CPRT Ended Ent

```
                          1           NAM     ISIFP
                          2   *
          =00F0           3   ZER     EQU     $F0
                          4   *
                          5   * CURRENT VERSION DATE
                          6   * MONTH/DAY/YEAR = 03/01/84
                          7   *
                          8   *
                          9   * (C) 1982 INTERFACE SYSTEMS,INC
                         10   *
                         11   * WRITTEN BY    BRUCE NORTH
                         12   *               DAVID EI
                         13   *
                         14   *
                         15   *
                         16   * THIS SWITCH DETERMINES THE USE OF THE PROGRAM
                         17   *
          =0000          18   DEBUG   EQU     0       0 FOR NORMAL SYSTEM, 1 FOR DEBUGING
                         19   *
                         20   *
                         21   * THIS SWITCH DETERMINES THE DEVICES BUFFER SIZE
                         22   *
          =0004          23   BUFSIZ  EQU     4       BUFSIZ SWITCH SETTINGS:
                         24   *                               2 = 1920
                         25   *                               4 = 3440
                         26   *                               5 = 3564
                         27   *
                         28   *
                         29   * THIS SWITCH DETERMINES FRONT PANEL FUNCTION
                         30   *
          =0000          31   DUMMY   EQU     0
                         32   *
                         33   *                       0 = NORMAL FRONT PANEL FUNCTION
                         34   *                       1 = DUMMIED UP FRONT PANEL
                         35   *
                         36   * THIS SWITCH DETERMINES THE TYPE OF FORM FEED DONE
                         37   *
          =0000          38   FFSLCT  EQU     0
                         39   *                       0 = NORMAL
                         40   *                       1 = HARDWARE
                         41   *
```

```
                =0000                   43              IFE     DEBUG
                =DF00                   44              ORG     $DF00
                                        45              ELSE
                                        46              ORG     $BF00
                                        47              ENDIF
                                        48      ****************************************
                                        49      *       CONFIGUATION DATA AREA
                                        50      ****************************************
DF00    49 53 49 20 33 32               51      ASCII0  FCC     'ISI 3274/76 INTERFACE'
DF06    37 34 2F 37 36 20
DF0C    49 4E 54 45 52 46
DF12    41 43 45
DF15    FF                              52              FCB     $FF
DF16    FF                              53              FCB     $FF
DF17    54 59 50 45 20 2D               54      CONFG1  FCC     'TYPE - ISIFP'
DF1D    20 49 53 49 46 50
DF23    FF                              55              FCB     $FF
DF24    56 45 52 53 49 4F               56      CONFG2  FCC     'VERSION - 03/01/84'
DF2A    4E 20 2D 20 30 33
DF30    2F 30 31 2F 38 34
DF36    FF                              57              FCB     $FF
DF37    42 55 46 46 45 52               58      CONFG3  FCC     'BUFFER SIZE - 4K'
DF3D    20 53 49 5A 45 20
DF43    2D 20 34 4B
DF47    FF                              59              FCB     $FF
DF48    43 48 41 52 2E 20               60      CONFG4  FCC     'CHAR. TABLE - #630E13'
DF4E    54 41 42 4C 45 20
DF54    2D 20 23 36 33 30
DF5A    45 31 33
DF5D    FF                              61              FCB     $FF
DF5E    46 4F 52 4D 20 46               62      CONFG5  FCC     'FORM FEED - NORMAL'
DF64    45 45 44 20 2D 20
DF6A    4E 4F 52 4D 41 4C
DF70    FF                              63              FCB     $FF
DF71    46 52 4F 4E 54 20               64      CONFG6  FCC     'FRONT PANEL - NORMAL'
DF77    50 41 4E 45 4C 20
DF7D    2D 20 4E 4F 52 4D
DF83    41 4C
DF85    FF FE                           65              FCB     $FF,$FE
                                        66
                                        67
                                        69      *
```

```
                        71          SUBTTL TYPE A RS-232 PROGRAM
                        74
=0006                   75  LU1     EQU     $06     LU1 MODE IS A SIX IN THE MODE BYTE
=0013                   76  XOFF    EQU     $13             XOFF CONT. CODE (DC3)
=0011                   77  XON     EQU     $11             XON CONT. CODE (DC1)
=8100                   78  TESTSW  EQU     $8100
                        79
                        80  *       ACIA STATUS BITS
                        81
=0001                   82  PERRBT  EQU     %00000001       PARITY ERROR BIT
=0002                   83  FERRBT  EQU     %00000010       FRAMING ERROR BIT
=0004                   84  OVRNBT  EQU     %00000100       RECEIVER OVERRUN BIT
=0008                   85  RDRFBT  EQU     %00001000       RECEIVE DATA REGISTER FULL BIT
=0010                   86  TDREBT  EQU     %00010000       XMIT DATA REGISTER EMPTY BIT
=0020                   87  DCDBT   EQU     %00100000       DATA CARRIER DETECT BIT
=0040                   88  DSRBT   EQU     %01000000       DATA SET READY BIT (CTS)
=0080                   89  IRQBT   EQU     %10000000       INTERRUPT BIT
                        90
                        91  *       STATUS BYTE EQU'S
                        92
=0040                   93  DCK     EQU     $40     DATA CHECK BIT
=0020                   94  OC      EQU     $20     OPERATION COMPLETE
=0010                   95  EC      EQU     $10     EQUIPMENT CHECK
=0008                   96  IR      EQU     $08     INTERVENTION REQUIRED BIT
=0004                   97  SDT     EQU     $04     SENSE DATA BIT
=0002                   98  IC      EQU     $02     INPUT CODE BIT
=0001                   99  SWTR    EQU     $01     SWITCH TRANSITION BIT
                       100
=0040                  101  SOP     EQU     $40     START OPERATION CODE
                       102
=0008                  103  HLDBIT  EQU     $08             HOLD            BIT IN LOGICAL STATUS
=0004                  104  BSYBIT  EQU     $04             BUSY             "  "     "       "
=0002                  105  FLTBIT  EQU     $02             FAULT            "  "     "       "
=0001                  106  PEBIT   EQU     $01             PAPER EMPTY      "  "     "       "
                       107
=3F00                  108  IDLTMR  EQU     $3F00   IDLE TIMER, 30 SECONDS
=0007                  109  MODMSK  EQU     07      THREE LOWEST ORDER BITS ARE MODE BITS
=0005                  110  CR      EQU     $05     ASCII CARRIAGE RETURN
=0006                  111  LF      EQU     $06     ASCII LINE FEED
=0002                  112  FF      EQU     $02     ASCII FORM FEED
=0004                  113  VCS     EQU     $04     SCS CODE FOR VERTICAL CHANNEL SELECT
=0016                  114  BCKSPC  EQU     $16     SCS BACK SPACE
=002F                  115  BEL     EQU     $2F     SCS BELL CODE
=0035                  116  TRN     EQU     $35     SCS TRANSPARENT
=001E                  117  IRS     EQU     $1E     SCS INTERCHANGE RECORD SEPARATOR
=000C                  118  FFEBCD  EQU     $0C     EBCDIC FORM FEED
=000D                  119  CREBCD  EQU     $0D     EBCDIC CARRIAGE RETURN
=0015                  120  NLEBCD  EQU     $15     EBCDIC NEXT LINE
=0025                  121  LFEBCD  EQU     $25     EBCDIC LINE FEED
=0050                  122  EBCAND  EQU     $50     EBCDIC ANPERSAND SIGN
=006C                  123  EBCPCT  EQU     $6C     EBCDIC PERCENT SIGN
=005C                  124  EBCAST  EQU     $5C     EBCDIC ASTERISK
```

```
=0040                125  SPEBC   EQU     $40     EBCDIC SPACE
=0060                126  HYPEBC  EQU     $60     EBCDIC HYPHEN
=005F                127  EBCNOT  EQU     $5F     EBCDIC  NOT SIGN
=00F0                128  EBC0    EQU     $F0     EBCDIC  '0'
=00F1                129  EBC1    EQU     $F1        "    '1'
=00D3                130  EBCL    EQU     $D3        "    'L'
=00D4                131  EBCM    EQU     $D4        "    'M'
=00D5                132  EBCN    EQU     $D5        "    'N'
=000B                133  VT      EQU     $0B     VERTICAL TAB CODE
=0005                134  HT      EQU     05      HORIZONTAL TAB CODE
=0005                135  CRDBC   EQU     $05     DEVICE BUFFER CODE CARRIAGE RETURN
=0001                136  EMDBC   EQU     $01     DEVICE BUFFER CODE END OF MESSAGE
=0003                137  NLDBC   EQU     $03     DEVICE BUFFER CODE NEXT LINE
=0002                138  FFDBC   EQU     $02     DEVICE BUFFER CODE FORM FEED
=00BF                139  DBCAST  EQU     $BF     DEVICE BUFFER CODE '*'
=0010                140  SPDBC   EQU     $10     DEVICE BUFFER CODE SPACE
=0030                141  DBCAND  EQU     $30     DEVICE BUFFER CODE AMPERSAND
=002E                142  DBCPCT  EQU     $2E     DEVICE BUFFER CODE PERCENT SIGN
=0020                143  DBC0    EQU     $20     D.B.C.  '0'
=0021                144  DBC1    EQU     $21     D.B.C.  '1'
=00AB                145  DBCL    EQU     $AB     D.B.C.  'L'
=00AC                146  DBCM    EQU     $AC     D.B.C   'M'
=00AD                147  DBCN    EQU     $AD     D.B.C.  'N'
=0014                148  DIRPGE  EQU     $14     DIRECT PAGE VALUE
=0000                149  OFF     EQU     $00     CONFIGURATION SWITCH OFF
=00FF                150  ON      EQU     $FF           "         "    ON
                     151
                     152  *       ADDRESSES
                     153
=5000                154  IRQCLR  EQU     $5000
=4800                155  RDSTAT  EQU     $4800
=4C00                156  ACIADT  EQU     $4C00           ACIA XMIT/REC REGISTER
=4C01                157  ACIARS  EQU     $4C01           ACIA RESET/STATUS REGISTER
=4C02                158  ACIACD  EQU     $4C02           ACIA COMMAND REGISTER
=4C03                159  ACIACL  EQU     $4C03           ACIA CONTROL REGISTER
                     160
                     161  *       LED EQU'S
                     162
=4400                163  FPLED   EQU     $4400           FRONT PANEL LED REGISTER
=4800                164  FPSSEL  EQU     $4800             "     "   SWITCH SELECT
                     165
=00FE                166  RDYLED  EQU     $FE             SELECT LED MASK
=00FD                167  CHKLED  EQU     $FD             PAPER EMPTY LED
=00FB                168  HLDLED  EQU     $FB             HOLD PRINT LED MASK
=00BF                169  DISLED  EQU     $BF             DISABLE LED
=007F                170  ALARM   EQU     $7F             ALARM MASK
=00DF                171  PRTLED  EQU     $DF
                     172
=00F7                173  PLSEN   EQU     $F7             PAGE LENGTH SWITCH ENABLE
=00FB                174  FPSEN   EQU     $FB             FRONT PANEL   "      "
=00FD                175  DIPSEN  EQU     $FD             DIP           "      "
=00FE                176  TSTSEN  EQU     $FE             TEST SWITCH AND 4 SWITCH DIP ENABLE
```

```
                        177
                        178   *   EQU'S FOR CC REGISTER
                        179
=0080                   180   EBIT    EQU     $80
=0040                   181   FBIT    EQU     $40
=0020                   182   HBIT    EQU     $20
=0010                   183   IBIT    EQU     $10
=0008                   184   NBIT    EQU     $08
=0004                   185   ZBIT    EQU     $04
=0002                   186   VBIT    EQU     $02
=0001                   187   CBIT    EQU     $01
                        188
                        189
                        190   *   PA SWITCH CODE EQU'S
                        191
=0050                   192   ATTN    EQU     $50
=005F                   193   PA1     EQU     $5F
=005E                   194   PA2     EQU     $5E
=005D                   195   NOPA    EQU     $5D
                        196
                        197   *       MICR MODE SEQUENCE OFFSETS
                        198   *
=000B                   199   MCRON   EQU     11
=0012                   200   MCROFF  EQU     18
=0019                   201   MCRRST  EQU     25
=001D                   202   MCRTAB  EQU     29
                        203   *
                        204
                        205   *   **  FRONT PANEL SWITCH MASK EQU'S  **
                        206
=00FE                   207   LFSW    EQU     $FE
=00FD                   208   BRPSW   EQU     $FD     BUFFER REPRINT SWITCH
=00FB                   209   PA1SW   EQU     $FB
=00F7                   210   PA2SW   EQU     $F7
=00EF                   211   HLDSW   EQU     $EF     HOLD-ENABLE SWITCH
=00DF                   212   CANSW   EQU     $DF
=00BF                   213   TSSW    EQU     $BF
=007F                   214   FFSW    EQU     $7F
=00EF                   215   ENSW    EQU     $EF
                        216
=01C0                   217   SWCTRH  EQU     $1C0
=0005                   218   SWCTRL  EQU     $05     SWITCH COUNTER LOW
```

```
                        220  ********************************************************************
                        221
                        222  *       PRINTER AND CU OUTPUT AREAS
                        223
                        224  ********************************************************************
        =0000           225          ORG     0
0000    =0001           226  STATUS  RMB     1       STATUS BYTE
0001    =0001           227  SWSTTS  RMB     1       SWITCH STATUS BYTE
0002    =0001           228  KEYIC   RMB     1       KEY INPUT CODE BYTE
0003    =0001           229  SENSE   RMB     1       SENSE DATA BYTE
0004    =0008           230  RESERV  RMB     8       MEMORY RESERVED FOR PRINTER
000C    =0004           231  ID      RMB     4       TERMINAL ID REGISTER
0010    =0001           232  MODE1   RMB     1       1ST MODE BYTE (UNUSED BY PRINTER)
0011    =0001           233  MODE2   RMB     1       2ND MODE BYTE
0012    =0002           234  MSA     RMB     2       MESSAGE STARTING ADDRESS REGISTER
0014    =0002           235  ML      RMB     2       MESSAGE LENGTH REGISTER
0016    =0001           236  ORDER   RMB     1       ORDER BYTE
0017    =0001           237  ORDRPM  RMB     1       ORDER PARAMETER BYTE
0018    =0001           238  MPP     RMB     1       MAXIMUM PRESENTATION POSITION
0019    =0031           239  RESRVD  RMB     49      MEMORY RESERVED FOR CONTROL UNIT
004A    =0004           240  TEST    RMB     4
004E    =0002           241  CUONLY  RMB     2       MEMORY USED BY CONTROL UNIT ONLY
                        242
                        243
        =0002           244          IFE     BUFSIZ-2
                        245  BUFFER  RMB     1968    BUFFER SIZE OF 1968 (2 K BUFFER)
                        246  BUFEND  EQU     *
                        247          ELSE
0050    =0FB0           248  BUFFER  RMB     4016    4 K BUFFER FOR MODELS 4 AND 5
        =1000           249  BUFEND  EQU     *
                        250          ENDIF
```

```
                =17FF                252   STACK   EQU     $17FF
                =1400                253           ORG     $1400
                =1400                254   SCRTCH  EQU     *
                                     255   ********************************
                                     256   *       THE SCRATCH PAD AREA   *
                                     257   ********************************
                                     258
     1400       =0014                259   VTAB    RMB     20              VERTICAL TAB SAVE AREA
     1414       =0001                260   VP3     RMB     1               VERTICAL POS. (LU3 CURRENT LINE)
     1415       =0001                261   VP1     RMB     1               VERTICAL POS. (LU1 CURRENT LINE)
     1416       =0001                262   LU1LN   RMB     1               SCS CURRENT LINE.  NOT UPDATED BY LU3 OR FP
     1417       =0001                263   MPL3    RMB     1               MAX. PRESENTATION LINE FOR LU3
     1418       =0001                264   MPL1    RMB     1               MAX. PRESENTATION LINE FOR LU1
     1419       =0001                265   TMARGN  RMB     1               SCS TOP MARGIN
     141A       =0001                266   BMARGN  RMB     1               SCS BOTTOM MARGIN
     141B       =0001                267   SVFFLG  RMB     1               "RECEIVED AN SVF" FLAG
     141C       =0014                268   HTAB    RMB     20              HORIZONTAL TAB SAVE AREA
     1430       =0001                269   HP1     RMB     1               HORIZONTAL.  (LU1 CURRENT POSITION)
     1431       =0001                270   MPP3    RMB     1               MAX. PRESENTATION POS. FOR LU3
     1432       =0001                271   MPP1    RMB     1               MAX.PRESENTATION POS. FOR LU1
     1433       =0001                272   LMARGN  RMB     1               SCS LEFT MARGIN
     1434       =0001                273   RMARGN  RMB     1               SCS RIGHT MARGIN
     1435       =0001                274   OVRFLG  RMB     1               FLAG TO DISALLOW HOLD & PE DURING FF & VT
                                     275
     1436       =0001                276   SOFTFF  RMB     1
     1437       =0001                277   DULCAS  RMB     1       FLAG FOR MONO/DUAL CASE
     1438       =0001                278   LSTCHR  RMB     1
     1439       =0001                279   CONTL   RMB     1       FLAG FOR HONOR/NO HONOR  OF CONTROL CHARACTERS
                                     280   *                               CONTL=0 => NOHONOR
                                     281   *                               CONTL=1 => HONOR
     143A       =0001                282   IRCHOS  RMB     1       FLAG SIGNALING IF IRQ WAS ENABLING, DISABLING,
                                     283   *                       OR FAULT CHECKING:
                                     284   *                               0=DISABLE, 1=ENABLE, 2=FAULT CHK
     143B       =0001                285   TRNCNT  RMB     1       COUNTER FOR # OF SCS TRANSPARENT BYTES
     143C       =0001                286   COUNTR  RMB     1       MISCELANEOUS COUNTER
                                     287
     143D       =0002                288   ERRCOD  RMB     2       ERROR CODE BYTE 1:
                                     289
                                     290   *                               BIT 7,  GOT A RESET
                                     291   *                               BIT 6,  GOT AN SSA ORDER
                                     292   *                               BIT 5,  IRQ ERROR
                                     293   *                               BIT 4,  UNDEF. (NON-ABORT SOP WHILE
                                     294   *                                       PROCESSING AN ORDER)
                                     295   *                               BIT 3,  IR POSTED IN THE STATUS
                                     296   *                               BIT 2,  SDT POSTED IN THE STATUS
                                     297   *                                       EC + SDT => INVALID ORDER
                                     298   *                                       SDT      => CANCEL
                                     299   *                               BIT 1,  INVALID COMMAND OR PARAMETER (EC SET)
                                     300   *                               BIT 0,  GOT AN ABORT
                                     301
                                     302   *                       ERROR CODE BYTE 2:
                                     303
```

```
                                304   *                       BIT 7,  UNDEF. (ENA/SOP WHILE ENABLED)
                                305   *                       BIT 6,  UNDEF. (NON-PDI FRQ WHILE DISABLING)
                                306   *                       BIT 5,  INVALID NMI (NMI/SWI/IRQ INTERRUPT)
                                307   *                       BIT 4,  TOP AND BOTTOM BOARD FIRMWARE MISMATCH
                                308
 143F   =0001                  309   SWITCH  RMB     1       HOLDS TEST SWITCH SETTING
 1440   =0002                  310   CKSUM   RMB     2       16 BIT CHECK SUM STORAGE
 1442   =0001                  311   HEXSAV  RMB     1       HOLDS TEST SWITCH SETTING DURING HEX DUMP
 1443   =0001                  312   DSPFLG  RMB     1       FLAG FOR DISPLAY/NON-DISPLAY FIELD
                                313   *                               DSPFLG=1 => NON, DSPFLG=0 => DISPLAY
 1444   =0001                  314   FLFLG   RMB     1       FLAG FOR REC./NOT REC. A NOT SIGN VERT. BAR L SEQ.
                                315   *                               SVFFLG=1 => RECEIVED, SVFFLG=0 => NOT
 1445   =0002                  316   ENTIMR  RMB     2       TIMING COUNTER DURING ENABLE AND IDLE
 1447   =0002                  317   HLDTMR  RMB     2       HOLD TIMEOUT TIMER
 1449   =0002                  318   MSGEND  RMB     2
 144B   =0002                  319   MLSAV   RMB     2       SAVE AREA FOR ML AREA OF CONTROL UNIT OUTPUT AREA
 144D   =0002                  320   MLSAV2  RMB     2       ML SAVE FOR ESCAPE SEQUENCE CHECK
 144F   =0002                  321   ENDMP   RMB     2       END ADDRESS FOR HEX DUMP
 1451   =0002                  322   ENDVAL  RMB     2       SAVE AREA USED IN HTSUB, AND VTSUB
 1453   =0002                  323   XSAV    RMB     2       GENERAL X REG. SAVE AREA
 1455   =0002                  324   TRNSTR  RMB     2       ADDRESS OF START OF SPECIFIC TRANSLATE TABLE
 1457   =0001                  325   CLCNT5  RMB     1
 1458   =0001                  326   LEDREG  RMB     1               LED REGISTER
 1459   =0001                  327   HIFLG   RMB     1       DEBOUNCE HANDSHAKE FLAG
                                328
 145A   =0001                  329   INCNT   RMB     1       NUMBER OF CHARACTERS IN OUTPUT BUFFER TO BE PRINTED
 145B   =0002                  330   INEND   RMB     2       POINTS TO NEXT EMPTY LOCATION IN OUTPUT BUFFER
 145D   =0002                  331   OUTPTR  RMB     2       POINTS TO NEXT CHARACTER IN OUTPUT BUFFR TO BE PRINTED
 145F   =0102                  332   OUTBUF  RMB     258     OUTPUT BUFFER, HAS EXACT CHARS TO BE SHIPPED TO PRINTER
        =1561                  333   OUTEND  EQU     *       END OF OUTPUT BUFFER
                               334
 1561   =0001                  335   SLUSND  RMB     1       PRINTER SLU SEND FLAG, 1=SEND, 0=RECEIVE
 1562   =0002                  336   BUFPT1  RMB     2       POINTS INTO INTERFACE BUFFER IN LU1 MODE OPERATION
 1564   =0002                  337   BUFPT3  RMB     2       POINTS INTO BUFFER IN LU3
 1566   =0001                  338   XFLAG   RMB     1       1 IF XOFF REC.,0 IF NOT
 1567   =0001                  339   CASESW  RMB     1       0=MONO, 1=DUAL
 1568   =0001                  340   AUTOSW  RMB     1       0=NO AUTO FF AFTER LOCAL PRINT, 1=AUTO FF
 1569   =0001                  341   CANFLG  RMB     1       1=CANCEL SWITCH SET, 0=NOT SET
 156A   =0001                  342   EBUFCT  RMB     1       ESCAPE BUFFER CHAR COUNT
 156B   =0002                  343   EBUFPT  RMB     2       ESCAPE BUFFER POINTER (NEXT OPEN LOCATION)
        =156D                  344   EBUFBG  EQU     *       ESCAPE BUFFER BEGINNING
 156D   =0006                  345   EBUFFR  RMB     6       6 CHAR ESCAPE BUFFER
 1573   =0001                  346   PTRMOV  RMB     1       INDICATES POINTER HAS MOVED IN CKESC1
 1574   =0001                  347   MLTFNC  RMB     1       INDICATES MULTIPLE CHAR. FUNCTION IN CNTRL1
                               348
                               349
                               350   *       RS-232
                               351
                               352   *                       ESCAPE BEFORE CHARACTER                 1
                               353   *                       SO-CHAR-SI                              2
                               354   *                       NOT ASSIGNED                            3
                               355   *                        "      "                               4
```

```
                                356   *                          "      "                                5
                                357   *                          "      "                                6
                                358   *                          "      "                                7
     1575    =0001              359   SGLDBL   RMB      1       RS-232 SPACING INDICATOR  0=SINGLE, 1=DOUBLE
     1576    =0001              360   PASAV    RMB      1       PENDING PA INPUT
     1577    =0001              361   DISSEM   RMB      1       DISABLE SEMAPHORE FOR THE DISPATCHER
     1578    =0001              362   DMPFLG   RMB      1       HEXDUMP IN PROCESS FLAG
     1579    =000E              363   DMPSAV   RMB      14      MACHINE STATE BEFORE HEXDUMP
                                364   *
     1587    =0001              365   MCRFLG   RMB      1       MICR MODE FLAG (XX=MICR MODE, 00=NORMAL MODE)
                                366   *
     1588    =0001              367   LU1DIR   RMB      1       LU1 PRINT DIRECTION SAVE (0=L-->R, X=L<--R)
     1589    =0001              368   BIPRNT   RMB      1       MACH. DEF. DIRECTION FLAG (0=L-->R, X=L<--R)
     158A    =0001              369   NLSOVD   RMB      1       OVERRIDE NULL LINE SUPPRESSION IN LU3 MODE
                                370   *                                  0=NORMAL,  X=TREAT NULL AS SPACE
             =0000              371            IFE      DUMMY
             =4400              372   FPSREG   EQU      $4400           FRONT PANEL SWITCH REGISTER
                                373            ELSE
                                374   FPSREG   RMB      1                 "     "     "    DUMMY LOCATION
                                375            ENDIF
```

```
                                377   ************************************************************
                                378   *       SET UP THE INTERRUPT VECTORS                       *
                                379   ************************************************************
                                380
                                381
                                382
          =0000                 383           IFE     DEBUG   DEBUG VERSION FOR EXORCISER?
          =FFE8                 384           ORG     $FFE8   NO, SET UP ESCAPE BUFFER AND
                                385           ELSE
                                386           ORG     $DFE8   2732 DEBUG
                                387           ENDIF
                                388   *                       DUMMY FRONT PANEL VALUES
                                389   *
  FFE8    FC                    390   SWTBL   FCB     %11111100       6 LPI,SIN. SPACE,DUAL CASE AUTO FF
  FFE9    00                    391           FCB     %00000000       ENGLISH
  FFEA    FF                    392           FCB     %11111111       FRONT PANEL SWITHCES DISABLED
  FFEB    99                    393           FCB     %10011001       PAGE LENGTH = 66
                                394
  FFEC    50                    395   LU1ES1  FCB     EBCAND
  FFED    6C                    396   LU1ES2  FCB     EBCPCT
  FFEE    30                    397   LU3ES1  FCB     DBCAND
  FFEF    2E                    398   LU3ES2  FCB     DBCPCT
                                399
  FFF0    0000                  400   IVECS   FDB     0       RESERVED
  FFF2    E153                  401           FDB     DISSA   SET UP SWI3 VECTOR
  FFF4    E1C8                  402           FDB     OPDONE  SET UP SWI2 VECTOR
  FFF6    E127                  403           FDB     FRQSUB  SET UP FIRQ VECTOR
  FFF8    E085                  404           FDB     NMISUB  SET UP IRQ VECTOR
  FFFA    E085                  405           FDB     NMISUB  SWI VECTOR
  FFFC    E085                  406           FDB     NMISUB  NMI VECTOR
  FFFE    E000                  407           FDB     START   SET UP RESET VECTOR
          =0000                 408           IFE     DEBUG   DEBUG SWITCH SET?
          =E000                 409           ORG     $E000   NO, JUST SET UP FOR 2732 PROM
                                410           ELSE
                                411           ORG     $C000   YES, SET UP FOR EXORCISER
                                412           ENDIF
```

```
414   ********************************************************
415   *
416   *       MACRO DEFINITIONS
417   *
418   ********************************************************
419   ION     MACRO
420           ANDCC   #!NFBIT
421           ENDM


423   IOFF    MACRO
424           ORCC    #FBIT!+IBIT
425           ENDM


427   *  **  SW2 IS THE SVC CALL TO SIGNAL THAT AN LU1 PRINT IS COMPLETE (OCSWI)
428
429   SW2     MACRO
430           SWI2
431           ION
432           ENDM


434   *  **  SW3 IS THE SVC CALL TO DISABLE TO RETURN STATUS INFO DURING A PRINT
435
436   SW3     MACRO
437           SWI3                    SWI3 EMULATES A POLL DISABLE
438           ION
439           ENDM


441
442   *       16 BIT LOGICAL SHIFT (LEFT)
443
444   LSLD    MACRO
445           LSLB
446           ROLA
447           ENDM


449
450   *       16 BIT LOGICAL SHIFT (RIGHT)
451
452   LSRD    MACRO
453           LSRA
454           RORB
455           ENDM
```

```
                                457   ********************************************************************
                                458   *       POWER ON RESET ROUTINE                                     *
                                459   ********************************************************************
                                460
                                461
          =14                   462           SETDP   DIRPGE
                                463+  START   IOFF                    SET INTERRUPT MASK
E000    1A 50                   464A          ORCC    #FBIT!+IBIT
E002    10CE 17FF               465           LDS     #STACK
E006    86 14                   466           LDA     #DIRPGE
E008    1F 8B                   467           TFR     A,DP
E00A    7F 5000                 468           CLR     IRQCLR
E00D    8E 0000                 469           LDX     #0
E010    CC 0000                 470           LDD     #0
                                471
E013    ED 81                   472   10$     STD     0,X++
E015    8C 1800                 473           CMPX    #(STACK+1)
E018    26 F9                   474           BNE     10$
                                475
E01A    BD F3DF                 476           JSR     LEDOFF          TURN OFF ALL LEDS DURING INIT
E01D    BD F3F6                 477           JSR     DVINIT          INITIALIZE THE DEVICE
E020    86 FE                   478           LDA     #TSTSEN
E022    BD F50A                 479           JSR     FPREAD          READ 4 SWITCH DIP
E025    B6 4400                 480           LDA     FPSREG          READ SWITCH SETTING
E028    84 0F                   481           ANDA    #$0F            ONLY INTERESTED IN LOW 4 BITS
E02A    BD F412                 482           JSR     CHKSPC          DEFAULT TO 6 LPI, SINGLE SPACING
E02D    BD F42A                 483           JSR     CHKCSE          MONO CASE
E030    BD F43A                 484           JSR     CHKAUT          NO FF AFTER OPERATOR INIT. LOCAL PRINT
E033    BD F677                 485           JSR     FLSWSB          INITIALIZE FORMS LENGTH
E036    0D 17                   486           TST     MPL3            FRONT PANEL SET TO 0?
E038    26 02                   487           BNE     20$               -NO,
                                488
E03A    0C 36                   489           INC     SOFTFF            -YES, FLAG HARDWARE FF
                                490
E03C    B6 C198                 491   20$     LDA     MAXLEN          INITIAL LU1 LINE LENGTH IS 132
E03F    97 31                   492           STA     MPP3
E041    BD EE54                 493           JSR     VTDFLT          DEFAULT SCS PARAMETERS
E044    BD EF0C                 494           JSR     HTDFLT
E047    0C 59                   495           INC     HIFLG           INITIALIZE SWITCH DEBOUNCE FLAG
E049    BD F30A                 496           JSR     BFINIT          INITIALIZE LINE BUFFER
E04C    BD F445                 497           JSR     DIPSW8          INIT. TRANS. TABLE,NULL LINE OVERRIDE
                                498   *                               & BI-DIRECTIONAL PRINT
E04F    7D C196                 499           TST     CONFIG          DEVICE SUPPORT MICR ?
E052    27 0C                   500           BEQ     30$
                                501
E054    7F 1587                 502           CLR     MCRFLG          CLEAR MICR FLAG
E057    8E C196                 503           LDX     #CONFIG         SEND MICR RESET SEQUENCE
E05A    30 88 19                504           LEAX    MCRRST,X
E05D    BD F090                 505           JSR     OUTX
E060    BD E08B                 506   30$     JSR     TSTSW
E063    86 FE                   507           LDA     #RDYLED
E065    BD F3E9                 508           JSR     LEDON           PRINTER IS NOW READY
```

```
     E068   7E F652              509          JMP     ABORPRT
```

```
                        511   ************************************************
                        512
                        513   *       SET UP STACK SUBROUTINE
                        514
                        515   ************************************************
                        516
                        517+  SETSTK  IOFF
E06B   1A 50            518A          ORCC    #FBIT!+IBIT
E06D   10AE E4          519           LDY     0,S       STORE RETURN ADDRESS IN Y
E070   10CE 17FF        520           LDS     #STACK    INIT. STACK POINTERS
E074   8E E785          521           LDX     #LU1MSG
E077   34 10            522           PSHS    X         SET STACK TO SIMULATE SWI, AND PUT ON PC
E079   32 7A            523           LEAS    -6,S
E07B   34 08            524           PSHS    DP        PUSH DP REGISTER OF $14 ON STACK
E07D   32 7E            525           LEAS    -2,S
E07F   86 90            526           LDA     #(EBIT!+IBIT)
E081   34 02            527           PSHS    A         PUT ON CC REG WITH FIRQ ENABLED
E083   6E A4            528           JMP     0,Y       Y HAS RETURN ADDRESS, SO SAME AS RTS



E085   86 20            530   NMISUB  LDA     #$20
E087   BD E3B9          531           JSR     EBT2ON
E08A   3B                532           RTI
```

```
                                534  ********************************************************************
                                535
                                536  *       TEST SWITCH ROUTINE
                                537
                                538  *               SWITCH DEBOUNCE DELAY = 1 SEC. (APPROX)
                                539
                                540  ********************************************************************
E08B   34 16                    541  TSTSW   PSHS    A,B,X   SAVE REGISTERS
E08D   96 58                    542          LDA     LEDREG
E08F   85 02                    543          BITA    #!NCHKLED       CHECK LED ON?
E091   27 2C                    544          BEQ     NRMRTS          -YES, RETURN
                                545
E093   34 02                    546          PSHS    A       STORE FRONT PANEL LEDS
                                547
E095   8E E0CA                  548  1$      LDX     #SWTABL SETUP SUBROUTINE VECTOR
E098   BD E0C1                  549          JSR     GETSW   GET CURRENT SWITCH VALUE
E09B   26 10                    550          BNE     2$      SAME AS LAST TIME?
                                551
E09D   58                       552          ASLB            -YES, GO TO SUBROUTINE REQUESTED
E09E   5D                       553          TSTB            SWITCH = 0?
E09F   27 05                    554          BEQ     3$      - YES, DONT TURN OFF READY LED
                                555
E0A1   86 FE                    556          LDA     #RDYLED - NO, TURN OFF READY LED BEFORE DOING FUNCTION
E0A3   BD F3DF                  557          JSR     LEDOFF
                                558
E0A6   3A                       559  3$      ABX
E0A7   AE 84                    560          LDX     0,X
E0A9   AD 84                    561          JSR     0,X
E0AB   20 E8                    562          BRA     1$
                                563
E0AD   D7 3F                    564  2$      STB     SWITCH          -NO, DEBOUNCE AND TRY AGAIN
E0AF   8E 0190                  565          LDX     #400
E0B2   BD E98E                  566          JSR     XTIMER  WAIT A SEC
E0B5   20 DE                    567          BRA     1$              TRY AGAIN
                                568
E0B7   39                       569  BADSW   RTS
                                570
E0B8   32 62                    571  NORMAL  LEAS    2,S             EXIT FOR NORMAL OPERATION
E0BA   35 02                    572          PULS    A       RESET FRONT PANEL LEDS
E0BC   BD F3D8                  573          JSR     NEWLED
E0BF   35 96                    574  NRMRTS  PULS    A,B,X,PC
                                575
                                576
E0C1   F6 8100                  577  GETSW   LDB     TESTSW          READ THE TEST SWITCH
                                578
E0C4   53                       579          COMB
E0C5   C4 0F                    580          ANDB    #$0F
E0C7   D1 3F                    581          CMPB    SWITCH
E0C9   39                       582          RTS
                                583
```

```
                          585  *                              MODE                    SWITCH #
 E0CA   E0B8              586  SWTABL  FDB     NORMAL  NORMAL                  0       $FF
 E0CC   EA3B              587          FDB     VRSION  VERSION & TYPE #'S     1       $FE
 E0CE   EA66              588          FDB     ERRPRT  PRINT ERROR BYTE       2       $FD
 E0D0   EA84              589          FDB     HEXDMP  PRINT HEX,3270,LU1     3       $FC
 E0D2   E0B7              590          FDB     BADSW                           4       $FB
 E0D4   E0B7              591          FDB     BADSW                           5       $FA
 E0D6   EBAA              592          FDB     MEMTST  NORMAL RAM TEST         6       $F9
 E0D8   E0EA              593          FDB     LLP     LONG LINE PRINT         7       $F8
 E0DA   E0B8              594          FDB     NORMAL  AUTO HEX DUMP           8       $F7
 E0DC   E0B7              595          FDB     BADSW   UNDEFINED               9       $F6
 E0DE   E0B7              596          FDB     BADSW                           A
 E0E0   E0B7              597          FDB     BADSW                           B
 E0E2   E0B7              598          FDB     BADSW                           C
 E0E4   E0B7              599          FDB     BADSW                           D
 E0E6   E0B7              600          FDB     BADSW                           E
 E0E8   E0B7              601          FDB     BADSW                           F
```

```
                                603   ********************************************************
                                604
                                605   *       LONG LINE PRINT ROUTINE, TEST SWITCH 7
                                606
                                607   ********************************************************
E0EA   C6 84                    608   LLP     LDB     #132    MAX COLUMN LENGTH
E0EC   86 20                    609   PRTO    LDA     #$20    LOAD UP A D.B.C ZERO
E0EE   BD F20D                  610           JSR     OUTCHR  OUTPUT ZERO
E0F1   5A                       611           DECB            END OF LINE?
E0F2   26 F8                    612           BNE     PRTO    - NO, CONTINE TO PRINT ZEROS
                                613
E0F4   BD F1E6                  614           JSR     EOL     - YES, INSERT NL CODE
                                615
E0F7   C6 84                    616           LDB     #132    MAX COLUMN LENGTH
E0F9   86 A7                    617   PRTH    LDA     #$A7    CHARACTER GENERATOR 'H'
E0FB   BD F20D                  618           JSR     OUTCHR  OUTPUT 'H'
E0FE   5A                       619           DECB            END OF LINE?
E0FF   26 F8                    620           BNE     PRTH    - NO, CONTINUE TO PRINT LINE
                                621
E101   BD F1E6                  622           JSR     EOL     - YES, INSERT NL CODE
                                623
E104   C6 02                    624           LDB     #2
E106   D7 3C                    625           STB     COUNTR  SET UP 2 LINE COUNTER FOR CHARACTER GEN. OUTPUT
E108   C6 84                    626           LDB     #132
E10A   86 08                    627           LDA     #$08    LOAD UP FIRST CGEN CHARACTER TO PRINT
                                628
E10C   BD F20D                  629   PRTCGN  JSR     OUTCHR
E10F   4C                       630           INCA
E110   81 C0                    631           CMPA    #$C0    START OF ATTRIBUTE BUFFER?
E112   26 02                    632           BNE     NXTCHR  - NO, GET NEXT CHARACTER FROM CGEN
                                633
E114   86 08                    634           LDA     #$08    - YES, START OVER WITH FIRST CHARACTER
                                635
E116   5A                       636   NXTCHR  DECB            AT END OF LINE?
E117   26 F3                    637           BNE     PRTCGN  - NO, CONTINUE TO OUTPUT CHARACTER
                                638
E119   34 02                    639           PSHS    A       SAVE CHARACTER
E11B   BD F1E6                  640           JSR     EOL     - YES, INSERT NL CODE
E11E   35 02                    641           PULS    A       PULL CHARACTER BACK
E120   C6 84                    642           LDB     #132            COLUMN COUNTER
                                643
E122   0A 3C                    644           DEC     COUNTR  DECREMENT CGEN COUNTER
E124   26 E6                    645           BNE     PRTCGN  IF TWO LINES HAVE NOT BEEN OUTPUT, CONTINUE
                                646
E126   39                       647           RTS             ELSE, RETURN
```

```
                                649   *       FRQSUB IS REACHED WHEN INTERRUPTED FROM "IDLER", IRCHOS=0, OR
                                650   *       WHEN PRINTING, IRCHOS=2.  IN EITHER CASE, WE GO DISABLED
                                651
E127   7F 5000                 652   FRQSUB  CLR     IRQCLR  CLEAR FIRQ RIGHT AWAY (< 30 NSECONDS)
E12A   7D 1577                 653           TST     DISSEM          PDI WHILE DISABLING?
E12D   27 1C                   654           BEQ     1$                -NO, NORMAL PDI FIRQ
                                655
E12F   32 63                   656           LEAS    3,S               -YES, REMOVE FIRQ
E131   F6 1577                 657           LDB     DISSEM
E134   C1 02                   658           CMPB    #$02            PDI WHILE GOING INTO SYNC STATE?
E136   1027 0019               659           LBEQ    DISSA             -YES, DISABLE AGAIN
                                660
E13A   13                      661           SYNC                    DISABLE AND WAIT FOR ENA/SOP
E13B   B7 5000                 662           STA     IRQCLR
                                663
E13E   7F 1577                 664           CLR     DISSEM
E141   BD E205                 665           JSR     ENATST          PEN?
E144   1027 000B               666           LBEQ    DISSA             -YES, DISABLE AND RETURN SA
                                667
E148   7E E174                 668           JMP     DSPTCH
                                669
E14B   BD E14F                 670   1$      JSR     IRQSIM          PUSH PC OF RTI
E14E   3B                      671           RTI
                                672
E14F   1A 80                   673   IRQSIM  ORCC    #EBIT
E151   34 7F                   674           PSHS    J,Y,X,DP,B,A,CC PUSH THE REST OF THE MACHINE STATE
                                675   *                               AND DISABLE
                                677   ************************************************
                                678   *       THE DISABLE SUBROUTINE                 *
                                679   ************************************************
                                680
                                681+  DISSA   IOFF            MASK INTERRUPTS
E153   1A 50                   682A          ORCC    #FBIT!+IBIT
E155   7F 1577                 683           CLR     DISSEM
E158   86 BF                   684           LDA     #DISLED
E15A   BD F3E9                 685           JSR     LEDON           TURN ON DISABLE LED
                                686
E15D   7C 1577                 687           INC     DISSEM
                                688+          ION
E160   1C BF                   689A          ANDCC   #!NFBIT
                                690+          IOFF
E162   1A 50                   691A          ORCC    #FBIT!+IBIT
                                692
E164   13                      693           SYNC
E165   B7 5000                 694           STA     IRQCLR
                                695
E168   7C 1577                 696           INC     DISSEM
E16B   12                      697           NOP
E16C   12                      698           NOP
```

```
                                699+          ION
     E16D    1C BF              700A          ANDCC   #!NFBIT
                                701+          IOFF
     E16F    1A 50              702A          ORCC    #FBIT!+IBIT
     E171    7F 1577            703           CLR     DISSEM          FALL INTO DSPTCH
```

```
                                705   *  **  BRANCH OFF IRCHOS TO START AN OPERATION, OR GO ENABLED
                                706   *                 IRCHOS  = 0 =>  NOTHING ON STACK
                                707   *                         = 1 =>  IDLER ON STACK
                                708   *                         = 2 =>  OPERATION ON STACK
                                709   *                         = 3 =>  OPERATION ON STACK, IDLER ON STACK
                                710
                                711
E174   BD E205                  712   DSPTCH  JSR     ENATST          BEGIN AN OPERATION?
E177   26 14                    713           BNE     SOPCMD            -YES



                                715   *  **  GO ENABLED AND IDLE, OR RETURN TO OP IN PROCESS
                                716
E179   BD E1D9                  717           JSR     ENASUB            -NO, PEN
E17C   0D 3A                    718           TST     IRCHOS
E17E   27 01                    719           BEQ     1$
                                720
E180   3B                       721           RTI                     RETURN TO PREVIOUS OPERATION OR IDLER
                                722
E181   0C 3A                    723   1$      INC     IRCHOS          FLAG "IDLE IN PROCESS" (IRCHOS=1)
E183   BD E20E                  724           JSR     IDLER
                                725
E186   0A 3A                    726           DEC     IRCHOS          FLAG "NOTHING IN PROCESS" (IRCHOS=0)
                                727   *                               OR   "PRINT IN PROCESS" (IRCHOS=2)
E188   26 3B                    728           BNE     PCMD1
E18A   7E E153                  729           JMP     DISSA           IDLE TIMEOUT, DISABLE AND RETURN SA



E18D   BD E1E8                  731   SOPCMD  JSR     SOPSUB
E190   F6 0016                  732           LDB     ORDER
                                733
E193   C1 F0                    734           CMPB    #$F0            RESET COMMAND?
E195   1027 00B6                735           LBEQ    RESCMD            -YES, DO IT
                                736
E199   C1 01                    737           CMPB    #$01            ABORT COMMAND?
E19B   1027 01BF                738           LBEQ    ABOCMD            -YES, DO IT
                                739
E19F   96 3A                    740           LDA     IRCHOS
E1A1   81 03                    741           CMPA    #$03            ORDER ALREADY IN PROCESS?
E1A3   23 07                    742           BLS     1$                -NO, NO PROTOCOL VIOLATION
                                743
E1A5   86 10                    744           LDA     #$10              -YES, FLAG AN ERROR
E1A7   BD E3B1                  745           JSR     EBITON
E1AA   96 3A                    746           LDA     IRCHOS
                                747
E1AC   C1 02                    748   1$      CMPB    #$02            SSA ORDER?
```

```
E1AE  26 06          749          BNE   2$
                     750
E1B0  BD E263        751          JSR   SSACMD          -YES
E1B3  7E E1C8        752          JMP   OPDONE
                     753
E1B6  C1 03          754  2$      CMPB  #$03           PRINT ORDER?
E1B8  27 06          755          BEQ   PRTCMD          -YES
                     756
E1BA  BD E337        757          JSR   INVALD          -NO, MUST BE INVALID
E1BD  7E E1C8        758          JMP   OPDONE
                     759
E1C0  81 02          760  PRTCMD  CMPA  #$02           IDLE PENDING?
E1C2  27 01          761          BEQ   PCMD1           -NO, OK TO START PRINTING
                     762
E1C4  3B             763          RTI                   -YES, FINISH IDLE FIRST
                     764
E1C5  BD E29B        765  PCMD1   JSR   PRNT
                     766
E1C8  0A 3A          767  OPDONE  DEC   IRCHOS
E1CA  0A 3A          768          DEC   IRCHOS
E1CC  7E E1D1        769          JMP   OPD1
                     770
E1CF  0F 3A          771  ABODON  CLR   IRCHOS
                     772
E1D1  86 DF          773  OPD1    LDA   #PRTLED
E1D3  BD F3DF        774          JSR   LEDOFF
E1D6  7E E153        775          JMP   DISSA

E1D9  BD E1FA        777  ENASUB  JSR   ENSB1
E1DC  96 3A          778          LDA   IRCHOS
E1DE  81 02          779          CMPA  #$02
E1E0  2C 05          780          BGE   1$              -YES, LEAVE IDLE TIMER ALONE (MAY HAVE BEEN
                     781  *                             COMPLETING IDLE WHEN DISABLED)
E1E2  8E 3F00        782          LDX   #IDLTMR         -NO, RESTART IDLE LOOP
E1E5  9F 45          783          STX   ENTIMR
                     784
E1E7  39             785  1$      RTS

E1E8  0C 3A          787  SOPSUB  INC   IRCHOS
E1EA  0C 3A          788          INC   IRCHOS
E1EC  86 DF          789          LDA   #PRTLED         TURN ON "PRINT IN PROCESS" LED
E1EE  BD F3E9        790          JSR   LEDON
E1F1  BD E1FA        791          JSR   ENSB1   CLEAR STATUS & TURN OFF DISABLE LED
E1F4  8E 0001        792          LDX   #1
```

```
E1F7  9F 45          793          STX   ENTIMR
E1F9  39             794          RTS



                     796
E1FA  86 BF          797  ENSB1   LDA   #DISLED TURN OFF DISABLE LED
E1FC  BD F3DF        798          JSR   LEDOFF
E1FF  86 E7          799          LDA   #!N(EC!+IR)     ALL STATUS BITS OFF EXCEPT IR & EC
E201  BD E3A5        800          JSR   SBTOFF
E204  39             801          RTS



E205  8E 4800        803  ENATST  LDX   #RDSTAT
E208  BD EA27        804          JSR   RDSTSB  FETCH SOP
E20B  C5 40          805          BITB  #SOP    SET Z-BIT IF NO SOP
E20D  39             806          RTS
```

```
                        808   ************************************************************
                        809   *       'IDLER' IS THE ENABLED AND IDLE SUBROUTINE          *
                        810   ************************************************************
                        811+  IDLER   ION
E20E   1C BF            812A          ANDCC   #!NFBIT
E210   BD E22E          813           JSR     CMPTCK          CHECK TOP AND BOTTOM BOARD FIRMWARE COMPAT.
E213   BD F0C4          814   10$     JSR     DEVCHK          PRINTER READY ?
E216   25 10            815           BCS     40$               -NO, REPORT IR SET STATUS TRANSITION
                        816
E218   BD E08B          817           JSR     TSTSW           CHECK TEST SWITCH
E21B   BD E996          818   30$     JSR     DLY2MS
                        819
                        820+          IOFF
E21E   1A 50            821A          ORCC    #FBIT!+IBIT
E220   9E 45            822           LDX     ENTIMR
E222   30 1F            823           LEAX    -1,X
E224   9F 45            824           STX     ENTIMR          TIMER DECREMENTED TO ZERO ?
E226   26 E6            825           BNE     IDLER             -NO, DO IT AGAIN
                        826
E228   8E 3F00          827   40$     LDX     #IDLTMR                 -YES, REINITILIZE TIMER COUNT
E22B   9F 45            828           STX     ENTIMR
E22D   39               829           RTS
```

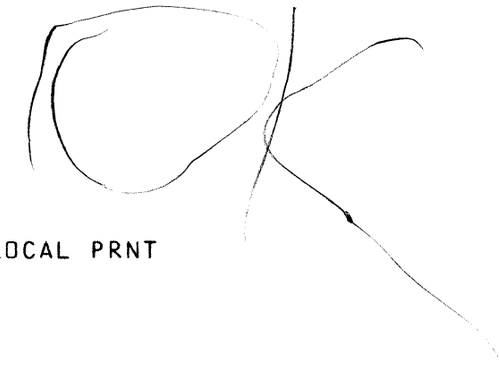
```
                                831  ************************************************************
                                832  *               CMPTCK
                                833
                                834  *       FIRMWARE COMPATABILITY CHECK ROUTINE
                                835
                                836  *       CHECKS TO MAKE SURE THE BOTTOM BOARD SOFTWARE AND THE TOP BOARD
                                837  *       FIRMWARE ARE FOR THE SAME MODEL PRINTER.
                                838
                                839  *       BOTTOM BOARD BUFFER SIZE        TOP - BITS 4,5,6,7 IN ID BYTE(0C)
                                840
                                841  *               1920                    0101
                                842  *               3440                    1111
                                843  *               3564                    1101
                                844
E22E   34 06                    845  CMPTCK  PSHS    A,B
E230   F6 000C                  846          LDB     ID      LOAD UP TERMINAL ID
E233   C4 0F                    847          ANDB    #$0F    MASK OFF BOTTOM 4 BITS IN ID
                                848
       =0002                    849          IFE     BUFSIZ-2
                                850          CMPB    #$05    MODEL=2?
                                851          BEQ     CMPRTS  YES, RETURN
                                852          ENDIF
       =0000                    853          IFE     BUFSIZ-4
E235   C1 0F                    854          CMPB    #$0F    MODEL=4?
E237   27 13                    855          BEQ     CMPRTS  YES, RETURN
                                856          ENDIF
       =FFFF                    857          IFE     BUFSIZ-5
                                858          CMPB    #$0D    MODEL=5?
                                859          BEQ     CMPRTS  YES, CONTINUE
                                860          ENDIF
                                861
E239   86 10                    862          LDA     #$10    NO, SET BIT 4 IN ERROR BYTE 2 TO INDICATE FIRMWARE
E23B   BD E3B9                  863          JSR     EBT2ON  COMPATABILITY ERROR.
                                864
E23E   5D                       865          TSTB            TERMINAL ID=0?
E23F   27 0B                    866          BEQ     CMPRTS  YES, JUST RETURN WITH ERROR CODE SET
                                867
E244   86 FE                    869          LDA     #RDYLED
E246   BD F3DF                  870          JSR     LEDOFF  TURN OFF READY LED
E249   7E F46A                  871          JMP     CHECK   TURN ON CHECK LED AND HANG
                                872
E24C   35 06                    873  CMPRTS  PULS    A,B
E24E   39                       874          RTS
```

```
                        876  ***********************************************
                        877  *       THE STARTOP ROUTINE.  THE NEW COMMAND  *
                        878  *       IN THE ORDER BYTE IS PERFORMED.        *
                        879  ***********************************************
                        880
E24F   86 80            881  RESCMD  LDA     #$80
E251   BD E3B1          882          JSR     EBITON          NOTE RECEIVED A RESET
E254   BD E9B8          883          JSR     DEVTST          PRINTER READY ?
E257   1026 13F7        884          LBNE    ABOPRT          -NO, CAN'T WAIT
                        885
E25B   86 05            886          LDA     #CR
E25D   BD F31F          887          JSR     OUTCH           RESET PRINTER (SEND CR)
E260   7E F652          888          JMP     ABOPRT



                        890
                        891  *  **  SSA ORDER  **
                        892
E263   86 40            893  SSACMD  LDA     #$40    -YES, NOTE THIS IN ERROR CODE
E265   BD E3B1          894          JSR     EBITON
E268   BD E372          895          JSR     HEXTST
E26B   BD E387          896          JSR     MODCHK  MODE=0?, THEN CLEAR TABS
E26E   27 28            897          BEQ     1$        -YES, DONE
                        898
E270   81 06            899          CMPA    #$06    LU1 MODE?
E272   26 24            900          BNE     1$        -NO, DONE
                        901
E274   7F 1561          902          CLR     SLUSND  INITIALLY CLEAR FLAG
E277   B6 0017          903          LDA     ORDRPM
E27A   81 02            904          CMPA    #$02    -SLU SEND STATE?
E27C   26 1A            905          BNE     1$      NO, CONTINUE
                        906
                        907  *  **  SEND STATE
                        908
E27E   B6 1576          909          LDA     PASAV   PENDING PA INFO?
E281   27 0B            910          BEQ     2$        -NO, ENTER SEND STATE
                        911
E283   B7 0002          912          STA     KEYIC
E286   7F 1576          913          CLR     PASAV     -YES, RETURN IT
E289   86 22            914          LDA     #IC!+0C
E28B   7E E355          915          JMP     FINAL1
                        916
E28E   86 01            917  2$      LDA     #1
E290   B7 1561          918          STA     SLUSND    -YES, SET SLU SEND STATE FLAG
E293   86 7F            919          LDA     #ALARM  RING THE BELL
E295   BD F3E9          920          JSR     LEDON
                        921
E298   7E E353          922  1$      JMP     STOPPR  LEAVE
```

```
E29B   BD E387          924   PRNT   JSR     MODCHK          MODE = 0 ?
E29E   26 06            925          BNE     PRT1
                        926
E2A0   BD E372          927          JSR     HEXTST
E2A3   7E E353          928          JMP     STOPPR  -YES, HALT
                        929
                        930+  PRT1   ION                     TURN INT. ON
E2A6   1C BF            931A         ANDCC   #!NFBIT
E2A8   BE 0014          932          LDX     ML      -NO, MESSAGE LENGTH = 0?
E2AB   26 06            933          BNE     5$      -NO,PRINT
                        934
E2AD   BD E372          935          JSR     HEXTST  -YES, DONE
E2B0   7E E353          936          JMP     STOPPR
                        937
E2B3   B6 0000          938   5$     LDA     STATUS          IR SET IN STATUS ?
E2B6   85 08            939          BITA    #IR
E2B8   27 0E            940          BEQ     8$              -NO, DO PRINT
                        941
E2BA   BD E9B8          942          JSR     DEVTST          -YES, DEVICE READY ?
E2BD   1026 0092        943          LBNE    STOPPR          -NO, RETURN OC,IR  ---> DONE
                        944
E2C1   BD F1BE          945          JSR     CLRIR           -YES, CLEAR IR AND REPORT IT BACK
                        946+         SW3
E2C4   113F             947A         SWI3                    SWI3 EMULATES A POLL DISABLE
E2C6   1C BF            949B         ANDCC   #!NFBIT
                        950
E2C8   B6 0011          951   8$     LDA     MODE2
E2CB   84 07            952          ANDA    #MODMSK
E2CD   81 06            953          CMPA    #LU1    -NO, LU1 MODE ?
E2CF   27 1E            954          BEQ     2$      -YES, DO LU1 PRINT
                        955
                        956   *  **  LU3 PRINT  **
                        957
E2D1   7F 1569          958          CLR     CANFLG  RESET CANCEL FLAG BEFORE DOING LU3 PRINT
E2D4   BD F1F0          959          JSR     PCR1    LU3 ALWAYS STARTS IN COL. 1
                        960
E2D7   BD E3C1          961          JSR     LU3PRT  DO LU3 PRINT
E2DA   B6 0011          962          LDA     MODE2   LOAD UP MODE
E2DD   85 10            963          BITA    #$10    A HAS MODE, CHECK FOR OPERATOR INITIATED LOCAL PRNT
E2DF   27 08            964          BEQ     1$      IF BIT 3 NOT SET, CONTINUE
                        965
E2E1   F6 1568          966          LDB     AUTOSW  CHECK TO SEE IF AUTO-FF ON
E2E4   27 03            967          BEQ     1$      IF NOT SET, CONTINUE
                        968
E2E6   BD E4A2          969          JSR     FFLU3   ELSE SEND FF
E2E9   BD E372          970   1$     JSR     HEXTST
E2EC   7E E353          971          JMP     STOPPR
                        972
```



```
                                973   *  **  LU1 PRINT  **
                                974
E2EF   B6 1569                  975   2$      LDA     CANFLG  CHECK TO SEE IF CANCEL SWITCH HAS BEEN
E2F2   27 0C                    976           BEQ     3$      PRESSED, IF NOT, GO ON WITH LU1 PRINT
                                977
E2F4   7F 1569                  978           CLR     CANFLG  CLEAR CANCEL FLAG TO ACKNOWLEDGE CANCEL SWITCH
E2F7   B6 0017                  979           LDA     ORDRPM  CHECK PRINT ORDER PARAMETER
E2FA   85 40                    980           BITA    #$40    TO SEE IF FSFIC.
E2FC   1027 1338                981           LBEQ    CANSB2  ELSE, GO TO CANCEL SUBROUTINE
                                982
                                983   *       SET UP LU1 PAPER MOTION PARAMETERS AND MARGINS
                                984
                                985
E300   7D 1589                  986   3$      TST     BIPRNT          BIDIRECTIONAL PRINT ?
E303   27 05                    987           BEQ     35$             -NO, HANDLE NORMALLY
                                988
E308   97 37                    990           STA     DULCAS
                                991
E30A   7D C196                  992   35$     TST     CONFIG          ARE WE IN MICRE PROPORTIONAL SPACE MODE?
E30D   26 0D                    993           BNE     4$                -YES, DON'T TRY TO FIND HORIZ. POSITION
                                994
E30F   D6 30                    995           LDB     HP1
E311   5A                       996           DECB
E312   D1 57                    997           CMPB    CLCNT5          LU1 COL. POS = DEVICE POSITION?
E314   27 06                    998           BEQ     4$                -YES, START THE PRINT
                                999
E316   BD F1F0                 1000           JSR     PCR1              -NO, HOME THE HEAD AND ...
E319   BD E56A                 1001           JSR     SPACES             SPACE OUT
                               1002
E31C   32 62                  1003   4$      LEAS    2,S             REMOVE JSR TO PRNT FROM STACK
E31E   B6 0017                1004           LDA     ORDRPM
E321   85 40                  1005           BITA    #$40            FSFIC?
E323   27 06                  1006           BEQ     50$               -NO, CONTINUE LU1 PRINT
                               1007
E325   BD E918                1008           JSR     EMTEBF            -YES, PRINT ESC SEQ. BUFFER
E328   BD E06B                1009           JSR     SETSTK          RESTART LU1
                               1010
E32B   BE 0012                1011   50$     LDX     MSA     STORE MESSAGE STARTING
E32E   BF 1562                1012           STX     BUFPT1  ADDRESS IN BUFFER POINTER
E331   BE 0014                1013           LDX     ML      STORE MESSAGE LENGTH IN
E334   9F 4B                  1014           STX     MLSAV   SAVE AREA
E336   3B                     1015           RTI             'RETURN' TO LU1MSG


E337   BD E372                1017   INVALD  JSR     HEXTST
E33A   BD E387                1018           JSR     MODCHK  ORDER IS INVALID IF MODE IS NONZERO
E33D   27 14                  1019           BEQ     STOPPR    -MODE=0
                              1020
```

```
E33F  86 7F      1021          LDA   #ALARM
E341  BD F3E9    1022          JSR   LEDON   RING BELL ON PARAMETER ERROR
E344  86 04      1023          LDA   #04
E346  B7 0003    1024          STA   SENSE   LOAD SENSE BYTE WITH 'INVALID COMMND'
E349  86 14      1025          LDA   #EC!+SDT
E34B  BD E3B1    1026          JSR   EBITON
E34E  86 34      1027          LDA   #OC!+EC!+SDT    SEND OC,EC,SENSE DATA AVAILABLE
E350  7E E355    1028          JMP   FINAL1



E353  86 20      1030  STOPPR  LDA   #OC
                  1031
E355  BD E39C    1032  FINAL1  JSR   SBITON  SET STATUS TO IBM
E358  86 DF      1033          LDA   #PRTLED
E35A  BD F3DF    1034          JSR   LEDOFF
E35D  39         1035          RTS           GO DISABLED



E35E  86 01      1037  ABOCMD  LDA   #$01
E360  BD E3B1    1038          JSR   EBITON
E363  BD E387    1039          JSR   MODCHK  IF MODE=0, CLEAR TABS
E366  7F 1561    1040          CLR   SLUSND
E369  BD E372    1041          JSR   HEXTST
E36C  BD E353    1042          JSR   STOPPR
E36F  7E F652    1043          JMP   ABOPRT          ABORT COMPLETED, GO DISABLED



E372  BD E0C1    1045  HEXTST  JSR   GETSW
E375  C1 08      1046          CMPB  #08
E377  26 0D      1047          BNE   10$
                  1048
E379  86 FE      1049          LDA   #RDYLED
E37B  BD F3DF    1050          JSR   LEDOFF  TURN OFF READY LED
E37E  BD EA84    1051          JSR   HEXDMP
E381  86 FE      1052          LDA   #RDYLED
E383  BD F3E9    1053          JSR   LEDON   TURN READY LED BACK ON
E386  39         1054  10$     RTS



                  1056  *
```

```
                                1057   *       MODCHK TURNS INTERRUPTS OFF !!! (VIA SBTOFF)
                                1058   *
     E387   B6 0011             1059   MODCHK  LDA     MODE2
     E38A   84 07               1060           ANDA    #MODMSK
     E38C   26 0D               1061           BNE     1$      -NO, RETURN
                                1062
     E38E   7F 1561             1063           CLR     SLUSND   PRINTER SLU GOES TO RECEIVE STATE (SLUSND=0)
     E391   7F 1576             1064           CLR     PASAV   CLEAR PENDING PA INPUT
     E394   86 02               1065           LDA     #IC     IN BOTH KEYIC BYTE, AND
     E396   BD E3A5             1066           JSR     SBTOFF  STATUS BYTE
     E399   1A 04               1067           ORCC    #ZBIT   SET Z-BIT
     E39B   39                  1068   1$      RTS
```

```
                        1070  ************************************************************
                        1071  *       'SBITON' TURNS ON STATUS BITS ACCORDING TO THE     *
                        1072  *       BITS TURNED ON IN ACCA. (INT'S ARE LEFT OFF)       *
                        1073  ************************************************************
                        1074
                        1075+ SBITON  IOFF
E39C   1A 50            1076A         ORCC    #FBIT!+IBIT
E39E   BA 0000          1077          ORA     STATUS
E3A1   B7 0000          1078          STA     STATUS
E3A4   39               1079          RTS
                        1080
                        1081  ************************************************************
                        1082  *       'SBTOFF' TURNS OFF STATUS BITS ACCORDING TO THE BITS*
                        1083  *       TURNED ON IN ACCA. (INT'S ARE LEFT OFF)
                        1084  ************************************************************
                        1085
                        1086+ SBTOFF  IOFF
E3A5   1A 50            1087A         ORCC    #FBIT!+IBIT
E3A7   43               1088          COMA
E3A8   1C FE            1089          ANDCC   #!N(CBIT)       CLEAR CARRY
E3AA   B4 0000          1090          ANDA    STATUS
E3AD   B7 0000          1091          STA     STATUS
E3B0   39               1092          RTS
                        1093
                        1094  ************************************************************
                        1095  *       'EBITON' TURNS ON ERROR CODE BITS ACCORDING TO THE    *
                        1096  *       BITS TURNED ON IN ACCA.                               *
                        1097  ************************************************************
                        1098
E3B1   34 02            1099  EBITON  PSHS    A
E3B3   9A 3D            1100          ORA     ERRCOD
E3B5   97 3D            1101          STA     ERRCOD
E3B7   35 82            1102          PULS    A,PC



E3B9   34 02            1104  EBT2ON  PSHS    A
E3BB   9A 3E            1105          ORA     ERRCOD+1
E3BD   97 3E            1106          STA     ERRCOD+1
E3BF   35 82            1107          PULS    A,PC
```

```
                                1109
                                1110    *   **  TEST FOR HONOR CONTROL CHARS  **
                                1111
E3C1   5F                       1112    LU3PRT  CLRB            ASSUME NO HONOR OF CONTROL CODES
E3C2   B6 0017                  1113            LDA     ORDRPM  GET ORDER PARAMETER BYTE
E3C5   85 01                    1114            BITA    #$01    HONORING CC'S?
E3C7   26 01                    1115            BNE     1$      -NO,BR IF NOT HONORING CC
                                1116
E3C9   53                       1117            COMB            -YES, FLAG IS NONZERO
E3CA   D7 39                    1118    1$      STB     CONTL
                                1119
                                1120    *  ** TEST FOR DUAL CASE  **
                                1121
E3CC   F6 1567                  1122            LDB     CASESW  FIND OUT SETTING OF SWITCH, 1=DUAL, 0=MONO(DEFAULT)
E3CF   84 06                    1123            ANDA    #$06    BITS 5 & 6 CLEAR ?
E3D1   27 06                    1124            BEQ     3$      -DEFAULT TO MACHINE SETTING
E3D3   5F                       1125            CLRB
E3D4   84 04                    1126            ANDA    #$04    -NO, BIT 5 CLEAR?
E3D6   27 01                    1127            BEQ     3$      -YES, UPPER CASE ONLY
                                1128
E3D8   5C                       1129            INCB            -NO, DUAL CASE
E3D9   D7 37                    1130    3$      STB     DULCAS  0=MONOCASE, 1=DUALCASE
                                1131
                                1132    *    **  FIND LINE LENGTH  **
                                1133
E3DB   F6 C198                  1134            LDB     MAXLEN
E3DE   B6 0018                  1135            LDA     MPP     GET MAX. PRESENTATION POSITION
E3E1   27 09                    1136            BEQ     4$      BR IF MPP=0, DEFAULT TO MAX LINE LENGTH
                                1137
E3E3   34 04                    1138            PSHS    B       MPP = 132 ?
E3E5   A1 E0                    1139            CMPA    ,S+
E3E7   24 03                    1140            BCC     4$      BR IF MPP >= MAX LINE LENGTH
                                1141
E3E9   1F 89                    1142            TFR     A,B     SET B = MPP
E3EB   4D                       1143            TSTA
E3EC   D7 31                    1144    4$      STB     MPP3
E3EE   B6 0014                  1145            LDA     ML      GET MESSAGE LENGTH IN A:B
E3F1   F6 0015                  1146            LDB     ML+1
                                1147
E3F4   FB 0013                  1148    5$      ADDB    MSA+1   ADD MESSAGE STARTINNG ADDRESS
E3F7   B9 0012                  1149            ADCA    MSA
E3FA   24 01                    1150            BCC     6$
E3FC   39                       1151            RTS             CARRY SET MEANS OVERFLOW ERROR
                                1152
                                1153
                                1154    *    **  TEST FOR MESSAGE ADDR > THAN BUFFER END  **
                                1155
E3FD   97 49                    1156    6$      STA     MSGEND  PUT RESULT IN MESSAGE END ADDRESS
E3FF   D7 4A                    1157            STB     MSGEND+1
                                1158
E401   1083 1000                1159            CMPD    #BUFEND COMPARE WITH END OF BUFFER
E405   23 05                    1160            BLS     7$      BR IF MSG <= BUFFER
```

```
                          1161
E407   8E 1000            1162          LDX     #BUFEND CAN'T PRINT PAST END OF BUFFER, SO MAKE
E40A   9F 49              1163          STX     MSGEND  BUFFER END THE MESSAGE  END
                          1164
E40C   BD E426            1165   7$     JSR     ATRSUB  SEARCH FOR AN ATTRIBUTE
E40F   BE 0012            1166          LDX     MSA     SET BUFFER POINTER TO STARTING ADDRESS
E412   BF 1564            1167          STX     BUFPT3
E415   BD E4AA            1168   9$     JSR     PRLINE  PRINT A LINE
E418   25 0B              1169          BCS     11$     CARRY SET MEANS PRINTER DEAD
                          1170
E41A   96 38              1171   10$    LDA     LSTCHR  WAS LAST CHAR. AN  END OF MESSAGE?
E41C   81 01              1172          CMPA    #EMDBC
E41E   27 05              1173          BEQ     11$     -YES, STOP PRINT
                          1174
E420   BD E49C            1175          JSR     CHKEND  -NO, CHECK FOR END OF MESSAGE ADDRESS
E423   26 F0              1176          BNE     9$      MESSAGE NOT DONE, PRINT NEXT LINE
                          1177
E425   39                 1178   11$    RTS             MESSAGE DONE
```

```
                        1180  ************************************************************
                        1181
                        1182  *       SUBROUTINE TO DO BACKWARDS SEARCH FOR AN ATTRIBUTE
                        1183
                        1184  ************************************************************
E426  0F 43             1185  ATRSUB  CLR DSPFLG      DEFAULT DISPLAY FLAG TO PRINT
E428  BE 0012           1186          LDX     MSA
E42B  34 10             1187          PSHS    X
E42D  A6 84             1188          LDA     ,X        CHECK MSA FOR AN ATTRIBUTE
E42F  81 C0             1189          CMPA    #$C0      ATTRIBUTE?
E431  24 0E             1190          BHS     3$        - YES, DONE
                        1191
E433  9E 49             1192          LDX     MSGEND    - NO, DO THE BACKWARD SEARCH
                        1193
E435  A6 82             1194  1$      LDA     ,-X       FETCH DATA BYTE
E437  81 C0             1195          CMPA    #$C0      ATTRIBUTE?
E439  24 06             1196          BHS     3$          -YES, DONE SEARCHING
E43B  AC E4             1197          CMPX    ,S        DONE LOOPING YET?
E43D  26 F6             1198          BNE     1$          -NO, KEEP LOOKING
                        1199
E43F  35 90             1200          PULS    X,PC        -YES, DONE
                        1201
E441  84 0C             1202  3$      ANDA    #$0C      ONLY LOOK AT NONPRINT ATTRIBUTES
E443  81 0C             1203          CMPA    #$0C      NONPRINT?
E445  26 02             1204          BNE     2$          -NO, DONE
                        1205
E447  0C 43             1206          INC     DSPFLG      -YES, SET NONDISPLAY FLG
E449  35 90             1207  2$      PULS    X,PC      AND RETURN
```

```
                        1209  ********************************************************************
                        1210  *       'TSTCHR' GETS A CHARACTER FROM THE INTERFACE BUFFER AND CHECKS *
                        1211  *       FOR SPACES, NULLS, CC'S, AND PRINTABLE CHARACTERS. IT RETURNS  *
                        1212  *       WITH THE CHARACTER IN ACCA AND THE CARRY AND ZERO BITS SET AS   *
                        1213  *       FOLLOWS:                                                       *
                        1215  *       ------------------------------------------                     *
                        1216  *               0               0               PRINTABLE              *
                        1217  *               0               1               SPACE                  *
                        1218  *               1               0               CC                     *
                        1219  *               1               1               NULL                   *
                        1220  *                                                                      *
                        1221  ********************************************************************
E44B   BD E583          1222  TSTCHR  JSR     GTAINC
E44E   4D               1223          TSTA
E44F   27 38            1224          BEQ     6$      BR IF A NULL
                        1225
E451   81 C0            1226          CMPA    #$C0
E453   24 25            1227          BCC     3$      BR IF AN ATTRIBUTE
                        1228
E455   0D 43            1229          TST     DSPFLG
E457   26 2F            1230          BNE     5$      BR IF NON-DISPLAY FIELD
                        1231
E459   81 07            1232          CMPA    #$07
E45B   23 16            1233          BLS     2$      BR IF CONTROL CHARACTER
                        1234
E45D   7D 1589          1235          TST     BIPRNT          DOING BIDIRECTIONAL PRINTS
E460   26 0A            1236          BNE     1$              -YES, ALWAYS DUAL CASE
                        1237
E462   81 3F            1238          CMPA    #$3F    CHARACTERS NOT FOLDED?
E464   23 06            1239          BLS     1$      - YES, CONTINUE
                        1240
E466   0D 37            1241          TST     DULCAS  DUAL CASE ?
E468   26 02            1242          BNE     1$      - YES, CONTINUE
                        1243
E46A   8A 20            1244          ORA     #$20    - NO, FOLD
E46C   97 38            1245  1$      STA     LSTCHR
E46E   81 10            1246          CMPA    #SPDBC
E470   1C FE            1247          ANDCC   #!N(CBIT)       CLEAR CARRY
E472   39               1248          RTS
```

```
E473  0D 39          1250  2$      TST     CONTL
E475  26 1F          1251          BNE     7$        BR IF HONOR CC
                     1252
E477  7E E488        1253          JMP     5$
E47A  34 04          1254  3$      PSHS    B
E47C  5F             1255          CLRB
E47D  84 0C          1256          ANDA    #$0C
E47F  81 0C          1257          CMPA    #$0C      NO DISPLAY FIELD
E481  26 01          1258          BNE     4$
                     1259
E483  53             1260          COMB
E484  D7 43          1261  4$      STB     DSPFLG
E486  35 04          1262          PULS    B
E488  4F             1263  5$      CLRA
E489  7D 158A        1264  6$      TST     NLSOVD          NULL LINE SUPPRESS OVERRIDE SET ?
E48C  26 04          1265          BNE     65$             -YES, TREAT NULL AS SPACE
                     1266
E48E  0D 39          1267          TST     CONTL
E490  27 04          1268          BEQ     7$              -NO, HONORING CONTROL CHAR. ?
                     1269
E492  86 10          1270  65$     LDA     #SPDBC
E494  20 D6          1271          BRA     1$              -YES, MAKE NULLS SPACES IF HONOR CC
E496  97 38          1272  7$      STA     LSTCHR
E498  4D             1273          TSTA
E499  1A 01          1274          ORCC    #CBIT     SET CARRY
E49B  39             1275          RTS
                     1276
                     1277
E49C  BE 1564        1278  CHKEND  LDX     BUFPT3
E49F  9C 49          1279          CMPX    MSGEND
E4A1  39             1280          RTS
```

```
                                1282   ************************************************************
                                1283   *       'FFLU3' PERFORMS AN LU3 SOFTWARE FORM FEED. IT IS  *
                                1284   *       CALLED WHEN A NORMAL FF OCCURS AT THE FRONT OF A   *
                                1285   *       LINE.                                              *
                                1286   ************************************************************
                                1287
E4A2   BD F1F0                  1288   FFLU3   JSR     PCR1    END CURRENT LINE
E4A5   86 02                    1289           LDA     #FF
E4A7   7E F20D                  1290           JMP     OUTCHR
```

```
                        1292  ************************************************************
                        1293
                        1294  * PRINT ONE LINE IN LU3 MODE
                        1295
                        1296  ************************************************************
E4AA  5F                1297  PRLINE  CLRB    CLEAR COLUMN COUNT
                        1298
                        1299  * TEST FOR FORM FEED
                        1300
E4AB  BD E57D           1301          JSR     GETCHR
E4AE  81 02             1302          CMPA    #FFDBC  1ST CHARACTER A FORM FEED?
E4B0  26 0B             1303          BNE     1$      -NO, GO ON
E4B2  30 01             1304          LEAX    1,X
E4B4  BF 1564           1305          STX     BUFPT3
E4B7  BD E4A2           1306          JSR     FFLU3   -YES, START A NEW FORM
E4BA  24 08             1307          BCC     2$
E4BC  39                1308          RTS
                        1309
                        1310  * NULL LOOP
                        1311
E4BD  BD E44B           1312  1$      JSR     TSTCHR
E4C0  24 14             1313          BCC     11$     BR IF DISPLAYABLE
E4C2  26 23             1314          BNE     21$     BR IF CC
E4C4  BD E49C           1315  2$      JSR     CHKEND  NULL, END OF MESSAGE YET?
E4C7  27 05             1316          BEQ     3$      -YES, LEAVE
E4C9  5C                1317          INCB            -NO, INCREMENT COLUMN POSITION
E4CA  D1 31             1318          CMPB    MPP3    END OF LINE?
E4CC  26 EF             1319          BNE     1$      -NO, DO NEXT CHARACTER
E4CE  1C FE             1320  3$      ANDCC   #!N(CBIT)       CLEAR CARRY
E4D0  39                1321          RTS
                        1322
                        1323  * SPACE CHARACTER LOOP
                        1324
E4D1  BD E44B           1325  10$     JSR     TSTCHR
E4D4  25 0F             1326          BCS     20$     BR IF CC
E4D6  26 30             1327  11$     BNE     30$     BR IF DISPLAYABLE CHAR
E4D8  BD E49C           1328  12$     JSR     CHKEND  SPACE, END OF MESSAGE YET?
E4DB  27 05             1329          BEQ     13$
E4DD  5C                1330          INCB            -NO, INCREMENT COLUMN POSITION
E4DE  D1 31             1331          CMPB    MPP3    END OF LINE?
E4E0  26 EF             1332          BNE     10$     -NO, DO NEXT CHARACTER
E4E2  7E F1EB           1333  13$     JMP     PLF     -YES, DO LINE FEED AND LEAVE
                        1334
                        1335  * NULL AND SPACE LOOP
                        1336
E4E5  27 F1             1337  20$     BEQ     12$     BR IF A NULL
E4E7  81 03             1338  21$     CMPA    #NLDBC  NEW LINE?
E4E9  26 03             1339          BNE     7$      NO, CONTINUE
                        1340
E4EB  7E F20D           1341          JMP     OUTCHR
                        1342
E4EE  81 05             1343  7$      CMPA    #CRDBC  CARRIAGE RETURN?
```