```
                                1              IDENT      PRTHNDLR
                                1+001          MACRO
                                1+002          NAME       EBOX
                                1+003          LIST       MACROS
                                1+004     .***********************************************************************
                                1+005          END
                                2
                                     ***********************************************************************
                                4     *
                                5     *         THIS IS THE PRINTER DRIVER.                                   *
                                6     *                                                                       *
                                7     *         THIS WILL DRIVE ANY PRACTICAL NUMBER OF 512 AND/OR 501        *
                                8     *         PRINTERS.                                                     *
                                9     *                                                                       *
                               10     *         PRINTER CONTROL BLOCKS ARE BUILT BY INITIAL AND PRSTART       *
                               11     *         WHENEVER A ≠LP≠ SYMBOL IS FOUND IN THE SYMBOLS BLOCK.         *
                               12     *                                                                       *
                                     ***********************************************************************
                               14
                               15              INCLUDE    ↑SYSMAC
                               15+001 SYSMAC   COSY/      03         V4.1       08/17/74  0453
                               16
00065 P                        17              ENTRY      DISKIMAG
00124                          18              ENTRY      LINEPAGE
00451 P                        19              ENTRY      PRFILE
00073 P                        20              ENTRY      PRIMAGE
00013 P                        21              ENTRY      PRINT
00341 P                        22              ENTRY      PRINTCB
00446 P                        23              ENTRY      PRQEMPTY
00467 P                        24              ENTRY      PRQING
                               25
                               26
                               26+001          EXT        BIT17
                               27              EXT        BIT18
                               28              EXT        BIT19
                               29              EXT        BIT20
                               30              EXT        BIT21
                               31              EXT        BIT22
                               32              EXT        BLANKS
                               33              EXT        CONNECT      ROUTINE TO CONNECT TO CONTROLLERS
                               34              EXT        FINK         ENTRY TO DISK DRIVER
                               35              EXT        GETBUFF      ROUTINE TO GET FILE CORE BLOCK
                               36              EXT        GIVBUFFP     ROUTINE TO FREE FILE CORE BLOCK
                               37              EXT        NBIT18
                               38              EXT        NBIT19
                               39              EXT        NBIT21
                               40              EXT        NBIT20
                               41              EXT        NBIT22
                               42              EXT        PR1BLOC
                               43              EXT        READ
                               44              EXT        SYSERR
                               45              EXT        TIMSET       TIMER ROUTINE
                               46              EXT        UNCON        ROUTINE TO RELEASE CHANNEL
                               47              EXT        URBLOK
                               48              EXT        URBLOKI
                               49              EXT        URBLOKNX
                               50              EXT        URBLOKQX
```

```
                                    52
00000                               53        IMPURE   EQU       0
00000                               54        IO       EQU       0
00001                               55        PCB      EQU       1
00000                               56        SELECT   EQU       0
00000                               57        SENSE    EQU       0
00001                               58        X1       EQU       1
00002                               59        X2       EQU       2
00003                               60        X3       EQU       3
                                    61
07773                               62        DINT     EQU       7773B
                                    63
00001                               64        PFLOC    EQU       1              USE PAGE FILE ONE FOR SCRATCH
                                    65
04000                               66        CORE     EQU       PFLOC*2↑11
                                    67
00022                               68        CLOCK    EQU       22B            CLOCK REGISTER FILE LOCATION
                                    69
00220                               70        IMAGELEN EQU       144            LENGTH OF IMAGE BUFFER
                                    71
                                    ***********************************************************************
                                    73        *                                                            *
                                    74        *        SET ≠PR501≠ NON-ZERO IF THIS DRIVER SHOULD PROCESS 501 *
                                    75        *        PRINTERS.                                            *
                                    76        *                                                            *
                                    77        *        SET ≠PR512≠ NON-ZERO IF THIS DRIVER SHOULD PROCESS 512 *
                                    78        *        PRINTERS.                                            *
                                    79        *                                                            *
                                    80        *        SET DEF8 NON-ZERO IF THE DEFAULT IS 8 LINES/INCH      *
                                    81        *                                                            *
                                    ***********************************************************************
                                    83
00000                               84        PR501    EQU       0
00001                               85        PR512    EQU       1
00001                               85+001     DEF8     EQU       1              =0 FOR DEFAULT TO SIX LINES PER I
                                    87
                                    ***********************************************************************
                                    89        *LINEPAGE EQU       63             63 LINES/PAGE AT 6/INCH       *
                                    ***********************************************************************
                                    89+002     IF        DEF8 EQ 0, BOX
00124                               92        LINEPAGE EQU       84             84 LINES/PAGE AT 8/INCH
                                    92+001     EBOX
                                    1+004     .***********************************************************************
                                    94
00000  00000000                     95        CONTAB   OCT       0,0,0,0,0,0,0,0    1 WORD FOR EACH OF 8 CHANNELS
```

```
                            97              LPMACDEF
                             5         . *
                             6         . * ****************************************************************
                             7         . *
                             8         . *           URBLOCK BLOCK DEFINITIONS
                             9         . *
                            10         . *
00000                       11    FB       EQU      0                    POINTER TO NEXT FILE BLOCK
00001                       12    BLF      EQU      FB+1                 COUNT OF BLOCKS IN THIS FILE
00002                       13    BFBGN    EQU      BLF+1                QUARTER PAGE NUMBER OF CURRENT
                            14                                          512 WORD BLOCK
00003                       15    BFCPP    EQU      BFBGN+1              POINTER TO NEXT WORD TO BE
                            16         . *                              LOADED FROM THIS BLOCK.  THIS
                            17         . *                              POINTER IS RELATIVE TO THE
                            18                                          BEGINNING OF THE CURRENT BLOCK
00004                       19    CALBAK   EQU      BFCPP+1              GO TO THIS ADDRESS WHEN BUFFER
                            20                                          IS DONE AFTER AN INTERRUPT
                            21                                          BIT23 SEZZ CALBAK
00005                       22    IMAD     EQU      CALBAK+1             LOCATION WHERE RECORD IS TO BE
                            23         . *                              PLACED OR MOVED FROM.
00006                       24    LNIM     EQU      IMAD+1               MAXIMUM ALLOWABLE RECORD SIZE
00007                       25    KILLFLAG EQU      LNIM+1               STI  *,0
00010                       26    ENAD     EQU      KILLFLAG+1           ENI  BLOCK,X1
00011                       27    NJM      EQU      ENAD+1               UJP  IMPURE
00012                       28    ENIT     EQU      NJM+1                TEMP FOR INDEX 3
                            29         . *                              IF BIT23 DEVICE MUST BE STARTED *
                            30         . *                              BY OPERATOR
                            31         . *                              IF BIT22 DO NOT PROCESS FORMS ON*
                            32                                          THIS DEVICE
                            33                                          IF BIT21 THEN STOP MACRO
                            34         . *                              IF BIT20 THEN BUFFER IS UNSAFE
                            35                                          BIT 19 IS A QUEUEING FLAG
00013                       36    DEVBLK   EQU      ENIT+1               PTR TO 4 WORD BLOCK
00014                       37    COUNT    EQU      DEVBLK+1             COUNT OF WORDS IN RECORD
00015                       38    POSI     EQU      COUNT+1              RELATIVE LOCATION IN BUFFER
00016                       39    PFWORD   EQU      POSI+1               CONTENTS OF PF1
00016                       40    FORMSWRD EQU      PFWORD
                            41         . *                              BIT19 SEZ WAITING FOR
                            42         . *                              OPERATOR TO READY DEVICE
                            43         . *                              BIT20 SEZ WANTS FORMS
                            44         . *                              BIT21 SEZ HAS FORMS
                            45         . *                              BIT22 SEZ TAKE FORMS OUT
                            46         . *                              BIT23 SEZ SAME AS BIT22 BUT
                            47         . *                              DRIVER IS WAITING TO OUTPUT NEXT*
                            48                                          FILE
00017                       49    IDENT    EQU      PFWORD+1             BCD IDENT OF THE DEVICE
00020                       50    URBEXITA EQU      IDENT+1              ENI  BLOCK,X1
00021                       51    URBEXIT  EQU      URBEXITA+1           UJP  IMPURE
00022                       52    QINGLOC  EQU      URBEXIT+1            ADDRESS TO GO TO WHEN FILES
                            53         . *                              ARE UNEQUIPPED
00023                       54    QPNT     EQU      QINGLOC+1            POINTER TO NXPTR AND LXPTR
00024                       55    QEMPTY   EQU      QPNT+1               ADDRESS TO TELL DRIVER THAT IT
                            56         . *                              HAS TO MORE FILES TO OUTPUT
00025                       57    STRTLOC  EQU      QEMPTY+1             ADDRESS TO TELL DRIVER TO START *
                            58         . *                              FILE
                            59         . * ****************************************************************
                            60
00026                      152    PRSTART  EQU      STRTLOC+1            ENI  PCB,PCB
                           153                                          UJP  PRINT   ENTRY FROM INTSORT *
00030                      154    CON      EQU      PRSTART+2            CONNECT CODE OF PRINTER
                           155         . *                              BIT23 SEZ 501
                           156         . *                              BIT22 SEZ LOAD IMAGE BUFFER
                           157         . *                              BIT21 SEZ LOADING IMAGE BUFFER
                           158         . *                              BIT20 SEZ IMAGE HAS BEEN READ
                           159         . *                                   FROM DISK
                           160                                          BIT 19 SEZ 8 LINES/INCH
                           161         . *                              BIT 18 SEZ AUTO PAGE EJECT
                           162         . *                              BIT 17 SEZ TOP OF FORM IS UP
                           163         . *                              (IF SET DO NOT EJECT PAGE UNTIL *
                           164                                          NEXT PRINT OPERATION.)
00031                      165    CTLW     EQU      CON+1                NON-ZERO SEZ BUSY
                           166         . *                              +0 SEZ NOTHING INITIATED
                           167                                          -0 SEZ SPOKEN FOR
00032                      168    RDYFG    EQU      CTLW+1
00033                      169    URWORD   EQU      RDYFG+1              POINTER TO CURRENT MOVEBUFF
                           170         . *                              ROUTINE
00034                      171    SEQWORD  EQU      URWORD+1             SEQUENCE NUMBER OF
                           172         . *                              LINE PRINTER FILE
00035                      173    PRPOINT  EQU      SEQWORD+1            POINTER TO NEXT PRINTER BLOCK
```

```
00036      174      IMAGEADD EQU      PRPOINT+1        POINTER TO FILE CORE BLOCK     *
           175         . *                            WITH IMAGE BUFFER IN IT        *
           176         . *                            FOR THIS PRINTER               *
           177         . *                            RTJ MACHERR  ERROR READING IMAGE*
00040      178      IMAGERET EQU      IMAGEADD+2       NORMAL RETURN FROM READING     *
           179         . *                            ENI  BLOCK,X1    IMAGE BUFFER  *
           180         . *                            UJP  PRIMAGE                    *
00042      181      BUFFR    EQU      IMAGERET+2
```

```
                          101   *****************************************************************
                          102   *                                                               *
                          103   *         ENTRIES TO THIS CODE FROM EXTERNAL ROUTINES SUCH AS INTSORT *
                          104   *         AND MOVEBUFF OCCUR THROUGH THE APPROPRIATE PRINTER CONTROL  *
                          105   *         BLOCK.                                                 *
                          106   *         INTSORT ENTRIES COME TO PRINT                          *
                          107   *                                                               *
                          108   *                                                               *
                          109   *****************************************************************
                          110
          00010 P         111   VILCH     EQU       *
00010   20100032          112             LDA       RDYFG,PCB         CHECK IF READY TO PRINT
00011   03300015 P        113             AZJ,LT    PRCONNEC
00012   01000000          114   PRINTEX   UJP       IMPURE            EXIT FROM HERE
                          115
00013   77730000          116   PRINT     VFD       A12/DINT          ENTER HERE FROM INTSORT
00014   47300012 P        117             STI       PRINTEX,X3        SAVE THE RETURN ADDRESS
                          118
                          119   *****************************************************************
                          120   *                                                               *
                          121   *         ROUTINE TO CONNECT TO PRINTER                          *
                          122   *                                                               *
                          123   *****************************************************************
                          124
          00015 P         125   PRCONNEC  EQU       *
00015   20100030          126             LDA       CON,PCB
00016   53500000          127             TAI       X1                LOWER 15 BITS OF CONNECT CODE
00017   14703720          128             ENQ       2000              MAXIMUM TIME
00020   54200012 P        129             LDI       PRINTEX,X2        LOAD RETURN ADDRESS
00021   14300021 P        130             ENI       *,X3
00022   01077777 X        131             UJP       CONNECT
00023   00700237 P        132             RTJ       CHINIT            CALL ON CHANNEL INTERRUPT
00024   01200000          133             UJP       0,X2              WILL BE INTERRUPTED ON CONNECTED
00025   47200012 P        134             STI       PRINTEX,X2        SAVE RETURN ADDRESS
00026   14177777 X        135             ENI       PR1BLOC,PCB       SEARCH FOR PROPER PRINTER
00027   13000030          136             SHAQ      24
00030   20100030          137   CONLOOK    LDA       CON,PCB           LOAD THE NEXT CONNECT CODE
00031   17677777          138             ANA       77777B            SAVE JUST THE CONNECT CODE
00032   03400037 P        139             AQJ,EQ    CONMATCH          FOUND IT
00033   20100035          140             LDA       PRPOINT,PCB       LOAD POINTER TO NEXT BLOCK
00034   53500000          141             TAI       PCB
00035   03100030 P        142             AZJ,NE    CONLOOK           KEEP LOOKING IF NOT DONE
00036   00777777 X        143             RTJ       SYSERR            BOOM
                          144
          00037 P         145   CONMATCH  EQU       *
00037   14600021          146             ENA       21B               RELEASE INT ON RDY AND NOT BUSY
00040   00700353 P        147             RTJ       SEL
00041   77200001          148             EXS       1,SENSE           CHECK FOR READY
00042   77200002          149             EXS       2,SENSE           CHECK FOR BUSY
00043   01000376 P        150             UJP       SELINT            JUMP OFF IF BUSY OR NOT READY
00044   14577777          151             ENQ,S     -0
00045   41100032          152             STQ       RDYFG,PCB         SAY PRINTER READY
```

```
                            153+001           IF       PR512 EQ 0, BOX
                            153+002   ******************************************************************
                            153+003   *                                                                *
                            153+004   *        ROUTINE TO CHECK IF 512 PRINTER AND TO LOAD IMAG BUFFER IF *
                            153+005   *        NEEDED                                                   *
                            153+006   *                                                                *
                            153+007   ******************************************************************
                            161
00046  20100030             162               LDA      CON,PCB              LOAD THE CONNECT CODE WORD
                            162+001           IF       PR501, AZJ,LT  CARGCNTL  JUMP IF A 501
00047  12000001             166               SHA      1                    CHECK FOR IMAGE NEEDING TO BE
00050  03200104  P          167               AZJ,GE   IMLOAD04             LOADED   JUMP IF ALL READY LOADED
00051  12000027             168               SHA      24-1                 PUT A BACK TOGETHER
00052  37077777  X          169               LPA      NBIT22               CLEAR BIT22
00053  35077777  X          170               SSA      BIT21                AND SET 21 TO INDICATE IMAGE LOAD
00054  40100030             171               STA      CON,PCB              IN PROGRESSS
00055  53100000             172               TIA      PCB                  MOVE THE PCB INDEX TO X3 SINCE
00056  53700000             173               TAI      X3                   GETBUFF RESTORES X3 ON QUEUED RET
00057  14700063  P          174               ENQ      IMAGECB              ENTER QUEUED RETURN
00060  14600062  P          175               ENA      *+2                  ENTER IMMEDIATE RETURN
00061  01077777  X          176               UJP      GETBUFF              GET A FILE CORE BLOCK
00062  03300402  P          177               AZJ,LT   RLSCHAN              WAIT FOR CALL BACK IF NO BUFFER N
                            178
00063  14700000             179   IMAGECB     ENQ      0
00064  13077760             180               SHAQ     -24+9                FORM 18 BIT CORE ADDRESS
00065  11000000   00000 0   181   DISKIMAG    ECHA     IMPURE               ENTER THE DISK ADDRESS
00066  14100220             182               ENI      IMAGELEN,X1          ENTER WORD COUNT
00067  14277777  X          183               ENI      READ,X2
00070  15300040             184               INI      IMAGERET,X3          FORM INTERRUPT ADDRESS
00071  00777777  X          185               RTJ      FINK                 CALL THE DISK DRIVER
00072  01000402  P          186               UJP      RLSCHAN              GIVE UP THE CHANNEL
                            187
00073  P                    188   PRIMAGE     EQU      *                    ENTER HERE AFTER READING IMAGE
00073  41100036             189               STQ      IMAGEADD,PCB         SAVE THE IMAGE ADDRESS IN THE MAC
00074  20077777  X          190               LDA      BIT20                SAY OK TO HAVE INTERRUPT
00075  34100030  P          191               RAD      CON,PCB
00076  01000013  P          192               UJP      PRINT                GET THE PRINTER CHANNEL
                            193
00077  20077777  X          194   NOIMAGE     LDA      BIT22                SAY TO RELOAD IMAGE AGAIN
00100  34100030             195               RAD      CON,PCB
00101  77512000             196   CLCA        CLCA     IMPURE               TURN OFF GREEN LITES
00102  14300402  P          197               ENI      RLSCHAN,X3           ENTER RETURN
00103  01077777  X          198               UJP      GIVBUFFP             GIVE UP THE FILE CORE BLOCK
                            199
00104  12000001             200   IMLOAD04    SHA      1                    JUMP IF IMAGE IS REALLY LOADED
00105  03200145  P          201               AZJ,GE   CARGCNTL             HAS THE IMAGE BEEN READ INTO CORE
00106  12000001             202               SHA      1                    IGNORE THE INTERRUPT
00107  03200402  P          203               AZJ,GE   RLSCHAN
00110  20100030             204               LDA      CON,PCB              CLEAR THE IMAGE BITS
00111  37077777  X          205               LPA      NBIT21               NO LONGER LOADING
00112  37077777  X          206               LPA      NBIT20               IMAGE NO LONGER IN CORE
00113  40100030             207               STA      CON,PCB
00114  14600012             208               ENA      0012B                SAY TO FILL IMAGE BUFFER
00115  00700353  P          209               RTJ      SEL
00116  03100077  P          210               AZJ,NE   NOIMAGE              PRINTER IS HAVING PROBLEMS
00117  20100036             211               LDA      IMAGEADD,PCB         LOAD THE IMAGE ADDRESS
00120  12077766             212               SHA      -9                   FORM 1/4 PAGE ADDRESS
00121  77640001             213               APF      PFLOC
00122  77550000             214               CIA                          SET UP MASK FOR CHANNEL CLEAR
00123  53600000             215               TAI      X2                   IF NEEDED LATER
00124  14600001             216               ENA      1
00125  12200000             217               SHA      0,X2
00126  16612000             218               XOA      12000B               CLCA IS 15 BIT INSTRUCTION
00127  44000101  P          219               SWA      CLCA
00130  14600000             220               ENA      0                    USE STATE ZERO FOR RELOCATION
00131  76004220             221               OUTW     IO,CORE,CORE+IMAGELEN
00132  00004000             
00133  01000131  P          222               UJP      *-2
00134  14201440             223               ENI      800,X2               WAIT A FINITE AMOUNT OF TIME
00135  77300006             224               INS      0006B,SENSE          WAIT FOR THE GREEN LITE
00136  02600135  P          225               IJD      *-1,X2
00137  77300007             226               INS      0007B,SENSE
00140  01000077  P          227               UJP      NOIMAGE
00141  47100144  P          228               STI      *+3,PCB              SAVE THE MACRO ADDRESS
00142  14300144  P          229               ENI      *+2,X3               ENTER THE RETURN ADDRESS
00143  01000103  X          230               UJP      GIVBUFFP             GIVE UP THE FILE CORE BLOCK
00144  14100000             231               ENI      IMPURE,PCB           RESTORE THE MACRO POINTER
                            231+001           EBOX
                            1+004   .******************************************************************
```

```
                                    235   *                                                              *
                                    236   *       ROUTINE TO FETCH AND DECODE CARRIAGE CONTROL CHARACTER  *
                                    237   *       FUNCTION CODES ARE PACKED IN CTLW                        *
                                    238   *                                                              *
                                    ***************************************************************************
                                    240
          00145 P                   241   CARGCNTL EQU     *
00145  24100030                     242            LCA     CON,PCB         GET BITS FOR 6/8 LINE AND AUTO
00146  13077754                     243            SHAQ    -19             PAGE EJECT
00147  53700000                     244            TAI     X3              SAVE 6/8 LINE BIT IN X3
00150  14600005                     245            ENA     5               ASSUME AUTO PAGE EJECT
00151  05500000                     246            QSG,S   0
00152  14600030                     247            ENA     30B             REALLY NO AUTO PAGE EJECT
00153  00700373 P                   248            RTJ     SELX            ISSUE THE FUNCTION
00154  14600010                     249            ENA     10B
00155  17300001                     250            ANI     1,X3            SAVE JUST 6/8 LINE BIT
00156  53340000                     251            AIA     X3              TURN INTO SELECT CODE
00157  00700373 P                   252            RTJ     SELX            ISSUE THE FUNCTION
00160  14600050                     253            ENA     50B             SELECT PREPRINT SPACING
00161  00700373 P                   254            RTJ     SELX            ISSUE THE FUNCTION
                                    255
00162  20100031                     256   CARGCNTX LDA     CTLW,PCB        LOAD CONTROL WORD
00163  03077777 X                   257            AZJ,EQ  URBLOKNX        GET THE NEXT PRINTER FILE
00164  12077755                     258            SHA     -18             CURRENT FUNCTION TO RIGHT
00165  17600077                     259            ANA     77B
00166  14700070                     260            ENQ     70B
00167  03700202 P                   261            AQJ,LT  CARGCNTZ        JUMP IF REGULAR SELECT CODE
00170  14700076                     262            ENQ     76B             CHECK FOR DONE
00171  03600402 P                   263            AQJ,GE  RLSCHAN
00172  04600074                     264            ASE     74B             SKIP IF FILE MARK CODE
00173  01000163 X                   265            UJP     URBLOKNX        GET THE NEXT PRINTER FILE
00174  14600004                     266            ENA     4               CODE FOR PAGE EJECT
00175  00700373 P                   267            RTJ     SELX            ISSUE THE FUNCTION
00176  14577700                     268            ENQ,S   77700B
00177  41100031                     269            STQ     CTLW,PCB        SET NO BUFFER FLAG
00200  14200376 P                   270            ENI     SELINT,X2       ENTER RETURN ADDRESS
00201  01000247 P                   271            UJP     SNLC            GENERATE NEW BUFFER
                                    272
          00202 P                   273   CARGCNTZ EQU     *
00202  03000213 P                   274            AZJ,EQ  PRRPT           PRINT ON ZERO
00203  00700373 P                   275            RTJ     SELX            ISSUE THE FUNCTION
00204  20100031                     276            LDA     CTLW,PCB        LOAD CONTROL WORD
00205  14577777                     277            ENQ,S   77777B          SHIFT IN END OF FUN CODE
00206  13000006                     278            SHAQ    6               NEXT FUNCTION TO POSITION
00207  40100031                     279            STA     CTLW,PCB        AND SAVE WORD
00210  77200002                     280            EXS     2,SENSE         CHECK FOR SET BUSY
00211  01000376 P                   281            UJP     SELINT          SELECT INTERRUPT IF BUSY
00212  01000152 P                   282            UJP     CARGCNTX        IF NOT BUSY, DO NEXT FUNCTION
                                    283
          00213 P                   284   PRRPT    EQU     *
00213  20100005                     285            LDA     IMAD,PCB        GET ADDRESS OF OUTPUT BUFFER
00214  44000221 P                   286            SWA     PROPC+1         SET SUB-INSTRUCTION WORD
00215  30100014                     287            ADA     COUNT,PCB       ADD LENGTH
00216  44000220 P                   288            SWA     PROPC           SET INSTRUCTION ADDRESS
00217  14400000                     289            ENA,S   0               RELOCATION
00220  76000000                     290   PROPC    OUTW,INT  IO,IMPURE,IMPURE  OUTPUT COMMAND FOR PRINTER
00221  00400000
00222  01000220 P                   291            UJP     *-2             REJECT
00223  40100032                     292            STA     RDYFG,PCB       SET FLAG TO NOT READY
00224  24077777 X                   292+001        LCA     BIT17           ALL BUT THE BIT
00225  37100030                     292+002        LPA     CON,PCB         CLEAR THE TOP OF FORM BIT
00226  40100030                     292+003        STA     CON,PCB         AND SAVE INTO MACRO AGAIN
00227  21100031                     293            LDQ     CTLW,PCB        LOAD CONTROL WORD
00230  12400006                     294            SHQ     5               SHIFT PRINT COMMAND OUT
00231  41100031                     295            STQ     CTLW,PCB        STORE WORD BACK
00232  77550000                     296            CIA                     GET CHANNEL NUMBER
00233  53600000                     297            TAI     X2              USE CONVENIENT INDEX
00234  53100000                     298            TIA     PCB             GET CONTROL BLOCK ADDRESS
00235  40200000 P                   299            STA     CONTAB,X2       AND STORE INTO TABLE
00236  01000012 P                   300            UJP     PRINTEX         RETURN
```

```
************************************************************************
                     303   *                                                                *
                     304   **        ROUTINE TO PROCESS CHANNEL INTERRUPT AND TO CALL MOVEBUFF  **
                     305   *         TO GET THE NEXT RECCRD                                   **
                     306   *                                                                **
                           ************************************************************************
                     308
00237  01000000      309   CHINIT   UJP     IMPURE          CALL HERE ON CHANNEL INTERRUPT
00240  77550000      310            CIA                     GET CHANNEL NUMBER
00241  53700000      311            TAI     X3
00242  20300000  P   312            LDA     CONTAB,X3       LOAD PROPER BLOCK ADDRESS
00243  53500000      313            TAI     PCB             SET CONTROL BLOCK ADDRESS
00244  14600020      314            ENA     20B             TRY FOR INT CN READY ^ NCT BUSY
00245  00700353  P   315            RTJ     SEL
00246  54200237  P   316            LDI     CHINIT,X2       LOAD RETURN ADDRESS
00247  47200335  P   318   SNLC     STI     SNLX,X2         SAVE RETURN ADDRESS
00250  21100014      319            LDQ     COUNT,PCB       SHOULD WE REPEAT THE LINE AGAIN
00251  14600000      320            ENA     0
00252  13000005      321            SHAQ    5
00253  15477776      322            INA,S   -1
00254  03300275  P   323            AZJ,LT  SNLCX           JUMP IF NO REPEAT
00255  53700000      324            TAI     X3
00256  13077772      325            SHAQ    -5              SAVE COUNTER FOR NEXT TIME
00257  41100014      326            STQ     COUNT,PCB
00260  17300001      327            ANI     1,X3            SELECT BETWEEN CVERPRINT AND
00261  21300442  P   328            LDQ     PRNTNSP,X3      SPACE ONCE
00262  01000330  P   329            UJP     VCN
00263  54100327  P   330   SPECCNTL LDI     PCBS,PCB        RESTORE CONTRCL BLOCK POINTER
00264  14300000      331            ENI     0,X3            ASSUME S OR T
00265  05600062      332            ASG     H≠S≠            SKIP IF REALLY S OR T
00266  14300001      333            ENI     1,X3            Q OR R
00267  21100030      334            LDQ     CON,PCB         LOAD THE CONNECT WORD
00270  12700005      335            SHQ     23-19+1,X3      MERGE NEW BIT INTO THE STATUS
00271  13077776      336            SHAQ    -1
00272  16377777      337            XOI     -0,X3
00273  12700054      338            SHQ     24+19+1,X3      RESTORE THE CCNNECT WORD
00274  41100030      339            STQ     CON,PCB
00275  14300277  P   340   SNLCX    ENI     *+2,X3          ENTER RETURN ADDRESS
00276  01100033      341            UJP     URWORD,PCB      CALL BUFFER GENERATOR
00277  01000336  P   342            UJP     SNLUR           NO BUFFER NCW
00300  03200305  P   343   GBFNW    AZJ,GE  NOSPEC          JUMP IF NCT EOF OR EOD
00301  21000444  P   344            LDQ     PRNFL           SPECIAL WORD FOR FILE MARK
00302  03100330  P   345            AZJ,NE  VCN             JUMP IF FILE MARK
00303  21000445  P   346            LDQ     PRNTM           SPECIAL WORD FCR TERMINATION
00304  01000330  P   347            UJP     VCN
00305  47100327  P   348   NOSPEC   STI     PCBS,PCB        SAVE THE DEVICE PCINTER
00306  20100014      349            LDA     COUNT,PCB       IS THE RECORD BINARY
00307  37077777  X   350            LPA     BIT18
00310  03100321  P   351            AZJ,NE  CRSPACE         NO SPECIAL CONTROL IF SO
00311  21500005      352            LDQ,I   IMAD,PCB        LOAD FIRST WORD FROM BUFFER
00312  13000006      353            SHAQ    6               GET CARRIAGE CONTROL CHARACTER
00313  16700060      354            XOQ     60B             SET BLANK INTC FIRST CHAR
00314  12400022      355            SHQ     18              SHIFT WORD BACK TO POSITION
00315  41500005      356            STQ,I   IMAD,PCB        AND REPLACE
00316  14100040      357            ENI     PRCIZ,X1        COUNT FOR MEQ
00317  14700077      358            ENQ     77B             MASK
00320  06100404  P   359            MEQ     PRLCX,1         SCAN FCR VALID CHARACTER
00321  14100037      360   CRSPACE  ENI     PRNTSP-PRLCX,X1 DEFAULT TO BLANK
00322  05100004      361            ISG     REGCNTL,X1      SKIP IF NO 6/8 LINES REQUEST
00323  01000263  P   362            UJP     SPECCNTL
00324  21100404  P   363            LDQ     PRLCX,X1        LOAD TABLE ENTRY
00325  17577700      364            ANQ,S   77700B          MASK OUT CHARACTER
00326  16500076      365            XOQ,S   00076B          AND SET IN END CHARACTER
00327  14100030      366   PCBS     ENI     IMPURE,PCB      RESTORE INDEX
00330  20100031      367   VCN      LDA     CTLW,PCB        CHECK FOR PREVIOUS OPERATION
00331  03300334  P   368            AZJ,LT  *+3             IN-COMPLETE
00332  12077755      369            SHA     -18             ONLY ONE FUNCTION CAN REMAIN
00333  13077771      370            SHAQ    -6
00334  41100031      371            STQ     CTLW,PCB
00335  01000000      372   SNLX     UJP     IMPURE          RETURN
                     373
00336  14677777  X   374   SNLUR    ENA     URBLOK          SET BUFFER CALL ADDRESS FOR
00337  44100033      375            SWA     URWORD,PCB      LATER CALLS
00340  01000335  P   376            UJP     SNLX            RETURN
                     377
00341  47300012  P   378   PRINTCB  STI     PRINTEX,X3      SAVE THE RETURN ADDRESS
00342  14200010  P   379            ENI     VILCH,X2        RETURN TO VILCH
00343  47200335  P   380            STI     SNLX,X2
00344  01000300  P   381            UJP     GBFNW           PROCESS BUFFER CONTROL
```

```
                              384   *   **********************************************************
                              385   *                                                          *
                              386   *        SELECT ROUTINE                                     *
                              387   *                                                          *
                              388   *        ENTER THIS ROUTINE WITH A SELECT CODE IN A.  IF THE PRINTER *
                              389   *        IS A 512 THIS ROUTINE WILL ISSUE THE CODE.  IF THE PRINTER  *
                              390   *        IS A 501 IT WILL CONVERT TO THE PROPER 501 FUNCTION *
                              391   *        AND ISSUE IT.  ON EXIT A=0 IF REJECTED OR A≠0 IF OK *
                              392   *                                                          *
                                    **********************************************************

                              393
       00345 P               394   REJ       EQU       *
00345  53010022              395             TMQ       CLOCK              GET CURRENT CLOCK VALUE
00346  03500367 P            396             AQJ,NE    NEWCLK             JUMP TO GET NEW CLOCK VALUE
00347  77100000              397   ISUF      SEL       IMPURE,SELECT      ISSUE I/O FUNCTION
00350  01000345 P            398             UJP       REJ                WE WUZ REJECTED
00351  14600000              399   SELEXIT   ENA       0                  SAY FUNCTION WENT
00352  14200000              400   SELX2     ENI       IMPURE,X2
00353  01000001              401   SEL       UJP       IMPURE             ROUTINE TO ISSUE FUNCTION CODES
00354  47200352 P            402             STI       SELX2,X2           SAVE THE INDEX
00355  44000347 P            403             SWA       ISUF               STORE FUNCTION
00356  14700004              403+001         ENQ       4                  PAGE EJECT CARRAIGE CONTROL
00357  03500366 P            403+002         AQJ,NE    NOTEJECT           JUMP IF NOT A PAGE EJECT CODE
00360  20100030              403+003         LDA       CON,PCB            GET THE CONTROL/CONNECT WORD
00361  12000006              403+004         SHA       6                  CHECK THE TOP OF FORM BIT
00362  03300351 P            403+005         AZJ,LT    SELEXIT            CANT EJECT IF AT TOP OF FORM
00363  20000224 X            403+006         LDA       BIT17              GET THE BIT TO SET
00364  34100030              403+007         RAO       CON,PCB            SAY WE ARE NOW AT TOP OF FORM
00365  01000366 P            403+008         UJP       SETCLK             AND PREPARE FOR THE FUNCTION
       00366 P               403+009   NOTEJECT EQU    *
                                    **********************************************************
                              405   *         TAI       X2                 FUN TO X2                        *
                              406   *         LDA       CON,PCB            CHECK FOR 501                    *
                              407   *         AZJ,GE    SELCOUNT           JUMP IF 512                      *
                              408   *         LOCH      PR501SEL,X2                                         *
                              409   *         SQCH      ISUF+3             STORE 501 CODE                   *
                              410   *         ENA       77B                                                *
                              411   *         AQJ,EQ    SELEXIT            JUMP IF 501 SHOULD IGNORE THE FUN*
                              412   *                                                                      *
                              413   *SELCOUNT EQU       *                                                  *
                                    **********************************************************

       00366 P               413+002   SETCLK  EQU     *
00366  14200005              415             ENI       5,X2               ALLOW FIVE MILLISECONDS
00367  53020022              416   NEWCLK    TMA       CLOCK              GET NEW VALUE OF CLOCK
00370  02600347 P            417             IJD       ISUF,X2
00371  14600001              418             ENA       1                  FUNCTION WAS NOT ACCEPTED
00372  01000352 P            419             UJP       SELX2              REJECTED  RESTORE X2 AND EXIT
                              420
                              421
00373  01000000              422   SELX      UJP       IMPURE
00374  00700353 P            423             RTJ       SEL                ISSUE THE FUNCTION
00375  03000373 P            424             AZJ,EQ    SELX               EXIT IF OK
       00376 P               425   SELINT    EQU       *
00376  14400000              426             ENA,S     0
00377  40100032              427             STA       RDYFG,PCB          SET FLAG TO NOT READY
00400  14600020              428             ENA       20B                SELECT READY AND NOT BUSY
00401  00700353 P            429             RTJ       SEL
00402  54200012 P            430   RLSCHAN   LDI       PRINTEX,X2         LOAD RETURN ADDRESS
00403  01077777 X            431             UJP       UNCON              RELEASE CHANNEL
                              432
                              433
                                    **********************************************************
                              435   *PR501SEL OCT       00010203,04050607  00-07                           *
                              436   *         OCT       77777777,77777777  10-17                           *
                              437   *         OCT       30313233,34357777  20-27                           *
                              438   *         OCT       10111213,14151677  30-37                           *
                              439   *         OCT       11111111,03777777  40-47                           *
                              440   *         OCT       20212223,24252621  50-57                           *
                              441   *         OCT       21212121,03777777  60-67                           *
                                    **********************************************************
```

```
**************************************************************************
445        *                                                           *
446        *                                                           *
447        *       TABLE TO CONVERT CARRIAGE CONTROL CHARACTER TO FUNCTION CODE *
448        *                                                           *
449        *       TABLE IS BUILT AS FOLLOWS                           *
450        *                                                           *
451        *       VFD        06/FUN1,06/FUN2,06/FUN3,H6/CONTROL CHARACTER *
452        *                                                           *
453        *       FUN1, FUN2, AND FUN3 ARE FUNCTION CODES TO ISSUE TO THE  *
454        *       PRINTER.  THE FOLLOWING ENTRIES IN A FUNCTION POSITION HAVE *
455        *       SPECIAL MEANINGS:                                    *
456        *                                                           *
457        *       00           PRINT LINE                             *
458        *       74           FILE MARK (EJECT PAGE)                 *
459        *       75           END OF PRINTER FILE                    *
460        *       76           LINE HAS BEEN PRINTED                  *
461        *       77           FILLER VALUE                           *
462        *                                                           *
           **************************************************************************
464
            00404 P          465    PRLCX    EQU     *
00404  77777750            466             VFD     06/77,06/77,06/77,H6/Q      50 Q    CLEAR AUTO EJECT
00405  77777751            467             VFD     06/77,06/77,06/77,H6/R      51 R    SET AUTO EJECT
00406  77777762            468             VFD     06/77,06/77,06/77,H6/S      62 S    6 LINES/INCH
00407  77777763            469             VFD     06/77,06/77,06/77,H6/T      63 T    8 LINES/INCH
            00004          470    REGCNTL  EQU     *-PRLCX
00410  01000421            471             VFD     06/01,06/00,06/04,H6/A      21 A
00411  01000322            472             VFD     06/01,06/00,06/03,H6/B      22 B
00412  01005623            473             VFD     06/01,06/00,06/56,H6/C      23 C
00413  01005524            474             VFD     06/01,06/00,06/55,H6/D      24 D
00414  01005425            475             VFD     06/01,06/00,06/54,H6/E      25 E
00415  01005326            476             VFD     06/01,06/00,06/53,H6/F      26 F
00416  01005227            477             VFD     06/01,06/00,06/52,H6/G      27 G
00417  01006330            478             VFD     06/01,06/00,06/63,H6/H      30 H
00420  01005731            479             VFD     06/01,06/00,06/57,H6/I      31 I
00421  01006041            480             VFD     06/01,06/00,06/60,H6/J      41 J
00422  01006142            481             VFD     06/01,06/00,06/61,H6/K      42 K
00423  01006243            482             VFD     06/01,06/00,06/62,H6/L      43 L
00424  03007702            483             VFD     06/03,06/00,06/77,H6/2      02 2
00425  56007703            484             VFD     06/56,06/00,06/77,H6/3      03 3
00426  55007704            485             VFD     06/55,06/00,06/77,H6/4      04 4
00427  54007705            486             VFD     06/54,06/00,06/77,H6/5      05 5
00430  53007706            487             VFD     06/53,06/00,06/77,H6/6      06 6
00431  52007707            488             VFD     06/52,06/00,06/77,H6/7      07 7
00432  63007710            489             VFD     06/63,06/00,06/77,H6/8      10 8
00433  57007711            490             VFD     06/57,06/00,06/77,H6/9      11 9
00434  62007767            491             VFD     06/62,06/00,06/77,H6/X      67 X
00435  61007770            492             VFD     06/61,06/00,06/77,H6/Y      70 Y
00436  60007771            493             VFD     06/60,06/00,06/77,H6/Z      71 Z
00437  02010040            494             VFD     06/02,06/01,06/00,H6/-      40 -
00440  04007701            495             VFD     06/04,06/00,06/77,H6/1      01 1
00441  02007700            496             VFD     06/02,06/00,06/77,H6/0      00 0
00442  00770020            497    PRNTNSP  VFD     06/00,06/77,06/00,H6/+      20 +
00443  01007760            498    PRNTSP   VFD     06/01,06/00,06/77,H6/      60
            00040          499    PRCIZ    EQU     *-PRLCX
                           500
                           501
00444  74770000            502    PRNFL    OCT     74770000               FILE MARK
           *************************************************************************
                           504   *PRNTM     OCT     05110475               END OF DATA          *
           *************************************************************************
            504+002
00445  05100475            507    PRNTM    IF      DEF8 EQ 0, BOX
                                           OCT     05100475               END OF DATA
            507+001                         EBOX
            1+004          .*************************************************************************
```

```
                            ***************************************************************
                    511     *                                                             *
                    512     *        QUEUEING SECTION                                     *
                    513     *                                                             *
                    514     *   ENTRY IS MADE TO PRQEMPTY WHEN THERE ARE NO MORE PRINTER  *
                    515     *   FILT TO PRINT                                             *
                    516     *                                                             *
                    517     *   ENTRY IS MADE TO PRFILE WHEN LP FILE IS UNEQUIPPED        *
                    518     *                                                             *
                    519     *   ENTRY IS MADE TO PRQING WHEN A PRINTER THAT IS NOT PRINTING *
                    520     *   GIVES A READY AND NOT BUSY STATUS                         *
                    521     *                                                             *
                            ***************************************************************
                    523
        00446 P     524     PRQEMPTY EQU      *
00446   14600000    525              ENA      0               SAY PRINTER IS NOT ACTIVE
00447   40100031    526              STA      CTLW,PCB
00450   01000402 P  527              UJP      RLSCHAN
                    528
                    529
        00451 P     530     PRFILE   EQU      *
00451   24100031    531              LCA      CTLW,PCB        LOAD COMPLEMENT FOR CONVENIENCE
00452   03100462 P  532              AZJ,NE   SCANX           NON-ZERO SEZ BUSY
00453   03200462 P  533              AZJ,GE   SCANX           IF NEGATIVE, SEZ SPOKEN FOR
00454   40100031    534              STA      CTLW,PCB        GOT IT, NOW DON≠T LET GO
00455   53100000    535              TIA      PCB             ADDRESS OF BLOCK TO A
00456   13000030    536              SHAQ     24              AND NOW TO Q
00457   15700026    537              INQ      PRSTART         ADD ON INTERRUPT LOCATION DISTANC
00460   14600005    538              ENA      5               COME BACK SOON
00461   00777777 X  539              RTJ      TIMSET          CALL TIMER ROUTINE
                    540     *                                 USE TIMER SO WE DON≠T NEED TO CON
        00462 P     541     SCANX    EQU      *
00462   20100035    542              LDA      PRPOINT,PCB     POINT TO THE NEXT BLOCK
00463   53500000    543              TAI      PCB
00464   03100451 P  544              AZJ,NE   PRFILE          JUMP IF MORE PRINTERS
00465   14100026 X  545              ENI      PR1BLOC,X1      POINT TO PRIMARY PRINTER AGAIN
00466   01077777 X  546              UJP      URBLOKQX
                    547
                    548
        00467 P     549     PRQING   EQU      *
00467   14477700    550              ENA,S    777008          SET NO BUFFER FLAG
00470   40100031    551              STA      CTLW,PCB
00471   14677777    552              ENA      URBLOKI         ENTER INITIATOR ADDRESS
00472   44100033    553              SWA      URWORD,PCB      SET CALL ADDRESS
00473   20100034    554              LDA      SEQWORD,PCB     LOAD THIS FILES SEQUENCE NUMBER
00474   30000523 P  555              ADA      KONST           ADD KLUDGE CONSTANT
00475   40100042    556              STA      BUFFR,PCB       TEMP1
00476   37077777 X  557              LPA      BLANKS
00477   40100043    558              STA      BUFFR+1,PCB     TEMP2
00500   12000025    559              SHA      21
00501   30100043    560              ADA      BUFFR+1,PCB     TEMP2
00502   16477777    561              XOA,S    -0
00503   30100042    562              ADA      BUFFR,PCB       TEMP1
00504   40100034    563              STA      SEQWORD,PCB     SAVE NEW SEQUENCE NUMBER
00505   13000030    564              SHAQ     24              SEQUENCE NUMBER TO Q
00506   20000524 P  565              LDA      COUNTX          SET LENGTH OF LINE
00507   40100014    566              STA      COUNT,PCB
00510   15100042    567              INI      34,PCB          FILL THE BUFFER WITH THE
00511   14200020    568              ENI      16,X2           SEQUENCE NUMBER
00512   20000476 X  569              LDA      BLANKS
00513   15177775    570              INI      -2,PCB
00514   45100042    571              STAQ     BUFFR,PCB
00515   02600513 P  572              IJD      *-2,X2
00516   20100030    573              LDA      CON,PCB         LOAD STATUS BITS
                            ***************************************************************
                    575     *        LPA      NBIT19          CLEAR 8 LINES/INCH          *
                            ***************************************************************
                  575+002            IF       DEF8 EQ 0, BOX
00517   35077777 X 575+003           SSA      BIT19           SE 8 LINES/INCH
                  575+004            EBOX
                    1+004  .***************************************************************
00520   35000307 X  579              SSA      BIT18
00521   40100030    580              STA      CON,PCB
00522   01000213 P  581              UJP      PRRPT           PRINT LINE
                    582
                    583
00523   66666667    584     KONST    OCT      66666667
                    585
00524   17000042    586     COUNTX   VFD      05/07,01/1,03/0,A15/34
```

```
587
588              END
```

NO LINES WITH ERRORS

```
BFBGN              00002        13        15 00010P
BFCPP              00003        15        19 00010P
BIT17        X                26+1     292+1 00224P    403+6 00363P
BIT18        X                  27       350 00307P     579 00520P
BIT19        X                  28     575+3 00517P
BIT20        X                  29       190 00074P
BIT21        X                  30       170 00053P
BIT22        X                  31       194 00077P
BLANKS       X                  32       557 00476P     569 00512P
BLF                00001        12        13 00010P
BUFFR              00042       181       556 00475P     558 00477P     560 00501P     562 00503P     571 00514P
CALBAK             00004        19        22 00010P
CARGCNTL          00145P       241       201 00105P
CARGCNTX          00162P       256       282 00212P
CARGCNTZ          00202P       273       261 00167P
CHINIT            00237P       309       132 00023P     316 00246P
CLCA              00101P       196       219 00127P
CLOCK              00022        68       395 00345P     416 00367P
CON                00030       154       165 00015P     126 00015P     137 00030P     162 00046P     171 00054P     191 00075P
                                         195 00100P     204 00110P     207 00113P     242 00145P   292+2 00225P   292+3 00226P
                                         334 00267P     339 00274P   403+3 00360P   403+7 00364P     573 00516P     580 00521P
CONLOOK           00030P       137       142 00035P
CONMATCH          00037P       145       139 00032P
CONNECT      X                  33       131 00022P
CONTAB            00000P        95       299 00235P     312 00242P
CCRE               04000        66       221 00131P     221 00131P
COUNT              00014        37        38 00010P     287 00215P     319 00250P     326 00257P     349 00306P     566 00507P
CCUNTX            00524P       586       565 00506P
CRSPACE           00321P       360       351 00310P
CTLW               00031       165       168 00010P     256 00162P     269 00177P     276 00204P     279 00207P     293 00227P
                                         295 00231P     367 00330P     371 00334P     526 00447P     531 00451P     534 00454P
                                         551 00470P
DEF8               00001      85+1      87+1 00000P    89+2 00000P   502+1 00445P   504+2 00445P   573+1 00517P   575+2 00517P
DEVBLK             00013        36        37 00010P
DINT               07773        62       116 00013P
DISKIMAG E        00065P       181        17 00000P
ENAD               00010        26        27 00010P
ENIT               00012        28        36 00010P
FB                 00000        11        12 00010P
FINK         X                  34       185 00071P
*  FCRMSWRD        00016        40
GBFNW             00300P       343       381 00344P
GETBUFF      X                  35       176 00061P
GIVBUFFP     X                  36       198 00103P     230 00143P
IDENT              00017        49        50 00010P
IMAD               00005        22        24 00010P     285 00213P     352 00311P     356 00315P
IMAGEADD           00036       174       178 00010P     189 00073P     211 00117P
IMAGECB           00063P       179       174 00057P
IMAGELEN           00220        70       182 00066P     221 00131P
IMAGERET           00040       178       181 00010P     184 00070P
IMLOAD04          00104P       200       167 00050P
IMPURE             00000        53       114 00012P     181 00065P     196 00101P     231 00144P     290 00220P     290 00220P
                                         309 00237P     366 00327P     372 00335P     397 00347P     400 00352P     401 00353P
                                         422 00373P
IO                 00000        54       221 00131P     290 00220P
ISUF              00347P       397       403 00355P     417 00370P
KILLFLAG           00007        25        26 00010P
KONST             00523P       584       555 00474P
LINEPAGE E         00124        92        18 00000P
LNIM               00006        24        25 00010P
*  NBIT18     X                  37
*  NBIT19     X                  38
NBIT20       X                  40       206 00112P
NBIT21       X                  39       205 00111P
NBIT22       X                  41       169 00052P
NEWCLK            00367P       416       396 00346P
NJM                00011        27        28 00010P
NOIMAGE           00077P       194       210 00116P     227 00140P
NOSPEC            00305P       348       343 00300P
NOTEJECT          00366P     403+9     403+2 00357P
PCB                00001        55       112 00010P     126 00015P     135 00026P     137 00030P     140 00033P     141 00034P
                                         152 00045P     162 00046P     171 00054P     172 00055P     189 00073P     191 00075P
                                         195 00100P     204 00110P     207 00113P     211 00117P     228 00141P     231 00144P
                                         242 00145P     256 00162P     269 00177P     276 00204P     279 00207P     285 00213P
                                         287 00215P     292 00223P   292+2 00225P   292+3 00226P     293 00227P     295 00231P
                                         298 00243P     313 00250P     319 00250P     326 00257P     330 00263P     334 00267P
                                         339 00274P     341 00276P     348 00305P     349 00306P     352 00311P     356 00315P
                                         366 00327P     367 00330P     371 00334P     375 00337P   403+3 00360P   403+7 00364P
                                         427 00377P     526 00447P     531 00451P     534 00454P     535 00455P     542 00462P
```

Symbol	Flag	Value	Defn	Ref	Ref	Ref	Ref	Ref	Ref
				543 00463P	551 00470P	553 00472P	554 00473P	556 00475P	558 00477P
				560 00501P	562 00503P	563 00504P	566 00507P	567 00510P	570 00513P
				571 00514P	573 00516P	580 00521P			
PCBS		00327P	366	330 00263P	348 00305P				
PFLOC		00001	64	66 00000P	213 00121P				
PFWORD		00016	39	40 00010P	49 00010P				
POSI		00015	38	39 00010P					
PR1BLOC	X		42	135 00026P	545 00465P				
PR501		00000	84	162+1 00047P	403+10 00366P	433+1 00404P			
PR512		00001	85	153+1 00046P					
PRCIZ		00040	499	357 00316P					
PRCONNEC		00015P	125	113 00011P					
PRFILE	E	00451P	530	19 00000P	544 00464P				
PRIMAGE	E	00073P	188	20 00000P					
PRINT	E	00013P	116	21 00000P	192 00076P				
PRINTC3	E	00341P	378	22 00000P					
PRINTEX		00012P	114	117 00014P	129 00020P	134 00025P	300 00236P	378 00341P	430 00402P
PRLCX		00404P	465	470 00410P	499 00444P	359 00320P	360 00321P	363 00324P	
PRNFL		00444P	502	344 00301P					
PRNTM		00445P	507	346 00303P					
PRNTNSP		00442P	497	328 00261P					
PRNTSP		00443P	498	360 00321P					
PROPC		00220P	290	286 00214P	288 00216P				
PRPOINT		00035	173	174 00010P	140 00033P	542 00462P			
PRQEMPTY	E	00446P	524	23 00000P					
PRQING	E	00467P	549	24 00000P					
PRRPT		00213P	284	274 00202P	581 00522P				
PRSTART		00026	152	154 00010P	537 00457P				
QEMPTY		00024	55	57 00010P					
QINGLOC		00022	52	54 00010P					
QPNT		00023	54	55 00010P					
RDYFG		00032	168	169 00010P	112 00010P	152 00045P	292 00223P	427 00377P	
READ	X		43	183 00067P					
REGCNTL		00004	470	361 00322P					
REJ		00345P	394	398 00350P					
RLSCHAN		00402P	430	177 00062P	186 00072P	197 00102P	203 00107P	263 00171P	527 00450P
SCANX		00462P	541	532 00452P	533 00453P				
SEL		00353P	401	147 00040P	209 00115P	315 00245P	423 00374P	429 00401P	
SELECT		00000	56	397 00347P					
SELEXIT		00351P	339	403+5 00362P					
SELINT		00376P	425	150 00043P	270 00200P	281 00211P			
SELX		00373P	422	248 00153P	252 00157P	254 00161P	267 00175P	275 00203P	424 00375P
SELX2		00352P	400	402 00354P	419 00372P				
SENSE		00000	57	148 00041P	149 00042P	224 00135P	226 00137P	280 00210P	
SEQWORD		00034	171	173 00010P	554 00473P	563 00504P			
SETCLK		00366P	413+2	403+8 00365P					
SNLC		00247P	318	271 00201P					
SNLCX		00275P	340	323 00254P					
SNLUR		00336P	374	342 00277P					
SNLX		00335P	372	318 00247P	376 00340P	380 00343P			
SPECCNTL		00263P	330	362 00323P					
STRTLOC		00025	57	152 00010P					
SYSERR	X		44	143 00036P					
TIMSET	X		45	539 00461P					
UNCON	X		46	431 00403P					
URBEXIT		00021	51	52 00010P					
URBEXITA		00020	50	51 00010P					
URBLOK	X		47	374 00336P					
URBLOKI	X		48	552 00471P					
URBLOKNX	X		49	257 00163P	265 00173P				
URBLOKQX	X		50	546 00466P					
URWORD		00033	169	171 00010P	341 00276P	375 00337P	553 00472P		
VCN		00330P	367	329 00262P	345 00302P	347 00304P			
VILCH		00010P	111	379 00342P					
X1		00001	58	127 00016P	182 00066P	357 00316P	360 00321P	361 00322P	363 00324P
				545 00465P					
X2		00002	59	129 00020P	133 00024P	134 00025P	183 00067P	215 00123P	217 00125P
				223 00134P	225 00136P	270 00200P	297 00233P	299 00235P	316 00246P
				318 00247P	379 00342P	380 00343P	400 00352P	402 00354P	415 00366P
				417 00370P	430 00402P	568 00511P	572 00515P		
X3		00003	60	117 00014P	130 00021P	173 00056P	184 00070P	197 00102P	229 00142P
				244 00147P	250 00155P	251 00156P	311 00241P	312 00242P	324 00255P
				327 00260P	328 00261P	331 00264P	333 00266P	335 00270P	337 00272P
				338 00273P	340 00275P	378 00341P			