         TXI   UNH,4,1        WORK ON NEXT ONE
17351 -0534 00 4 02317   212 UND   LXD   $CPPI,4         PUSH UP $CPPI
17352  1 00000 4 17353   213 UNJ   TXI   **+1,4,**       BY N
17353 -0634 00 4 02317   214         SXD   $CPPI,4
17354  0774 00 4 00000   215 UNR   AXT   **,4            RESTORE LINK
17355  0774 00 2 00000   216         AXT   **,2           AND IR2
17356  0020 00 4 00001   217         TRA   1,4
                         218 *   MOVE IS A SPECIAL COMPILER SERVICE SUBROUTINE WITH BAD CALLING.
                         219 *         TSX   *MOVE,1
                         220 *         TNX   NAME,1,*MN
17357  0634 00 1 17364   221 MOVE  SXA   MOVY,1
17360 -0534 00 1 02317   222         LXD   $CPPI,1        PICK UP PDL PPINTER
17361  0601 00 1 00001   223         STO   1,1            SAVE AC
17362 -0600 00 1 00002   224         STQ   2,1
17363 -0634 00 4 17453   225         SXD   TXLW,4         SAVE RETURN INDEX
17364  0774 00 4 00000   226 MOVY  AXT   **,4            PICK UP REFERENCE TO CALLING HEAD
17365  0500 00 4 00001   227         CLA   1,4            TNX WORD HAS NAME IN ADDR.
17366  0621 00 0 17453   228         STA   TXLW           COMPLETES THE TXL WORD
17367  0622 00 0 17452   229         STD   STRW           PUT N IN STRW DECREMENT
17370  0500 00 0 17453   230         CLA   TXLW
17371  0601 00 1 00000   231         STO   0,1            PUT IT AT HEAD OF PDL BLOCK
17372  0500 00 4 00000   232         CLA   0,4            TSX HAS COUNT FIELD=(No. of args.)-1
17373 -0320 00 0 00467   233         ANA   CNTMSK         COUNT FIELD MASK
17374  0100 00 0 17444   234         TZE   MOVD           IF LESS THAN 3 ARGS
17375 -0734 00 4 00000   235         PDX   0,4            COUNT FIELD TO IX
17376  0020 00 4 17443   236         TRA   MOVD-1,4       ENTER PART OF MOVE ROUTINE
17377  0500 00 0 03342   237         CLA   $ARG20
17400  0601 00 1 00024   238         STO   20,1
17401  0500 00 0 03341   239         CLA   $ARG19
17402  0601 00 1 00023   240         STO   19,1
17403  0500 00 0 03340   241         CLA   $ARG18
17404  0601 00 1 00022   242         STO   18,1
17405  0500 00 0 03337   243         CLA   $ARG17
17406  0601 00 1 00021   244         STO   17,1
17407  0500 00 0 03336   245         CLA   $ARG16
17410  0601 00 1 00020   246         STO   16,1
17411  0500 00 0 03335   247         CLA   $ARG15
17412  0601 00 1 00017   248         STO   15,1
17413  0500 00 0 03334   249         CLA   $ARG14
17414  0601 00 1 00016   250         STO   14,1
17415  0500 00 0 03333   251         CLA   $ARG13
17416  0601 00 1 00015   252         STO   13,1
17417  0500 00 0 03332   253         CLA   $ARG12
17420  0601 00 1 00014   254         STO   12,1
17421  0500 00 0 03331   255         CLA   $ARG11
17422  0601 00 1 00013   256         STO   11,1
17423  0500 00 0 03330   257         CLA   $ARG10
17424  0601 00 1 00012   258         STO   10,1
17425  0500 00 0 03327   259         CLA   $ARG9
```

```
17426  0601 00 1 00011    260        STO     9,1
17427  0500 00 0 03326    261        CLA     $ARG8
17430  0601 00 1 00010    262        STO     8,1
17431  0500 00 0 03325    263        CLA     $ARG7
17432  0601 00 1 00007    264        STO     7,1
17433  0500 00 0 03324    265        CLA     $ARG6
17434  0601 00 1 00006    266        STO     6,1
17435  0500 00 0 03323    267        CLA     $ARG5
17436  0601 00 1 00005    268        STO     5,1
17437  0500 00 0 03322    269        CLA     $ARG4
17440  0601 00 1 00004    270        STO     4,1
17441  0500 00 0 03321    271        CLA     $ARG3
17442  0601 00 1 00003    272        STO     3,1
17443  0534 00 4 17364    273        LXA     MOVY,4          RESTORE IR4
17444  0522 00 4 00001    274 MOVD   XEC     1,4     XECED TNX DECREMENTS IX1 BUT NO TRANSFER
17445 -0634 00 1 02317    275        SXD     $CPPI,1         KEEP CPPI UP TO DATE ALSO
17446  0522 00 0 02414    276 MOVPDD XEC     ENDPDL          TEST FOR OUT OF BPS
17447  0500 00 0 17452    277        CLA     STRW            CREATES SECOND PARAMETER WORD
17450  0601 00 1 77777    278        STO     -1,1            PUT AT VERY END OF BLOCK
17451  0020 00 4 00002    279        TRA     2,4             RETURN FROM LINK
17452 -1 00000 0 00000    280 STRW   STR     **
17453 -3 00000 0 00000    281 TXLW   TXL     **,,**
                          282 *
                          283 * RESTOR PICKS UP IX4 FROM PDL,SETS BACK CPPI ,AND EXITS.
17454 -0634 00 1 02317    284 RESTOR SXD     $CPPI,1
17455  0131 00 0 00000    285        XCA                     SAVE VALUE OF FUNCTION
17456  0500 00 1 00000    286        CLA     0,1             PICK UP RETURN WORD
17457 -0734 00 4 00000    287        PDX     0,4             RESTORE IX4
17460  0131 00 0 00000    288        XCA                     RESTORE AC
17461  0020 00 4 00001    289        TRA     1,4             EXIT
                          290 *
                                     DECK                    PERMANENT ATOMS
17462                       1 TOPROG BSS     0
```

RETURN

TXL $WORDS,1,**

```
                                      EJECT
                     66230            ORG     27800            PERMANENT OBJECTS START HERE
      66230                    LOWERP BSS     1                LWER LIMIT OF PERMENANT LIST STRUCTURE
                                          *********************HEAD OR HED*****************************LC893000
                               0      HED  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXLC893100
                                                                                               LC889200
                                          LOWER LIMIT OF PERM. LIST STRUCTURE                  LC889700
                                                                                               LC889800
      66231  0 00000 0 00000                                   LAST BUCKET                     1.5M8340
                                      DUP     1,125            MAKE BUCKETS
                                              ,,-*+1
      66427  0 11352 0 00000   BUCKET         ,,-*+1           POINTER TO BUCKETS
                     66427     OBLIST SYN     BUCKET                                           1.5M8380
```

```
                                    15          EJECT
                                    16          HEAD    0
                                    17              OBJECT LIST                                                 LC894400
                                    18                                                                          LC894500
66430  0 11347 0 77777              19  OBLB        -1,,-*-1                                                    LC894600
66431  0 11346 0 11023              20                  -III4,,-*-1         ADD 1                           RDCP0123
66432  0 11345 0 11001              21                  -)ALST,,-*-1
66433  0 11344 0 10772              22              AND,,-*-1                                                   LC894800
66434  0 11343 0 10762              23              F1,,-*-1                                                    LC894900
66435  0 11342 0 10752              24              F18,,-*-1                                                   LC895000
66436  0 11341 0 10742              25              APVAL,,-*-1                                                 LC895100
66437  0 11340 0 10735              26                  -III,,-*-1          ARRAY                           RDCP0110
66440  0 11337 0 10725              27              ATOM,,-*-1                                                  LC895300
66441  0 11336 0 10715              28              F29,,-*-1                                                   LC895400
66442  0 11335 0 10675              29              CAR,,-*-1                                                   LC897200
66443  0 11334 0 10665              30              CDR,,-*-1                                                   LC897300
66444  0 11333 0 10655              31              CAAR,,-*-1                                                  LC911700
66445  0 11332 0 10645              32              CDAR,,-*-1                                                  LC911800
66446  0 11331 0 10635              33              CADR,,-*-1                                                  LC911900
66447  0 11330 0 10625              34              CDDR,,-*-1                                                  LC912000
66450  0 11327 0 10615              35              CAAAR,,-*-1                                                 LC912100
66451  0 11326 0 10605              36              CAADR,,-*-1                                                 LC912200
66452  0 11325 0 10575              37              CADAR,,-*-1                                                 LC912300
66453  0 11324 0 10565              38              CADDR,,-*-1                                                 LC912400
66454  0 11323 0 10555              39              CDAAR,,-*-1                                                 LC912500
66455  0 11322 0 10545              40              CDADR,,-*-1                                                 LC912600
66456  0 11321 0 10535              41              CDDAR,,-*-1                                                 LC912700
66457  0 11320 0 10525              42              CDDDR,,-*-1                                                 LC912800
66460  0 11317 0 10460              43              CONC,,-*-1                                                  LC897600
66461  0 11316 0 10450              44              CONSN,,-*-1                                                 LC897700
66462  0 11315 0 10430              45              COPYN,,-*-1                                                 LC898000
66463  0 11314 0 10323              46                  DUMP,,-*-1
66464  0 11313 0 10440              47              F12,,-*-1                                                   LC897900
66465  0 11312 0 10420              48              F35,,-*-1                                                   LC898100
66466  0 11311 0 10365              49                  -IJ01,,-*-1         DIFFER
66467  0 11310 0 10343              50                  -IJ02,,-*-1         DIVIDE
66470  0 11307 0 10261              51              EQ,,-*-1                                                    LC898300
66471  0 11306 0 10241              52              F8,,-*-1                                                    LC898500
66472  0 11305 0 10231              53              F21,,-*-1                                                   LC898600
66473  0 11304 0 10177              54              F19,,-*-1                                                   LC898700
66474  0 11303 0 10167              55              EVLISL,,-*-1                                                LC898800
66475  0 11302 0 10157              56              EXPR,,-*-1                                                  LC898900
66476  0 11301 0 10152              57              F32,,-*-1                                                   LC899000
66477  0 11300 0 10142              58              FEXPR,,-*-1                                                 LC899200
66500  0 11277 0 10135              59              FIX,,-*-1                                                   LC899300
66501  0 11276 0 10130              60                  -III1,,-*-1         FIX P                           RDCP0120
66502  0 11275 0 10120              61              FLOAT,,-*-1                                                 LC899400
66503  0 11274 0 10113              62                  -III2,,-*-1         FLOAT P                         RDCP0121
66504  0 11273 0 10103              63              FSUBR,,-*-1                                                 LC899500
66505  0 11272 0 10076              64              FUNARG,,-*-1                                                LC899600
66506  0 11271 0 10071              65              FUNCT,,-*-1                                                 LC899700
66507  0 11270 0 10057              66              SYMGEN,,-*-1                                                LC899800
66510  0 11267 0 10037              67              GO,,-*-1                                                    LC899900
66511  0 11266 0 10027              68                  -II3,,-*-1          GREATER THAN P                  RDCP0112
```

```
66512  0 11265 0 10015   69  F16,,-*-1                                  LC900200
66513  0 11264 0 10005   70  LABEL,,-*-1                                LC900300
66514  0 11263 0 07775   71  LAMBDA,,-*-1                              LC900400
66515  0 11262 0 07770   72      LAP,,-*-1
66516  0 11261 0 07746   73      -II4,,-*-1      LESS THAN P            RDCP0113
66517  0 11260 0 07736   74  LIST,,-*-1                                LC900500
66520  0 11257 0 07716   75      LOADA,,-*-1     LOADER OBJECT
66521  0 11256 0 07646   76  PMAPCA,,-*-1                              LC901200
66522  0 11255 0 07636   77  -)069B,,-*-1                             LC901300
66523  0 11254 0 07626   78  -)069A,,-*-1                             LC901400
66524  0 11253 0 07614   79      -II7,,-*-1      MAXIMUM                RDCP0116
66525  0 11252 0 07604   80      -II8,,-*-1      MINIMUN                RDCP0117
66526  0 11251 0 07574   81  MINUS,,-*-1                               LC901700
66527  0 11250 0 07564   82      -II16,,-*-1     MINUS P                RDCP0125
66530  0 11247 0 07544   83  F3,,-*-1                                  LC901800
66531  0 11246 0 00000   84  NIL,,-*-1                                 LC902000
66532  0 11245 0 07534   85  NOT,,-*-1                                 LC902200
66533  0 11244 0 07524   86  NULL,,-*-1                                LC902300
66534  0 11243 0 07514   87      -II13,,-*-1     NUMBER P               RDCP0122
66535  0 11242 0 07472   88      OBLBA,,-*-1     OBLIST OBJECT
66536  0 11241 0 07455   89      -II9,,-*-1      ONE P                  RDCP0118
66537  0 11240 0 07435   90  OR,,-*-1                                  LC902600
66540  0 11237 0 07415   91  F2,,-*-1                                  LC902700
66541  0 11236 0 07405   92  PAUSE,,-*-1                               LC902800
66542  0 11235 0 07365   93  PLB,,-*-1                                 LC903000
66543  0 11234 0 07355   94  PLUS,,-*-1                                LC903100
66544  0 11233 0 07335   95  PNAME,,-*-1                               LC903200
66545  0 11232 0 07320   96  F4,,-*-1                                  LC903500
66546  0 11231 0 07300   97  PROG,,-*-1                                LC903700
66547  0 11230 0 07260   98  PROPO,,-*-1                               LC903800
66550  0 11227 0 07270   99      -IJ05,,-*-1     PUNCH
66551  0 11226 0 07250  100  QUOTE,,-*-1                               LC903900
66552  0 11225 0 07240  101      -IJ03,,-*-1     QUOTIENT
66553  0 11224 0 07226  102  F13,,-*-1                                 LC904000
66554  0 11223 0 07216  103      -II18,,-*-1     RECIP                  RDCP0127
66555  0 11222 0 07206  104  RCLAM,,-*-1                               LC904200
66556  0 11221 0 07140  105  PRPLCA,,-*-1                              LC904300
66557  0 11220 0 07130  106  PRPLCD,,-*-1                              LC904400
66560  0 11217 0 07174  107      -1J04,,-*-1     REMAINDER
66561  0 11216 0 07150  108      RETATM,,-*-1    RETURN
66562  0 11215 0 07052  109  SASCD,,-*-1                               LC904800
66563  0 11214 0 07042  110  SRCH,,-*-1                                LC904900
66564  0 11213 0 07032  111  SET,,-*-1                                 LC905000
66565  0 11212 0 07022  112  SETQ,,-*-1                               LC905100
66566  0 11211 0 07002  113  F34,,-*-1                                 LC905200
66567  0 11210 0 06772  114  STOP,,-*-1                               LC905300
66570  0 11207 0 06733  115  SUBR,,-*-1                               LC905500
66571  0 11206 0 06647  116      TRACE,,-*-1
66572  0 11205 0 07101  117      SMOVE,,-*-1
66573  0 11204 0 07072  118      SRETUR,,-*-1
66574  0 11203 0 07061  119      SLIST,,-*-1
66575  0 11202 0 07110  120      SPECAL,,-*-1
66576  0 11201 0 06743  121      -II15,,-*-1     SUBTRACT 1             RDCP0124
66577  0 11200 0 06726  122  F17,,-*-1                                 LC905600
```

```
66600  0 11177 0 06716  123        F30,,-*-1                                  LC905700
66601  0 11176 0 00001  124            1,,-*-1          *T* BINARY TRUE ATOM
66602  0 11175 0 06671  125        F27,,-*-1                                  LC906400
66603  0 11174 0 06706  126            SYM,,-*-1
66604  0 11173 0 06657  127        TIMES,,-*-1                                LC906500
66605  0 11172 0 06642  128        F36,,-*-1                                  LC906800
66606  0 11171 0 06620  129            -1110,,-*-1      ZERO P                RDCP0119
66607  0 11170 0 10047  130        CGET,,-*-1                                 LC914300
66610  0 11167 0 07162  131            REMPP,,-*-1                            LC914600
66611  0 11166 0 06127  132        H00,,-*-1                                  RDCP0011
66612  0 11165 0 06130  133        H01,,-*-1                                  RDCP0012
66613  0 11164 0 06131  134        H02,,-*-1                                  RDCP0013
66614  0 11163 0 06132  135        H03,,-*-1                                  RDCP0014
66615  0 11162 0 06133  136        H04,,-*-1                                  RDCP0015
66616  0 11161 0 06134  137        H05,,-*-1                                  RDCP0016
66617  0 11160 0 06135  138        H06,,-*-1                                  RDCP0017
66620  0 11157 0 06136  139        H07,,-*-1                                  RDCP0018
66621  0 11156 0 06137  140        H10,,-*-1                                  RDCP0019
66622  0 11155 0 06140  141        H11,,-*-1                                  RDCP0020
66623  0 11154 0 06141  142        H12,,-*-1                                  RDCP0021
66624  0 11153 0 06142  143        H13,,-*-1                                  RDCP0022
66625  0 11152 0 06144  144        H15,,-*-1                                  RDCP0024
66626  0 11151 0 06143  145        H14,,-*-1                                  RDCP0023
66627  0 11150 0 06145  146        H16,,-*-1                                  RDCP0025
66630  0 11147 0 06146  147        H17,,-*-1                                  RDCP0026
66631  0 11146 0 06147  148        H20,,-*-1                                  RDCP0027
66632  0 11145 0 06150  149        H21,,-*-1                                  RDCP0028
66633  0 11144 0 06151  150        H22,,-*-1                                  RDCP0029
66634  0 11143 0 06152  151        H23,,-*-1                                  RDCP0030
66635  0 11142 0 06153  152        H24,,-*-1                                  RDCP0031
66636  0 11141 0 06154  153        H25,,-*-1                                  RDCP0032
66637  0 11140 0 06155  154        H26,,-*-1                                  RDCP0033
66640  0 11137 0 06156  155        H27,,-*-1                                  RDCP0034
66641  0 11136 0 06157  156        H30,,-*-1                                  RDCP0035
66642  0 11135 0 06160  157        H31,,-*-1                                  RDCP0036
66643  0 11134 0 06161  158        H32,,-*-1                                  RDCP0037
66644  0 11133 0 06162  159        H33,,-*-1                                  RDCP0038
66645  0 11132 0 06163  160        H34,,-*-1                                  RDCP0039
66646  0 11131 0 06164  161        H35,,-*-1                                  RDCP0040
66647  0 11130 0 06165  162        H36,,-*-1                                  RDCP0041
66650  0 11127 0 06166  163        H37,,-*-1                                  RDCP0042
66651  0 11126 0 06167  164        H40,,-*-1                                  RDCP0043
66652  0 11125 0 06170  165        H41,,-*-1                                  RDCP0044
66653  0 11124 0 06171  166        H42,,-*-1                                  RDCP0045
66654  0 11123 0 06172  167        H43,,-*-1                                  RDCP0046
66655  0 11122 0 06173  168        H44,,-*-1                                  RDCP0047
66656  0 11121 0 06174  169        H45,,-*-1                                  RDCP0048
66657  0 11120 0 06175  170        H46,,-*-1                                  RDCP0049
66660  0 11117 0 06176  171        H47,,-*-1                                  RDCP0050
66661  0 11116 0 06177  172        H50,,-*-1                                  RDCP0051
66662  0 11115 0 06200  173        H51,,-*-1                                  RDCP0052
66663  0 11114 0 06201  174        H52,,-*-1                                  RDCP0053
66664  0 11113 0 06202  175        H53,,-*-1                                  RDCP0054
66665  0 11112 0 06203  176        H54,,-*-1                                  RDCP0055
```

```
66666  0 11111 0 06204  177  H55,,-*-1                                  RDCP0056
66667  0 11110 0 06205  178  H56,,-*-1                                  RDCP0057
66670  0 11107 0 06206  179  H57,,-*-1                                  RDCP0058
66671  0 11106 0 06207  180  H60,,-*-1                                  RDCP0059
66672  0 11105 0 06210  181  H61,,-*-1                                  RDCP0060
66673  0 11104 0 06211  182  H62,,-*-1                                  RDCP0061
66674  0 11103 0 06212  183  H63,,-*-1                                  RDCP0062
66675  0 11102 0 06213  184  H64,,-*-1                                  RDCP0063
66676  0 11101 0 06214  185  H65,,-*-1                                  RDCP0064
66677  0 11100 0 06215  186  H66,,-*-1                                  RDCP0065
66700  0 11077 0 06216  187  H67,,-*-1                                  RDCP0066
66701  0 11076 0 06217  188  H70,,-*-1                                  RDCP0067
66702  0 11075 0 06220  189  H71,,-*-1                                  RDCP0068
66703  0 11074 0 06221  190  H72,,-*-1                                  RDCP0069
66704  0 11073 0 06222  191  H73,,-*-1                                  RDCP0070
66705  0 11072 0 06223  192  H74,,-*-1                                  RDCP0071
66706  0 11071 0 06224  193  H75,,-*-1                                  RDCP0072
66707  0 11070 0 06225  194  H76,,-*-1                                  RDCP0073
66710  0 11067 0 06226  195  H77,,-*-1                                  RDCP0074
66711  0 11066 0 10410  196  PJ1,,-*-1                                  RDCP0075
66712  0 11065 0 11013  197  PJ2,,-*-1                                  RDCP0076
66713  0 11064 0 10221  198  PJ4,,-*-1                                  RDCP0077
66714  0 11063 0 10251  199  PJ5,,-*-1                                  RDCP0078
66715  0 11062 0 10470  200  PJ6,,-*-1                                  RDCP0079
66716  0 11061 0 07656  201  PJ7,,-*-1                                  RDCP0080
66717  0 11060 0 07120  202  PJ8,,-*-1                                  RDCP0081
66720  0 11057 0 07375  203  PJ9,,-*-1                                  RDCP0082
66721  0 11056 0 10333  204  PJ10,,-*-1                                 RDCP0083
66722  0 11055 0 07345  205  PJ11,,-*-1                                 RDCP0084
66723  0 11054 0 10705  206  PJ12,,-*-1                                 RDCP0085
66724  0 11053 0 07012  207  PJ14,,-*-1                                 RDCP0086
66725  0 11052 0 06765  208  PJ15,,-*-1                                 RDCP0087
66726  0 11051 0 10375  209  PJ16,,-*-1                                 RDCP0088
66727  0 11050 0 07726  210  PJ17,,-*-1                                 RDCP0089
66730  0 11047 0 07445  211  PJ18,,-*-1                                 RDCP0090
66731  0 11046 0 10353  212  PJ19,,-*-1                                 RDCP0091
66732  0 11045 0 06755  213  PJ21,,-*-1                                 RDCP0092
66733  0 11044 0 06701  214  PJ23,,-*-1                                 RDCP0093
66734  0 11043 0 07425  215  PJ24,,-*-1                                 RDCP0094
66735  0 11042 0 07502  216  PJ25,,-*-1                                 RDCP0095
66736  0 11041 0 07554  217  PJ26,,-*-1                                 RDCP0096
66737  0 11040 0 10502  218  PJ27,,-*-1                                 RDCP0097
66740  0 11037 0 07462  219  PJ28,,-*-1                                 RDCP0098
66741  0 11036 0 10313  220  PJ30,,-*-1                                 RDCP0099
66742  0 11035 0 06630  221  PJ31,,-*-1                                 RDCP0100
66743  0 11034 0 10515  222  PJ32,,-*-1                                 RDCP0102
66744  0 11033 0 07330  223  PJ33,,-*-1                                 RDCP0103
66745  0 11032 0 10301  224  PJ34,,-*-1                                 RDCP0104
66746  0 11031 0 10271  225  PJ35,,-*-1                                 RDCP0105
66747  0 11030 0 07676  226  PJ36,,-*-1                                 RDCP0106
66750  0 11027 0 07706  227  PJ37,,-*-1                                 RDCP0107
66751  0 11026 0 07666  228  PJ38,,-*-1                                 RDCP0108
66752  0 11025 0 07310  229  PJ39,,-*-1                                 RDCP0109
66753  0 11024 0 10211  230  ERSETO,,-*-1      ERRORSET
```

66754 0 00000 0 07760 231 PVW1 LAST OBJECT - LEFTSHIFT

```
                                EJECT
                                    PROPERTY LISTS                                     LC915000
                                                                                       LC915100
66755  0 11022 0 77777   II14           -1,,-*-1                                       RDC80426
66756  0 11021 0 06733                  $SUBR,,-*-1                                    RDC80427
66757  0 11017 0 11020                  -*-1,,-*-2                                     RDC80428
66760 -3 00001 0 14401          TXL     ADD1,,1                                        RDC80429
66761  0 11016 0 07335                  $PNAME,,-*-1                                   RDC80430
66762  0 00000 0 11015                  -*-1                                           RDC80431
66763  0 00000 0 11014                  -*-1                                           RDC80432
66764 +212424017777             OCT     212424017777          ADD1                     RDC80433
       *                                                                               RDC80434
66765  0 11012 0 77777   )PJ2       -1,,-*-1                  ADVANCE                  RDCP0625
66766  0 11011 0 06733              SUBR,,-*-1                                         RDCP0632
66767  0 11007 0 11010          PZE -*-1,,-*-2                                         RDCW0012
66770 -3 00000 0 12211          TXL ADVANC,,0                                          RDCP0634
66771  0 11006 0 07335              PNAME,,-*-1                                        RDC80002
66772  0 00000 0 11005              -*-1                                               RDCP0633
66773  0 11003 0 11004              -*-1,,-*-2                                         RDCP0628
66774  212465214523             BCD 1ADVANC                                            RDCP0629
66775  0 00000 0 11002              -*-1                                               RDCP0630
66776 +257777777777             OCT 257777777777                                       RDCP0631
       *
66777  0 11000 0 77777   )ALST          -1,,-*-1
67000  0 10777 0 07335              PNAME,,-*-1                                        LC919300
67001  0 10774 0 10776                  -*-1,,-*-3
67002  0 00000 0 10775              -*-1                                               LC919400
67003 -132143316263             OCT     532143316263          $ALIST
67004  0 10773 0 06706                  SYM,,-*-1
67005  0 00000 0 61262                  -C$ALST
                                                                                       LC915800
67006  0 10771 0 77777   )002       -1,,-*-1                                           LC915900
67007  0 10770 0 10103              FSUBR,,-*-1                                        LC916000
67010  0 10766 0 10767              -*-1,,-*-2                                         LC916100
67011 -3 00000 0 15370          TXL $EVAND,,0                                          LC916200
67012  0 10765 0 07335              $PNAME,,-*-1                                       LC916300
67013  0 00000 0 10764              -*-1                                               LC916400
67014  0 00000 0 10763              -*-1                                               LC916500
67015 +214524777777             OCT 214524777777              AND                      LC916600
                                                                                       LC916700
67016  0 10761 0 77777   )003       -1,,-*-1                                           LC916800
67017  0 10760 0 06733              SUBR,,-*-1                                         LC916900
67020  0 10756 0 10757              -*-1,,-*-2                                         LC917000
67021 -3 00002 0 07541          TXL APPEND,,2                                          LC917100
67022  0 10755 0 07335              PNAME,,-*-1                                        LC917200
67023  0 00000 0 10754              -*-1                                               LC917300
67024  0 00000 0 10753              -*-1                                               LC917400
67025  214747254524             BCD 1APPEND                                            LC917500
                                                                                       LC917600
67026  0 10751 0 77777   )004       -1,,-*-1                                           LC917700
67027  0 10750 0 06733              SUBR,,-*-1                                         LC917800
67030  0 10746 0 10747              -*-1,,-*-2                                         LC917900
67031 -3 00003 0 14663          TXL APPLY,,3                                           LC918000
67032  0 10745 0 07335              PNAME,,-*-1                                        LC918100
```

```
67033  0 00000 0 10744     286              -*-1                                    LC918200
67034  0 00000 0 10743     287              -*-1                                    LC918300
67035 +214747437077        288        OCT 214747437077          APPLY              LC918400
                           289                                                      LC919700
67036  0 10741 0 77777     290 )005          -1,,-*-1
67037  0 10740 0 07335     291               PNAME,,-*-1
67040  0 00000 0 10737     292               -*-1
67041  0 00000 0 10736     293               -*-1
67042  214765214377        294        VFD    H30/APVAL,06/77    APVAL
                           295 *
67043  0 10734 0 77777     296  III          -1,,-*-1                                RDC80305
67044  0 10733 0 06733     297               SUBR,,-*-1
67045  0 10731 0 10732     298               -*-1,,-*-2
67046 -3 00001 0 13113     299        TXL    ARYMAK,,1
67047  0 10730 0 07335     300               $PNAME,,-*-1                            RDC80309
67050  0 00000 0 10727     301               -*-1                                    RDC80310
67051  0 00000 0 10726     302               -*-1                                    RDC80311
67052 +215151217077        303        OCT    215151217077       ARRAY              RDC80312
                           304 *                                                    RDC80313
67053  0 10724 0 77777     305 )007          -1,,-*-1                                LC919800
67054  0 10723 0 06733     306               SUBR,,-*-1                              LC919900
67055  0 10721 0 10722     307               -*-1,,-*-2                              LC920000
67056 -3 00001 0 15230     308        TXL ATOMP,,1                                   LC920100
67057  0 10720 0 07335     309            PNAME,,-*-1                                LC922400
67060  0 00000 0 10717     310            -*-1                                       LC922500
67061  0 00000 0 10716     311            -*-1                                       LC922600
67062 +216346447777        312        OCT 216346447777       ATOM                   LC922700
                           313                                                      LC922800
67063  0 10714 0 77777     314 )008          -1,,-*-1                                LC922900
67064  0 10713 0 06733     315               SUBR,,-*-1                              LC923000
67065  0 10711 0 10712     316               -*-1,,-*-2                              LC923100
67066 -3 00002 0 10134     317        TXL ATTRIB,,2                                  LC923200
67067  0 10710 0 07335     318            PNAME,,-*-1                                LC923300
67070  0 00000 0 10707     319            -*-1                                       LC923400
67071  0 00000 0 10706     320            -*-1                                       LC923500
67072  216363513122        321        BCD 1ATTRIB                                    LC923600
                           322 *
67073  0 10704 0 77777     323 )PJ12  PZE -1,,-*-1               BLANK              RDC80069
67074  0 10703 0 07335     324        PZE PNAME,,-*-1                                RDC80070
67075  0 10700 0 10702     325            -*-1,,-*-3                                 RDC80071
67076  0 00000 0 10701     326            -*-1                                       RDC80072
67077 +224321454277        327        OCT 224321454277       BCD BLANK              RDC80073
67100  0 10677 0 10742     328            APVAL1,,-*-1                               RDC80074
67101  0 00000 0 10676     329            -*-1                                       RDC80075
67102  0 00000 0 06207     330            H60                                        RDC80076
                           331 *
67103  0 10674 0 77777     332  )011          -1,,-*-1                              HAC50000
67104  0 10673 0 06733     333               SUBR,,-*-1                            HAC50010
67105  0 10671 0 10672     334               -*-1,,-*-2                            HAC50020
67106 -3 00001 0 15212     335        TXL    CARP,,1                               HAC50030
67107  0 10670 0 07335     336               PNAME,,-*-1
67110  0 00000 0 10667     337               -*-1                                  HAC50130
67111  0 00000 0 10666     338               -*-1                                  HAC50140
67112 +232151777777        339        OCT    232151777777  CAR                     HAC50150
```

```
                                 *                                          HAC50160
67113  0 10664 0 77777      )012           -1,,-*-1                         HAC50170
67114  0 10663 0 06733                     SUBR,,-*-1                       HAC50180
67115  0 10661 0 10662                     -*-1,,-*-2                       HAC50190
67116 -3 00001 0 15222            TXL      CDRP,,1                          HAC50200
67117  0 10660 0 07335                     PNAME,,-*-1
67120  0 00000 0 10657                     -*-1                             HAC50290
67121  0 00000 0 10656                     -*-1                             HAC50300
67122 +232451777777               OCT      232451777777   CDR               HAC50310
                                                                            LD092800
67123  0 10654 0 77777      )201      -1,,-*-1                              LD092900
67124  0 10653 0 06733                     $SUBR,,-*-1
67125  0 10651 0 10652                     -*-1,,-*-2
67126 -3 00001 0 11726            TXL      CAARXX,,1
67127  0 10650 0 07335                PNAME,,-*-1                           LD093000
67130  0 00000 0 10647                -*-1                                  LD093200
67131  0 00000 0 10646                -*-1                                  LD093500
67132 +232121517777               OCT 232121517777                          LD093300
                                                                            LD094400
67133  0 10644 0 77777      )202      -1,,-*-1                              LD094500
67134  0 10643 0 06733                     $SUBR,,-*-1
67135  0 10641 0 10642                     -*-1,,-*-2
67136 -3 00001 0 11765            TXL      CDARXX,,1
67137  0 10640 0 07335                PNAME,,-*-1                           LD094600
67140  0 00000 0 10637                -*-1                                  LD095100
67141  0 00000 0 10636                -*-1                                  LD094800
67142 +232421517777               OCT 232421517777                          LD094900
                                                                            LD095900
67143  0 10634 0 77777      )203      -1,,-*-1                              LD096000
67144  0 10633 0 06733                     $SUBR,,-*-1
67145  0 10631 0 10632                     -*-1,,-*-2
67146 -3 00001 0 11730            TXL      CADRXX,,1
67147  0 10630 0 07335                PNAME,,-*-1                           LD096100
67150  0 00000 0 10627                -*-1                                  LD096800
67151  0 00000 0 10626                -*-1                                  LD096300
67152 +232124517777               OCT 232124517777                          LD096400
                                                                            LD097500
67153  0 10624 0 77777      )204      -1,,-*-1                              LD097600
67154  0 10623 0 06733                     $SUBR,,-*-1
67155  0 10621 0 10622                     -*-1,,-*-2
67156 -3 00001 0 11767            TXL      CDDRXX,,1
67157  0 10620 0 07335                PNAME,,-*-1                           LD097700
67160  0 00000 0 10617                -*-1                                  LD098200
67161  0 00000 0 10616                -*-1                                  LD097900
67162 +232424517777               OCT 232424517777                          LD098000
                                                                            LD099000
67163  0 10614 0 77777      )205      -1,,-*-1                              LD099100
67164  0 10613 0 06733                     $SUBR,,-*-1
67165  0 10611 0 10612                     -*-1,,-*-2
67166 -3 00001 0 11672            TXL      CAAARX,,1
67167  0 10610 0 07335                PNAME,,-*-1                           LD099200
67170  0 00000 0 10607                -*-1                                  LD099700
67171  0 00000 0 10606                -*-1                                  LD099400
67172 +232121215177               OCT 232121215177                          LD099500
```

```
                              394                                                   LD100800
  67173  0 10604 0 77777      395  )206       -1,,-*-1                              LD100900
  67174  0 10603 0 06733      396                   $SUBR,,-*-1
  67175  0 10601 0 10602      397                   -*-1,,-*-2
  67176 -3 00001 0 11705      398        TXL        CAADRX,,1
  67177  0 10600 0 07335      399             PNAME,,-*-1                           LD101000
  67200  0 00000 0 10577      400             -*-1                                  LD101500
  67201  0 00000 0 10576      401             -*-1                                  LD101200
  67202 +232121245177         402        OCT  232121245177                          LD101300
                              403                                                   LD102600
  67203  0 10574 0 77777      404  )207       -1,,-*-1                              LD102700
  67204  0 10573 0 06733      405                   $SUBR,,-*-1
  67205  0 10571 0 10572      406                   -*-1,,-*-2
  67206 -3 00001 0 11712      407        TXL        CADARX,,1
  67207  0 10570 0 07335      408             PNAME,,-*-1                           LD102800
  67210  0 00000 0 10567      409             -*-1                                  LD103300
  67211  0 00000 0 10566      410             -*-1                                  LD103000
  67212 +232124215177         411        OCT  232124215177                          LD103100
                              412                                                   LD104400
  67213  0 10564 0 77777      413  )208       -1,,-*-1                              LD104500
  67214  0 10563 0 06733      414                   $SUBR,,-*-1
  67215  0 10561 0 10562      415                   -*-1,,-*-2
  67216 -3 00001 0 11721      416        TXL        CADDRX,,1
  67217  0 10560 0 07335      417             PNAME,,-*-1                           LD104600
  67220  0 00000 0 10557      418             -*-1                                  LD105100
  67221  0 00000 0 10556      419             -*-1                                  LD104800
  67222 +232124245177         420        OCT  232124245177                          LD104900
                              421                                                   LD106200
  67223  0 10554 0 77777      422  )209       -1,,-*-1                              LD106300
  67224  0 10553 0 06733      423                   $SUBR,,-*-1
  67225  0 10551 0 10552      424                   -*-1,,-*-2
  67226 -3 00001 0 11732      425        TXL        CDAARX,,1
  67227  0 10550 0 07335      426             PNAME,,-*-1                           LD106400
  67230  0 00000 0 10547      427             -*-1                                  LD106900
  67231  0 00000 0 10546      428             -*-1                                  LD106600
  67232 +232421215177         429        OCT  232421215177                          LD106700
                              430                                                   LD107900
  67233  0 10544 0 77777      431  )210       -1,,-*-1                              LD108000
  67234  0 10543 0 06733      432                   $SUBR,,-*-1
  67235  0 10541 0 10542      433                   -*-1,,-*-2
  67236 -3 00001 0 11744      434        TXL        CDADRX,,1
  67237  0 10540 0 07335      435             PNAME,,-*-1                           LD108100
  67240  0 00000 0 10537      436             -*-1                                  LD108600
  67241  0 00000 0 10536      437             -*-1                                  LD108300
  67242 +232421245177         438        OCT  232421245177                          LD108400
                              439                                                   LD109600
  67243  0 10534 0 77777      440  )211       -1,,-*-1                              LD109700
  67244  0 10533 0 06733      441                   $SUBR,,-*-1
  67245  0 10531 0 10532      442                   -*-1,,-*-2
  67246 -3 00001 0 11751      443        TXL        CDDARX,,1
  67247  0 10530 0 07335      444             PNAME,,-*-1                           LD109800
  67250  0 00000 0 10527      445             -*-1                                  LD110300
  67251  0 00000 0 10526      446             -*-1                                  LD110000
  67252 +232424215177         447        OCT  232424215177                          LD110100
```

```
                                                                          LD111300
67253  0 10524 0 77777   )212        -1,,-*-1                             LD111400
67254  0 10523 0 06733                 $SUBR,,-*-1
67255  0 10521 0 10522                 -*-1,,-*-2
67256 -3 00001 0 11760          TXL    CDDDRX,,1
67257  0 10520 0 07335               PNAME,,-*-1                          LD111500
67260  0 00000 0 10517               -*-1                                 LD112000
67261  0 00000 0 10516               -*-1                                 LD111700
67262 +232424245177             OCT  232424245177                         LD111800
                         *                                                HAC50320
67263  0 10514 0 77777   )PJ32         -1,,-*-1         CHARCOUNT         HAC50330
67264  0 10513 0 07335                 PNAME,,-*-1                        HAC50340
67265  0 10506 0 10512                 -*-1,,-*-5                         HAC50350
67266  0 10511 0 10510                 -*-2,,-*-1                         HAC50360
67267  0 00000 0 10507                 -*-2                               HAC50370
67270  233021512346             BCI    1,CHARCO         BCI CHARCOUNT     HAC50380
67271 -244563777777             OCT    644563777777                       HAC50390
67272  0 10505 0 10742                 APVAL1,,-*-1                       HAC50400
67273  0 00000 0 10504                 -*-1                               HAC50410
67274  0 00000 0 10503                 -*-1
67275 -0 65143 1 77777          MZE    -1,1,-CHACT
                         *                                                HAC50500
67276  0 10501 0 77777   )PJ27         -1,,-*-1         CLEARBUFF         HAC50510
67277  0 10500 0 06733                 SUBR,,-*-1                         HAC50520
67300  0 10476 0 10477                 -*-1,,-*-2                         HAC50530
67301 -3 00000 0 12201          TXL    CLEAR                              HAC50540
67302  0 10475 0 07335                 PNAME,,-*-1                        HAC50550
67303  0 00000 0 10474                 -*-1                               HAC50560
67304  0 10472 0 10473                 -*-1,,-*-2                         HAC50570
67305  234325215122             BCI    1,CLEARB                           HAC50580
67306  0 00000 0 10471                 -*-1                               HAC50590
67307 -242626777777             OCT    642626777777     BCD UFF           HAC50600
                                                                          HAC50610
67310  0 10467 0 77777   )PJ6          -1,,-*-1         COMMA (LITERAL)   HAC50620
67311  0 10466 0 07335                 PNAME,,-*-1                        HAC50630
67312  0 10463 0 10465                 -*-1,,-*-3                         HAC50640
67313  0 00000 0 10464                 -*-1                               HAC50650
67314 +234644442177             OCT    234644442177     BCD COMMA         HAC50660
67315  0 10462 0 10742                 APVAL1,,-*-1                       HAC50670
67316  0 00000 0 10461                 -*-1                               HAC50680
67317  0 00000 0 06222          PZE    H73                                HAC50690
                                                                          HAC50820
67320  0 10457 0 77777   )016          -1,,-*-1                           HAC50830
67321  0 10456 0 10103                 FSUBR,,-*-1                        HAC50840
67322  0 10454 0 10455                 -*-1,,-*-2                         HAC50850
67323 -3 00000 0 15154          TXL    $EVCON,,0                          HAC50860
67324  0 10453 0 07335                 PNAME,,-*-1                        HAC50870
67325  0 00000 0 10452                 -*-1                               HAC50880
67326  0 00000 0 10451                 -*-1                               HAC50890
67327 +234645247777             OCT    234645247777     COND              HAC50900
                                                                          HAC50910
67330  0 10447 0 77777   )017          -1,,-*-1                           HAC50920
67331  0 10446 0 06733                 SUBR,,-*-1                         HAC50930
67332  0 10444 0 10445                 -*-1,,-*-2                         HAC50940
```

```
67333 -3 00002 0 03730          TXL     CONS,,2                                HAC50950
67334  0 10443 0 07335                  PNAME,,-*-1
67335  0 00000 0 10442                  -*-1                                   HAC51260
67336  0 00000 0 10441                  -*-1                                   HAC51270
67337 +234645627777             OCT     234645627777  CONS                     HAC51280
                                                                               HAC51380
67340  0 10437 0 77777    )019          -1,,-*-1                               HAC51390
67341  0 10436 0 06733                  SUBR,,-*-1                             HAC51400
67342  0 10434 0 10435                  -*-1,,-*-2                             HAC51410
67343 -3 00001 0 07343          TXL     CP1,,1                                 HAC51420
67344  0 10433 0 07335                  PNAME,,-*-1                            HAC51430
67345  0 00000 0 10432                  -*-1                                   HAC51440
67346  0 00000 0 10431                  -*-1                                   HAC51450
67347 +234701777777             OCT     234701777777  CP1                      HAC51460
                                                                               HAC51470
67350  0 10427 0 77777    )020          -1,,-*-1                               HAC51480
67351  0 10426 0 06733              SUBR,,-*-1                                 LC956800
67352  0 10424 0 10425              -*-1,,-*-2                                 LC956900
67353 -3 00001 0 04345          TXL $COPY,,1                                   LC957000
67354  0 10423 0 07335              PNAME,,-*-1                                LC957100
67355  0 00000 0 10422              -*-1                                       LC957200
67356  0 00000 0 10421              -*-1                                       LC957300
67357 +234647707777             OCT 234647707777          COPY                 LC957400
                                                                               LC957500
67360  0 10417 0 77777    )021      -1,,-*-1                                   LC957600
67361  0 10416 0 06733              SUBR,,-*-1                                 LC957700
67362  0 10414 0 10415              -*-1,,-*-2                                 LC957800
67363 -3 00000 0 04057          TXL COUNT,,0                                   LC957900
67364  0 10413 0 07335              PNAME,,-*-1                                LC958000
67365  0 00000 0 10412              -*-1                                       LC958100
67366  0 00000 0 10411              -*-1                                       LC958200
67367 +234664456377             OCT 234664456377          COUNT                LC958300
                                                                               RDCP0606
67370  0 10407 0 77777    )PJ1      -1,,-*-1              CURCHAR              RDCP0607
67371  0 10406 0 10742              APVAL1,,-*-1                               RDCP0608
67372  0 10405 0 65145              -CURC1,,-*-1                               RDCP0609
67373  0 10404 0 07335              PNAME,,-*-1                                RDCP0611
67374  0 10377 0 10403              -*-1,,-*-5                                 RDCP0612
67375  0 10401 0 10402              -*-1,,-*-2                                 RDCP0613
67376  236451233021             BCD 1CURCHA                                    RDCP0614
67377  0 00000 0 10400              -*-1                                       RDCP0615
67400 -117777777777             OCT 517777777777                               RDCP0616
67401  0 10376 0 07110                  SPECAL,,-*-1
67402  0 00000 0 65144                  -CURC
                                                                               RDC80096
67403  0 10374 0 77777    )PJ16     -1,,-*-1              DASH                 RDC80097
67404  0 10373 0 10742              APVAL1,,-*-1                               RDC80105
67405  0 10371 0 10372          PZE -*-1,,-*-2                                 RDCW0014
67406  0 00000 0 06167              H40                                        RDC80107
67407  0 10370 0 07335              PNAME,,-*-1                                RDC80098
67410  0 00000 0 10367              -*-1                                       RDC80106
67411  0 00000 0 10366              -*-1                                       RDC80100
67412 +242162307777             OCT 242162307777          BCD DASH             RDC80101
                                                                               RDC80126
```

```
67413  0 10364 0 77777    556  IJ01          -1,,-*-1
67414  0 10363 0 06733    557                $SUBR,,-*-1
67415  0 10361 0 10362    558                -*-1,,-*-2
67416 -3 00002 0 13512    559          TXL   DIFFER,,2
67417  0 10360 0 07335    560                $PNAME,,-*-1
67420  0 00000 0 10357    561                -*-1
67421  0 10356 0 10355    562                -*-2,,-*-1
67422  0 00000 0 10354    563                -*-2
67423  243126262551       564          BCI   1,DIFFER
67424 +254523257777       565          OCT   254523257777      DIFFERENCE
                          566 *
67425  0 10352 0 77777    567 )PJ19          -1,,-*-1          DIGIT                RDC80127
67426  0 10351 0 06733    568                SUBR,,-*-1                             RDC80132
67427  0 10347 0 10350    569          PZE   -*-1,,-*-2                             RDCW0017
67430 -3 00001 0 12337    570          TXL   DIGIT,,1                               RDC80134
67431  0 10346 0 07335    571                PNAME,,-*-1                            RDC80128
67432  0 00000 0 10345    572                -*-1                                   RDC80133
67433  0 00000 0 10344    573                -*-1                                   RDC80130
67434 +243127316377       574          OCT   243127316377                           RDC80131
                          575                                                       RDC80050
67435  0 10342 0 77777    576  IJ02          -1,,-*-1
67436  0 10341 0 06733    577                $SUBR,,-*-1
67437  0 10337 0 10340    578                -*-1,,-*-2
67440 -3 00002 0 13420    579          TXL   DIVIDE,,2
67441  0 10336 0 07335    580                $PNAME,,-*-1
67442  0 00000 0 10335    581                -*-1
67443  0 00000 0 10334    582                -*-1
67444  243165312425       583          BCI   1,DIVIDE
                          584 *
67445  0 10332 0 77777    585 )PJ10          -1,,-*-1          COLLAR               RDC80051
67446  0 10331 0 07335    586                PNAME,,-*-1                            RDC80052
67447  0 10326 0 10330    587                -*-1,,-*-3                             RDC80053
67450  0 00000 0 10327    588                -*-1                                   RDC80054
67451  244643432151       589          BCD   1DOLLAR                                RDC80055
67452  0 10325 0 10742    590                APVAL1,,-*-1                           RDC80056
67453  0 00000 0 10324    591                -*-1                                   RDC80057
67454  0 00000 0 06202    592                H53                                    RDC80058
                          593 *
67455  0 10322 0 77777    594 DMPC8             -1,,-*-1
67456  0 10321 0 06733    595                   SUBR,,-*-1
67457  0 10317 0 10320    596                   -*-1,,-*-2
67460 -3 00004 0 10736    597          TXL      DUMPXX,,4
67461  0 10316 0 07335    598                   PNAME,,-*-1
67462  0 00000 0 10315    599                   -*-1
67463  0 00000 0 10314    600                   -*-1
67464 +246444477777       601          OCT      246444477777      DUMP
                          602 *                                                     RDC80199
67465  0 10312 0 77777    603  )PJ30            -1,,-*-1          ENDREAD            RDC80200
67466  0 10311 0 06733    604                   SUBR,,-*-1                           RDC80207
67467  0 10307 0 10310    605                   -*-1,,-*-2                           RDCW0024
67470 -3 00000 0 12273    606          TXL      ENDRED                               RDC80209
67471  0 10306 0 07335    607                   PNAME,,-*-1                          RDC80201
67472  0 00000 0 10305    608                   -*-1                                 RDC80208
67473  0 10304 0 10303    609                   -*-2,,-*-1                           RDC80203
```

```
67474  0 00000 0 10302    610                -*-2                                  RDC80204
67475  254524512521       611          BCI   1,ENDREA          ENDREA              RDC80205
67476 +247777777777       612          OCT   247777777777      D                   RDC80206
                          613 *                                                    RDC80246
67477  0 10300 0 77777    614 )PJ34          -1,,-*-1          EOF                 RDC80247
67500  0 10277 0 10742    615                APVAL1,,-*-1                          RDC80252
67501  0 10275 0 10276    616             -*-1,,-*-2
67502  0 00000 0 06141    617                H12                                   RDC80254
67503  0 10274 0 07335    618                PNAME,,-*-1                           RDC80248
67504  0 00000 0 10273    619                -*-1                                  RDC80250
67505  0 00000 0 10272    620             -*-1                                     RDC80256
67506 +254626777777       621          OCT   254626777777      BCD EOF             RDCP0259
                          622 *                                                    RDC80255
67507  0 10270 0 77777    623 )PJ35          -1,,-*-1                              RDC80258
67510  0 10267 0 10742    624                APVAL1,,-*-1                          RDC80263
67511  0 10265 0 10266    625             -*-1,,-*-2
67512  0 00000 0 06221    626                H72                                   RDC80264
67513  0 10264 0 07335    627                PNAME,,-*-1                           RDC80259
67514  0 00000 0 10263    628                -*-1                                  RDC80261
67515  0 00000 0 10262    629             -*-1                                     RDC80266
67516 +254651777777       630          OCT   254651777777                          RDCP0510
                          631                                                      LC959300
                          632                                                      LC959400
67517  0 10260 0 77777    633 )030           -1,,-*-1                              LC959500
67520  0 10257 0 06733    634                SUBR,,-*-1                            LC959600
67521  0 10255 0 10256    635                -*-1,,-*-2                            LC959700
67522 -3 00002 0 15445    636          TXL   EQP,,2                                LC959800
67523  0 10254 0 07335    637                PNAME,,-*-1
67524  0 00000 0 10253    638                -*-1                                  LC961400
67525  0 00000 0 10252    639                -*-1                                  LC961500
67526 +255077777777       640          OCT   255077777777      EQ                  LC961600
                          641                                                      LC961700
67527  0 10250 0 77777    642 )PJ5           -1,,-*-1          EQSIGN              RDC80006
67530  0 10247 0 07335    643                PNAME,,-*-1                           RDC80007
67531  0 10244 0 10246    644                -*-1,,-*-3                            RDC80008
67532  0 00000 0 10245    645                -*-1                                  RDC80009
67533  255062312745       646          BCI   1,EQSIGN                             RDC80010
67534  0 10243 0 10742    647                APVAL1,,-*-1                          RDC80011
67535  0 00000 0 10242    648                -*-1                                  RDC80012
67536  0 00000 0 06142    649                H13                                   RDC80013
                          650                                                      LC962600
67537  0 10240 0 77777    651 )032           -1,,-*-1                              LC962700
67540  0 10237 0 06733    652                SUBR,,-*-1                            LC962800
67541  0 10235 0 10236    653                -*-1,,-*-2                            LC962900
67542 -3 00002 0 04461    654          TXL   EQUAL,,2                              LC963000
67543  0 10234 0 07335    655                PNAME,,-*-1                           LC963100
67544  0 00000 0 10233    656                -*-1                                  LC963200
67545  0 00000 0 10232    657                -*-1                                  LC963300
67546 +255064214377       658          OCT   255064214377      EQUAL               LC963400
                          659                                                      LC963500
67547  0 10230 0 77777    660 )034           -1,,-*-1                              LC963600
67550  0 10227 0 06733    661                SUBR,,-*-1                            LC963700
67551  0 10225 0 10226    662                -*-1,,-*-2                            LC963800
67552 -3 00001 0 02071    663          TXL   ERRCR1,,1                             LC963900
```

```
67553  0 10224 0 07335    664            PNAME,,-*-1                                LC964000
67554  0 00000 0 10223    665            -*-1                                       LC964100
67555  0 00000 0 10222    666            -*-1                                       LC964200
67556 +255151465177       667        OCT 255151465177          ERROR               LC964300
                          668                                                      RDCP0635
67557  0 10220 0 77777    669 )PJ4        -1,,-*-1              ERROR1             RDCP0636
67560  0 10217 0 06733    670            SUBR,,-*-1                                 RDC80000
67561  0 10215 0 10216    671        PZE -*-1,,-*-2                                 RDCW0013
67562 -3 00000 0 12346    672        TXL EROR1,,0                                   RDC80004
67563  0 10214 0 07335    673            PNAME,,-*-1                                RDCP0637
67564  0 00000 0 10213    674            -*-1                                       RDC80001
67565  0 00000 0 10212    675            -*-1                                       RDCP0639
67566  255151465101       676        BCD 1ERROR1                                    RDCP0640
                          677 *
67567  0 10210 0 77777    678 )PJ41        -1,,-*-1            ERRORSET
67570  0 10207 0 06733    679              SUBR,,-*-1
67571  0 10205 0 10206    680              -*-1,,-*-2
67572 -3 00003 0 11560    681          TXL ERRSET,,3
67573  0 10204 0 07335    682              PNAME,,-*-1
67574  0 00000 0 10203    683              -*-1
67575  0 10202 0 10201    684              -*-2,,-*-1
67576  0 00000 0 10200    685              -*-2
67577  255151465162       686          BCI 1,ERRORS
67600 +256377777777       687          OCT 256377777777
                          688                                                      LC964400
67601  0 10176 0 77777    689 )035        -1,,-*-1                                 LC964500
67602  0 10175 0 06733    690            SUBR,,-*-1                                 LC964600
67603  0 10173 0 10174    691            -*-1,,-*-2                                 LC964700
67604 -3 00002 0 15454    692        TXL EVAL,,2                                    LC964800
67605  0 10172 0 07335    693            PNAME,,-*-1                                LC964900
67606  0 00000 0 10171    694            -*-1                                       LC965000
67607  0 00000 0 10170    695            -*-1                                       LC965100
67610 +256521437777       696        OCT 256521437777          EVAL                LC965200
                          697                                                      LC965300
67611  0 10166 0 77777    698 )036        -1,,-*-1                                 LC965400
67612  0 10165 0 06733    699            $SUBR,,-*-1                                LC965500
67613  0 10163 0 10164    700            -*-1,,-*-2                                 LC965600
67614 -3 00002 0 15774    701        TXL $EVLIS,,2                                  LC965700
67615  0 10162 0 07335    702            $PNAME,,-*-1                               LC965800
67616  0 00000 0 10161    703            -*-1                                       LC965900
67617  0 00000 0 10160    704            -*-1                                       LC966000
67620 +256543316277       705        OCT 256543316277          EVLIS               LC966100
                          706                                                      LC966200
67621  0 10156 0 77777    707 )037        -1,,-*-1                                 LC966300
67622  0 10155 0 07335    708            PNAME,,-*-1                                LC966400
67623  0 00000 0 10154    709            -*-1                                       LC966500
67624  0 00000 0 10153    710            -*-1                                       LC966600
67625 +256747517777       711        OCT 256747517777                             LC966700
                          712                                                      LC966800
67626  0 10151 0 77777    713 )038        -1,,-*-1                                 LC966900
67627  0 10150 0 06733    714            SUBR,,-*-1                                 LC967000
67630  0 10146 0 10147    715            -*-1,,-*-2                                 LC967100
67631 -3 00002 0 13530    716        TXL EXPT,,2                                    LC967200
67632  0 10145 0 07335    717            PNAME,,-*-1                                LC967300
```

```
67633  0 00000 0 10144    718            -*-1                                    LC967400
67634  0 00000 0 10143    719            -*-1                                    LC967500
67635 +256747637777        720       OCT 256747637777          EXPT              LC967600
                           721                                                  LC968800
67636  0 10141 0 77777    722  )040      -1,,-*-1                                LC968900
67637  0 10140 0 07335    723            PNAME,,-*-1                             LC969000
67640  0 00000 0 10137    724            -*-1                                    LC969100
67641  0 00000 0 10136    725            -*-1                                    LC969200
67642 +262567475177        726       OCT 262567475177          FEXPR             LC969300
                           727                                                  LC969400
67643  0 10134 0 77777    728  )041      -1,,-*-1                                LC969500
67644  0 10133 0 07335    729            PNAME,,-*-1                             LC969600
67645  0 00000 0 10132    730            -*-1                                    LC969700
67646  0 00000 0 10131    731            -*-1                                    LC969800
67647 +263167777777        732       OCT 263167777777          FIX               LC969900
                           733                                                  LC970000
67650  0 10127 0 77777    734  IIII        -1,,-*-1                              RDC80397
67651  0 10126 0 06733    735             $SUBR,,-*-1                           RDC80398
67652  0 10124 0 10125    736             -*-1,,-*-2                            RDC80399
67653 -3 00001 0 14466     737        TXL  FIXP,,1                               RDC80400
67654  0 10123 0 07335    738             $PNAME,,-*-1                          RDC80401
67655  0 00000 0 10122    739             -*-1                                  RDC80402
67656  0 00000 0 10121    740             -*-1                                  RDC80403
67657 +263167477777        741       OCT  263167477777         FIXP              RDC80404
                           742 *                                                RDC80405
67660  0 10117 0 77777    743  )042      -1,,-*-1                                LC970100
67661  0 10116 0 07335    744            PNAME,,-*-1                             LC970200
67662  0 00000 0 10115    745            -*-1                                    LC970300
67663  0 00000 0 10114    746            -*-1                                    LC970400
67664 +264346216377        747       OCT 264346216377          FLOAT
                           748                                                  LC970600
67665  0 10112 0 77777    749  IIII2       -1,,-*-1                              RDC80406
67666  0 10111 0 06733    750             $SUBR,,-*-1                           RDC80407
67667  0 10107 0 10110    751             -*-1,,-*-2                            RDC80408
67670 -3 00001 0 14453     752        TXL  FLOATP,,1                             RDC80409
67671  0 10106 0 07335    753             $PNAME,,-*-1                          RDC80410
67672  0 00000 0 10105    754             -*-1                                  RDC80411
67673  0 00000 0 10104    755             -*-1                                  RDC80412
67674  264346216347       756        BCI    1,FLOATP                            RDC80413
                           757 *                                                RDC80414
67675  0 10102 0 77777    758  )043      -1,,-*-1                                LC970700
67676  0 10101 0 07335    759            PNAME,,-*-1                             LC970800
67677  0 00000 0 10100    760            -*-1                                    LC970900
67700  0 00000 0 10077    761            -*-1                                    LC971000
67701 +266264225177        762       OCT 266264225177          FSUBR             LC971100
                           763                                                  LC971200
67702  0 10075 0 77777    764  )044      -1,,-*-1                                LC971300
67703  0 10074 0 07335    765            $PNAME,,-*-1                            LC971400
67704  0 00000 0 10073    766            -*-1                                    LC971500
67705  0 00000 0 10072    767            -*-1                                    LC971600
67706  266445215127       768        BCD 1FUNARG               FUNARG            LC971700
                           769                                                  LC971800
67707  0 10070 0 77777    770  )045      -1,,-*-1                                LC971900
67710  0 10067 0 10103    771            FSUBR,,-*-1                             LC972000
```

```
67711  0 10065 0 10066                      -*-1,,-*-2                                 LC972100
67712 -3 00000 0 15250               TXL  $LAMP,,0                                     LC972200
67713  0 10064 0 07335                    PNAME,,-*-1                                  LC972300
67714  0 00000 0 10063                    -*-1                                         LC972400
67715  0 10061 0 10062                    -*-1,,-*-2                                   LC972500
67716  266445236331                  BCD  1FUNCTI                                      LC972600
67717  0 00000 0 10060                    -*-1                                         LC972700
67720 -064577777777                  OCT  464577777777         ON                      LC972800
                                                                                       LC972900
67721  0 10056 0 77777        )046        -1,,-*-1                                     LC973000
67722  0 10055 0 06733                    $SUBR,,-*-1                                  LC973100
67723  0 10053 0 10054                    -*-1,,-*-2                                   LC973200
67724 -3 00000 0 10174               TXL  GENSYM,,0                                    LC973300
67725  0 10052 0 07335                    $PNAME,,-*-1                                 LC973400
67726  0 00000 0 10051                    -*-1                                         LC973500
67727  0 00000 0 10050                    -*-1                                         LC973600
67730  272545627044                  BCD  1GENSYM                                      LC973700
                                                                                       LC973800
67731  0 10046 0 77777        )231        -1,,-*-1                                     LD127000
67732  0 10045 0 06733                    SUBR,,-*-1                                   LD127100
67733  0 10043 0 10044                    -*-1,,-*-2                                   LD127200
67734 -3 00002 0 11771               TXL  C$GET,,2                                     LD127300
67735  0 10042 0 07335                    PNAME,,-*-1                                  LD127400
67736  0 00000 0 10041                    -*-1                                         LD127500
67737  0 00000 0 10040                    -*-1                                         LD127600
67740 +272563777777                  OCT  272563777777         GET                     LD127700
                                                                                       LD127800
67741  0 10036 0 77777        )047        -1,,-*-1                                     LC973900
67742  0 10035 0 10103                            $FSUBR,,-*-1
67743  0 10033 0 10034                            -*-1,,-*-2
67744 -3 00001 0 16276               TXL          GOGOGO,,1            GO TO GO FSUBR
67745  0 10032 0 07335                    PNAME,,-*-1
67746  0 00000 0 10031                    -*-1                                         LC974900
67747  0 00000 0 10030                    -*-1                                         LC975000
67750 +274677777777                  OCT  274677777777         GO                      LC975100
                                                                                       LC975200
67751  0 10026 0 77777        II3                 -1,,-*-1                             RDC80323
67752  0 10025 0 06733                            $SUBR,,-*-1                          RDC80324
67753  0 10023 0 10024                            -*-1,,-*-2                           RDC80325
67754 -3 00002 0 14433               TXL          GRTRTP,,2                            RDC80326
67755  0 10022 0 07335                            $PNAME,,-*-1                         RDC80327
67756  0 00000 0 10021                            -*-1                                 RDC80328
67757  0 10020 0 10017                            -*-2,,-*-1                           RDC80329
67760  0 00000 0 10016                            -*-2                                 RDC80330
67761  275125216325                  BCI          1,GREATE                             RDC80331
67762 -114777777777                  OCT          514777777777  GREATERP               RDC80332
                                                                                       LC976700
67763  0 10014 0 77777        )052        -1,,-*-1                                     LC976800
67764  0 10013 0 06733                    SUBR,,-*-1                                   LC976900
67765  0 10011 0 10012                    -*-1,,-*-2                                   LC977000
67766 -3 00001 0 06420               TXL  INTRN1,,1                                    LC977100
67767  0 10010 0 07335                    PNAME,,-*-1                                  LC977200
67770  0 00000 0 10007                    -*-1                                         LC977300
67771  0 00000 0 10006                    -*-1                                         LC977400
```

```
67772  314563255145          826          BCD 1INTERN                                    LC977500
                             827                                                         LC977600
67773  0 10004 0 77777       828  )054        -1,,-*-1                                   LC977700
67774  0 10003 0 10103       829              FSUBR,,-*-1                                LC977800
67775  0 10001 0 10002       830              -*-1,,-*-2                                 LC977900
67776 -3 00000 0 15264       831          TXL LABP,,0                                    LC978000
67777  0 10000 0 07335       832              PNAME,,-*-1                                LC978100
70000  0 00000 0 07777       833              -*-1                                       LC978200
70001  0 00000 0 07776       834              -*-1                                       LC978300
70002 -032122254377          835          OCT 432122254377           LABEL               LC978400
                             836                                                         LC978500
70003  0 07774 0 77777       837  )055        -1,,-*-1                                   LC978600
70004  0 07773 0 07335       838              PNAME,,-*-1                                LC978700
70005  0 00000 0 07772       839              -*-1                                       LC978800
70006  0 00000 0 07771       840              -*-1                                       LC978900
70007  432144222421          841          BCD 1LAMBDA                                    LC979000
                             842 *
70010  0 07767 0 77777       843 )LAP         -1,,-*-1
70011  0 07766 0 06733       844              SUBR,,-*-1
70012  0 07764 0 07765       845              -*-1,,-*-2
70013 -3 00002 0 16321       846          TXL C$LAP,,2
70014  0 07763 0 07335       847              PNAME,,-*-1
70015  0 00000 0 07762       848              -*-1
70016  0 00000 0 07761       849              -*-1
70017 -032147777777          850          OCT 432147777777           LAP
                             851 *                                                       RDC70300
70020  0 07757 0 77777       852  PVV1        -1,,-*-1                LEFTSHIFT          RDC70310
70021  0 07756 0 06733       853              SUBR,,-*-1                                 RDC70320
70022  0 07754 0 07755       854              -*-1,,-*-2                                 RDC70330
70023 -3 00002 0 12760       855          TXL LSHIFT,,2
70024  0 07753 0 07335       856              PNAME,,-*-1                                RDC70350
70025  0 00000 0 07752       857              -*-1                                       RDC70360
70026  0 07751 0 07750       858              -*-2,,-*-1                                 RDC70370
70027  0 00000 0 07747       859              -*-2                                       RDC70380
70030  432526636230          860          BCI 1,LEFTSH                                   RDC70390
70031 +312663777777          861          OCT 312663777777                               RDC70400
                             862                                                         LC979100
70032  0 07745 0 77777       863  II4         -1,,-*-1                                   RDC80334
70033  0 07744 0 06733       864              $SUBR,,-*-1                                RDC80335
70034  0 07742 0 07743       865              -*-1,,-*-2                                 RDC80336
70035 -3 00002 0 14443       866          TXL LESSTP,,2                                  RDC80337
70036  0 07741 0 07335       867              $PNAME,,-*-1                               RDC80338
70037  0 00000 0 07740       868              -*-1                                       RDC80339
70040  0 00000 0 07737       869              -*-1                                       RDC80340
70041 -032562624777          870          OCT 432562624777           LESSP               RDC80341
                             871 *                                                       RDC80342
70042  0 07735 0 77777       872  )057        -1,,-*-1                                   LC979200
70043  0 07734 0 10103       873              FSUBR,,-*-1                                LC979300
70044  0 07732 0 07733       874              -*-1,,-*-2                                 LC979400
70045 -3 00000 0 15774       875          TXL EVLIS,,0                                   LC979500
70046  0 07731 0 07335       876              PNAME,,-*-1                                LC979600
70047  0 00000 0 07730       877              -*-1                                       LC979700
70050  0 00000 0 07727       878              -*-1                                       LC979800
70051 -033162637777          879          OCT 433162637777           LIST                LC979900
```

```
                               880                                                          RDC80108
 70052  0 07725 0 77777        881 )PJ17      -1,,-*-1              LITER                   RDC80109
 70053  0 07724 0 06733        882            SUBR,,-*-1                                    RDC80114
 70054  0 07722 0 07723        883       PZE  -*-1,,-*-2                                    RDCW0015
 70055 -3 00001 0 12321        884       TXL  LITER,,1                                      RDC80116
 70056  0 07721 0 07335        885            PNAME,,-*-1                                   RDC80110
 70057  0 00000 0 07720        886            -*-1                                          RDC80115
 70060  0 00000 0 07717        887            -*-1                                          RDC80112
 70061 -033163255177           888       OCT  433163255177                                  RDC80113
                               889                                                          LC980000
 70062  0 07715 0 77777        890  )234A     -1,,-*-1                                      LC980100
 70063  0 07714 0 06733        891            SUBR,,-*-1                                    LC980200
 70064  0 07712 0 07713        892            -*-1,,-*-2                                    LC980300
 70065 -3 00000 0 77724        893       TXL  LOACER,,0                                     LC980400
 70066  0 07711 0 07335        894            PNAME,,-*-1                                   LC980500
 70067  0 00000 0 07710        895            -*-1                                          LC980600
 70070  0 00000 0 07707        896            -*-1                                          LC980700
 70071 -034621247777           897       OCT  434621247777       LOAD                       LC980800
                               898 *                                                        RDC80276
 70072  0 07705 0 77777        899  )PJ37            -1,,-*-1              LOGAND           RDC80277
 70073  0 07704 0 10103        900                   FSUBR,,-*-1                            RDC80282
 70074  0 07702 0 07703        901                   -*-1,,-*-2                             RDCW0026
 70075 -3 00000 0 12676        902       TXL         LOGAND                                 RDC80284
 70076  0 07701 0 07335        903                   PNAME,,-*-1                            RDC80278
 70077  0 00000 0 07700        904                   -*-1                                   RDC80283
 70100  0 00000 0 07677        905                   -*-1                                   RDC80280
 70101  434627214524           906       BCI         1,LOGAND                               RDC80281
                               907 *                                                        RDC80265
 70102  0 07675 0 77777        908  )PJ36            -1,,-*-1              LOGOR            RDC80268
 70103  0 07674 0 10103        909                   FSUBR,,-*-1                            RDC80273
 70104  0 07672 0 07673        910                   -*-1,,-*-2                             RDCW0025
 70105 -3 00000 0 12662        911       TXL         LOGOR                                  RDC80275
 70106  0 07671 0 07335        912                   PNAME,,-*-1                            RDC80269
 70107  0 00000 0 07670        913                   -*-1                                   RDC80274
 70110  0 00000 0 07667        914                   -*-1                                   RDC80271
 70111 -034627465177           915       OCT         434627465177          BCD LOGOR        RDC80272
                               916 *
 70112  0 07665 0 77777        917  )PJ38            -1,,-*-1              LOGXOR
 70113  0 07664 U 10103        918                   FSUBR,,-*-1                            RDC80293
 70114  0 07662 0 07663        919                   -*-1,,-*-2                             RDCW0027
 70115 -3 00000 0 12712        920       TXL         LOGXOR,,0
 70116  0 07661 0 07335        921                   PNAME,,-*-1                            RDC80287
 70117  0 00000 0 07660        922                   -*-1
 70120  0 00000 0 07657        923                   -*-1
 70121  434627674651           924       BCI         1,LOGXOR
                               925                                                          RDC80023
 70122  0 07655 0 77777        926 )PJ7       -1,,-*-1                     LPAR             RDC80024
 70123  0 07654 0 07335        927            PNAME,,-*-1                                   RDC80025
 70124  0 07651 0 07653        928            -*-1,,-*-3                                    RDC80026
 70125  0 00000 0 07652        929            -*-1                                          RDC80027
 70126 -034721517777           930       OCT  434721517777                 BCD LPAR         RDC80028
 70127  0 07650 0 10742        931            APVAL1,,-*-1                                  RDC80029
 70130  0 00000 0 07647        932            -*-1                                          RDC80030
 70131  0 00U00 0 06223        933            H74                                           RDC80031
```

```
                                    934 *
70132  0 07645 0 77777              935  )065      -1,,-*-1                                  LC985200
70133  0 07644 0 06733              936            SUBR,,-*-1                                LC985300
70134  0 07642 0 07643              937            -*-1,,-*-2                                LC985400
70135 -3 00002 0 07620              938       TXL  MAPCAR,,2                                 LC985500
70136  0 07641 0 07335              939            PNAME,,-*-1                               LC985600
70137  0 00000 0 07640              940            -*-1                                      LC985700
70140  0 00000 0 07637              941            -*-1                                      LC985800
70141 -042147777777                 942       OCT  442147777777        MAP                 LC985900
                                    943                                                     LC986000
70142  0 07635 0 77777              944  )069B      -1,,-*-1                                  LC986100
70143  0 07634 0 06733              945            SUBR,,-*-1                                LC986200
70144  0 07632 0 07633              946            -*-1,,-*-2                                LC986300
70145 -3 00002 0 07645              947       TXL  MAPCON,,2                                 LC986400
70146  0 07631 0 07335              948            PNAME,,-*-1                               LC986500
70147  0 00000 0 07630              949            -*-1                                      LC986600
70150  0 00000 0 07627              950            -*-1                                      LC986700
70151  442147234645                 951       BCD  1MAPCON                                   LC986800
                                    952                                                     LC986900
70152  0 07625 0 77777              953  )069A      -1,,-*-1                                  LC987000
70153  0 07624 0 06733              954            SUBR,,-*-1                                LC987100
70154  0 07622 0 07623              955            -*-1,,-*-2                                LC987200
70155 -3 00002 0 04214              956       TXL  MAPLIS,,2                                 LC987300
70156  0 07621 0 07335              957            PNAME,,-*-1                               LC987400
70157  0 00000 0 07620              958            -*-1                                      LC987500
70160  0 07617 0 07616              959            -*-2,,-*-1                                LC987600
70161  0 00000 0 07615              960            -*-2                                      LC987700
70162  442147433162                 961       BCD  1MAPLIS                                   LC987800
70163 -237777777777                 962       OCT  637777777777        MAPLIST             LC987900
                                    963                                                     LC988000
70164  0 07613 0 77777              964  II7        -1,,-*-1                                  RDC80361
70165  0 07612 0 10103              965             $FSUBR,,-*-1                             RDC80362
70166  0 07610 0 07611              966             -*-1,,-*-2                               RDC80363
70167 -3 00002 0 14150              967       TXL   MAX,,2                                   RDC80364
70170  0 07607 0 07335              968             $PNAME,,-*-1                             RDC80365
70171  0 00000 0 07606              969             -*-1                                     RDC80366
70172  0 00000 0 07605              970             -*-1                                     RDC80367
70173 -042167777777                 971       OCT   442167777777       MAX                 RDC80368
                                    972 *                                                   RDC80369
70174  0 07603 0 77777              973  II8        -1,,-*-1                                  RDC80370
70175  0 07602 0 10103              974             $FSUBR,,-*-1                             RDC80371
70176  0 07600 0 07601              975             -*-1,,-*-2                               RDC80372
70177 -3 00002 0 14142              976       TXL   MIN,,2                                   RDC80373
70200  0 07577 0 07335              977             $PNAME,,-*-1                             RDC80374
70201  0 00000 0 07576              978             -*-1                                     RDC80375
70202  0 00000 0 07575              979             -*-1                                     RDC80376
70203 -043145777777                 980       OCT   443145777777       MIN                 RDC80377
                                    981 *                                                   RDC80378
70204  0 07573 0 77777              982  )070      -1,,-*-1                                  LC990500
70205  0 07572 0 06733              983            $SUBR,,-*-1                               RDC80454
70206  0 07570 0 07571              984            -*-1,,-*-2                                RDC80455
70207 -3 00001 0 14624              985       TXL  MNSPRG,,1                                 RDC80456
70210  0 07567 0 07335              986            $PNAME,,-*-1                              RDC80457
70211  0 00000 0 07566              987            -*-1                                      RDC80458
```

```
 70212  0 00000 0 07565     988               -*-1                            RDC80459
 70213 -043145646277        989         OCT   443145646277      MINUS         RDC80460
                            990 *                                             RDC80461
 70214  0 07563 0 77777     991  II16         -1,,-*-1                        RDC80444
 70215  0 07562 0 06733     992               $SUBR,,-*-1                     RDC80445
 70216  0 07560 0 07561     993               -*-1,,-*-2                      RDC80446
 70217 -3 00001 0 14500     994         TXL   MINUSP,,1                       RDC80447
 70220  0 07557 0 07335     995               $PNAME,,-*-1                    RDC80448
 70221  0 00000 0 07556     996               -*-1                            RDC80449
 70222  0 00000 0 07555     997               -*-1                            RDC80450
 70223  443145646247        998         BCI   1,MINUSP                        RDC80451
                            999 *                                             RDC80452
                           1000 *                                             RDC80173
 70224  0 07553 0 77777    1001  )PJ26        -1,,-*-1          MKNAM         RDC80174
 70225  0 07552 0 06733    1002               SUBR,,-*-1                      RDC80179
 70226  0 07550 0 07551    1003               -*-1,,-*-2                      RDCW0022
 70227 -3 00000 0 12147    1004         TXL   MKNAM                           RDC80181
 70230  0 07547 0 07335    1005               PNAME,,-*-1                     RDC80175
 70231  0 00000 0 07546    1006               -*-1                            RDC80180
 70232  0 00000 0 07545    1007               -*-1                            RDC80177
 70233 -044245214477       1008         OCT   444245214477      BCD MKNAM     RDC80178
                           1009                                               LC991000
 70234  0 07543 0 77777    1010  )071     -1,,-*-1                            LC991100
 70235  0 07542 0 06733    1011           SUBR,,-*-1                          LC991200
 70236  0 07540 0 07541    1012           -*-1,,-*-2                          LC991300
 70237 -3 00002 0 07675    1013     TXL   NCONC,,2                            LC991400
 70240  0 07537 0 07335    1014           PNAME,,-*-1                         LC991500
 70241  0 00000 0 07536    1015           -*-1                                LC991600
 70242  0 00000 0 07535    1016           -*-1                                LC991700
 70243 -052346452377       1017     OCT   452346452377          NCONC         LC991800
                           1018                                               LC991900
 70244  0 07533 0 77777    1019  )074     -1,,-*-1                            LC994900
 70245  0 07532 0 06733    1020           $SUBR,,-*-1                         LC995000
 70246  0 07530 0 07531    1021           -*-1,,-*-2                          LC995100
 70247 -3 00001 0 10150    1022     TXL   NOTS,,1                             LC995200
 70250  0 07527 0 07335    1023           $PNAME,,-*-1                        LC995300
 70251  0 00000 0 07526    1024           -*-1                                LC995400
 70252  0 00000 0 07525    1025           -*-1                                LC995500
 70253 -054663777777       1026     OCT   454663777777          NOT           LC995600
                           1027                                               LC995700
 70254  0 07523 0 77777    1028  )075     -1,,-*-1                            LC995800
 70255  0 07522 0 06733    1029           SUBR,,-*-1                          LC995900
 70256  0 07520 0 07521    1030           -*-1,,-*-2                          LC996000
 70257 -3 00001 0 15243    1031     TXL   NULLP,,1                            LC996100
 70260  0 07517 0 07335    1032           PNAME,,-*-1
 70261  0 00000 0 07516    1033           -*-1                                LC997300
 70262  0 00000 0 07515    1034           -*-1                                LC997400
 70263 -056443437777       1035     OCT   456443437777          NULL          LC997500
                           1036                                               LC997600
 70264  0 07513 0 77777    1037  II13         -1,,-*-1                        RDC80415
 70265  0 07512 0 06733    1038               $SUBR,,-*-1                     RDC80416
 70266  0 07510 0 07511    1039               -*-1,,-*-2                      RDC80417
 70267 -3 00001 0 14445    1040         TXL   NUMBRP,,1                       RDC80418
 70270  0 07507 0 07335    1041               $PNAME,,-*-1                    RDC80419
```

```
70271  0 00000 0 07506   1042                    -*-1                                RDC80420
70272  0 07505 0 07504   1043                    -*-2,,-*-1                          RDC80421
70273  0 00000 0 07503   1044                    -*-2                                RDC80422
70274  456444222551      1045          BCI       1,NUMBER                            RDC80423
70275 -077777777777      1046          OCT       477777777777      NUMBERP           RDC80424
                         1047 *                                                      RDC80425
70276  0 07501 0 77777   1048  )PJ25             -1,,-*-1          NUMOB             RDC80165
70277  0 07500 0 06733   1049                    SUBR,,-*-1                          RDC80170
70300  0 07476 0 07477   1050                    -*-1,,-*-2                          RDCW0021
70301 -3 00000 0 12071   1051          TXL       NUMOB                               RDC80172
70302  0 07475 0 07335   1052                    PNAME,,-*-1                         RDC80166
70303  0 00000 0 07474   1053                    -*-1                                RDC80171
70304  0 00000 0 07473   1054                    -*-1                                RDC80168
70305 -056444462277      1055          OCT       456444462277      BCD NUMOB         RDC80169
                         1056                                                        LC999100
70306  0 07471 0 77777   1057  )079A        -1,,-*-1                                 LC999200
70307  0 07470 0 10742   1058               APVAL1,,-*-1                             LC999300
70310  0 07466 0 07467   1059               -*-1,,-*-2                               LC999400
70311  0 00000 0 11351   1060                    -OBLIST
70312  0 07465 0 07335   1061               PNAME,,-*-1                              LC999600
70313  0 00000 0 07464   1062               -*-1                                     LC999700
70314  0 00000 0 07463   1063               -*-1                                     LC999800
70315  462243316263      1064          BCD 1OBLIST                     OBLIST        LC999900
                         1065 *                                                      RDC80193
70316  0 07461 0 77777   1066  )PJ28             -1,,-*-1          OCTAL             RDC80194
70317  0 07460 0 07335   1067                    PNAME,,-*-1                         RDC80195
70320  0 00000 0 07457   1068                    -*-1                                RDC80196
70321  0 00000 0 07456   1069                    -*-1                                RDC80197
70322 -062363214377      1070          OCT       462363214377      BCD OCTAL         RDC80198
                         1071                                                        RDC80117
70323  0 07454 0 77777   1072  II9               -1,,-*-1                            RDC80379
70324  0 07453 0 06733   1073                    $SUBR,,-*-1                         RDC80380
70325  0 07451 0 07452   1074                    -*-1,,-*-2                          RDC80381
70326 -3 00001 0 14533   1075          TXL       ONEP,,1                             RDC80382
70327  0 07450 0 07335   1076                    $PNAME,,-*-1                        RDC80383
70330  0 00000 0 07447   1077                    -*-1                                RDC80384
70331  0 00000 0 07446   1078                    -*-1                                RDC80385
70332 -064525477777      1079          OCT       464525477777      ONEP              RDC80386
                         1080 *                                                      RDC80387
70333  0 07444 0 77777   1081 )PJ18         -1,,-*-1               OPCHAR            RDC80118
70334  0 07443 0 06733   1082               SUBR,,-*-1                               RDC80123
70335  0 07441 0 07442   1083          PZE -*-1,,-*-2                                RDCW0016
70336 -3 00001 0 12333   1084          TXL CPCHAR,,1                                 RDC80125
70337  0 07440 0 07335   1085               PNAME,,-*-1                              RDC80119
70340  0 00000 0 07437   1086               -*-1                                     RDC80124
70341  0 00000 0 07436   1087               -*-1                                     RDC80121
70342  464723302151      1088          BCD 1OPCHAR                                   RDC80122
                         1089                                                        LD000000
70343  0 07434 0 77777   1090  )079         -1,,-*-1                                 LD000100
70344  0 07433 0 10103   1091               FSUBR,,-*-1                              LD000200
70345  0 07431 0 07432   1092               -*-1,,-*-2                               LD000300
70346 -3 00000 0 15416   1093          TXL $EVCR,,0                                  LD000400
70347  0 07430 0 07335   1094               $PNAME,,-*-1                             LD000500
70350  0 00000 0 07427   1095               -*-1                                     LD000600
```

```
70351  0 00000 0 07426                    -*-1                                  LD000700
70352 -065177777777             OCT 465177777777            OR                   LD000800
                          *
70353  0 07424 0 77777   )PJ24              -1,,-*-1        PACK                 RDC80156
70354  0 07423 0 06733                      SUBR,,-*-1                           RDC80161
70355  0 07421 0 07422                      -*-1,,-*-2                           RDCW0020
70356 -3 00001 0 12032          TXL         PACK,,1                              RDC80163
70357  0 07420 0 07335                      PNAME,,-*-1                          RDC80157
70360  0 00000 0 07417                      -*-1                                 RDC80162
70361  0 00000 0 07416                      -*-1                                 RDC80159
70362 -072123427777             OCT         472123427777    BCD PACK             RDC80160
                                                                                 LD000900
70363  0 07414 0 77777   )080           -1,,-*-1                                 LD001000
70364  0 07413 0 06733                  SUBR,,-*-1                               LD001100
70365  0 07411 0 07412                  -*-1,,-*-2                               LD001200
70366 -3 00002 0 07562          TXL PAIR,,2                                      LD001300
70367  0 07410 0 07335                  PNAME,,-*-1                              LD001400
70370  0 00000 0 07407                  -*-1                                     LD001500
70371  0 00000 0 07406                  -*-1                                     LD001600
70372 -072131517777             OCT 472131517777            PAIR                 LD001700
                                                                                 LD001800
70373  0 07404 0 77777   )234C          -1,,-*-1                                 LD001900
70374  0 07403 0 06733                  SUBR,,-*-1                               LD002000
70375  0 07401 0 07402                  -*-1,,-*-2                               LD002100
70376 -3 00000 0 01554          TXL PAUSEF,,0                                    LD002200
70377  0 07400 0 07335                  PNAME,,-*-1                              LD002300
70400  0 00000 0 07377                  -*-1                                     LD002400
70401  0 00000 0 07376                  -*-1                                     LD002500
70402 -072164622577             OCT 472164622577       PAUSE                     LD002600
                                                                                 RDC80041
70403  0 07374 0 77777   )PJ9           -1,,-*-1                PERIOD           RDC80042
70404  0 07373 0 07335                  PNAME,,-*-1                              RDC80043
70405  0 07370 0 07372                  -*-1,,-*-3                               RDC80044
70406  0 00000 0 07371                  -*-1                                     RDC80045
70407  472551314624             BCD 1PERIOD                                      RDC80046
70410  0 07367 0 10742                  APVAL1,,-*-1                             RDC80047
70411  0 00000 0 07366          PZE -*-1                                         RDC80048
70412  0 00000 0 06162                  H33                                      RDC80049
                                                                                 LD002700
70413  0 07364 0 77777   )234B          -1,,-*-1                                 LD003700
70414  0 07363 0 06733                  SUBR,,-*-1                               LD003800
70415  0 07361 0 07362                  -*-1,,-*-2                               LD003900
70416 -3 00000 0 01371          TXL PSHLDB,,0                                    LD004000
70417  0 07360 0 07335                  PNAME,,-*-1                              LD004100
70420  0 00000 0 07357                  -*-1                                     LD004200
70421  0 00000 0 07356                  -*-1                                     LD004300
70422 -074322777777             OCT 474322777777       PLB                       LD004400
                                                                                 LD004500
70423  0 07354 0 77777   )081           -1,,-*-1                                 LD004600
70424  0 07353 0 10103                      $FSUBR,,-*-1                         RDC80344
70425  0 07351 0 07352                      -*-1,,-*-2                           RDC80345
70426 -3 00002 0 14126          TXL         ADDP,,2
70427  0 07350 0 07335                      $PNAME,,-*-1                         RDC80347
70430  0 00000 0 07347                      -*-1                                 RDC80348
```

```
70431  0 00000 0 07346   1150                -*-1                                    RDC80349
70432 -074364627777      1151          OCT   474364627777      PLUS
                         1152 *                                                     RDC80351
70433  0 07344 0 77777   1153 )PJ11         -1,,-*-1           PLUS SIGN (PLUSS)    RDC80060
70434  0 07343 0 07335   1154          PZE PNAME,,-*-1                             RDC80061
70435  0 07340 0 07342   1155              -*-1,,-*-3                              RDC80062
70436  0 00000 0 07341   1156              -*-1                                    RDC80063
70437 -074364626277      1157          OCT 474364626277      BCD PLUSS             RDC80064
70440  0 07337 0 10742   1158              APVAL1,,-*-1                            RDC80065
70441  0 00000 0 07336   1159          PZE -*-1                                    RDC80066
70442  0 00000 0 06147   1160              H20                                     RDC80067
                         1161                                                       LD005100
70443  0 07334 0 77777   1162  )083        -1,,-*-1                                LD005200
70444  0 07333 0 07335   1163              PNAME,,-*-1                             LD005300
70445  0 00000 0 07332   1164              -*-1                                    LD005400
70446  0 00000 0 07331   1165              -*-1                                    LD005500
70447 -074521442577      1166          OCT 474521442577      PNAME                 LD005600
                         1167                                                       LD005700
70450  0 07327 0 77777   1168  )PJ33         -1,,-*-1           PRIN1             RDC80238
70451  0 07326 0 06733   1169              SUBR,,-*-1                              RDC80239
70452  0 07324 0 07325   1170              -*-1,,-*-2                              RDC80240
70453 -3 00001 0 04703   1171          TXL $PRIN1,,1                               RDC80241
70454  0 07323 0 07335   1172              PNAME,,-*-1                             RDC80242
70455  0 00000 0 07322   1173              -*-1                                    RDC80243
70456  0 00000 0 07321   1174              -*-1                                    RDC80244
70457 -075131450177      1175          OCT   475131450177      BCI PRIN1         RDC80245
                         1176                                                       LD007200
70460  0 07317 0 77777   1177  )087        -1,,-*-1                                LD007300
70461  0 07316 0 06733   1178              SUBR,,-*-1                              LD007400
70462  0 07314 0 07315   1179              -*-1,,-*-2                              LD007500
70463 -3 00001 0 04604   1180          TXL PRINT,,1                                LD007600
70464  0 07313 0 07335   1181              PNAME,,-*-1                             LD007700
70465  0 00000 0 07312   1182              -*-1                                    LD007800
70466  0 00000 0 07311   1183              -*-1                                    LD007900
70467 -075131456377      1184          OCT 475131456377      PRINT               LD008000
                         1185                                                       LD008100
70470  0 07307 0 77777   1186  )PJ39         -1,,-*-1           PRINT2            RDC80296
70471  0 07306 0 06733   1187              SUBR,,-*-1                              RDC80301
70472  0 07304 0 07305   1188              -*-1,,-*-2                              RDCW0028
70473 -3 00001 0 05104   1189          TXL   PRINT2,,1                             RDC80303
70474  0 07303 0 07335   1190              PNAME,,-*-1                             RDC80297
70475  0 00000 0 07302   1191              -*-1                                    RDC80302
70476  0 00000 0 07301   1192              -*-1                                    RDC80299
70477  475131456302      1193          BCI     1,PRINT2                            RDC80300
                         1194                                                       LD009000
70500  0 07277 0 77777   1195  )089        -1,,-*-1                                LD009100
70501  0 07276 0 10103   1196              FSUBR,,-*-1                             LD009200
70502  0 07274 0 07275   1197              -*-1,,-*-2                              LD009300
70503 -3 00000 0 16130   1198          TXL INTER,,0                                LD009400
70504  0 07273 0 07335   1199              PNAME,,-*-1                             LD009500
70505  0 00000 0 07272   1200              -*-1                                    LD009600
70506  0 00000 0 07271   1201              -*-1                                    LD009700
70507 -075146277777      1202          OCT 475146277777      PROG                LD009800
                         1203                                                       LD009900
```

```
70510  0 07267 0 77777   1204  IJ05          -1,,-*-1
70511  0 07266 0 06733   1205                $SUBR,,-*-1
70512  0 07264 0 07265   1206                -*-1,,-*-2
70513 -3 00001 0 05325   1207        TXL     $PUNCH,,1
70514  0 07263 0 07335   1208                $PNAME,,-*-1
70515  0 00000 0 07262   1209                -*-1
70516  0 00000 0 07261   1210                -*-1
70517 -076445233077      1211        OCT     476445233077        PUNCH
                         1212 *
70520  0 07257 0 77777   1213  )090          -1,,-*-1                                LD010000
70521  0 07256 0 06733   1214                SUBR,,-*-1                              LD010100
70522  0 07254 0 07255   1215                -*-1,,-*-2                              LD010200
70523 -3 00003 0 10011   1216        TXL     APROP,,3                                LD010300
70524  0 07253 0 07335   1217                PNAME,,-*-1                             LD010400
70525  0 00000 0 07252   1218                -*-1                                    LD010500
70526  0 00000 0 07251   1219                -*-1                                    LD010600
70527 -075146477777      1220        OCT     475146477777        PROP               LD010700
                         1221                                                        LD010800
70530  0 07247 0 77777   1222  )094          -1,,-*-1                                LD010900
70531  0 07246 0 10103   1223                FSUBR,,-*-1                             LD011000
70532  0 07244 0 07245   1224                -*-1,,-*-2                              LD011100
70533 -3 00000 0 15212   1225        TXL     CARP,,0                                 LD011200
70534  0 07243 0 07335   1226                PNAME,,-*-1                             LD011300
70535  0 00000 0 07242   1227                -*-1                                    LD011400
70536  0 00000 0 07241   1228                -*-1                                    LD011500
70537 -106446632577      1229        OCT     506446632577        QUOTE              LD011600
                         1230                                                        LD011700
70540  0 07237 0 77777   1231  IJ03            -1,,-*-1
70541  0 07236 0 06733   1232                  $SUBR,,-*-1
70542  0 07234 0 07235   1233                  -*-1,,-*-2
70543 -3 00002 0 13427   1234        TXL       QUOTEN,,2
70544  0 07233 0 07335   1235                  $PNAME,,-*-1
70545  0 00000 0 07232   1236                  -*-1
70546  0 07231 0 07230   1237                  -*-2,,-*-1
70547  0 00000 0 07227   1238                  -*-2
70550  506446633125      1239        BCI       1,QUOTIE
70551 -056377777777      1240        OCT       456377777777        QUOTIENT
                         1241 *
70552  0 07225 0 77777   1242  )096          -1,,-*-1                                LD011800
70553  0 07224 0 06733   1243                SUBR,,-*-1                              LD011900
70554  0 07222 0 07223   1244                -*-1,,-*-2                              LD012000
70555 -3 00000 0 05732   1245        TXL     READ,,0                                 LD012100
70556  0 07221 0 07335   1246                PNAME,,-*-1                             LD012200
70557  0 00000 0 07220   1247                -*-1                                    LD012300
70560  0 00000 0 07217   1248                -*-1                                    LD012400
70561 -112521247777      1249        OCT     512521247777        READ               LD012500
                         1250                                                        LD012600
70562  0 07215 0 77777   1251  II18          -1,,-*-1                                RDC80462
70563  0 07214 0 06733   1252                $SUBR,,-*-1                             RDC80463
70564  0 07212 0 07213   1253                -*-1,,-*-2                              RDC80464
70565 -3 00001 0 14633   1254        TXL     RCPPRG,,1                               RDC80465
70566  0 07211 0 07335   1255                $PNAME,,-*-1                            RDC80466
70567  0 00000 0 07210   1256                -*-1                                    RDC80467
70570  0 00000 0 07207   1257                -*-1                                    RDC80468
```

```
70571 -112523314777            OCT      512523314777        RECIP              RDC80469
                       *                                                       RDC80470
70572  0 07205 0 77777  )234D      -1,,-*-1                                    LD013200
70573  0 07204 0 06733             SUBR,,-*-1                                  LD013300
70574  0 07202 0 07203             -*-1,,-*-2                                  LD013400
70575 -3 00000 0 02522         TXL RECLAM,,0
70576  0 07201 0 07335             PNAME,,-*-1                                 LD013600
70577  0 00000 0 07200             -*-1                                        LD013700
70600  0 07177 0 07176             -*-2,,-*-1                                  LD013800
70601  0 00000 0 07175             -*-2                                        LD013900
70602  512523432131            BCD 1RECLAI                                     LD014000
70603 -047777777777            OCT 447777777777     RECLAIM                    LD014100
                       *                                                       RDC80285
70604  0 07173 0 77777  IJ04           -1,,-*-1
70605  0 07172 0 06733                 $SUBR,,-*-1
70606  0 07170 0 07171                 -*-1,,-*-2
70607 -3 00002 0 13423         TXL     REMAIN,,2
70610  0 07167 0 07335                 $PNAME,,-*-1
70611  0 00000 0 07166                 -*-1
70612  0 07165 0 07164                 -*-2,,-*-1
70613  0 00000 0 07163                 -*-2
70614  512544213145            BCI     1,REMAIN
70615 +242551777777            OCT     242551777777        REMAINDER
                       *
70616  0 07161 0 77777  )250           -1,,-*-1                                LD134400
70617  0 07160 0 06733                 SUBR,,-*-1                              LD134500
70620  0 07156 0 07157                 -*-1,,-*-2                              LD134600
70621 -3 00002 0 07714         TXL     REMPRP,,2                               LD134700
70622  0 07155 0 07335                 PNAME,,-*-1                             LD134800
70623  0 00000 0 07154                 -*-1                                    LD134900
70624  0 07152 0 07153                 -*-1,,-*-2                              LD135000
70625  512544475146            BCD 1REMPRO                 REMPRO              LD135100
70626  0 00000 0 07151                 -*-1                                    LD135200
70627 -077777777777            OCT     477777777777        P                   LD135300
                       *
70630  0 07147 0 77777  )102       -1,,-*-1                                    LD020000
70631  0 07146 0 06733                 $SUBR,,-*-1
70632  0 07144 0 07145                 -*-1,,-*-2
70633 -3 00001 0 16272         TXL     RETURN,,1
70634  0 07143 0 07335             PNAME,,-*-1
70635  0 00000 0 07142             -*-1                                        LD021100
70636  0 00000 0 07141             -*-1                                        LD021200
70637  512563645145            BCD 1RETURN                 RETURN              LD021300
                                                                               LD014200
                                                                               LD019900
70640  0 07137 0 77777  )100       -1,,-*-1                                    LD014300
70641  0 07136 0 06733             SUBR,,-*-1                                  LD014400
70642  0 07134 0 07135             -*-1,,-*-2                                  LD014500
70643 -3 00000 0 10155         TXL RPLACA,,0                                   LD014600
70644  0 07133 0 07335             PNAME,,-*-1
70645  0 00000 0 07132             -*-1                                        LD016000
70646  0 00000 0 07131             -*-1                                        LD016100
70647  514743212321            BCD 1RPLACA                                     LD016200
                                                                               LD016300
```

```
70650  0 07127 0 77777   1312  )101      -1,,-*-1                                  LD016400
70651  0 07126 0 06733   1313            SUBR,,-*-1                                LD016500
70652  0 07124 0 07125   1314            -*-1,,-*-2                                LD016600
70653 -3 00000 0 10164   1315       TXL  RPLACD,,0                                 LD016700
70654  0 07123 0 07335   1316            PNAME,,-*-1
70655  0 00000 0 07122   1317            -*-1                                      LD018000
70656  0 00000 0 07121   1318            -*-1                                      LD018100
70657  514743212324      1319       BCD  1RPLACD                                   LD018200
                         1320                                                      RDC80032
70660  0 07117 0 77777   1321  )PJ8      -1,,-*-1                 RPAR             RDC80033
70661  0 07116 0 07335   1322       PZE  PNAME,,-*-1                               RDC80034
70662  0 07113 0 07115   1323            -*-1,,-*-3                                RDC80035
70663  0 00000 0 07114   1324            -*-1                                      RDC80036
70664 -114721517777      1325       OCT  514721517777        BCD RPAR             RDC80037
70665  0 07112 0 10742   1326            APVAL1,,-*-1                              RDC80038
70666  0 00000 0 07111   1327            -*-1                                      RDC80039
70667  0 00000 0 06163   1328            H34                                       RDC80040
                         1329 *
70670  0 07107 0 77777   1330  )SPCL        -1,,-*-1
70671  0 07106 0 07335   1331               PNAME,,-*-1
70672  0 00000 0 07105   1332               -*-1
70673  0 07103 0 07104   1333               -*-1,,-*-2
70674  624725233121      1334       BCI      1,SPECIA
70675  0 00000 0 07102   1335               -*-1
70676  437777777777      1336       VFD      H6/L,O30/7777777777        SPECIAL
                         1337 *
70677  0 07100 0 77777   1338  )MOV         -1,,-*-1
70700  0 07077 0 07335   1339               PNAME,,-*-1
70701  0 07074 0 07076   1340               -*-1,,-*-3
70702  0 00000 0 07075   1341               -*-1
70703  544446652577      1342       VFD      H30/*MOVE,O6/77     *MOVE
70704  0 07073 0 06706   1343               SYM,,-*-1
70705 -0 00000 0 61255   1344       MZE      -C$MOV
                         1345 *
70706  0 07071 0 77777   1346  )RTRN        -1,,-*-1
70707  0 07070 0 07335   1347               PNAME,,-*-1
70710  0 07063 0 07067   1348               -*-1,,-*-5
70711  0 07065 0 07066   1349               -*-1,,-*-2
70712  545125636451      1350       BCI      1,*RETUR
70713  0 00000 0 07064   1351               -*-1
70714  457777777777      1352       VFD      H6/N,O30/7777777777
70715  0 07062 0 06706   1353               SYM,,-*-1
70716 -0 00000 0 61253   1354       MZE      -C$RTRN
                         1355 *
70717  0 07060 0 77777   1356  )LST         -1,,-*-1
70720  0 07057 0 07335   1357               PNAME,,-*-1
70721  0 07054 0 07056   1358               -*-1,,-*-3
70722  0 00000 0 07055   1359               -*-1
70723  544331626377      1360       VFD      H30/*LIST,O6/77
70724  0 07053 0 06706   1361               SYM,,-*-1
70725 -0 00000 0 61254   1362       MZE      -C$LSTR
                         1363                                                      LD022000
70726  0 07051 0 77777   1364  )106      -1,,-*-1                                  LD022100
70727  0 07050 0 06733   1365            SUBR,,-*-1                                LD022200
```

```
70730  0 07046 0 07047   1366          -*-1,,-*-2                                  LD022300
70731 -3 00003 0 10042   1367      TXL APSSOC,,3                                   LD022400
70732  0 07045 0 07335   1368          PNAME,,-*-1                                 LD022500
70733  0 00000 0 07044   1369          -*-1                                        LD022600
70734  0 00000 0 07043   1370          -*-1                                        LD022700
70735  622162624623      1371      BCD 1SASSOC                                     LD022800
                         1372                                                      LD022900
70736  0 07041 0 77777   1373  )236    -1,,-*-1              SEARCH                LD023000
70737  0 07040 0 06733   1374          SUBR,,-*-1                                  LD023100
70740  0 07036 0 07037   1375          -*-1,,-*-2                                  LD023200
70741 -3 00004 0 04400   1376      TXL SEARCH,,4                                   LD023300
70742  0 07035 0 07335   1377          PNAME,,-*-1                                 LD023400
70743  0 00000 0 07034   1378          -*-1                                        LD023500
70744  0 00000 0 07033   1379          -*-1                                        LD023600
70745  622521512330      1380      BCD 1SEARCH                                     LD023700
                         1381                                                      LD023800
70746  0 07031 0 77777   1382  )107    -1,,-*-1                                    LD023900
70747  0 07030 0 06733   1383          $SUBR,,-*-1                                 LD024000
70750  0 07026 0 07027   1384          -*-1,,-*-2                                  LD024100
70751 -3 00002 0 15346   1385      TXL SETP,,2                                     LD024200
70752  0 07025 0 07335   1386          $PNAME,,-*-1                                LD024300
70753  0 00000 0 07024   1387          -*-1                                        LD024400
70754  0 00000 0 07023   1388          -*-1                                        LD024500
70755 -222563777777      1389      OCT 622563777777      SET                     LD024600
                         1390                                                      LD024700
70756  0 07021 0 77777   1391  )108    -1,,-*-1                                    LD024800
70757  0 07020 0 10103   1392          $FSUBR,,-*-1                                LD024900
70760  0 07016 0 07017   1393          -*-1,,-*-2                                  LD025000
70761 -3 00000 0 15311   1394      TXL SETQP,,0                                    LD025100
70762  0 07015 0 07335   1395              PNAME,,-*-1
70763  0 00000 0 07014   1396          -*-1                                        LD026500
70764  0 00000 0 07013   1397          -*-1                                        LD026600
70765 -222563507777      1398      OCT 622563507777      SETQ                    LD026700
                         1399 *
70766  0 07011 0 77777   1400 )PJ14   -1,,-*-1              SLASH                 RDC80079
70767  0 07010 0 07335   1401          PNAME,,-*-1                                 RDC80080
70770  0 07005 0 07007   1402          -*-1,,-*-3                                  RDC80081
70771  0 00000 0 07006   1403          -*-1                                        RDC80082
70772 -224321623077      1404      OCT 624321623077      BCD SLASH               RDC80083
70773  0 07004 0 10742   1405          APVAL1,,-*-1                                RDC80084
70774  0 00000 0 07003   1406          -*-1                                        RDC80085
70775  0 00000 0 06210   1407          H61                                         RDC80086
                         1408                                                      LD026800
70776  0 07001 0 77777   1409  )109    -1,,-*-1                                    LD026900
70777  0 07000 0 06733   1410          SUBR,,-*-1                                  LD027000
71000  0 06776 0 06777   1411          -*-1,,-*-2                                  LD027100
71001 -3 00000 0 03774   1412      TXL SPEAK,,0                                    LD027200
71002  0 06775 0 07335   1413          PNAME,,-*-1                                 LD027300
71003  0 00000 0 06774   1414          -*-1                                        LD027400
71004  0 00000 0 06773   1415          -*-1                                        LD027500
71005 -224725214277      1416      OCT 624725214277      SPEAK                   LD027600
                         1417                                                      LD027700
71006  0 06771 0 77777   1418  )111    -1,,-*-1                                    LD027800
71007  0 06770 0 07335   1419          PNAME,,-*-1                                 LD027900
```

```
71010  0 00000 0 06767   1420            -*-1                                    LD028000
71011  0 00000 0 06766   1421            -*-1                                    LD028100
71012 -226346477777      1422       OCT 626346477777                             LD028200
                         1423                                                    RDC80087
71013  0 06764 0 77777   1424 )PJ15       -1,,-*-1          STAR                 RDC80088
71014  0 06763 0 07335   1425            PNAME,,-*-1                             RDC80089
71015  0 06760 0 06762   1426            -*-1,,-*-3                              RDC80090
71016  0 00000 0 06761   1427            -*-1                                    RDC80091
71017 -226321517777      1428       OCT 626321517777  BCD STAR                  RDC80092
71020  0 06757 0 10742   1429            APVAL1,,-*-1                            RDC80093
71021  0 00000 0 06756   1430            -*-1                                    RDC80094
71022  0 00000 0 06203   1431            H54                                     RDC80095
                         1432                                                    RDC80135
71023  0 06754 0 77777   1433 )PJ21  PZE -1,,-*-1          STARTREAD            RDC80136
71024  0 06753 0 06733   1434            SUBR,,-*-1                              RDC80143
71025  0 06751 0 06752   1435       PZE -*-1,,-*-2                               RDCW0018
71026 -3 00000 0 12221   1436       TXL STREAD,,0                                RDC80145
71027  0 06750 0 07335   1437            PNAME,,-*-1                             RDC80137
71030  0 00000 0 06747   1438            -*-1                                    RDC80144
71031  0 06745 0 06746   1439            -*-1,,-*-2                              RDC80139
71032  626321516351      1440       BCD ISTARTR                                  RDC80140
71033  0 00000 0 06744   1441            -*-1                                    RDC80141
71034 +252124777777      1442       OCT 252124777777                             RDC80142
                         1443                                                    LD028300
71035  0 06742 0 77777   1444  II15         -1,,-*-1                             RDC80435
71036  0 06741 0 06733   1445              $SUBR,,-*-1                          RDC80436
71037  0 06737 0 06740   1446              -*-1,,-*-2                           RDC80437
71040 -3 00001 0 14430   1447       TXL    SUB1,,1                              RDC80438
71041  0 06736 0 07335   1448              $PNAME,,-*-1                         RDC80439
71042  0 00000 0 06735   1449              -*-1                                 RDC80440
71043  0 00000 0 06734   1450              -*-1                                 RDC80441
71044 -226422017777      1451       OCT    626422017777      SUB1              RDC80442
                         1452 *                                                 RDC80443
71045  0 06732 0 77777   1453  )113       -1,,-*-1                             LD029300
71046  0 06731 0 07335   1454            PNAME,,-*-1                             LD029400
71047  0 00000 0 06730   1455            -*-1                                    LD029500
71050  0 00000 0 06727   1456            -*-1                                    LD029600
71051 -226422517777      1457       OCT 626422517777  SUBR                      LD029700
                         1458                                                    LD029800
71052  0 06725 0 77777   1459  )114       -1,,-*-1                             LD029900
71053  0 06724 0 06733   1460            SUBR,,-*-1                              LD030000
71054  0 06722 0 06723   1461            -*-1,,-*-2                              LD030100
71055 -3 00002 0 07445   1462       TXL SUBLIS,,2                                LD030200
71056  0 06721 0 07335   1463            PNAME,,-*-1                             LD030300
71057  0 00000 0 06720   1464            -*-1                                    LD030400
71060  0 00000 0 06717   1465            -*-1                                    LD030500
71061  626422433162      1466       BCD ISUBLIS                                  LD030600
                         1467                                                    LD030700
71062  0 06715 0 77777   1468  )115       -1,,-*-1                             LD030800
71063  0 06714 0 06733   1469            SUBR,,-*-1                              LD030900
71064  0 06712 0 06713   1470            -*-1,,-*-2                              LD031000
71065 -3 00003 0 07367   1471       TXL SUBST,,3                                 LD031100
71066  0 06711 0 07335   1472            PNAME,,-*-1                             LD031200
71067  0 00000 0 06710   1473            -*-1                                    LD031300
```

```
  71070  0 00000 0 06707   1474                -*-1                                LD031400
  71071 -226422626377      1475          OCT 626422626377         SUBST            LD031500
                           1476 *
  71072  0 06705 0 77777   1477 )SYM              -1,,-*-1
  71073  0 06704 0 07335   1478                   PNAME,,-*-1
  71074  0 00000 0 06703   1479                   -*-1
  71075  0 00000 0 06702   1480                   -*-1
  71076 -227044777777      1481          OCT      627044777777     SYM
                           1482                                                        RDC80146
  71077  0 06700 0 77777   1483 )PJ23          -1,,-*-1               TERPRI           RDC80147
  71100  0 06677 0 06733   1484                SUBR,,-*-1                              RDC80152
  71101  0 06675 0 06676   1485          PZE -*-1,,-*-2                                RDCW0019
  71102 -3 00000 0 05214   1486          TXL TERPRI,,0                                 RDC80154
  71103  0 06674 0 07335   1487                PNAME,,-*-1                             RDC80148
  71104  0 00000 0 06673   1488                -*-1                                    RDC80153
  71105  0 00000 0 06672   1489                -*-1                                    RDC80150
  71106  632551475131      1490          BCD 1TERPRI                                   RDC80151
                           1491                                                        LD036900
  71107  0 06670 0 77777   1492  )122          -1,,-*-1                                LD037000
  71110  0 06667 0 06733   1493                SUBR,,-*-1                              LD037100
  71111  0 06665 0 06666   1494                -*-1,,-*-2                              LD037200
  71112 -3 00000 0 01521   1495          TXL      $TIME,,0
  71113  0 06664 0 07335   1496                PNAME,,-*-1                             LD037400
  71114  0 00000 0 06663   1497                -*-1                                    LD037500
  71115  0 06662 0 06661   1498                   -*-2,,-*-1
  71116  0 00000 0 06660   1499                   -*-2
  71117  632544476462      1500          BCI      2,TEMPUS-FUGIT
  71120  402664273163
                           1501                                                        LD037800
  71121  0 06656 0 77777   1502  )124          -1,,-*-1                                LD038500
  71122  0 06655 0 10103   1503                   $FSUBR,,-*-1                         RDC80353
  71123  0 06653 0 06654   1504                   -*-1,,-*-2                           RDC80354
  71124 -3 00002 0 14134   1505          TXL      MULT,,2                              RDC80355
  71125  0 06652 0 07335   1506                   $PNAME,,-*-1                         RDC80356
  71126  0 00000 0 06651   1507                   -*-1                                 RDC80357
  71127  0 00000 0 06650   1508                   -*-1                                 RDC80358
  71130 -233144256277      1509          OCT      633144256277     TIMES
                           1510 *                                                      RDC80360
  71131  0 06646 0 77777   1511 )213              -1,,-*-1
  71132  0 06645 0 07335   1512                   $PNAME,,-*-1
  71133  0 00000 0 06644   1513                   -*-1
  71134  0 00000 0 06643   1514                   -*-1
  71135  635121232577      1515          VFD      H30/TRACE,06/77
                           1516 *
  71136  0 06641 0 77777   1517  )127          -1,,-*-1                                LD040600
  71137  0 06640 0 06733   1518                SUBR,,-*-1                              LD040700
  71140  0 06636 0 06637   1519                -*-1,,-*-2                              LD040800
  71141 -3 00000 0 04101   1520          TXL UNCONT,,0                                 LD040900
  71142  0 06635 0 07335   1521                PNAME,,-*-1                             LD041000
  71143  0 00000 0 06634   1522                -*-1                                    LD041100
  71144  0 06633 0 06632   1523                -*-2,,-*-1                              LD041200
  71145  0 00000 0 06631   1524                -*-2                                    LD041300
  71146  644523466445      1525          BCD 1UNCOUN                                   LD041400
  71147 -237777777777      1526          OCT 637777777777         UNCOUNT          LD041500
```

```
                                                                              RDC80210
71150  0 06627 0 77777   )PJ31              -1,,-*-1         UNPACK           RDC80211
71151  0 06626 0 06733                      SUBR,,-*-1                        RDC80212
71152  0 06624 0 06625                      -*-1,,-*-2                        RDC80213
71153 -3 00001 0 12365             TXL      UNPACK,,1                         RDC80214
71154  0 06623 0 07335                      PNAME,,-*-1                       RDC80215
71155  0 00000 0 06622                      -*-1                              RDC80216
71156  0 00000 0 06621                      -*-1                              RDC80217
71157  644547212342                BCI      1,UNPACK                          RDC80218
                                                                              RDC70217
71160  0 06617 0 77777   II10               -1,,-*-1                          RDC80388
71161  0 06616 0 06733                      $SUBR,,-*-1                       RDC80389
71162  0 06614 0 06615                      -*-1,,-*-2                        RDC80390
71163 -3 00001 0 14507             TXL      ZEROP,,1                          RDC80391
71164  0 06613 0 07335                      $PNAME,,-*-1                      RDC80392
71165  0 00000 0 06612                      -*-1                              RDC80393
71166  0 00000 0 06611                      -*-1                              RDC80394
71167 -312551464777                OCT      712551464777     ZEROP            RDC80395
                         *
```

```
1546          EJECT
1547 *                                                        RDCZ0005
1548 *                                                        RDCZ0006
```

```
                                1549          EJECT
                                1550 *        PROPERTY LISTS FOR ALPHABETIC OBJECTS                                    RDCZ0007
                                1551 *                                                                                 RDCZ0008
71170  0 00000 0 00000          1552 HH00           0
                                1553           * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
71171  0 00000 0 00001          1554 HH01           1
                                1555           * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
71172  0 00000 0 00002          1556 HH02           2
                                1557           * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
71173  0 00000 0 00003          1558 HH03           3
                                1559           * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
71174  0 00000 0 00004          1560 HH04           4
                                1561           * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
71175  0 00000 0 00005          1562 HH05           5
                                1563           * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
71176  0 00000 0 00006          1564 HH06           6
                                1565           * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
71177  0 00000 0 00007          1566 HH07           7
                                1567           * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
71200 +000000000010             1568 HH10     OCT   10
                                1569           * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
71201 +000000000011             1570 HH11     OCT   11
                                1571           * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
                                1572           * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0255
71202  0 06575 0 07335          1573  HH12    PZE PNAME,,-*-1          END OF FILE                                    RDCP0256
71203  0 06572 0 06574          1574          PZE -*-1,,-*-3                                                          RDCP0257
71204  0 00000 0 06573          1575          PZE -*-1                                                                RDCP0258
71205 -132546265377             1576          OCT 532546265377         BCD $EOF$                                      RDC80257
71206  0 06571 0 10742          1577          PZE APVAL1,,-*-1                                                        RDCP0260
71207  0 00000 0 06570          1578          PZE -*-1                                                                RDCP0261
71210  0 00000 0 06141          1579          PZE H12                                                                 RDCP0262
                                1580           * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0263
71211  0 06566 0 07335          1581 HH13     PZE PNAME,,-*-1          =                                              RDCP0264
71212  0 00000 0 06565          1582          PZE -*-1                                                                RDCP0265
71213  0 00000 0 06564          1583          PZE -*-1                                                                RDCP0266
71214 +137777777777             1584          OCT 137777777777                                                        RDCP0267
                                1585           * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0268
71215  0 06562 0 07335          1586 HH14          PNAME,,-*-1          8-4 MINUS                                  RDCP0269
71216  0 00000 0 06561          1587          PZE -*-1                                                                RDCP0270
71217  0 00000 0 06560          1588          PZE -*-1                                                                RDCP0271
71220 +147777777777             1589          OCT 147777777777                                                        RDCP0272
                                1590           * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0273
71221  0 06556 0 07335          1591 HH15          PNAME,,-*-1          ILLEGAL                                    RDCP0274
71222  0 00000 0 06555          1592          PZE -*-1                                                                RDCP0275
71223  0 00000 0 06554          1593          PZE -*-1                                                                RDCP0276
71224  533143010553             1594          BCD 1$IL15$                                                             RDCP0277
                                1595           * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0278
71225  0 06552 0 07335          1596 HH16          PNAME,,-*-1          ILLEGAL                                    RDCP0279
71226  0 00000 0 06551          1597          PZE -*-1                                                                RDCP0280
71227  0 00000 0 06550          1598          PZE -*-1                                                                RDCP0281
71230  533143010653             1599          BCD 1$IL16$                                                             RDCP0282
                                1600           * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0283
71231  0 06546 0 07335          1601 HH17          PNAME,,-*-1          ILLEGAL                                    RDCP0284
71232  0 00000 0 06545          1602          PZE -*-1                                                                RDCP0285
```

```
71233  0 00000 0 06544   1603          PZE -*-1                                                    RDCP0286
71234  533143010753      1604          BCD 1$IL17$                                                 RDCP0287
                         1605              * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0288
71235  0 06542 0 07335   1606 HH20         PNAME,,-*-1              +                          RDCP0289
71236  0 00000 0 06541   1607          PZE -*-1                                                    RDCP0290
71237  0 00000 0 06540   1608          PZE -*-1                                                    RDCP0291
71240 +207777777777      1609          OCT 207777777777                                            RDCP0292
                         1610              * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0293
71241  0 06536 0 07335   1611 HH21         PNAME,,-*-1              A                          RDCP0294
71242  0 00000 0 06535   1612          PZE -*-1                                                    RDCP0295
71243  0 00000 0 06534   1613          PZE -*-1                                                    RDCP0296
71244 +217777777777      1614          OCT 217777777777                                            RDCP0297
                         1615              * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0298
71245  0 06532 0 07335   1616 HH22         PNAME,,-*-1              B                          RDCP0299
71246  0 00000 0 06531   1617          PZE -*-1                                                    RDCP0300
71247  0 00000 0 06530   1618          PZE -*-1                                                    RDCP0301
71250 +227777777777      1619          OCT 227777777777                                            RDCP0302
                         1620              * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0303
71251  0 06526 0 07335   1621 HH23         PNAME,,-*-1              C                          RDCP0304
71252  0 00000 0 06525   1622          PZE -*-1                                                    RDCP0305
71253  0 00000 0 06524   1623          PZE -*-1                                                    RDCP0306
71254 +237777777777      1624          OCT 237777777777                                            RDCP0307
                         1625              * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0308
71255  0 06522 0 07335   1626 HH24         PNAME,,-*-1              D                          RDCP0309
71256  0 00000 0 06521   1627          PZE -*-1                                                    RDCP0310
71257  0 00000 0 06520   1628          PZE -*-1                                                    RDCP0311
71260 +247777777777      1629          OCT 247777777777                                            RDCP0312
                         1630              * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0313
71261  0 06516 0 07335   1631 HH25         PNAME,,-*-1              E                          RDCP0314
71262  0 00000 0 06515   1632          PZE -*-1                                                    RDCP0315
71263  0 00000 0 06514   1633          PZE -*-1                                                    RDCP0316
71264 +257777777777      1634          OCT 257777777777                                            RDCP0317
                         1635              * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0318
71265  0 06512 0 77777   1636 HH26         -1,,-*-1                 F                          RDCP0319
71266  0 06511 0 10742   1637             APVAL,,-*-1                                             RDCP0320
71267  0 06507 0 06510   1638             -*-1,,-*-2                                              RDCP0321
71270  0 00000 0 00000   1639             0                                                       RDCP0322
71271  0 06506 0 07335   1640             PNAME,,-*-1                                             RDCP0323
71272  0 00000 0 06505   1641          PZE -*-1                                                    RDCP0324
71273  0 00000 0 06504   1642          PZE -*-1                                                    RDCP0325
71274 +267777777777      1643          OCT 267777777777                                            RDCP0326
                         1644              * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0327
71275  0 06502 0 07335   1645 HH27         PNAME,,-*-1              G                          RDCP0328
71276  0 00000 0 06501   1646          PZE -*-1                                                    RDCP0329
71277  0 00000 0 06500   1647          PZE -*-1                                                    RDCP0330
71300 +277777777777      1648          OCT 277777777777                                            RDCP0331
                         1649              * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0332
71301  0 06476 0 07335   1650 HH30         PNAME,,-*-1              H                          RDCP0333
71302  0 00000 0 06475   1651          PZE -*-1                                                    RDCP0334
71303  0 00000 0 06474   1652          PZE -*-1                                                    RDCP0335
71304 +307777777777      1653          OCT 307777777777                                            RDCP0336
                         1654              * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0337
71305  0 06472 0 07335   1655 HH31         PNAME,,-*-1              I                          RDCP0338
71306  0 00000 0 06471   1656          PZE -*-1                                                    RDCP0339
```

```
71307  0 00000 0 06470   1657          PZE -*-1                                                        RDCP0340
71310 +317777777777      1658          OCT 317777777777                                                RDCP0341
                         1659              * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0342
71311  0 06466 0 07335   1660 HH32         PNAME,,-*-1          +0                                     RDCP0343
71312  0 00000 0 06465   1661          PZE -*-1                                                        RDCP0344
71313  0 00000 0 06464   1662          PZE -*-1                                                        RDCP0345
71314   533143030253     1663          BCD 1$IL32$                                                     RDCP0346
                         1664              * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0347
71315  0 06462 0 07335   1665 HH33         PNAME,,-*-1          .                                      RDCP0348
71316  0 00000 0 06461   1666          PZE -*-1                                                        RDCP0349
71317  0 00000 0 06460   1667          PZE -*-1                                                        RDCP0350
71320 +337777777777      1668          OCT 337777777777                                                RDCP0351
                         1669              * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0352
71321  0 06456 0 07335   1670 HH34         PNAME,,-*-1          )                                      RDCP0353
71322  0 00000 0 06455   1671          PZE -*-1                                                        RDCP0354
71323  0 00000 0 06454   1672          PZE -*-1                                                        RDCP0355
71324 +347777777777      1673          OCT 347777777777                                                RDCP0356
                         1674              * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0357
71325  0 06452 0 07335   1675 HH35         PNAME,,-*-1          ILLEGAL                                RDCP0358
71326  0 00000 0 06451   1676          PZE -*-1                                                        RDCP0359
71327  0 00000 0 06450   1677          PZE -*-1                                                        RDCP0360
71330   533143030553     1678          BCD 1$IL35$                                                     RDCP0361
                         1679              * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0362
71331  0 06446 0 07335   1680 HH36         PNAME,,-*-1          ILLEGAL                                RDCP0363
71332  0 00000 0 06445   1681          PZE -*-1                                                        RDCP0364
71333  0 00000 0 06444   1682          PZE -*-1                                                        RDCP0365
71334   533143030653     1683          BCD 1$IL36$                                                     RDCP0366
                         1684              * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0367
71335  0 06442 0 07335   1685 HH37         PNAME,,-*-1          ILLEGAL                                RDCP0368
71336  0 00000 0 06441   1686          PZE -*-1                                                        RDCP0369
71337  0 00000 0 06440   1687          PZE -*-1                                                        RDCP0370
71340   533143030753     1688          BCD 1$IL37$                                                     RDCP0371
                         1689              * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0372
71341  0 06436 0 07335   1690 HH40         PNAME,,-*-1          11 MINUS                               RDCP0373
71342  0 00000 0 06435   1691          PZE -*-1                                                        RDCP0374
71343  0 00000 0 06434   1692          PZE -*-1                                                        RDCP0375
71344 -007777777777      1693          OCT 407777777777                                                RDCP0376
                         1694              * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0377
71345  0 06432 0 07335   1695 HH41         PNAME,,-*-1          J                                      RDCP0378
71346  0 00000 0 06431   1696          PZE -*-1                                                        RDCP0379
71347  0 00000 0 06430   1697          PZE -*-1                                                        RDCP0380
71350 -017777777777      1698          OCT 417777777777                                                RDCP0381
                         1699              * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0382
71351  0 06426 0 07335   1700 HH42         PNAME,,-*-1          K                                      RDCP0383
71352  0 00000 0 06425   1701          PZE -*-1                                                        RDCP0384
71353  0 00000 0 06424   1702          PZE -*-1                                                        RDCP0385
71354 -027777777777      1703          OCT 427777777777                                                RDCP0386
                         1704              * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0387
71355  0 06422 0 07335   1705 HH43         PNAME,,-*-1          L                                      RDCP0388
71356  0 00000 0 06421   1706          PZE -*-1                                                        RDCP0389
71357  0 00000 0 06420   1707          PZE -*-1                                                        RDCP0390
71360 -037777777777      1708          OCT 437777777777                                                RDCP0391
                         1709              * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0392
71361  0 06416 0 07335   1710 HH44         PNAME,,-*-1          M                                      RDCP0393
```

```
71362  0 00000 0 06415   1711          PZE -*-1                                                    RDCP0394
71363  0 00000 0 06414   1712          PZE -*-1                                                    RDCP0395
71364 -047777777777      1713          OCT 447777777777                                            RDCP0396
                         1714              * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0397
71365  0 06412 0 07335   1715 HH45         PNAME,,-*-1              N                          RDCP0398
71366  0 00000 0 06411   1716          PZE -*-1                                                    RDCP0399
71367  0 00000 0 06410   1717          PZE -*-1                                                    RDCP0400
71370 -057777777777      1718          OCT 457777777777                                            RDCP0401
                         1719              * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0402
71371  0 06406 0 07335   1720 HH46         PNAME,,-*-1              O                          RDCP0403
71372  0 00000 0 06405   1721          PZE -*-1                                                    RDCP0404
71373  0 00000 0 06404   1722          PZE -*-1                                                    RDCP0405
71374 -067777777777      1723          OCT 467777777777                                            RDCP0406
                         1724              * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0407
71375  0 06402 0 07335   1725 HH47         PNAME,,-*-1              P                          RDCP0408
71376  0 00000 0 06401   1726          PZE -*-1                                                    RDCP0409
71377  0 00000 0 06400   1727          PZE -*-1                                                    RDCP0410
71400 -077777777777      1728          OCT 477777777777                                            RDCP0411
                         1729              * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0412
71401  0 06376 0 07335   1730 HH50         PNAME,,-*-1              Q                          RDCP0413
71402  0 00000 0 06375   1731          PZE -*-1                                                    RDCP0414
71403  0 00000 0 06374   1732          PZE -*-1                                                    RDCP0415
71404 -107777777777      1733          OCT 507777777777                                            RDCP0416
                         1734              * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0417
71405  0 06372 0 07335   1735 HH51         PNAME,,-*-1              R                          RDCP0418
71406  0 00000 0 06371   1736          PZE -*-1                                                    RDCP0419
71407  0 00000 0 06370   1737          PZE -*-1                                                    RDCP0420
71410 -117777777777      1738          OCT 517777777777                                            RDCP0421
                         1739              * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0422
71411  0 06366 0 07335   1740 HH52         PNAME,,-*-1              -0                         RDCP0423
71412  0 00000 0 06365   1741          PZE -*-1                                                    RDCP0424
71413  0 00000 0 06364   1742          PZE -*-1                                                    RDCP0425
71414  533143050253      1743          BCD 1$IL52$                                                 RDCP0426
                         1744              * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0427
71415  0 06362 0 07335   1745 HH53         PNAME,,-*-1              $                          RDCP0428
71416  0 00000 0 06361   1746          PZE -*-1                                                    RDCP0429
71417  0 00000 0 06360   1747          PZE -*-1                                                    RDCP0430
71420 -137777777777      1748          OCT 537777777777                                            RDCP0431
                         1749              * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0432
71421  0 06356 0 07335   1750 HH54         PNAME,,-*-1              *                          RDCP0433
71422  0 06353 0 06355   1751          PZE      -*-1,,-*-3
71423  0 00000 0 06354   1752          PZE -*-1                                                    RDCP0435
71424 -147777777777      1753          OCT 547777777777                                            RDCP0436
71425  0 06352 0 06706   1754          PZE      SYM,,-*-1
71426  0 00000 0 61272   1755          PZE      -C$STAR
                         1756              * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0437
71427  0 06350 0 07335   1757 HH55         PNAME,,-*-1              ILLEGAL                    RDCP0438
71430  0 00000 0 06347   1758          PZE -*-1                                                    RDCP0439
71431  0 00000 0 06346   1759          PZE -*-1                                                    RDCP0440
71432  533143050553      1760          BCD 1$IL55$                                                 RDCP0441
                         1761              * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0442
71433  0 06344 0 07335   1762 HH56         PNAME,,-*-1              ILLEGAL                    RDCP0443
71434  0 00000 0 06343   1763          PZE -*-1                                                    RDCP0444
71435  0 00000 0 06342   1764          PZE -*-1                                                    RDCP0445
```

```
71436  533143050653                  BCD 1$IL56$                                                  RDCP0446
                                         * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0447
71437  0 06340 0 07335         HH57      PNAME,,-*-1            ILLEGAL                           RDCP0448
71440  0 00000 0 06337               PZE -*-1                                                     RDCP0449
71441  0 00000 0 06336               PZE -*-1                                                     RDCP0450
71442  533143050753                  BCD 1$IL57$                                                  RDCP0451
                                         * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0452
71443  0 06334 0 07335         HH60      PNAME,,-*-1            BLANK                             RDCP0453
71444  0 00000 0 06333               PZE -*-1                                                     RDCP0454
71445  0 00000 0 06332               PZE -*-1                                                     RDCP0455
71446 -207777777777                  OCT 607777777777                                             RDCP0456
                                         * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0457
71447  0 06330 0 07335         HH61      PNAME,,-*-1            /                                 RDCP0458
71450  0 00000 0 06327               PZE -*-1                                                     RDCP0459
71451  0 00000 0 06326               PZE -*-1                                                     RDCP0460
71452 -217777777777                  OCT 617777777777                                             RDCP0461
                                         * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0462
71453  0 06324 0 07335         HH62      PNAME,,-*-1            S                                 RDCP0463
71454  0 00000 0 06323               PZE -*-1                                                     RDCP0464
71455  0 00000 0 06322               PZE -*-1                                                     RDCP0465
71456 -227777777777                  OCT 627777777777                                             RDCP0466
                                         * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0467
71457  0 06320 0 77777         HH63      -1,,-*-1               T                                 RDCP0468
71460  0 06317 0 10742                   APVAL,,-*-1                                              RDCP0469
71461  0 06315 0 06316                   -*-1,,-*-2                                               RDCP0470
71462  0 00000 0 00001                   1                                                        RDCP0471
71463  0 06314 0 07335                   PNAME,,-*-1                                              RDCP0472
71464  0 00000 0 06313               PZE -*-1                                                     RDCP0473
71465  0 00000 0 06312               PZE -*-1                                                     RDCP0474
71466 -237777777777                  OCT 637777777777                                             RDCP0475
                                         * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0476
71467  0 06310 0 07335         HH64      PNAME,,-*-1            U                                 RDCP0477
71470  0 00000 0 06307               PZE -*-1                                                     RDCP0478
71471  0 00000 0 06306               PZE -*-1                                                     RDCP0479
71472 -247777777777                  OCT 647777777777                                             RDCP0480
                                         * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0481
71473  0 06304 0 07335         HH65      PNAME,,-*-1            V                                 RDCP0482
71474  0 00000 0 06303               PZE -*-1                                                     RDCP0483
71475  0 00000 0 06302               PZE -*-1                                                     RDCP0484
71476 -257777777777                  OCT 657777777777                                             RDCP0485
                                         * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0486
71477  0 06300 0 07335         HH66      PNAME,,-*-1            W                                 RDCP0487
71500  0 00000 0 06277               PZE -*-1                                                     RDCP0488
71501  0 00000 0 06276               PZE -*-1                                                     RDCP0489
71502 -267777777777                  OCT 667777777777                                             RDCP0490
                                         * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0491
71503  0 06274 0 07335         HH67      PNAME,,-*-1            X                                 RDCP0492
71504  0 00000 0 06273               PZE -*-1                                                     RDCP0493
71505  0 00000 0 06272               PZE -*-1                                                     RDCP0494
71506 -277777777777                  OCT 677777777777                                             RDCP0495
                                         * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0496
71507  0 06270 0 07335         HH70      PNAME,,-*-1            Y                                 RDCP0497
71510  0 00000 0 06267               PZE -*-1                                                     RDCP0498
71511  0 00000 0 06266               PZE -*-1                                                     RDCP0499
```

```
71512 -307777777777      1819        OCT 707777777777                               RDCP0500
                         1820           * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0501
71513  0 06264 0 07335   1821 HH71      PNAME,,-*-1          Z                       RDCP0502
71514  0 00000 0 06263   1822        PZE -*-1                                        RDCP0503
71515  0 00000 0 06262   1823        PZE -*-1                                        RDCP0504
71516 -317777777777      1824        OCT 717777777777                               RDCP0505
                         1825           * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0506
71517  0 06260 0 07335   1826 HH72      PNAME,,-*-1          END OF RECORD           RDCP0507
71520  0 06255 0 06257   1827        PZE -*-1,,-*-3                                  RDCP0508
71521  0 00000 0 06256   1828        PZE -*-1                                        RDCP0509
71522 -132546515377      1829        OCT 532546515377         BCD $EOR$              RDC80267
71523  0 06254 0 10742   1830        PZE APVAL1,,-*-1                                RDCP0511
71524  0 00000 0 06253   1831        PZE -*-1                                        RDCP0512
71525  0 00000 0 06221   1832        PZE H72                                         RDCP0513
                         1833           * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0514
71526  0 06251 0 07335   1834 HH73      PNAME,,-*-1          ,                       RDCP0515
71527  0 00000 0 06250   1835        PZE -*-1                                        RDCP0516
71530  0 00000 0 06247   1836        PZE -*-1                                        RDCP0517
71531 -337777777777      1837        OCT 737777777777                               RDCP0518
                         1838           * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0519
71532  0 06245 0 07335   1839 HH74      PNAME,,-*-1          (                       RDCP0520
71533  0 00000 0 06244   1840        PZE -*-1                                        RDCP0521
71534  0 00000 0 06243   1841        PZE -*-1                                        RDCP0522
71535 -347777777777      1842        OCT 747777777777                               RDCP0523
                         1843           * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0524
71536  0 06241 0 07335   1844 HH75      PNAME,,-*-1          ILLEGAL                 RDCP0525
71537  0 00000 0 06240   1845        PZE -*-1                                        RDCP0526
71540  0 00000 0 06237   1846        PZE -*-1                                        RDCP0527
71541  533143070553      1847        BCD 1$IL75$                                     RDCP0528
                         1848           * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0529
71542  0 06235 0 07335   1849 HH76      PNAME,,-*-1          ILLEGAL                 RDCP0530
71543  0 00000 0 06234   1850        PZE -*-1                                        RDCP0531
71544  0 00000 0 06233   1851        PZE -*-1                                        RDCP0532
71545  533143070653      1852        BCD 1$IL76$                                     RDCP0533
                         1853           * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *RDCP0534
71546  0 06231 0 07335   1854 HH77      PNAME,,-*-1          ILLEGAL                 RDCP0535
71547  0 00000 0 06230   1855        PZE -*-1                                        RDCP0536
71550  0 00000 0 06227   1856        PZE -*-1                                        RDCP0537
71551  533143070753      1857        BCD 1$IL77$                                     RDCP0538
                         1858 *                                                      RDCP0539
                         1859 *                                                      RDCP0540
71552  0 06232 0 77777   1860 )H77         -1,,-HH77                                 RDCP0541
71553  0 06236 0 77777   1861 )H76         -1,,-HH76                                 RDCP0542
71554  0 06242 0 77777   1862 )H75         -1,,-HH75                                 RDCP0543
71555  0 06246 0 77777   1863 )H74         -1,,-HH74                                 RDCP0544
71556  0 06252 0 77777   1864 )H73         -1,,-HH73                                 RDCP0545
71557  0 06261 0 77777   1865 )H72         -1,,-HH72                                 RDCP0546
71560  0 06265 0 77777   1866 )H71         -1,,-HH71                                 RDCP0547
71561  0 06271 0 77777   1867 )H70         -1,,-HH70                                 RDCP0548
71562  0 06275 0 77777   1868 )H67         -1,,-HH67                                 RDCP0549
71563  0 06301 0 77777   1869 )H66         -1,,-HH66                                 RDCP0550
71564  0 06305 0 77777   1870 )H65         -1,,-HH65                                 RDCP0551
71565  0 06311 0 77777   1871 )H64         -1,,-HH64                                 RDCP0552
71566  0 06321 0 77777   1872 )H63         -1,,-HH63                                 RDCP0553
```

```
71567  0 06325 0 77777   1873 )H62        -1,,-HH62                    RDCP0554
71570  0 06331 0 77777   1874 )H61        -1,,-HH61                    RDCP0555
71571  0 06335 0 77777   1875 )H60        -1,,-HH60                    RDCP0556
71572  0 06341 0 77777   1876 )H57        -1,,-HH57                    RDCP0557
71573  0 06345 0 77777   1877 )H56        -1,,-HH56                    RDCP0558
71574  0 06351 0 77777   1878 )H55        -1,,-HH55                    RDCP0559
71575  0 06357 0 77777   1879 )H54        -1,,-HH54                    RDCP0560
71576  0 06363 0 77777   1880 )H53        -1,,-HH53                    RDCP0561
71577  0 06367 0 77777   1881 )H52        -1,,-HH52                    RDCP0562
71600  0 06373 0 77777   1882 )H51        -1,,-HH51                    RDCP0563
71601  0 06377 0 77777   1883 )H50        -1,,-HH50                    RDCP0564
71602  0 06403 0 77777   1884 )H47        -1,,-HH47                    RDCP0565
71603  0 06407 0 77777   1885 )H46        -1,,-HH46                    RDCP0566
71604  0 06413 0 77777   1886 )H45        -1,,-HH45                    RDCP0567
71605  0 06417 0 77777   1887 )H44        -1,,-HH44                    RDCP0568
71606  0 06423 0 77777   1888 )H43        -1,,-HH43                    RDCP0569
71607  0 06427 0 77777   1889 )H42        -1,,-HH42                    RDCP0570
71610  0 06433 0 77777   1890 )H41        -1,,-HH41                    RDCP0571
71611  0 06437 0 77777   1891 )H40        -1,,-HH40                    RDCP0572
71612  0 06443 0 77777   1892 )H37        -1,,-HH37                    RDCP0573
71613  0 06447 0 77777   1893 )H36        -1,,-HH36                    RDCP0574
71614  0 06453 0 77777   1894 )H35        -1,,-HH35                    RDCP0575
71615  0 06457 0 77777   1895 )H34        -1,,-HH34                    RDCP0576
71616  0 06463 0 77777   1896 )H33        -1,,-HH33                    RDCP0577
71617  0 06467 0 77777   1897 )H32        -1,,-HH32                    RDCP0578
71620  0 06473 0 77777   1898 )H31        -1,,-HH31                    RDCP0579
71621  0 06477 0 77777   1899 )H30        -1,,-HH30                    RDCP0580
71622  0 06503 0 77777   1900 )H27        -1,,-HH27                    RDCP0581
71623  0 06513 0 77777   1901 )H26        -1,,-HH26                    RDCP0582
71624  0 06517 0 77777   1902 )H25        -1,,-HH25                    RDCP0583
71625  0 06523 0 77777   1903 )H24        -1,,-HH24                    RDCP0584
71626  0 06527 0 77777   1904 )H23        -1,,-HH23                    RDCP0585
71627  0 06533 0 77777   1905 )H22        -1,,-HH22                    RDCP0586
71630  0 06537 0 77777   1906 )H21        -1,,-HH21                    RDCP0587
71631  0 06543 0 77777   1907 )H20        -1,,-HH20                    RDCP0588
71632  0 06547 0 77777   1908 )H17        -1,,-HH17                    RDCP0589
71633  0 06553 0 77777   1909 )H16        -1,,-HH16                    RDCP0590
71634  0 06557 0 77777   1910 )H15        -1,,-HH15                    RDCP0591
71635  0 06563 0 77777   1911 )H14        -1,,-HH14                    RDCP0592
71636  0 06567 0 77777   1912 )H13        -1,,-HH13                    RDCP0593
71637  0 06576 0 77777   1913 )H12        -1,,-HH12                    RDCP0594
71640  0 06577 1 77777   1914  )H11           -1,1,-HH11
71641  0 06600 1 77777   1915  )H10           -1,1,-HH10
71642  0 06601 1 77777   1916  )H07           -1,1,-HH07
71643  0 06602 1 77777   1917  )H06           -1,1,-HH06
71644  0 06603 1 77777   1918  )H05           -1,1,-HH05
71645  0 06604 1 77777   1919  )H04           -1,1,-HH04
71646  0 06605 1 77777   1920  )H03           -1,1,-HH03
71647  0 06606 1 77777   1921  )H02           -1,1,-HH02
71650  0 06607 1 77777   1922  )H01           -1,1,-HH01
71651  0 06610 1 77777   1923  )H00           -1,1,-HH00
71652                    1924 UPERML BSS       0
```

BONNIE-S BIRTHDAY ASSEMBLY

1925 EJECT

```
                    1926        EJECT
                    1927        HEAD    0
                    1928 *      SYN CARDS CAUSE MANY SYMBOLS TO HAVE 0-HEADED EQUIVALENTS
                    1929 *
06127               1930 H00    SYN -)H00                                   RDC80471
06130               1931 H01    SYN -)H01                                   RDC80472
06131               1932 H02    SYN -)H02                                   RDC80473
06132               1933 H03    SYN -)H03                                   RDC80474
06133               1934 H04    SYN -)H04                                   RDC80475
06134               1935 H05    SYN -)H05                                   RDC80476
06135               1936 H06    SYN -)H06                                   RDC80477
06136               1937 H07    SYN -)H07                                   RDC80478
06137               1938 H10    SYN -)H10                                   RDC80479
06140               1939 H11    SYN -)H11                                   RDC80480
06141               1940 H12    SYN -)H12                                   RDC80481
06142               1941 H13    SYN -)H13                                   RDC80482
06143               1942 H14    SYN -)H14                                   RDC80483
06144               1943 H15    SYN -)H15                                   RDC80484
06145               1944 H16    SYN -)H16                                   RDC80485
06146               1945 H17    SYN -)H17                                   RDC80486
06147               1946 H20    SYN -)H20                                   RDC80487
06150               1947 H21    SYN -)H21                                   RDC80488
06151               1948 H22    SYN -)H22                                   RDC80489
06152               1949 H23    SYN -)H23                                   RDC80490
06153               1950 H24    SYN -)H24                                   RDC80491
06154               1951 H25    SYN -)H25                                   RDC80492
06155               1952 H26    SYN -)H26                                   RDC80493
06156               1953 H27    SYN -)H27                                   RDC80494
06157               1954 H30    SYN -)H30                                   RDC80495
06160               1955 H31    SYN -)H31                                   RDC80496
06161               1956 H32    SYN -)H32                                   RDC80497
06162               1957 H33    SYN -)H33                                   RDC80498
06163               1958 H34    SYN -)H34                                   RDC80499
06164               1959 H35    SYN -)H35                                   RDC80500
06165               1960 H36    SYN -)H36                                   RDC80501
06166               1961 H37    SYN -)H37                                   RDC80502
06167               1962 H40    SYN -)H40                                   RDC80503
06170               1963 H41    SYN -)H41                                   RDC80504
06171               1964 H42    SYN -)H42                                   RDC80505
06172               1965 H43    SYN -)H43                                   RDC80506
06173               1966 H44    SYN -)H44                                   RDC80507
06174               1967 H45    SYN -)H45                                   RDC80508
06175               1968 H46    SYN -)H46                                   RDC80509
06176               1969 H47    SYN -)H47                                   RDC80510
06177               1970 H50    SYN -)H50                                   RDC80511
06200               1971 H51    SYN -)H51                                   RDC80512
06201               1972 H52    SYN -)H52                                   RDC80513
06202               1973 H53    SYN -)H53                                   RDC80514
06203               1974 H54    SYN -)H54                                   RDC80515
06204               1975 H55    SYN -)H55                                   RDC80516
06205               1976 H56    SYN -)H56                                   RDC80517
06206               1977 H57    SYN -)H57                                   RDC80518
06207               1978 H60    SYN -)H60                                   RDC80519
06210               1979 H61    SYN -)H61                                   RDC80520
```

```
06211   1980 H62     SYN -)H62                                  RDC80521
06212   1981 H63     SYN -)H63                                  RDC80522
06213   1982 H64     SYN -)H64                                  RDC80523
06214   1983 H65     SYN -)H65                                  RDC80524
06215   1984 H66     SYN -)H66                                  RDC80525
06216   1985 H67     SYN -)H67                                  RDC80526
06217   1986 H70     SYN -)H70                                  RDC80527
06220   1987 H71     SYN -)H71                                  RDC80528
06221   1988 H72     SYN -)H72                                  RDC80529
06222   1989 H73     SYN -)H73                                  RDC80530
06223   1990 H74     SYN -)H74                                  RDC80531
06224   1991 H75     SYN -)H75                                  RDC80532
06225   1992 H76     SYN -)H76                                  RDC80533
06226   1993 H77     SYN -)H77                                  RDC80534
10772   1994  AND    SYN -)002                                  LD137600
10762   1995  F1     SYN -)003                                  LD137700
10752   1996  F18    SYN -)004                                  LD137800
10742   1997  APVAL  SYN -)005                                  LD137900
10742   1998 APVAL1  SYN     -)005
10735   1999 ARRAY   SYN     -III
10725   2000  ATOM   SYN -)007                                  LD138100
10715   2001  F29    SYN -)008                                  LD138200
06155   2002  F      SYN H26                                    RDCW0000
06212   2003  T      SYN H63                                    RDCW0001
10675   2004  CAR    SYN -)011                                  LD140000
10665   2005  CDR    SYN -)012                                  LD140100
06222   2006  COMMA  SYN H73
10460   2007  COND   SYN -)016                                  LD140400
10450   2008  CONSN  SYN -)017                                  LD140500
10323   2009 DUMP    SYN     -DMPOB
10440   2010  F12    SYN -)019                                  LD140700
10430   2011  COPYN  SYN -)020                                  LD140800
10420   2012  F35    SYN -)021                                  LD140900
10261   2013  EQ     SYN -)030                                  LD141100
10241   2014  F8     SYN -)032                                  LD141300
10231   2015  F21    SYN -)034                                  LD141400
10177   2016  F19    SYN -)035                                  LD141500
10167   2017 EVLISL  SYN -)036                                  LD141600
10157   2018  EXPR   SYN -)037                                  LD141700
10152   2019  F32    SYN -)038                                  LD141800
10142   2020  FEXPR  SYN -)040                                  LD142000
10135   2021  BIN    SYN -)041                                  6D142100
10135   2022  FIX    SYN -)041                                  LD142100
10120   2023  FLOAT  SYN -)042                                  LD142200
10103   2024  FSUBR  SYN -)043                                  LD142300
10076   2025 FUNARG  SYN -)044                                  LD142400
10071   2026  FUNCT  SYN -)045                                  LD142500
10057   2027 SYMGEN  SYN -)046                                  LD142600
10047   2028  CGET   SYN -)231                                  LD159000
10037   2029  GO     SYN -)047                                  LD142700
10015   2030  F16    SYN -)052                                  LD143000
10005   2031  LABEL  SYN -)054                                  LD143100
07775   2032 LAMBDA  SYN -)055                                  LD143200
07770   2033 LAP     SYN     -)LAP
```

```
07736  2034  LIST   SYN -)057                                  LD143300
07716  2035  LOADA  SYN -)234A
07646  2036  PMAPCA SYN -)065                                  LD144000
07614  2037  MAXP   SYN    -II7
07574  2038  MINUS  SYN -)070                                  LD144300
07604  2039  MINP   SYN    -II8
07544  2040  F3     SYN -)071                                  LD144400
00000  2041  NIL    SYN 0
07534  2042  NOT    SYN -)074                                  LD144800
07524  2043  NULL   SYN -)075                                  LD144900
07472  2044  OBLBA  SYN -)079A
07435  2045  OR     SYN -)079                                  LD145200
07415  2046  F2     SYN -)080                                  LD145300
07405  2047  PAUSE  SYN -)234C                                 LD145400
07365  2048  PLB    SYN -)234B                                 LD145600
07355  2049  PLUS   SYN -)081                                  LD145700
07335  2050  PNAME  SYN -)083                                  LD145800
07320  2051  F4     SYN -)087                                  LD146100
07300  2052  PROG   SYN -)089                                  LD146300
07260  2053  PROPO  SYN -)090                                  LD146400
07250  2054  QUOTE  SYN -)094                                  LD146500
07226  2055  F13    SYN -)096                                  LD146600
07206  2056  RCLAM  SYN -)234D                                 LD146800
07140  2057  PRPLCA SYN -)100                                  LD146900
07130  2058  PRPLCD SYN -)101                                  LD147000
07150  2059  RETATM SYN -)102
07052  2060  SASCO  SYN -)106                                  LD147400
07061  2061  SLIST  SYN    -)LST
07110  2062  SPECAL SYN    -)SPCL
07101  2063  SMOVE  SYN    -)MOV
07072  2064  SRETUR SYN    -)RTRN
07042  2065  SRCH   SYN -)236                                  LD147500
07032  2066  SET    SYN -)107                                  LD147600
07022  2067  SETQ   SYN -)108                                  LD147700
06772  2068  STOP   SYN -)111                                  LD147800
07002  2069  F34    SYN -)109                                  LD147900
06733  2070  SUBR   SYN -)113                                  LD148100
06726  2071  F17    SYN -)114                                  LD148200
06716  2072  F30    SYN -)115                                  LD148300
06671  2073  F27    SYN -)122                                  LD149000
06706  2074  SYM    SYN    -)SYM
06657  2075  TIMES  SYN -)124                                  LD149200
06647  2076  TRACE  SYN    -)213
06642  2077  F36    SYN -)127                                  LD149500
10655  2078  CAAR   SYN -)201                                  LD156400
10645  2079  CDAR   SYN -)202                                  LD156500
10635  2080  CADR   SYN -)203                                  LD156600
10625  2081  CDDR   SYN -)204                                  LD156700
10615  2082  CAAAR  SYN -)205                                  LD156800
10605  2083  CAADR  SYN -)206                                  LD156900
10575  2084  CADAR  SYN -)207                                  LD157000
10565  2085  CADDR  SYN -)208                                  LD157100
10555  2086  CDAAR  SYN -)209                                  LD157200
10545  2087  CDADR  SYN -)210                                  LD157300
```

```
10535  2088  CDDAR  SYN -)211                                   LD157400
10525  2089  CDDDR  SYN -)212                                   LD157500
07162  2090  REMPP  SYN     -)250                               LD159600
10410  2091  PJ1    SYN -)PJ1                                   RDC80535
11013  2092  PJ2    SYN -)PJ2                                   RDC80536
10221  2093  PJ4    SYN -)PJ4                                   RDC80537
10251  2094  PJ5    SYN -)PJ5                                   RDC80538
10470  2095  PJ6    SYN -)PJ6                                   RDC80539
07656  2096  PJ7    SYN -)PJ7                                   RDC80540
07120  2097  PJ8    SYN -)PJ8                                   RDC80541
07375  2098  PJ9    SYN -)PJ9                                   RDC80542
10333  2099  PJ10   SYN -)PJ10                                  RDC80543
07345  2100  PJ11   SYN -)PJ11                                  RDC80544
10705  2101  PJ12   SYN -)PJ12                                  RDC80545
07012  2102  PJ14   SYN -)PJ14                                  RDC80546
06765  2103  PJ15   SYN -)PJ15                                  RDC80547
10375  2104  PJ16   SYN -)PJ16                                  RDC80548
07726  2105  PJ17   SYN -)PJ17                                  RDC80549
07445  2106  PJ18   SYN -)PJ18                                  RDC80550
10353  2107  PJ19   SYN -)PJ19                                  RDC80551
06755  2108  PJ21   SYN -)PJ21                                  RDC80552
06701  2109  PJ23   SYN -)PJ23                                  RDC80553
07425  2110  PJ24   SYN     -)PJ24                              RDC80554
07502  2111  PJ25   SYN     -)PJ25                              RDC80555
07554  2112  PJ26   SYN     -)PJ26                              RDC80556
10502  2113  PJ27   SYN     -)PJ27                              RDC80557
07462  2114  PJ28   SYN     -)PJ28                              RDC80558
10313  2115  PJ30   SYN     -)PJ30                              RDC80559
06630  2116  PJ31   SYN     -)PJ31                              RDC80560
10515  2117  PJ32   SYN     -)PJ32                              RDC80561
07330  2118  PJ33   SYN     -)PJ33                              RDC80563
10301  2119  PJ34   SYN     -)PJ34                              RDC80564
10271  2120  PJ35   SYN     -)PJ35                              RDC80565
07676  2121  PJ36   SYN     -)PJ36                              RDC80566
07706  2122  PJ37   SYN     -)PJ37                              RDC80567
07666  2123  PJ38   SYN     -)PJ38                              RDC80568
07310  2124  PJ39   SYN     -)PJ39                              RDC80569
10211  2125  ERSETO SYN     -)PJ41
07760  2126  PVW1   SYN     -PVV1          LEFTSHIFT            RDC70410
07462  2127  OCT    SYN     PJ28                                RDC80570
07216  2128  RECIP  SYN     -I118                               RDC80572
14401  2129  ADD1   SYN     Q$ADD1                              RDCZ0015
14126  2130  ADDP   SYN     Q$ADDP
15016  2131  APP2   SYN A$APP2                                  LD163600
14663  2132  APPLY  SYN A$APPLY                                 LD163500
10011  2133  APROP  SYN R$PROP                                  LD165600
15230  2134  ATOMP  SYN R$ATOMP                                 LD164000
15212  2135  CARP   SYN R$CARP                                  LD163800
15222  2136  CDRP   SYN R$CDRP                                  LD163900
06370  2137  CELL   SYN I$CELL                                  LD162600
12635  2138  CHACT  SYN     F$CHACT                             RDCZ0009
12201  2139  CLEAR  SYN     F$CLEAR                             RDCI0529
04345  2140  COPY   SYN R$CCPY                                  LD161600
07343  2141  CP1    SYN C$CP1                                   LD162900
```

```
12634  2142  CURC   SYN      F$CURC                                    RDCZ0003
12633  2143  CURC1  SYN      F$CURC1                                   RDCZ0004
04111  2144  DECON  SYN E$DECON                                       LD161200
12337  2145  DIGIT  SYN      F$DIGIT                                   RDCI0532
15445  2146  EQP    SYN R$EQP                                         LD165100
04461  2147  EQUAL  SYN L$EQUAL                                       LD161900
12346  2148  EROR1  SYN      F$EROR1                                   RDCI0534
15454  2149  EVAL   SYN A$EVAL                                        LD165200
11310  2150  EVALQ  SYN      S$EVALQ
15370  2151  EVAND  SYN R$EVA8                                        LD165000
15154  2152  EVCON  SYN A$EVCON                                       LD163700
15774  2153 EVLIS   SYN      A$EVLIS
15416  2154  EVOR   SYN R$EVR8                                        LD164900
13530  2155  EXPT   SYN      Q$EXPT
14466  2156  FIXP   SYN      Q$FIXP                                    RDCZ0016
00663  2157  INPUT  SYN      B$INPUT
16130  2158  INTER  SYN R$INTER                                       LD165400
15264  2159  LABP   SYN R$LABP                                        LD164400
15250  2160  LAMP   SYN R$LAMP                                        LD164300
12321  2161  LITER  SYN      F$LITER                                   RDCI0536
12662  2162  LOGOR  SYN      H$LOGOR                                   RDCI0537
14150  2163  MAX    SYN      Q$MAX                                     RDCZ0017
07620  2164  MAP    SYN MAPCAR                                        LD163200
14142  2165  MIN    SYN      Q$MIN                                     RDCZ0018
12147  2166  MKNAM  SYN      F$MKNAM                                   RDCI0540
12636  2167  MKNO   SYN      F$MKNO                                    RDCI0541
14134  2168  MULT   SYN      Q$MULT                                    RDCZ0019
07675  2169  NCONC  SYN R$NCONC                                       LD163300
10150  2170  NOTS   SYN R$NOTS                                        LD166200
15243  2171  NULLP  SYN R$NULLP                                       LD164100
06622  2172  NUMBR  SYN      F$NUMBR                                   RDCI0544
12071  2173  NUMOB  SYN      F$NUMOB                                   RDCI0543
06543  2174  NUTRN  SYN T$NUTRN                                       LD162700
14533  2175  ONEP   SYN      Q$ONEP                                    RDCZ0020
10220  2176  OVBGN  SYN      S$OVBGN          OVERLORD BEGINNING
12032  2177  PACK   SYN      F$PACK                                    RDCI0546
07562  2178  PAIR   SYN A$PAIR                                        LD163100
13572  2179  POWR   SYN G$POWR                                        LD166700
04620  2180  PRINO  SYN      T$PRINO
04703  2181  PRIN1  SYN T$PRIN1                                       LD162000
05110  2182  PRIN2  SYN      T$PRIN2
04604  2183  PRINT  SYN T$PRINT                                       LD161800
10011  2184  PROP   SYN R$PROP                                        LD165700
05341  2185  PUN2   SYN      T$PUN2
05325  2186  PUNCH  SYN      T$PUNCH
06026  2187  RD     SYN I$RD                                          LD162400
05732  2188  READ   SYN I$READ                                        LD162200
05757  2189  READ1  SYN I$READ1                                       LD162300
15346  2190  SETP   SYN R$SETP                                        LD164700
15311  2191  SETQP  SYN      R$SETQP
02077  2192  SETUP  SYN      E$SETUP
14430  2193  SUB1   SYN      Q$SUB1
07367  2194  SUBST  SYN R$SUBST                                       LD163000
14565  2195  UNFIX  SYN      Q$UNFIX                                   RDCZ0022
```

```
                    06533   2196  VALUE SYN I$VALUE                                          LD162500
                    14507   2197  ZEROP SYN     Q$ZEROP                                      RDCZ0023
                    10042   2198 APSSOC SYN SASSOC                                           LD165800
                                        DECK                       BUTCH REGION AND END
                               1        HEAD     0
                               2 *                                                           LC893200
                               3 *      BUTCH, A HOME FOR PATCHES                            LC894000
                               4 *                                                           LC894100
     71652  0 00000 0 00000    5  BUTCH
                    05766      6 BUTCHL EQU      NILSXX-*+1        LENGTH OF BUTCH REGION
                               7                                                             LD167100
                    77724      8        TCD      LOADER            GO TO RW TML FOR OCTAL CORRECTION CDS
                               9 *
                              10 *               THE FOLLOWNG PRODUCE A ROW BINARY TRANSFER CARD TO CONTIN
                              11 *
                              12        FUL
                    00000     13        ORG      0
                    00174     14  AAAAA EQU      CONTIN
                    00000     15  BBBBB EQU      AAAAA-AAAAA/2*2
                    00000     16  CCCCC EQU      AAAAA/2-AAAAA/4*2
                    00001     17  DDDDD EQU      AAAAA/4-AAAAA/8*2
                    00001     18  EEEEE EQU      AAAAA/8-AAAAA/16*2
                    00001     19  FFFFF EQU      AAAAA/16-AAAAA/32*2
                    00001     20  GGGGG EQU      AAAAA/32-AAAAA/64*2
                    00001     21  HHHHH EQU      AAAAA/64-AAAAA/128*2
                    00000     22  IIIII EQU      AAAAA/128-AAAAA/256*2
                    00000     23  JJJJJ EQU      AAAAA/256-AAAAA/512*2
     00000 +000000000000      24        OCT      0,0,0,0,0,0,0,0,0
     00001 +000000000000
     00002 +000000000000
     00003 +000000000000
     00004 +000000000000
     00005 +000000000000
     00006 +000000000000
     00007 +000000000000
     00010 +000000000000
     00011  0 00000 0 00001   25        PZE      HHHHH+4096*IIIII,,64*JJJJJ
     00012  0 00100 0 10001   26        PZE      EEEEE+4096*FFFFF,,64*GGGGG
     00013  0 00100 0 00000   27        PZE      BBBBB+4096*CCCCC,,64*DDDDD
                    00000     28 ENDEND END      0
     77712 IS THE FIRST LOCATION NOT USED BY THIS PROGRAM
   NO ERROR IN ABOVE ASSEMBLY
```

```
      DUMPS FOR   JOB     LISP

77000 COREPM  0,00000,00013

AC  CC + 000000 000000  +.00000000+00  MQ + 006060 606060  +.17912294-37  SI  000000 077712  OVFL ON   DC OFF  IOC OFF
IR1  00004  00004   IR2  77776  32766   IR4  05722  03026                SL 0000   SW 000000   EK +000000 000000

 0  CC000            HTR   000006 074500    TCOA  006000 000001    TTR   C02100 074435    HTR   000000 000000
 0  CC004      +4    HTR   000000 000000    HTR   000000 000000    HTR   000000 000000    HTR   000000 000000
 0  CC010      +8    TTR   002100 074502    HTR   000000 000000    HTR   000000 000000    TTR   002100 075024
      ALL DUMPS COMPLETED
$$$  JOB LISP   5/07  15.0498  15.1533   0.1035    B
```