```
000.000                 1  H14BUG  EQU     0               ASSEMBLE FOR HARDWARE HANDSHAKE
000.000                 2  H84IO   EQU     0               ASSEMBLE FOR H8-4 CARD INTERFACE
                        3
000.000                 4          IF      H84IO
                        6          ELSE
                        7                  TITLE   'HDOS LP: DEVICE DRIVER, H8-5 INTERFACE'
                        8          ENDIF
                        9
                       10  ***     LPDVD - LINE PRINTER DEVICE DRIVER
                       11  *
                       12  *       G. A. CHANDLER          24-AUG-78
                       13  *
                       14  *       Copyright 16-OCT-78 for:
                       15  *
                       16  *               Heath Co.
                       17  *               Benton Harbor, MI
                       18  *               49022
                       19  *
                       20  *       Copyright       1979
                       21  *


                       23  **      LPDVD IS THE DEVICE DRIVER FOR THE DEVICE
                       24  *
                       25  *               LP:
                       26  *
                       27  *       LP: is an H-14 printer interfaced via an H8-4 MULTI-PORT I/O
                       28  *       card or an H8-5 SERIAL card confisured at address 340Q--the
                       29  *       default line printer port.
                       30  *


000.000                32          IF      H84IO
                       33          ELSE
                       34          ERRZR   H14BUG  ********************************************************
                       35          ERRZR   H14BUG  *   H8-5 CARD DOES NOT SUPPORT HARDWARE HANDSHAKE    *
                       36          ERRZR   H14BUG  ********************************************************
                       37          ENDIF
000.000                38          XTEXT   HOSDEF


                       40X **      HOSDEF - DEFINE HOS PARAMETER.
                       41X *
                       42X
                       43X
000.026                44X VERS    EQU     1*16+6          VERSION 1.6
                       45X
000.377                46X SYSCALL EQU     377Q            SYSCALL INSTRUCTION
                       47X
                       48X
000.000                49X         ORG     0
```

```
                        50X
                        51X *       RESIDENT FUNCTIONS
                        52X
000.000                 53X .EXIT   DS      1           EXIT (MUST BE FIRST)
000.001                 54X .SCIN   DS      1           SCIN
000.002                 55X .SCOUT  DS      1           SCOUT
000.003                 56X .PRINT  DS      1           PRINT
000.004                 57X .READ   DS      1           READ
000.005                 58X .WRITE  DS      1           WRITE
000.006                 59X .CONSL  DS      1           SET/CLEAR CONSOLE OPTIONS
000.007                 60X .CLRCO  DS      1           CLEAR CONSOLE BUFFER
000.010                 61X .LOADO  DS      1           LOAD AN OVERLAY
000.011                 62X .VERS   DS      1           RETURN HDOS VERSION NUMBER
000.012                 63X .SYSRES DS      1           PRECEDING FUNCTIONS ARE RESIDENT
                        64X
                        65X
                        66X *       *HDOSOVL0.SYS*  FUNCTIONS
                        67X
000.040                 68X         ORG     40A
                        69X
000.040                 70X .LINK   DS      1           LINK  (MUST BE FIRST)
000.041                 71X .CTLC   DS      1           CTL-C
000.042                 72X .OPENR  DS      1           OPENR
000.043                 73X .OPENW  DS      1           OPENW
000.044                 74X .OPENU  DS      1           OPENU
000.045                 75X .OPENC  DS      1           OPENC
000.046                 76X .CLOSE  DS      1           CLOSE
000.047                 77X .POSIT  DS      1           POSITION
000.050                 78X .DELET  DS      1           DELETE
000.051                 79X .RENAM  DS      1           RENAME
000.052                 80X .SETTP  DS      1           SETTOP
000.053                 81X .DECODE DS      1           NAME DECODE
000.054                 82X .NAME   DS      1           GET FILE NAME FROM CHANNEL
000.055                 83X .CLEAR  DS      1           CLEAR CHAN
000.056                 84X .CLEARA DS      1           CLEAR ALL CHANS
000.057                 85X .ERROR  DS      1           LOOKUP ERROR
000.060                 86X .CHFLG  DS      1           CHANGE FLAGS
000.061                 87X .DISMT  DS      1           FLAG SYSTEM DISK DISMOUNTED
000.062                 88X .LOADD  DS      1           LOAD DEVICE DRIVER
                        89X
                        90X
                        91X *       *HDOSOVL1.SYS*  FUNCTIONS
                        92X
000.200                 93X         ORG     2000
                        94X
000.200                 95X .MOUNT  DS      1           MOUNT  (MUST BE FIRST)
000.201                 96X .DMOUN  DS      1           DISMOUNT
000.202                 97X .MONMS  DS      1           MOUNT/NO MESSAGE
000.203                 98X .DMNMS  DS      1           DISMOUNT/NO MESSAGE
000.204                 99X .RESET  DS      1           RESET * DISMOUNT/MOUNT OF UNIT
000.205                100          XTEXT   ASCII
```

```
                        102X **     ASCII CHARACTER EQUIVALENCES.
                        103X
000.015                 104X CR     EQU   13          CARRIAGE RETURN
000.012                 105X LF     EQU   10          LINE FEED
000.200                 106X NULL   EQU   200Q        PAD CHARACTER
000.000                 107X NUL2   EQU   0
000.007                 108X BELL   EQU   7           BELL CHARACTER
000.177                 109X RUBOUT EQU   177Q
000.010                 110X BKSP   EQU   10Q         CTL-H
000.026                 111X C.SYN  EQU   26Q         SYNC
000.002                 112X C.STX  EQU   2           STX
000.047                 113X QUOTE  EQU   47Q
000.011                 114X TAB    EQU   11Q
000.033                 115X ESC    EQU   33Q
000.012                 116X NL     EQU   12Q         NEW LINE (HDOS SYSTEMS)
000.212                 117X ENL    EQU   NL+200Q     NL + END-OF-LINE-FLAG
000.014                 118X FF     EQU   14Q         FORM FEED
000.001                 119X CTLA   EQU   01Q         CTL-A
000.002                 120X CTLB   EQU   02Q         CTL-B
000.003                 121X CTLC   EQU   03Q         CTL-C
000.004                 122X CTLD   EQU   04Q         CTL-D
000.017                 123X CTLO   EQU   17Q         CTL-O
000.020                 124X CTLP   EQU   20Q         CTL-P
000.021                 125X CTLQ   EQU   21Q         CTL-Q
000.023                 126X CTLS   EQU   23Q         CTL-S
000.032                 127X CTLZ   EQU   32Q         CTL-Z
000.265                 128         XTEXT DDDEF


                        130X **     DEVICE DRIVER COMMUNICATION FLAGS.
                        131X *
                        132X
000.000                 133X        ORG   0
                        134X
000.000                 135X DC.REA DS    1           READ
000.001                 136X DC.WRI DS    1           WRITE
000.002                 137X DC.RER DS    1           READ REGARDLESS
000.003                 138X DC.OPR DS    1           OPEN FOR READ
000.004                 139X DC.OPW DS    1           OPEN FOR WRITE
000.005                 140X DC.OPU DS    1           OPEN FOR UPDATE
000.006                 141X DC.CLO DS    1           CLOSE
000.007                 142X DC.ABT DS    1           ABORT
000.010                 143X DC.MOU DS    1           MOUNT DEVICE
000.011                 144X DC.LOD DS    1           LOAD DEVICE DRIVER
000.012                 145X DC.MAX DS    1           MAXIMUM ENTRY INDEX
000.013                 146         XTEXT MTR
```

```
                        149X **     MTR - PAM/8 EQUIVALENCES.
                        150X *
                        151X *      THIS DECK CONTAINS SYMBOLIC DEFINITIONS USED TO
                        152X *      MAKE USE OF THE PAM/8 CODE AND CONTROL BYTES.

                        154X **     IO PORTS
                        155X
000.360                 156X IP.PAD EQU     360Q        PAD INPUT PORT
000.360                 157X OP.CTL EQU     360Q        CONTROL OUTPUT PORT
000.360                 158X OP.DIG EQU     360Q        DIGIT SELECT OUTPUT PORT
000.361                 159X OP.SEG EQU     361Q        SEGMENT SELECT OUTPUT PORT

                        161X **     FRONT PANEL CONTROL BITS.
                        162X
000.020                 163X CB.SSI EQU     00010000B   SINGLE STEP INTERRUPT
000.040                 164X CB.MTL EQU     00100000B   MONITOR LIGHT
000.100                 165X CB.CLI EQU     01000000B   CLOCK INTERRUPT ENABLE
000.200                 166X CB.SPK EQU     10000000B   SPEAKER ENABLE

                        168X **     MONITOR MODE FLAGS.
                        169X
000.000                 170X DM.MR  EQU     0           MEMORY READ
000.001                 171X DM.MW  EQU     1           MEMORY WRITE
000.002                 172X DM.RR  EQU     2           REGISTER READ
000.003                 173X DM.RW  EQU     3           REGISTER WRITE

                        175X **     USER OPTION BITS.
                        176X *
                        177X *      THESE BITS ARE SET IN CELL .MFLAG.
                        178X
000.200                 179X UO.HLT EQU     10000000B   DISABLE HALT PROCESSING
000.100                 180X UO.NFR EQU     CB.CLI      NO REFRESH OF FRONT PANEL
000.002                 181X UO.DDU EQU     00000010B   DISABLE DISPLAY UPDATE
000.001                 182X UO.CLK EQU     00000001B   ALLOW PRIVATE INTERRUPT PROCESSING

                        184X **     MONITOR IDENTIFICATION FLAGS
                        185X *
                        186X *      THESE BYTES IDENTIFY THE ROM MONITOR.
                        187X *      THEY ARE THE VARIOUS VALUES OF LOCATION .IDENT
                        188X
000.021                 189X M.PAM8 EQU     021Q        'LXI' INSTRUCTION AT 000.000 IN PAM-8
000.303                 190X M.FOX  EQU     303Q        'JMP' INSTRUCTION AT 000.000 IN FOX ROM
```

```
                        192X **     ROUTINE ENTRY POINTS.
                        193X *
                        194X
000.000                 195X .IDENT EQU     0000A       IDENTIFICATION LOCATION
000.053                 196X .DLY   EQU     0053A       DELAY
001.267                 197X .LOAD  EQU     1267A       TAPE LOAD
001.374                 198X .DUMP  EQU     1374A       TAPE DUMP
002.136                 199X .ALARM EQU     2136A       ALARM ROUTINE
002.140                 200X .HORN  EQU     2140A       HORN
002.172                 201X .CTC   EQU     2172A       CHECK TAPE CHECKSUM
002.205                 202X .TPERR EQU     2205A       TAPE ERROR ROUTINE
002.264                 203X .PCHL  EQU     2264A       PCHL INSTRUCTION
002.265                 204X .SRS   EQU     2265A       SCAN RECORD START
002.325                 205X .RNP   EQU     2325A       READ NEXT PAIR
002.331                 206X .RNB   EQU     2331A       READ NEXT BYTE
002.347                 207X .CRC   EQU     2347A       CRC-16 CALCULATOR
003.017                 208X .WNP   EQU     3017A       WRITE NEXT PAIR
003.024                 209X .WNB   EQU     3024A       WRITE NEXT BYTE
003.122                 210X .DOD   EQU     3122A       DECODE FOR OCTAL DISPLAY
003.260                 211X .RCK   EQU     3260A       READ CONSOLE KEYSET
003.356                 212X .DODA  EQU     3356A       SEGMENT CODE TABLE

                        214X **     RAM CELLS USED BY H8MTR.
                        215X *
                        216X
040.000                 217X .START EQU     40000A      START DUMP ADDRESS
040.002                 218X .IOWRK EQU     40002A      IN OR OUT INSTRUCTION
040.005                 219X .REGI  EQU     40005A      DISPLAYED REGISTER INDEX
040.006                 220X .DSPROT EQU    40006A      PERIOD FLAG BYTE
040.007                 221X .DSPMOD EQU    40007A      DISPLAY MODE
040.010                 222X .MFLAG EQU     40010A      USER OPTION BYTE
040.011                 223X .CTLFLG EQU    40011A      PANEL CONTROL BYTE
040.013                 224X .ALEDS EQU     40013A      ABUSS LEDS
040.021                 225X .DLEDS EQU     40021A      DBUSS LEDS
040.024                 226X .ABUSS EQU     40024A      ABUSS REGISTER
040.027                 227X .CRCSUM EQU    40027A      CRCSUM WORD
040.031                 228X .TPERRX EQU    40031A      TAPE ERROR EXIT VECTOR
040.033                 229X .TICCNT EQU    40033A      CLOCK TICK COUNTER
040.035                 230X .REGPTR EQU    40035A      REGISTER POINTER
040.037                 231X .UIVEC EQU     40037A      USER INTERRUPT VECTORS
000.013                 232         XTEXT   H8SEQU

                        234X **     HDOS SYSTEM EQUIVALENCES.
                        235X *
                        236X
024.000                 237X S.GRT0 EQU     24000A      SYSTEM AREA FOR  GRT0
025.000                 238X S.GRT1 EQU     25000A      SYSTEM AREA FOR  GRT1
026.000                 239X S.GRT2 EQU     26000A      SYSTEM AREA FOR  GRT2
                        240X
030.000                 241X ROMBOOT EQU    30000A      ROM BOOT ENTRY
                        242X
```

```
040.100                 243X            ORG     40100A          FREE SPACE FROM PAM-8
                        244X
040.100                 245X            DS      8               JUMP TO SYSTEM EXIT
040.110                 246X D.CON      DS      14              DISK CONSTANTS
040.130                 247X SYDD       EQU     *               SYSTEM DISK ENTRY POINT
040.130                 248X D.VEC      DS      24*3            SYSTEM ROM ENTRY VECTORS
040.240                 249X D.RAM      DS      31              SYSTEM ROM WORK AREA
040.277                 250X S.VAL      DS      36              SYSTEM VALUES
040.343                 251X S.INT      DS      115             SYSTEM INTERNAL WORK AREAS
041.126                 252X            DS      16
041.146                 253X S.SOVR     DS      2               STACK OVERFLOW WARNING
041.150                 254X            DS      42200A-*        SYSTEM STACK
001.032                 255X STACKL     EQU     *-S.SOVR        STACK SIZE
                        256X
042.200                 257X STACK      EQU     *               LWA+1 SYSTEM STACK
042.200                 258X USEREWA    EQU     *               USER FWA
042.200                 259             XTEXT   DIRDEF


                        261X **         DIRECTORY ENTRY FORMAT.
                        262X
000.000                 263X            ORG     0
                        264X
                        265X
000.377                 266X DF.EMP     EQU     377Q            FLAGS ENTRY EMPTY
000.376                 267X DF.CLR     EQU     376Q            FLAGS ENTRY EMPTY, REST OF DIR ALSO CLEAR
                        268X
000.000                 269X DIR.NAM    DS      8               NAME
000.010                 270X DIR.EXT    DS      3               EXTENSION
000.013                 271X DIR.PRO    DS      1               PROJECT
000.014                 272X DIR.VER    DS      1               VERSION
000.015                 273X DIRIDL     EQU     *               FILE IDENTIFICATION LENGTH
                        274X
000.015                 275X DIR.CLU    DS      1               CLUSTER FACTOR
000.016                 276X DIR.FLG    DS      1               FLAGS
000.017                 277X            DS      1               RESERVED
000.020                 278X DIR.FGN    DS      1               FIRST GROUP NUMBER
000.021                 279X DIR.LGN    DS      1               LAST GROUP NUMBER
000.022                 280X DIR.LSI    DS      1               LAST SECTOR INDEX (IN LAST GROUP)
000.023                 281X DIR.CRD    DS      2               CREATION DATE
000.025                 282X DIR.ALD    DS      2               LAST ALTERATION DATE
                        283X
000.027                 284X DIRELEN    EQU     *               DIRECTORY ENTRY LENGTH
000.027                 285             XTEXT   ESINT


                        287X **         S.INT - SYSTEM INTERNAL WORKAREA DEFINITIONS.
                        288X *
                        289X *          THESE CELLS ARE REFERENCED BY OVERLAYS AND MAIN CODE, AND
                        290X *          MUST THEREFORE RESIDE IN FIXED LOW MEMORY.
                        291X
                        292X
040.343                 293X            ORG     S.INT
```

```
                        294X
                        295X **     CONSOLE STATUS FLAGS
                        296X
     040.343            297X S.CDB   DS      1           CONSOLE DESCRIPTOR BYTE
     000.000            298X CDB.H85 EQU     00000000B
     000.001            299X CDB.H84 EQU     00000001B   =0 IF H8-5, =1 IF H8-4
     040.344            300X S.BAUD  DS      2           [0-14]  H8-4 BAUD RATE, =0 IF H8-5
                        301X *                           [15]    =1 IF BAUD RATE => 2 STOP BITS
                        302X
                        303X **     TABLE ADDRESS WORDS
                        304X
     040.346            305X S.DLINK DS      2           ADDRESS OF DATA IN HDOS CODE
     040.350            306X S.OFWA  DS      2           FWA  OVERLAY  TABLE
     040.352            307X S.CFWA  DS      2           FWA  CHANNEL  TABLE
     040.354            308X S.DFWA  DS      2           FWA  DEVICE   TABLE
     040.356            309X S.RFWA  DS      2           FWA  RESIDENT HDOS CODE
                        310X
                        311X **     DEVICE DRIVER DELAYED LOAD FLAGS
                        312X
     040.360            313X S.DDLDA DS      2           DRIVER LOAD ADDRESS (HIGH BYTE=0 IF NO LOAD PENDING)
     040.362            314X S.DDLEN DS      2           CODE LENGTH IN BYTES
     040.364            315X S.DDGRP DS      1           GROUP NUMBER FOR DRIVER
     040.365            316X         DS      1           HOLD PLACE
                        317X *S.DDSEC        DS      2           SECTOR NUMBER FOR DRIVER ( * OBSOLETE ! * )
     040.366            318X S.DDDTA DS      2           DEVICE'S ADDRESS IN DEVLST +DEV.RES
     040.370            319X S.DDOPC DS      1           OPEN OPCODE PENDEDING
                        320X
                        321X **     OVERLAY MANAGEMENT FLAGS
                        322X
     000.001            323X OVL.IN  EQU     00000001B   IN MEMORY
     000.002            324X OVL.RES EQU     00000010B   PERMINANTLY RESIDENT
     000.014            325X OVL.NUM EQU     00001100B   OVERLAY NUMBER MASK
     000.200            326X OVL.UCS EQU     10000000B   USER CODE SWAPPED FOR OVERLAY
                        327X
     040.371            328X S.OVLFL DS      1           OVERLAY FLAG
     040.372            329X S.UCSF  DS      2           FWA SWAPPED USER CODE
     040.374            330X S.UCSL  DS      2           LENGTH SWAPPED USER CODE
     040.376            331X S.OVLS  DS      2           SIZE OF OVERLAY CODE
     041.000            332X S.OVLE  DS      2           ENTRY POINT OF OVERLAY CODE
                        333X
     041.002            334X S.SSN   DS      2           SWAP AREA SECTOR NUMBER
     041.004            335X S.OSN   DS      2           OVERLAY SECTOR NUMBER
                        336X
                        337X *      SYSCALL PROCESSING WORK AREAS
                        338X
     041.006            339X S.CACC  DS      1           (ACC) UPON SYSCALL
     041.007            340X S.CODE  DS      1           SYSCALL INDEX IN PROGRESS
                        341X
                        342X *      JUMPS TO ROUTINES IN RESIDENT HDOS CODE
                        343X
     041.010            344X S.JUMPS DS      0           START OF DUMP VECTORS
     041.010            345X S.SDD   DS      3           JUMP TO STAND-IN DEVICE DRIVER
     041.013            346X S.FASER DS      3           JUMP TO FATSERR (FATAL SYSTEM ERROR)
     041.016            347X S.DIREA DS      3           JUMP TO DIREAD (DISK FILE READ)
     041.021            348X S.FCI   DS      3           JUMP TO FCI (FETCH CHANNEL INFO)
     041.024            349X S.SCI   DS      3           JUMP TO SCI (STORE CHANNEL INFO)
```

```
041.027                 350X S.GUP    DS      3               JUMP TO GUP (GET UNIT POINTER)
                        351X
041.032                 352X S.MOUNT  DS      1               <>0 IF THE SYSTEM DISK IS MOUNTED
041.033                 353X S.DCS    DS      1               DEFAULT CLUSTER SIZE-1
                        354X
041.034                 355X S.BOOTF  DS      1               BOOT FLAGS
000.001                 356X BOOT.P   EQU     00000001B       EXECUTE PROLOGUE UPON BOOTUP
                        357X
                        358X *        STACK VALUE SAVED FOR OVERLAY SYSCALLS
                        359X
041.035                 360X S.OVSTK  DS      2               VALUE OF SP UPON SYSCALLS USING OVERLAY
                        361X
041.037                 362X          DS      1               RESERVED


                        364X **       ACTIVE I/O AREA.
                        365X *
                        366X *        THE AIO.XXX AREA CONTAINS INFORMATION ABOUT THE I/O OPERATION
                        367X *        CURRENTLY BEING PERFORMED. THE INFORMATION IS OBTAINED FROM
                        368X *        THE CHANNEL TABLE, AND WILL BE RESTORED THERE WHEN DONE.
                        369X *
                        370X *        NORMALLY, THE AIO.XXX INFORMATION WOULD BE OBTAINED DIRECTLY
                        371X *        FROM VARIOUS SYSTEM TABLES VIA POINTER REGISTERS. SINCE THE
                        372X *        8080 HAS NO GOOD INDEXED ADDRESSING, THE DATA IS MANUALLY
                        373X *        COPIED INTO THE AIO.XXX CELLS BEFORE PROCESSING, AND
                        374X *        BACKDATED AFTER PROCESSING.
                        375X
041.040                 376X AIO.VEC  DS      3               JUMP INSTRUCTION
041.041                 377X AIO.DDA  EQU     *-2             DEVICE DRIVER ADDRESS
041.043                 378X AIO.FLG  DS      1               FLAG BYTE
041.044                 379X AIO.GRT  DS      2               ADDRESS OF GROUP RESERV TABLE
041.046                 380X AIO.SPG  DS      1               SECTORS PER GROUP
041.047                 381X AIO.CGN  DS      1               CURRENT GROUP NUMBER
041.050                 382X AIO.CSI  DS      1               CURRENT SECTOR INDEX
041.051                 383X AIO.LGN  DS      1               LAST GROUP NUMBER
041.052                 384X AIO.LSI  DS      1               LAST SECTOR INDEX
041.053                 385X AIO.DTA  DS      2               DEVICE TABLE ADDRESS
041.055                 386X AIO.DES  DS      2               DIRECTORY SECTOR
041.057                 387X AIO.DEV  DS      2               DEVICE CODE
041.061                 388X AIO.UNI  DS      1               UNIT NUMBER (0-9)
                        389X
041.062                 390X AIO.DIR  DS      DIRELEN         DIRECTORY ENTRY
                        391X
041.111                 392X AIO.CNT  DS      1               SECTOR COUNT
041.112                 393X AIO.EOM  DS      1               END OF MEDIA FLAG
041.113                 394X AIO.EOF  DS      1               END OF FILE FLAG
041.114                 395X AIO.TFP  DS      2               TEMP FILE POINTERS
041.116                 396X AIO.CHA  DS      2               ADDRESS OF CHANNEL BLOCK (IOC.DDA)
```

```
041.120                 398X S.SCR    DS      2               SYSTEM SCRATCH AREA ADDRESS
041.122                 399           XTEXT   ESVAL


                        401X **       S.VAL - SYSTEM VALUE DEFINTIONS.
                        402X *
                        403X *        THESE VALUES ARE SET AND MAINTAINED BY THE SYSTEM.
                        404X *
                        405X *        THE DECK HOSEQU MUST BE MODIFIED WHEN THIS IS MODIFIED.
                        406X
                        407X
040.277                 408X          ORG     S.VAL
                        409X
040.277                 410X S.DATE   DS      9               SYSTEM DATE (IN ASCII)
040.310                 411X S.DATC   DS      2               CODED DATE
040.312                 412X S.TIME   DS      4               TIME FROM MIDNIGHT (IN TICS)
040.316                 413X S.HIMEM  DS      2               HARDWARE HIGH MEMORY ADRESS+1
                        414X
040.320                 415X S.SYSM   DS      2               FWA RESIDENT SYSTEM
                        416X
040.322                 417X S.USRM   DS      2               LWA USER MEMORY
                        418X
040.324                 419X S.OMAX   DS      2               MAX OVERLAY SIZE FOR SYSTEM
                        420X
                        421X
                        422X **       THE FOLLOWING FIVE CELLS SHOULD BE MODIFIED/READ ONLY VIA THE .CONSL SYSCALL
                        423X
000.200                 424X CSL.ECH  EQU     10000000B       SUPPRESS ECHO
000.002                 425X CSL.WRP  EQU     00000010B       WRAP LINES AT WIDTH
000.001                 426X CSL.CHR  EQU     00000001B       OPERATE IN CHARACTER MODE
                        427X
000.000                 428X I.CSLMD  EQU     0               S.CSLMD IS FIRST BYTE
040.326                 429X S.CSLMD  DS      1               CONSOLE MODE
                        430X
000.200                 431X CTP.BKS  EQU     10000000B       TERMINAL PROCESSES BACKSPACES
000.040                 432X CTP.MLI  EQU     00100000B       MAP LOWER CASE TO UPPER ON INPUT
000.020                 433X CTP.MLO  EQU     00010000B       MAP LOWER CASE TO UPPER ON OUTPUT
000.010                 434X CTP.2SB  EQU     00001000B       TERMINAL NEEDS TWO STOP BITS
000.002                 435X CTP.BKM  EQU     00000010B       MAP BKSP (UPON INPUT) TO RUBOUT
000.001                 436X CTP.TAB  EQU     00000001B       TERMINAL SUPPORTS TAB CHARACTERS
                        437X
000.001                 438X I.CONTY  EQU     1               S.CONTY IS 2ND BYTE
000.000                 439X          ERRNZ   *-S.CSLMD-I.CONTY
040.327                 440X S.CONTY  DS      1               CONSOLE TYPE FLAGS
000.002                 441X I.CUSOR  EQU     2               S.CUSOR IS 3RD BYTE
000.000                 442X          ERRNZ   *-S.CSLMD-I.CUSOR
040.330                 443X S.CUSOR  DS      1               CURRENT CURSOR POSITION
000.003                 444X I.CONWI  EQU     3               S.CONWI IS 4TH BYTE
000.000                 445X          ERRNZ   *-S.CSLMD-I.CONWI
040.331                 446X S.CONWI  DS      1               CONSOLE WIDTH
                        447X
000.001                 448X CO.FLG   EQU     00000001B       CTL-O FLAG
000.200                 449X CS.FLG   EQU     10000000B       CTL-S FLAG
                        450X
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```
000.004                 451X I.CONFL EQU     4           S.CONFL IS 5TH BYTE
000.000                 452X         ERRNZ   *-S.CSLMD-I.CONFL
040.332                 453X S.CONFL DS      1           CONSOLE FLAGS
                        454X
040.333                 455X S.CAADR DS      2           ADDRESS FOR ABORT PROCESSING (>256 IF VALID)
040.335                 456X S.CCTAB DS      6           ADDR FOR CTL-A, CTL-B, CTL-C PROCESSING
040.343                 457          XTEXT   ECDEF


                        459X **      ERROR CODE DEFINITIONS.
                        460X
000.000                 461X         ORG     0
000.000                 462X         DS      1           NO ERROR #0
000.001                 463X EC.EOF  DS      1           END OF FILE
000.002                 464X EC.EOM  DS      1           END OF MEDIA
000.003                 465X EC.ILC  DS      1           ILLEGAL SYSCALL CODE
000.004                 466X EC.CNA  DS      1           CHANNEL NOT AVAILABLE
000.005                 467X EC.DNS  DS      1           DEVICE NOT SUITABLE
000.006                 468X EC.IDN  DS      1           ILLEGAL DEVICE NAME
000.007                 469X EC.IFN  DS      1           ILLEGAL FILE NAME
000.010                 470X EC.NRD  DS      1           NO ROOM FOR DEVICE DRIVER
000.011                 471X EC.FNO  DS      1           CHANNEL NOT OPEN
000.012                 472X EC.ILR  DS      1           ILLEGAL REQUEST
000.013                 473X EC.FUC  DS      1           FILE USAGE CONFLICT
000.014                 474X EC.FNF  DS      1           FILE NAME NOT FOUND
000.015                 475X EC.UND  DS      1           UNKNOWN DEVICE
000.016                 476X EC.ICN  DS      1           ILLEGAL CHANNEL NUMBER
000.017                 477X EC.DIF  DS      1           DIRECTORY FULL
000.020                 478X EC.IFC  DS      1           ILLEGAL FILE CONTENTS
000.021                 479X EC.NEM  DS      1           NOT ENOUGH MEMORY
000.022                 480X EC.RF   DS      1           READ FAILURE
000.023                 481X EC.WF   DS      1           WRITE FAILURE
000.024                 482X EC.WPV  DS      1           WRITE PROTECTION VIOLATION
000.025                 483X EC.WP   DS      1           DISK WRITE PROTECTED
000.026                 484X EC.FAP  DS      1           FILE ALREADY PRESENT
000.027                 485X EC.DDA  DS      1           DEVICE DRIVER ABORT
000.030                 486X EC.FL   DS      1           FILE LOCKED
000.031                 487X EC.FAO  DS      1           FILE ALREADY OPEN
000.032                 488X EC.IS   DS      1           ILLEGAL SWITCH
000.033                 489X EC.UUN  DS      1           UNKNOWN UNIT NUMBER
000.034                 490X EC.FNR  DS      1           FILE NAME REQUIRED
000.035                 491X EC.DIW  DS      1           DEVICE IS NOT WRITABLE (OR WRITE LOCKED)
000.036                 492X EC.UNA  DS      1           UNIT NOT AVAILABLE
000.037                 493X EC.ILV  DS      1           ILLEGAL VALUE
000.040                 494X EC.ILO  DS      1           ILLEGAL OPTION
000.041                 495X EC.VPM  DS      1           VOLUME PRESENTLY MOUNTED ON DEVICE
000.042                 496X EC.NVM  DS      1           NO VOLUME PRESENTLY MOUNTED
000.043                 497X EC.FOD  DS      1           FILE OPEN ON DEVICE
000.044                 498X EC.NPM  DS      1           NO PROVISIONS MADE FOR REMOUNTING MORE DISKS
000.045                 499X EC.DNI  DS      1           DISK NOT INITIALIZED
000.046                 500X EC.DNR  DS      1           DISK IS NOT READABLE
000.047                 501X EC.DSC  DS      1           DISK STRUCTURE IS CORRUPT
000.050                 502X EC.NCV  DS      1           NOT CORRECT VERSION OF HDOS
000.051                 503X EC.NOS  DS      1           NO OPERATING SYSTEM MOUNTED
000.052                 504X EC.IOI  DS      1           ILLEGAL OVERLAY INDEX
```

```
000.053                 505X EC.OTL  DS      1               OVERLAY TO LARGE
000.054                 506          XTEXT   H14

                        509X ***     H-14 DEFINITIONS
                        510X *
                        511X
000.033                 512X SET.H14 EQU     033Q
                        513X
000.000                 514X LPI.6   EQU      0
000.001                 515X LPI.8   EQU      1
                        516X
000.165                 517X SETWIDE EQU     165Q
                        518X
000.000                 519X CHAR.80 EQU      0
000.001                 520X CHAR.96 EQU      1
000.002                 521X CHAR132 EQU      2
000.054                 522          XTEXT   PICDEF

                        524X **      PIC FORMAT EQUIVALENCES.
                        525X
000.000                 526X         ORG     0
                        527X
000.000                 528X PIC.ID  DS      1               377Q = BINARY FILE FLAG
000.001                 529X         DS      1               FILE TYPE (FT.PIC)
000.002                 530X PIC.LEN DS      2               LENGTH OF ENTIRE RECORD
000.004                 531X PIC.PTR DS      2               INDEX OF START OF PIC TABLE
                        532X
000.006                 533X PIC.COD DS      0               CODE STARTS HERE
000.006                 534          XTEXT   DEVDEF

                        536X **      DEVICE TABLE ENTRYS.
                        537X
000.000                 538X         ORG     0
                        539X
000.000                 540X DEV.NAM DS      2               DEVICE NAME
000.000                 541X DV.EL   EQU     00000000B       END OF DEVICE LIST FLAG
000.001                 542X DV.NU   EQU     00000001B       DEVICE ENTRY NOT IN USE
                        543X
000.002                 544X DEV.RES DS      1               DRIVER RESIDENSE CODE
000.001                 545X DR.IM   EQU     00000001B       DRIVER IN MEMORY
000.002                 546X DR.PR   EQU     00000010B       DRIVER PERMINANTLY RESIDENT
                        547X
000.003                 548X DEV.JMP DS      1               JMP TO PROCESSOR
000.004                 549X DEV.DDA DS      2               DRIVER ADDRESS
000.006                 550X DEV.FLG DS      1               FLAG BYTE
000.001                 551X DT.DD   EQU     00000001B       DIRECTORY DEVICE
000.002                 552X DT.CR   EQU     00000010B       CAPABLE OF READ OPERATION
000.004                 553X DT.CW   EQU     00000100B       CAPABLE OF WRITE OPERATION
                        554X
000.007                 555X DEV.SPG DS      1               SECTORS PER GROUP THIS DEVICE
```

```
000.010                 556X DEV.MUM DS      1          MOUNTED UNIT MASK
000.011                 557X DEV.MNU DS      1          MAXIMUM NUMBER OF UNITS
000.012                 558X DEV.UNT DS      2          ADDRESS OF UNIT SPECIFIC DATA TABLE
                        559X
000.014                 560X DEV.DVL DS      2          DRIVER BYTE LENGTH
000.016                 561X DEV.DVG DS      1          DRIVER ROUTINE GROUP ADDRESS
                        562X
000.017                 563X DEVELEN EQU     *          DEVICE TABLE ENTRY LENGTH


                        565X **      UNIT SPECIFIC DEVICE DATA TABLE ENTRIES
                        566X
000.000                 567X         ORG     0
                        568X
000.000                 569X UNT.FLG DS      1          UNIT SPECIFIC  *DEV.FLG*
000.001                 570X UNT.GRT DS      2          ADDRESS OF GROUP RESERVATION TABLE (IF DT.DD)
000.003                 571X UNT.GTS DS      2          GRT SECTOR NUMBER
000.005                 572X UNT.DIS DS      2          DIRECTORY FIRST SECTOR NUMBER
                        573X
000.007                 574X UNT.SIZ EQU     *          SIZE OF UNIT SPECIFIC DATA TABLE PER UNIT
000.007                 575          XTEXT   DVDDEF


                        577X **      DEVICE DRIVER EQUIVALENCES.
                        578X
000.307                 579X DVDFLV  EQU     3070       DEVICE DRIVER FLAG VALUE
                        580X
000.006                 581X         ORG     PIC.COD    STARTS AT PIC CODE AREA
                        582X
000.006                 583X DVD.DVR DS      1          MUST BE DVDFLV, FLAGS TO HDOS AS DRIVER
000.007                 584X DVD.CAP DS      1          DEVICE CAPABILITY FLAG
000.010                 585X DVD.MUM DS      1          MOUNTED UNIT MASK
000.011                 586X DVD.MNU DS      1          MAXIMUM NUMBER OF UNITS
000.012                 587X DVD.UFL DS      8          UNIT SUB-CAPABILITY FLAGS FOR UNITS 0-7
000.022                 588X DVD.SET DS      1          = DVDFLV IFF DRIVER WILL TAKE SET OPTIONS
000.023                 589X         DS      24         RESERVED, MUST BE 0
000.053                 590X DVD.STE EQU     *          ENTRY FOR 'SET' INVOCATION
                        591X
002.000                 592X DVD.ENT EQU     2000A      DRIVER ENTRY POINT (MUST BE MULT OF 256)
000.053                 593          XTEXT   U8250


                        595X **      8250 UART CONTROL AND BIT DEFINITIONS.
                        596X
000.350                 597X SC.ACE  EQU     350Q       SYSTEM CONSOLE PORT IF 8250 ACE
000.156                 598X AC.DLY  EQU     110        220 MIL. SEC. DELAY FOR 8250
                        599X
000.000                 600X UR.RBR  EQU     0          RECEIVER BUFFER REGISTER (READ ONLY)
                        601X
000.000                 602X UR.THR  EQU     0          TRANSMITTER HOLDING REGISTER (WRITE ONLY)
```

```
                        603X
000.000                 604X UR.DLL   EQU     0               DIVISOR LATCH (LEAST SIGNIFICANT)
                        605X
000.001                 606X UR.DLM   EQU     1               DIVISOR LATCH (MOST SIGNIFICANT)
                        607X
000.001                 608X UR.IER   EQU     1               INTERRUPT ENABLE REGISTER
000.001                 609X UC.EDA   EQU     00000001B        ENABLE RECEIVED DATA AVAILABLE INTERRUPT
000.002                 610X UC.TRE   EQU     00000010B        ENABLE TRANSMIT HOLD REGISTER EMPTY INTERRUPT
000.004                 611X UC.RSI   EQU     00000100B        ENABLE RECEIVE STATUS INTERRUPT
000.010                 612X UC.MSI   EQU     00001000B        ENABLE MODEM STATUS INTERRUPT
                        613X
000.002                 614X UR.IIR   EQU     2               INTERRUPT IDENTIFICATION REGISTER
000.001                 615X UC.IIP   EQU     00000001B        INVERTED INTERRUPT PENDING (0 MEANS PENDING)
000.006                 616X UC.IID   EQU     00000110B        INTERRUPT ID
                        617X
000.003                 618X UR.LCR   EQU     3               LINE CONTROL REGISTER
000.000                 619X UC.5BW   EQU     00000000B        5 BIT WORDS
000.001                 620X UC.6BW   EQU     00000001B        6 BIT WORDS
000.002                 621X UC.7BW   EQU     00000010B        7 BIT WORDS
000.003                 622X UC.8BW   EQU     00000011B        8 BIT WORDS
000.004                 623X UC.2SB   EQU     00000100B        TWO STOP BITS SELECTED
000.010                 624X UC.PEN   EQU     00001000B        PARITY COMPUTATION ENABLED
000.020                 625X UC.EPS   EQU     00010000B        EVEN PARITY SELECT
000.040                 626X UC.SKP   EQU     00100000B        STICK PARITY
000.100                 627X UC.SB    EQU     01000000B        SET BREAK
000.200                 628X UC.DLA   EQU     10000000B        DIVISOR LATCH ACCESS
                        629X
000.004                 630X UR.MCR   EQU     4               MODEM CONTROL REGISTER
000.001                 631X UC.DTR   EQU     00000001B        DATA TERMINAL READY
000.002                 632X UC.RTS   EQU     00000010B        REQUEST TO SEND
000.004                 633X UC.OU1   EQU     00000100B        OUT 1
000.010                 634X UC.OU2   EQU     00001000B        OUT 2
000.020                 635X UC.LOO   EQU     00010000B        LOOP
                        636X
000.005                 637X UR.LSR   EQU     5               LINE STATUS REGISTER
000.001                 638X UC.DR    EQU     00000001B        DATA READY
000.002                 639X UC.OR    EQU     00000010B        OVERRUN
000.004                 640X UC.PE    EQU     00000100B        PARITY ERROR
000.010                 641X UC.FE    EQU     00001000B        FRAMING ERROR
000.020                 642X UC.BI    EQU     00010000B        BREAK INTERRUPT
000.040                 643X UC.THE   EQU     00100000B        TRANSMITTER HOLDING REGISTER EMPTY
000.100                 644X UC.TSE   EQU     01000000B        TRANSMITTER SHIFT REGISTER EMPTY
                        645X
000.006                 646X UR.MSR   EQU     6               MODEM STATUS REGISTER
000.001                 647X UC.DCS   EQU     00000001B        DELTA CLEAR TO SEND
000.002                 648X UC.DDR   EQU     00000010B        DELTA DATA SET READY
000.004                 649X UC.TER   EQU     00000100B        TRAILING EDGE OF RING
000.010                 650X UC.DRL   EQU     00001000B        DELTA RECEIVE LINE SIGNAL DETECT
000.020                 651X UC.CTS   EQU     00010000B        CLEAR TO SEND
000.040                 652X UC.DSR   EQU     00100000B        DATA SET READY
000.100                 653X UC.RI    EQU     01000000B        RING INDICATOR
000.200                 654X UC.RLS   EQU     10000000B        RECEIVED LINE SIGNAL DETECT
000.053                 655           XTEXT   U8251
```

```
                        658X **     8251 USART BIT DEFINITIONS.
                        659X *
                        660X
                        661X **     PORT ADDRESSES
                        662X
000.000                 663X UDR    EQU     0           DATA REGISTER IS EVEN
000.001                 664X USR    EQU     1           STATUS REGISTER IS NEXT
                        665X
000.372                 666X SC.UART EQU    372Q        CONSOLE USART ADDRESS (IFF 8251)
                        667X
                        668X
                        669X **     MODE INSTRUCTION CONTROL BITS.
                        670X
000.100                 671X UMI.1B EQU     01000000B   1 STOP BIT
000.200                 672X UMI.HB EQU     10000000B   1 1/2 STOP BITS
000.300                 673X UMI.2B EQU     11000000B   2 STOP BITS
000.040                 674X UMI.PE EQU     00100000B   EVEN PARITY
000.020                 675X UMI.PA EQU     00010000B   USE PARITY
000.000                 676X UMI.L5 EQU     00000000B   5 BIT CHARACTERS
000.004                 677X UMI.L6 EQU     00000100B   6 BIT CHARACTERS
000.010                 678X UMI.L7 EQU     00001000B   7 BIT CHARACTERS
000.014                 679X UMI.L8 EQU     00001100B   8 BIT CHARACTERS
000.001                 680X UMI.1X EQU     00000001B   CLOCK X 1
000.002                 681X UMI.16X EQU    00000010B   CLOCK X 16
000.003                 682X UMI.64X EQU    00000011B   CLOCK X 64
                        683X
                        684X **     COMMAND INSTRUCTION BITS.
                        685X
000.100                 686X UCI.IR EQU     01000000B   INTERNAL RESET
000.040                 687X UCI.RO EQU     00100000B   READER-ON CONTROL FLAG
000.020                 688X UCI.ER EQU     00010000B   ERROR RESET
000.004                 689X UCI.RE EQU     00000100B   RECEIVE ENABLE
000.002                 690X UCI.IE EQU     00000010B   ENABLE INTERRUPTS FLAG
000.001                 691X UCI.TE EQU     00000001B   TRANSMIT ENABLE
                        692X
                        693X **     STATUS READ COMMAND BITS.
                        694X
000.040                 695X USR.FE EQU     00100000B   FRAMING ERROR
000.020                 696X USR.OE EQU     00010000B   OVERRUN ERROR
000.010                 697X USR.PE EQU     00001000B   PARITY ERROR
000.004                 698X USR.TXE EQU    00000100B   TRANSMITTER EMPTY
000.002                 699X USR.RXR EQU    00000010B   RECEIVER READY
000.001                 700X USR.TXR EQU    00000001B   TRANSMITTER READY
000.053                 701         XJEXT   SETCAL
```

```
                        703X **     SETCAL - FIXED ADDRESS ROUTINES IN SET
                        704X *
                        705X *      THESE VECTORS ARE FIXED ENTRY POINTS INTO THE
                        706X *      SET PROGRAM TO UTILIZED BY DEVICE DRIVERS IN
                        707X *      PROCESSING SET COMMANDS.
                        708X *
                        709X
042,201                 710X        ORG     USERFWA+1
```

```
                                711X
042.201                         712X $SNA     DS      3
                                713X
042.204                         714X $DCS     DS      3
                                715X
042.207                         716X $CNA     DS      3
                                717X
042.212                         718X $FST     DS      3
                                719X
042.215                         720X $TBLS    DS      3
                                721X
042.220                         722X $WTBLS   DS      3
                                723X
042.223                         724X $LBD     DS      3
                                725X
042.226                         726X $SOP     DS      3
                                727X
042.231                         728X $PBF     DS      3
                                729X
042.234                         730X $PBV     DS      3
                                731X
042.237                         732X          DS      60      RESERVED
                                733           CODE    PIC
                                734
                                735 *         CODE HEADER
                                736
000.006  307                    737           DB      DVDFLV                  DEVICE DRIVER FLAG VALUE
000.007  004                    738           DB      DT.CW                   DEVICE CAPABILITY
000.010  001                    739           DB      00000001B               MOUNTED UNIT MASK
000.011  001                    740           DB      1                       ONLY 1 UNIT
000.012  004                    741           DB      DT.CW                   0:   CAPABLE OF WRITE
000.013                         742           DS      7                       1-7: IGNORED
000.022  307                    743           DB      DVDFLV
                                744
000.000                         745           ERRNZ   *-23Q
000.023                         746           DS      DVD.STE-23Q             RESERVED AREAS
```

```
                        749  ***     ASSEMBLY CONSTANTS
                        750  *
                        751  *
                        752
                        753  **      DEFAULT DEVICE DEFINITIONS
                        754  *
000.340                 755  DFLT.LP         EQU     3400            DEFAULT LPO: ADDRESS
000.000                 756          IF      H84IO
000.030                 757  DFLT.BD         EQU     30A             DEFAULT BAUD RATE = 4800 BAUD
                        758          ELSE
                        759  DFLT.BD         EQU     0000
                        760          ENDIF
000.010                 761  DFLT.WD         EQU     CHAR.80*4+CHAR132*4     DEFAULT (CHAR.80*16+CHAR132*4)
                        762  *                                                       WIDTH = WIDE-132,
                        763  *                                                               NARROW-80
                        764
000.000                 765  DFLT.LI         EQU     LPI.6           6 LINES/INCH
000.054                 766  DFLT.FL         EQU     11*4            11 INCH FORM LEN IN 1/4 INCHES
000.074                 767  DFLT.LC         EQU     60              LINE COUNT = 60 LINES/PAGE
                        768
000.001                 769  DFLT.LX         EQU     1               INITIAL LINE INDEX
000.001                 770  DFLT.CX         EQU     1               INITIAL COLUMN INDEX
                        771
000.000                 772  DFLT.CS         EQU     0               INITIAL CTL-S FLAG VALUE
```

```
                                    775  ***     SET CODE ENTRY POINT
                                    776  *
                                    777  *       SET COMMANDS ENTER HERE
                                    778  *
                                    779  *       ENTRY:  (DE)    = LINE POINTER
                                    780  *               (A)     = UNIT NUMBER
                                    781  *
                                    782  *       EXIT:   'C' CLEAR IF OK
                                    783  *               'C' SET IF ERROR
                                    784  *                (A) = ERROR CODE
                                    785  *
                                    786  *       USES:   ALL
                                    787  *
                                    788
000.053                             789  SETNTR  EQU     *
000.000                             790          ERRNZ   *-DVD.STE
000.053  247                        791          ANA     A
000.054  302 103 000                792          JNZ     SET1
000.057  102                        793          MOV     B,D
000.060  113                        794          MOV     C,E             (BC) = PARAMETER LIST ADDRESS
000.061  021 325 001                795          LXI     D,PRCTAB        (DE) = PROCESSOR TABLE ADDRESS
000.064  041 212 001                796          LXI     H,OPTTAB        (HL) = OPTION TABLE ADDRESS
000.067  315 226 042                797          CALL    $SOP
000.072  330                        798          RC
000.073  315 201 042                799          CALL    $SNA
000.076  310                        800          RZ                      AT END OF LINE
000.077  076 040                    801          MVI     A,EC.ILO        ILLEGAL OPTION
000.101  067                        802          STC
000.102  311                        803          RET
                                    804
000.103  076 033                    805  SET1    MVI     A,EC.UUN
000.105  067                        806          STC
000.106  311                        807          RET
```

```
                                    809  ***     PROCESSORS
                                    810  *
```

```
                                    812  **      FLAG - PROCESS FLAG OPTIONS
                                    813  *
                                    814  *       PROCESS FLAG TYPE OPTION SPECIFICATIONS
                                    815  *
                                    816  *
                                    817  *       ENTRY, EXIT, AND USE SAME AS PBF
                                    818
000.107  303 231 042                819  FLAG    JMP     $PBF            PROCESS BYTE FLAGS
```

```
                                821  **      VAL - PROCESS VALUE OPTIONS
                                822  *
                                823  *       PROCESS VALUE TYPE OPTION SPECIFICATIONS
                                824  *
                                825  *
                                826  *       ENTRY, EXIT, AND USE SAME AS PBV
                                827
000.112  303 234 042            828  VAL     JMP     $PBV            PROCESS BYTE VALUES



                                830  **      WIDTH - PROCESS WIDTH SPECIFICATIONS
                                831  *
                                832  *       PROCESS H-14 WIDTH OPTION SPECIFICATION.
                                833  *
                                834  *       SPECIFICATION FORMAT:
                                835  *
                                836  *               MMM,NNN         NNN = VALUE FOR NARROW SIDE OF SWITCH
                                837  *                               MMM = VALUE FOR WIDE SIDE OF SWITCH
                                838  *
                                839  *
                                840  *       ENTRY:  (BC)    = TEXT ADDRESS
                                841  *
                                842  *       EXIT:   (BC)    = TEXT ADDRESS UPDATED
                                843  *               'C' CLEAR IF OK
                                844  *               'C' SET IF ERROR
                                845  *                (A) = ERROR CODE
                                846  *
                                847  *       USES:   ALL
                                848  *
                                849
000.115  076 012                850  WIDTH   MVI     A,10            (A) = DEFAULT RADIX
000.117  315 207 042            851          CALL    $CNA            (HL) = VALUE
000.122  332 233 000            852          JC      WID1
000.125  174                    853          MOV     A,H
000.126  247                    854          ANA     A
000.127  302 233 000            855          JNZ     WID1
000.132  125                    856          MOV     D,L             (D)  = NARROW VALUE
000.133  315 201 042            857          CALL    $SNA
000.136  012                    858          LDAX    B
000.137  376 054                859          CPI     ','
000.141  302 233 000            860          JNE     WID1
000.144  003                    861          INX     B
000.145  076 012                862          MVI     A,10
000.147  325                    863          PUSH    D               SAVE NARROW VALUE
000.150  315 207 042            864          CALL    $CNA            (HL) = VALUE
000.153  321                    865          POP     D               RESTORE NARROW VALUE
000.154  332 233 000            866          JC      WID1
000.157  174                    867          MOV     A,H
000.160  247                    868          ANA     A
000.161  302 233 000            869          JNZ     WID1
000.164  175                    870          MOV     A,L             (A)  = WIDE SETTING
000.165  041 337 001            871          LXI     H,WIDTAB
000.170  315 215 042            872          CALL    $TBLS
000.173  302 233 000            873          JNZ     WID1
```

```
000.176  176            874          MOV     A,M             (A) = WIDE FLAG
                         875  *       RLC                                     /79.02.GC/
                         876  *       RLC                                     /79.02.GC/
000.177  137            877          MOV     E,A             (E) = WIDE FLAG VALUE
000.200  172            878          MOV     A,D
000.201  041 337 001    879          LXI     H,WIDTAB
000.204  315 215 042    880          CALL    $TBLS
000.207  302 233 000    881          JNZ     WID1
000.212  176            882          MOV     A,M             (A) = NARROW FLAG VALUE
000.213  007            883          RLC                                     /79.02.GC/
000.214  007            884          RLC                                     /79.02.GC/
000.215  263            885          ORA     E
000.216  007            886          RLC
000.217  007            887          RLC
000.220  137            888          MOV     E,A             (E) = COMBINED VALUE
000.221  072 021 004    889          LDA     TLP.CON
000.224  346 303        890          ANI     11000011B       MASK OUT OLD VALUES
000.226  263            891          ORA     E
000.227  062 021 004    892          STA     TLP.CON
000.232  311            893          RET
                        894
000.233  076 037        895  WID1    MVI     A,EC.ILV
000.235  067            896          STC
000.236  311            897          RET
000.000                 898          IF      H84TO
```

```
                         900  **      BAUD - PROCESS BAUD RATE
                         901  *
                         902  *       PROCESS BAUD RATE OPTION SPECIFICATION.
                         903  *
                         904  *
                         905  *       ENTRY:  (BC)    = TEXT ADDRESS
                         906  *
                         907  *       EXIT:   (BC)    = TEXT ADDRESS UPDATED
                         908  *               'C' CLEAR IF OK
                         909  *               'C' SET IF ERROR
                         910  *                (A) = ERROR CODE
                         911  *
                         912  *       USES:   ALL
                         913  *
                        914
000.237  076 012        915  BAUD    MVI     A,10            (A) = DEFAULT RADIX
000.241  315 207 042    916          CALL    $CNA
000.244  332 262 000    917          JC      BAU1
000.247  353            918          XCHG                    (DE) = BAUD RATE
000.250  315 223 042    919          CALL    $LBD
000.253  302 262 000    920          JNZ     BAU1
000.256  042 017 004    921          SHLD    TLP.BAU         SET BAUD RATE WORD
000.261  311            922          RET
                        923
000.262  076 037        924  BAU1    MVI     A,EC.ILV        ILLEGAL VALUE
000.264  067            925          STC
000.265  311            926          RET
```

```
                                    927             ENDIF


                                    929     **      HELP - PROCESS HELP OPTION
                                    930     *
                                    931     *       TYPE VALID OPTIONS ON USER CONSOLE
                                    932     *
                                    933
000.266  315 136 031                934     HELP    CALL    $TYPTX
000.271  012 012 123                935             DB      NL,NL,'Set Options:',NL,NL
000.311  066 114 120                936             DB      '6LPI(8LPI)     6(8) Lines/inch',NL
000.344  120 101 107                937             DB      'PAGE nnn       Lines/page',NL
000.370  120 117 122                938             DB      'PORT nnn       Port number',NL
001.015  127 111 104                939             DB      'WIDTH n,n      Wide(0)/Narrow(1) sides of '
001.062  167 151 144                940             DB      'width switch',NL
001.100  011 011 160                941             DB      '               possible values:  80,96,132',NL
000.000                             942             IF      H84IO
001.136  102 101 125                943             DB      'BAUD nnn       Baud rate',NL
                                    944             ENDIF
001.161  110 105 114                945             DB      'HELP           Type this text',NL
001.206  012 212                    946             DB      NL,ENL
001.210  257                        947             XRA     A               CLEAR CARRY
001.211  311                        948             RET
```

```
                                    950  ***     TABLES
                                    951  *
                                    952  *


                                    954  **      OPTTAB - OPTION TABLE
                                    955  *
                                    956
001.212  324 001                   957  OPTTAB  DW      OPTTABE
001.214  006                       958          DB      6
                                    959
001.215  066 114 120               960          DB      '6LP',2,'I'+2000Q,FLAGI,LPI.6!LPI.8,LPI.6
001.224  021 004                   961          DW      TLP.CON
001.226  000                       962          DB      0
                                    963
001.227  070 114 120               964          DB      '8LP',2,'I'+2000Q,FLAGI,LPI.6!LPI.8,LPI.8
001.236  021 004                   965          DW      TLP.CON
001.240  000                       966          DB      0
                                    967
001.241  120 101 107               968          DB      'PAG',2,'E'+2000Q,VALI,10,0,255
001.251  023 004                   969          DW      TLP.LC
                                    970
001.253  120 117 122               971          DB      'POR',2,'T'+2000Q,VALI-8,0,3770
001.263  016 004                   972          DW      TLP.POR
                                    973
001.265  127 111 104               974          DB      'WIDT',2,'H'+2000Q,WIDTHI
001.273  000 000 000               975          DB      0,0,0,0,0
                                    976
000.000                             977          IF      H8410
001.300  102 101 125               978          DB      'BAU',2,'D'+2000Q,BAUDI
001.305  000 000 000               979          DB      0,0,0,0,0
                                    980          ENDIF
                                    981
001.312  110 105 114               982          DB      'HEL',2,'P'+2000Q,HELPI
001.317  000 000 000               983          DB      0,0,0,0,0
                                    984
001.324  000                       985  OPTTABE DB      0


                                    987  **      PRCTAB - PROCESSOR TABLE
                                    988  *
                                    989
001.325                             990  PRCTAB  DS      0
                                    991
000.000                             992  FLAGI   EQU     *-PRCTAB/2
001.325  107 000                   993          DW      FLAG
                                    994
000.001                             995  VALI    EQU     *-PRCTAB/2
001.327  112 000                   996          DW      VAL
                                    997
000.002                             998  WIDTHI  EQU     *-PRCTAB/2
001.331  115 000                   999          DW      WIDTH
```

```
                                1000
000.000                         1001            IF      H84IO
000.003                         1002    BAUDI   EQU     *-PRCTAB/2
001.333  237 000                1003            DW      BAUD
                                1004            ENDIF
                                1005
000.004                         1006    HELPI   EQU     *-PRCTAB/2
001.335  266 000                1007            DW      HELP
                                1008


                                1010    **      WIDTAB - WIDTH TABLE
                                1011    *
                                1012
001.337                         1013    WIDTAB  DS      0
001.337  120 000                1014            DB      80,CHAR.80
001.341  140 001                1015            DB      96,CHAR.96
001.343  204 002                1016            DB      132,CHAR132
001.345  000                    1017            DB      0


000.000                         1019            IF      H84IO
                                1020            ELSE
                                1021            DS      0660
                                1022            ENDIF
001.346                         1023    .       SET     1346A
000.000                         1024            ERRNZ   *-.
001.346                         1025            DS      DVD.ENT-.
```

```
                                1028  ***     LPDVD ENTRY POINT
                                1029  *
                                1030  *       ENTRY:  (A)   = PROCESS CODE
                                1031  *               (BC)  = BYTE COUNT
                                1032  *               (DE)  = BUFFER ADDRESS AS PER ROUTINE
                                1033  *
                                1034  *       EXIT:   (PSW) = 'C' CLEAR IF NO ERRORS
                                1035  *                     = 'C' SET IF ERROR
                                1036  *                       (A)   = ERROR CODE
                                1037  *
                                1038  *       USES:   ALL
                                1039  *
                                1040
                                1041
                                1042
002.000                         1043  LPDVD   EQU     *
000.000                         1044          ERRNZ   *-DVD.ENT
002.000  376 011                1045          CPI     #9
002.002  322 022 002            1046          JNC     LPDVD10                 IF ILLEGAL PROCESS CODE
                                1047
002.005  315 076 031            1048          CALL    $TBRA                   ENTRY PROCESSOR
002.010  016                    1049          DB      LPNSUIT-*               READ
002.011  107                    1050          DB      LPWRITE-*               WRITE
002.012  014                    1051          DB      LPNSUIT-*               READR
002.013  013                    1052          DB      LPNSUIT-*               OPENR
002.014  027                    1053          DB      LPOPENW-*               OPENW
002.015  011                    1054          DB      LPNSUIT-*               OPENU
002.016  147                    1055          DB      LPCLOSE-*               CLOSE
002.017  013                    1056          DB      LPABORT-*               ABORT
002.020  012                    1057          DB      LPABORT-*               MOUNT
002.021  020                    1058          DB      LPLOADD-*               LOADD
                                1059
002.022  076 012                1060  LPDVD10 MVI     A,EC.ILR                        ILLEGAL REQUEST
002.024  067                    1061          STC
002.025  311                    1062          RET
                                1063
```

```
                                1066  ***     LPNSUIT - LINE PRINTER NOT SUITABLE
                                1067  *
                                1068  *       ENTRY:  NONE
                                1069  *
                                1070  *       EXIT:   (PSW) = 'C' SET FLAGGING ERROR
                                1071  *                       (A)   = ERROR CODE
                                1072  *
                                1073  *       USES:   PSW
                                1074  *
                                1075
    002.026                     1076  LPNSUIT EQU   *
    002.026  076 005            1077          MVI   A,EC.DNS                  DEVICE NOT SUITABLE ERROR CODE
    002.030  067                1078          STC
    002.031  311                1079          RET


                                1081  ***     LPABORT - LINE PRINTER ABORT
                                1082  *
                                1083  *       ENTRY:  NONE
                                1084  *
                                1085  *       EXIT:   (PSW) = 'C' SET FLAGGING ERROR
                                1086  *                       (A)   = ERROR CODE
                                1087  *
                                1088  *       USES:   PSW
                                1089  *
                                1090
    002.032                     1091  LPABORT EQU   *
    002.032  315 165 002        1092          CALL  LPCLOSE
    002.035  076 027            1093          MVI   A,EC.DDA                  DEVICE DRIVER ABORT ERROR CODE
    002.037  067                1094          STC
    002.040  311                1095          RET


                                1097  ***     LPLOADD - LOAD LPI
                                1098  *
                                1099  *       LPLOADD PROCESS THE LOAD DEVICE DRIVER ENTRY POINT.
                                1100  *
                                1101  *
                                1102  *       ENTRY:  NONE
                                1103  *
                                1104  *       EXIT:   NONE
                                1105  *
                                1106  *       USES:   (F)
                                1107  *
                                1108
    002.041                     1109  LPLOADD EQU   *
    002.041  247                1110          ANA   A       CLEAR CARRY
    002.042  311                1111          RET
```

```
                                1114  ***     LPOPENW - LINE PRINTER OPEN FOR WRITE
                                1115  *
                                1116  *       SET UP LINE PRINTER FOR OUTPUT
                                1117  *
                                1118  *       ENTRY   NONE
                                1119  *
                                1120  *       EXIT    (PSW) = 'C' CLEAR => NO ERROR
                                1121  *                       'C' SET => ERROR
                                1122  *                       (A)  = ERROR CODE
                                1123  *
                                1124  *       USES    ALL
                                1125  *
                                1126
002.043                         1127  LPOPENW EQU   *
                                1128
002.043  315 043 003            1129          CALL  UNITASS
002.046  302 114 002            1130          JNZ   LPO1                      ALREADY ASSIGNED
                                1131
                                1132  *       FLAG ASSIGNED, INITIALIZE INDICES, AND CTL-S FLAG
                                1133
002.051  076 200               1134          MVI     A,10000000B
002.053  062 015 004            1135          STA     TLP.AS
002.056  076 001               1136          MVI     A,1
002.060  062 024 004            1137          STA     TLP.LX
002.063  062 025 004            1138          STA     TLP.CX
002.066  257                   1139          XRA     A
002.067  062 026 004            1140          STA     TLP.CTS
                                1141
                                1142
                                1143  *       INITIALIZE PORT
                                1144
002.072  072 016 004            1145          LDA     TLP.POR
002.075  052 017 004            1146          LHLD    TLP.BAU
000.000                         1147          IF      H84IO
002.100  315 051 003            1148          CALL    I8250
                                1149          ELSE
                                1150          CALL    I8251
                                1151          ENDIF
                                1152
                                1153  *       INITIALIZE LP:
                                1154
002.103  315 233 003            1155          CALL  INITLP
002.106  076 015                1156          MVI   A,CR
002.110  315 225 002            1157          CALL  LPOUTCH
002.113  311                    1158          RET
                                1159
002.114  067                   1160  LPO1    STC
002.115  076 036               1161          MVI   A,EC.UNA                  UNIT NOT AVAILABLE, ALREADY ASSIGNED
002.117  311                   1162          RET
```

```
                                1165  ***     LPWRITE - LINE PRINTER WRITE
                                1166  *
                                1167  *       WRITE BYTES TO LP: DEVICE
                                1168  *
                                1169  *
                                1170  *       ENTRY:  (BC)  = BYTE COUNT
                                1171  *               (DE)  = ADDRESS OF DATA BUFFER
                                1172  *
                                1173  *       EXIT:   (PSW) = 'C' CLEAR => NO ERROR
                                1174  *                     = 'C' SET   =>    ERROR
                                1175  *                       (A)   = ERROR CODE
                                1176  *                       (BC)  = UNUSED BYTE COUNT
                                1177  *                       (DE)  = ADDRESS OF NEXT BYTE TO BE WRITTEN
                                1178  *
                                1179  *       USES:   ALL
                                1180  *
                                1181
002.120                         1182  LPWRITE EQU   *
                                1183
002.120  315 043 003            1184          CALL  UNITASS
002.123  312 153 002            1185          JZ    LPW3                      NOT ASSIGNED
                                1186
002.126  170                    1187  LPW1    MOV   A,B
002.127  261                    1188          ORA   C
002.130  312 156 002            1189          JZ    LPW4                      LAST BYTE WRITTEN
002.133  072 334 040            1190          LDA   S.CAADR+1
002.136  247                    1191          ANA   A
002.137  302 157 002            1192          JNZ   LPW5                      CTL-Z,-A,-B,-C HIT
002.142  032                    1193          LDAX  D                   (A) = BYTE TO BE WRITTEN
002.143  315 225 002            1194          CALL  LPOUTCH
002.146  023                    1195          INX   D                   INCREMENT ADDRESS
002.147  013                    1196          DCX   B                   DECREMENT COUNT
002.150  303 126 002            1197          JMP   LPW1
                                1198
002.153  076 036                1199  LPW3    MVI   A,EC.UNA            UNIT NOT AVAILABLE ERROR CODE
002.155  067                    1200          STC
                                1201
002.156                         1202  LPW4    EQU   *
002.156  311                    1203          RET
                                1204
002.157  076 014                1205  LPW5    MVI   A,FF
002.161  315 377 003            1206          CALL  OUTCH.
002.164  311                    1207          RET
```

```
                                1210  ***     LPCLOSE - CLOSE LINE PRINTER FOR OUTPUT
                                1211  *
                                1212  *       REMOVE SELECTED LP: DEVICE FROM TABLE OF CURRENTLY ACTIVE DEVICES.
                                1213  *
                                1214  *       ENTRY   NONE
                                1215  *
                                1216  *       EXIT    (PSW) = 'C' CLEAR => NO ERROR
                                1217  *                     = 'C' SET   =>    ERROR
                                1218  *                       (A)   = ERROR CODE
                                1219  *
                                1220  *       USES    ALL
                                1221  *
                                1222
002.165                         1223  LPCLOSE EQU   *
                                1224
002.165  315 043 003            1225          CALL  UNITASS
002.170  312 221 002            1226          JZ    LPC1                      UNIT FREE
                                1227
002.173  072 016 004            1228          LDA   TLP.FOR
002.176  147                    1229          MOV   H,A
002.177  056 000                1230          MVI   L,UR.THR
000.000                         1231          ERRNZ   UR.THR-UDR
002.201  076 014                1232          MVI   A,FF
002.203  315 171 003            1233          CALL  OUT
002.206  072 015 004            1234          LDA   TLP.AS
002.211  346 177                1235          ANI   #01111111B                CLEAR ASSIGNED BIT
002.213  062 015 004            1236          STA   TLP.AS
002.216  303 224 002            1237          JMP   LPC2
                                1238
002.221  076 036                1239  LPC1    MVI   A,EC.UNA                   UNIT NOT AVAILABLE ERROR CODE
002.223  067                    1240          STC
                                1241
002.224                         1242  LPC2    EQU   *
002.224  311                    1243          RET
```

```
                        1247  ***     LPOUTCH - LINE PRINTER OUTPUT CHARACTER
                        1248  *
                        1249  *       The special characters processed are:
                        1250  *
                        1251  *                       NULL
                        1252  *                       TAB
                        1253  *
                        1254  *       ENTRY:  (A)   = BYTE TO BE WRITTEN
                        1255  *               (HL)  = UNIT NUMBER OF OUTPUT DEVICE
                        1256  *
                        1257  *       EXIT:   Column Index updated
                        1258  *
                        1259  *       USES:   (PSW)
                        1260  *
                        1261
002,225                 1262  LPOUTCH EQU   *
002,225  345            1263          PUSH  H
                        1264
                        1265
002,226  346 177       1266          ANI   177Q              MAP OUT HIGH BIT
002,230  376 014       1267          CPI   FF
002,232  302 253 002   1268          JNZ   LPOT1             IF  NOT FORM FEED
002,235  315 331 003   1269          CALL  OUTCHAR
002,240  076 001       1270          MVI   A,#1
002,242  062 024 004   1271          STA   TLP.LX            UNIT LINE INDEX = 1
002,245  062 025 004   1272          STA   TLP.CX            UNIT COLUMN INDEX = 1
002,250  303 041 003   1273          JMP   LPOT9
                        1274
                        1275
                        1276  *       CHECK FOR LINE OVER-FLOW
                        1277
002,253  345           1278  LPOT1   PUSH  H
002,254  365           1279          PUSH  PSW
002,255  072 023 004   1280          LDA   TLP.LC
002,260  267           1281          ORA   A
002,261  312 300 002   1282          JZ    LPOT2             LINES/PAGE = 0
002,264  041 024 004   1283          LXI   H,TLP.LX
002,267  276           1284          CMP   M
002,270  322 300 002   1285          JNC   LPOT2             TLP.LC >= TLP.LX
002,273  076 014       1286          MVI   A,FF
002,275  315 225 002   1287          CALL  LPOUTCH
002,300  361           1288  LPOT2   POP   PSW
002,301  341           1289          POP   H
                        1290
002,302  376 011       1291          CPI   TAB
002,304  302 335 002   1292          JNZ   LPOT4             IF  NOT TAB
002,307  076 040       1293          MVI   A,' '             IF PRESENTLY AT TAB STOP FORCE
002,311  315 225 002   1294          CALL  LPOUTCH             TO THE NEXT ONE
002,314  072 025 004   1295  LPOT3   LDA   TLP.CX
002,317  075           1296          DCR   A
002,320  346 007       1297          ANI   #7                CHECK FOR MULTIPLE OF 8
002,322  312 041 003   1298          JZ    LPOT9
002,325  076 040       1299          MVI   A,' '
002,327  315 225 002   1300          CALL  LPOUTCH
002,332  303 314 002   1301          JMP   LPOT3
                        1302
```

```
002.335  376 000       1303  LPOT4   CPI   NUL2
002.337  312 041 003   1304          JZ    LPOT9                    IGNORE NULLS!!!
000.000               1305          ERRNZ *-LPOT5
                      1306
002.342  376 015       1307  LPOT5   CPI   CR
002.344  302 362 002   1308          JNZ   LPOT6                    NOT CARRIAGE RETURN
002.347  315 331 003   1309          CALL  OUTCHAR
002.352  076 001       1310          MVI   A,#1
002.354  062 025 004   1311          STA   TLP.CX                   COLUMN INDEX = 1
002.357  303 041 003   1312          JMP   LPOT9
                      1313
002.362  376 012       1314  LPOT6   CPI   NL
002.364  302 013 003   1315          JNZ   LPOT7
002.367  076 015       1316          MVI   A,CR
002.371  315 225 002   1317          CALL  LPOUTCH
002.374  076 012       1318          MVI   A,LF
002.376  315 331 003   1319          CALL  OUTCHAR
003.001  072 024 004   1320          LDA   TLP.LX
003.004  074           1321          INR   A                        UPDATE LINE INDEX
003.005  062 024 004   1322          STA   TLP.LX
003.010  303 041 003   1323          JMP   LPOT9
                      1324
003.013  376 040       1325  LPOT7   CPI   ' '
003.015  332 036 003   1326          JC    LPOT8                    (A) < ' '  => NON-PRINT
003.020  376 177       1327          CPI   RUBOUT
003.022  322 036 003   1328          JNC   LPOT8                    (A) >= RUBOUT  => NON-PRINT
003.025  365           1329          PUSH  PSW
003.026  072 025 004   1330          LDA   TLP.CX
003.031  074           1331          INR   A
003.032  062 025 004   1332          STA   TLP.CX
003.035  361           1333          POP   PSW
003.036  315 331 003   1334  LPOT8   CALL  OUTCHAR
                      1335
003.041  341           1336  LPOT9   POP   H
003.042  311           1337          RET
```

```
                                1340  **      UNITASS - UNIT ASSIGNED
                                1341  *
                                1342  *       CHECK LF! DEVICE TABLE TO SEE IF SPECIFIED UNIT IS ASSIGNED.
                                1343  *
                                1344  *       ENTRY   (HL) = UNIT NUMBER
                                1345  *
                                1346  *       EXIT    (PSW) = 'Z' SET   => UNIT FREE
                                1347  *                     = 'Z' CLEAR => UNIT ASSIGNED
                                1348  *
                                1349  *       USES    (PSW)
                                1350  *
                                1351
003.043                         1352  UNITASS EQU   *
                                1353
003.043  072 015 004            1354          LDA   TLP.AS
003.046  346 200                1355          ANI   10000000B                                   [7] = 1 => ASSIGNED
                                1356
003.050  311                    1357          RET
000.000                         1358          IF    H84IO


                                1360  **      I8250 - INITIALIZE 8250
                                1361  *
                                1362  *       INITIALIZE AN 8250 PORT.  STOLEN AS CAP FROM CONSL. DRIVER.
                                1363  *
                                1364  *       ENTRY   (A)         =  PORT ADDRESS
                                1365  *               (HL)[0-14]  =  NEW BAUD RATE
                                1366  *               (HL)[15]    =  1 IF TWO STOP BITS
                                1367  *
                                1368  *       EXIT    NONE
                                1369  *
                                1370  *       USES    (A)
                                1371  *
                                1372
003.051                         1373  I8250   EQU   *
003.051  325                    1374          PUSH  D
                                1375
003.052  353                    1376          XCHG
003.053  147                    1377          MOV   H,A
003.054  056 001                1378          MVI   L,UR.IER                                    /79.02.GC/
003.056  257                    1379          XRA   A                                           /79.02.GC/
003.057  315 171 003            1380          CALL  OUT                                         /79.02.GC/
003.062  056 004                1381          MVI   L,UR.MCR                                    /79.01.GC/
003.064  076 020                1382          MVI   A,UC.LOO                                    /79.01.GC/
003.066  315 171 003            1383          CALL  OUT             SET LOOP-BACK               /79.01.GC/
003.071  056 003                1384          MVI   L,UR.LCR
003.073  076 200                1385          MVI   A,UC.DLA
003.075  315 171 003            1386          CALL  OUT
003.100  056 000                1387          MVI   L,UR.DLL
003.102  173                    1388          MOV   A,E
003.103  315 171 003            1389          CALL  OUT
003.106  056 001                1390          MVI   L,UR.DLM
003.110  172                    1391          MOV   A,D
003.111  346 177                1392          ANI   177Q
```

```
003.113  315 171 003  1393          CALL  OUT
003.116  056 003      1394          MVI   L,UR.LCR
003.120  172          1395          MOV   A,D
003.121  007          1396          RLC
003.122  007          1397          RLC
003.123  007          1398          RLC
000.000               1399          ERRNZ UC.2SB-4
003.124  346 004      1400          ANI   UC.2SB
003.126  366 003      1401          ORI   UC.8BW                          8 BIT WORDS
003.130  315 171 003  1402          CALL  OUT
003.133  056 000      1403          MVI   L,UR.RBR
003.135  315 161 003  1404          CALL  IN                              REMOVE GARBAGE
                      1405
003.140  076 156      1406          MVI   A,AC.DLY                                        /79.01.6C/
003.142  315 053 000  1407          CALL  .DLY            WAIT FOR 8250 TO SETTLE         /79.01.6C/
003.145  056 004      1408          MVI   L,UR.MCR                                        /79.01.6C/
003.147  315 161 003  1409          CALL  IN                                              /79.01.6C/
003.152  346 357      1410          ANI   377Q-UC.LOO                                     /79.01.6C/
003.154  315 171 003  1411          CALL  OUT             TURN OFF LOOP-BACK              /79.01.6C/
                      1412
003.157  321          1413          POP   D
003.160  311          1414          RET
                      1415          ELSE
                      1416  I8251   SPACE 4,10
                      1417  **      I8251 - INITIALIZE 8251
                      1418  *
                      1419  *       INITIALIZE AN 8251 PORT
                      1420  *
                      1421  *       ENTRY   (A)       = PORT ADDRESS
                      1422  *               (HL)[15] = 1 IF TWO STOP BITS
                      1423  *
                      1424  *       EXIT    NONE
                      1425  *
                      1426  *       USES    ALL
                      1427  *
                      1428
                      1429  I8251   EQU   *
                      1430          XCHG
                      1431          MOV   H,A
                      1432          MVI   L,USR
                      1433          MOV   A,D
                      1434          ANI   2000                            (A) = 2000 IF TWO STOP BITS
                      1435          ERRNZ 2000+UMI.1B-UMI.2B
                      1436          ORI   UMI.1B+UMI.L8+UMI.16X
                      1437          STA   I8251.B
                      1438          LXI   B,I8251.A
                      1439  I8251.1 LDAX  B
                      1440          CPI   #377Q
                      1441          JZ    I8251.2
                      1442          CALL  OUT
                      1443          INX   B
                      1444          JMP   I8251.1
                      1445  I8251.2 MVI   A,UCI.ER+UCI.TE+UCI.RE
                      1446          CALL  OUT
                      1447          MVI   L,UDR
                      1448          CALL  IN
```

```
1449                    RET
1450    I8251.A DB      0,0,0,0,0,0
1451            DB      UCI.IR
1452    I8251.B DB      0                       CONFIGURATION BYTE
1453            DB      377Q
1454            ENDIF
```

```
                                1457  **      IN - INPUT
                                1458  *
                                1459  *       INPUT BYTE FROM SPECIFIED PORT
                                1460  *
                                1461  *       ENTRY   (H)   = PORT ADDRESS
                                1462  *               (L)   = OFFSET
                                1463  *
                                1464  *       EXIT    (A)   = BYTE READ
                                1465  *
                                1466  *       USES    (PSW)
                                1467  *
                                1468
003.161                         1469  IN      EQU   *
003.161  174                    1470          MOV   A,H
003.162  205                    1471          ADD   L
003.163  062 167 003            1472          STA   IN.ADD
003.166  333 000                1473          IN    *-*
003.167                         1474  IN.ADD  EQU   *-1
003.170  311                    1475          RET


                                1477  **      OUT - OUTPUT
                                1478  *
                                1479  *       OUTPUT BYTE TO SPECIFIED PORT
                                1480  *
                                1481  *       ENTRY   (A)   = BYTE TO BE WRITTEN
                                1482  *               (H)   = PORT ADDRESS
                                1483  *               (L)   = OFFSET
                                1484  *
                                1485  *       EXIT    NONE
                                1486  *
                                1487  *       USES    NONE
                                1488  *
                                1489
003.171                         1490  OUT     EQU   *
003.171  365                    1491          PUSH  PSW
003.172  174                    1492          MOV   A,H
003.173  205                    1493          ADD   L
003.174  062 201 003            1494          STA   OUT.ADD
003.177  361                    1495          POP   PSW
003.200  323 000                1496          OUT   *-*
003.201                         1497  OUT.ADD EQU   *-1
003.202  311                    1498          RET
```

```
                                1501  **      WAIT - WAIT FOR H14
                                1502  *
                                1503  *       WAIT UNTIL CTL-S, FLAG CLEAR
                                1504  *
                                1505  *       ENTRY   NONE
                                1506  *
                                1507  *       EXIT    NONE
                                1508  *
                                1509  *       USES    (PSW)
                                1510  *
                                1511
003.203                         1512  WAIT    EQU   *
003.203  345                    1513          PUSH  H
                                1514
003.204  072 334 040           1515  WAIT0   LDA   S.CAADR+1
003.207  247                    1516          ANA   A
003.210  302 231 003           1517          JNZ   WAIT3                     IF  CTL-Z,-A,-B,-C  HIT
                                1518
000.000                         1519          IF      H14BUG
003.213  072 016 004           1520          LDA     TLP.POR
003.216  147                    1521          MOV     H,A
003.217  056 006                1522          MVI     L,UR.MSR
003.221  315 161 003           1523          CALL    IN
003.224  346 020               1524          ANI     UC.CTS
003.226  302 204 003           1525          JNZ     WAIT0           INVERTED SIGNAL!!!
000.000                         1526          ERRNZ   WAIT3-*
                                1527          ELSE
                                1528          CALL    INCHAR
                                1529          ANI     #177Q
                                1530          CPI     CTLS
                                1531          JNZ     WAIT1
                                1532          MVI     A,#1
                                1533          STA     TLP.CTS
                                1534          JMP     WAIT2
                                1535  WAIT1   CPI     CTLQ
                                1536          JNZ     WAIT2                   IGNORE ALL OTHER CHARACTERS
                                1537          MVI     A,#0
                                1538          STA     TLP.CTS
                                1539
                                1540  WAIT2   LDA     TLP.CTS
                                1541          ANA     A
                                1542          JNZ     WAIT0
                                1543          ENDIF
                                1544
003.231  341                    1545  WAIT3   POP   H
003.232  311                    1546          RET
```

```
                                1549  **      INITLP - INITIALIZE LPT
                                1550  *
                                1551  *       INITIALIZE DEVICE LPT, THE H14 LINE PRINTER, BY SENDING THE
                                1552  *       CORRECT ESCAPE SEQUENCES.
                                1553  *
                                1554  *       ENTRY   (L)   = UNIT NUMBER
                                1555  *
                                1556  *       EXIT    NONE
                                1557  *
                                1558  *       USES    (PSW),(HL)
                                1559  *
                                1560
003.233                         1561  INITLP  EQU   *
                                1562
003.233  072 021 004           1563          LDA   TLP.CON
003.236  062 273 003           1564          STA   INITA+2
003.241  346 001               1565          ANI   #1
000.000                         1566          ERRNZ   LPI.8-1
003.243  306 170               1567          ADI   #170Q
003.245  062 275 003           1568          STA   INITB+1
003.250  041 271 003           1569          LXI   H,INITA
003.253  176                   1570  INIT0   MOV   A,M
003.254  376 377               1571          CPI   #377Q
003.256  312 270 003           1572          JZ    INIT1                     IF  TO END OF SEQUENCES
003.261  315 331 003           1573          CALL  OUTCHAR
003.264  043                   1574          INX   H
003.265  303 253 003           1575          JMP   INIT0
                                1576
003.270  311                   1577  INIT1   RET
003.271  033 165 000           1578  INITA   DB      ESC,SETWIDE,0
003.274  033 000 377           1579  INITB   DB      ESC,0,377Q
                                1580
                                1581
                                1582
```

```
                                1585  **      INCHAR - INPUT CHARACTER
                                1586  *
                                1587  *       INPUT CHARACTER FROM SPECIFIED DEVICE
                                1588  *
                                1589  *       ENTRY   NONE
                                1590  *
                                1591  *       EXIT    (PSW) = 'Z' CLEAR IF THERE IS A CHARACTER
                                1592  *                       (A) = CHARACTER
                                1593  *                     = 'Z' SET   IF THERE IS NOT A CHARACTER
                                1594  *
                                1595  *       USES    (PSW)
                                1596  *
                                1597
003.277                         1598  INCHAR  EQU   *
003.277  345                    1599          PUSH  H
003.300  072 016 004            1600          LDA   TLP.PDR
003.303  147                    1601          MOV   H,A
                                1602
                                1603  *       CHECK FOR DATA
                                1604
000.000                         1605          IF      H84IO
                                1606
003.304  056 005               1607          MVI   L,UR.LSR
003.306  315 161 003            1608          CALL  IN
003.311  346 001               1609          ANI   UC.DR                     'Z' SET IF THERE IS DATA
003.313  312 326 003            1610          JZ    INC1                      NO DATA
003.316  056 000               1611          MVI   L,UR.RBR
003.320  315 161 003            1612          CALL  IN
003.323  303 327 003            1613          JMP   INC2
                                1614
                                1615          ELSE
                                1616
                                1617          MVI   L,USR
                                1618          CALL  IN
                                1619          ANI   USR.RXR                   'Z' SET IF THERE IS NO DATA
                                1620          JZ    INC1                      NO DATA
                                1621          MVI   L,UDR
                                1622          CALL  IN
                                1623          ANA   A                         IGNORE NULL CHARACTERS
                                1624          JMP   INC2
                                1625
                                1626          ENDIF
                                1627
003.326  067                    1628  INC1    STC
                                1629
003.327  341                    1630  INC2    POP   H
003.330  311                    1631          RET
```

```
                                1633  **      OUTCHAR - OUTPUT CHARACTER
                                1634  *
                                1635  *       OUTPUT CHARACTER TO SPECIFIED DEVICE
                                1636  *
                                1637  *       ENTRY   (A)   = CHARACTER
                                1638  *
                                1639  *       EXIT    NONE
                                1640  *
                                1641  *       USES    (PSW)
                                1642  *
                                1643
003.331                         1644  OUTCHAR EQU   *
003.331  345                    1645          PUSH  H
                                1646
003.332  365                    1647          PUSH  PSW
003.333  072 016 004            1648          LDA   TLP.POR
003.336  147                    1649          MOV   H,A
                                1650
000.000                         1651          IF      H84IO
                                1652
003.337  056 005                1653          MVI   L,UR.LSR
003.341  315 203 003            1654          CALL  WAIT
003.344  072 334 040            1655  OUTC0   LDA   S.CAADR+1
003.347  247                    1656          ANA   A
003.350  302 374 003            1657          JNZ   OUTC1                     IF  CTL-Z,-A,-B,-C HIT
003.353  315 161 003            1658  OUTC0.0 CALL  IN
003.356  346 040                1659          ANI   UC.THE
003.360  312 344 003            1660          JZ    OUTC0                     IF  NOT READY FOR TRANSMIT
003.363  361                    1661          POP   PSW
003.364  056 000                1662          MVI   L,UR.THR
003.366  315 171 003            1663          CALL  OUT
003.371  303 375 003            1664          JMP   OUTC2
                                1665
                                1666          ELSE
                                1667
                                1668          MVI   L,USR
                                1669          CALL  WAIT
                                1670  OUTC0   LDA   S.CAADR+1
                                1671          ANA   A
                                1672          JNZ   OUTC1                     IF  CTL-Z,-A,-B,-C HIT
                                1673  OUTC0.0 CALL  IN
                                1674          ANI   USR.TXR
                                1675          JZ    OUTC0                     IF  NOT READY FOR TRANSMIT
                                1676          POP   PSW
                                1677          MVI   L,UDR
                                1678          CALL  OUT
                                1679          JMP   OUTC2
                                1680
                                1681          ENDIF
                                1682
003.374  361                    1683  OUTC1   POP   PSW
                                1684
003.375  341                    1685  OUTC2   POP   H
003.376  311                    1686          RET
                                1687
003.377  345                    1688  OUTCH.  PUSH    H
```

```
004.000  365              1689          PUSH    PSW
004.001  072 016 004      1690          LDA     TLP.POR
004.004  147              1691          MOV     H,A
                          1692
000.000                   1693          IF      H84IO
004.005  056 005          1694          MVI     L,UR.LSR
                          1695          ELSE
                          1696          MVI     L,USR
                          1697          ENDIF
                          1698
004.007  315 203 003      1699          CALL    WAIT
004.012  303 353 003      1700          JMP     OUTC0.0
```

```
                        1703  ***  TLP.UNT - TABLE OF LPI UNIT CONSTANTS
                        1704  *
                        1705  *
                        1706
004.015                 1707  TLP.UNA EQU   *
                        1708
004.015 000             1709  TLP.UNT       DB      0               UNIT NUMBER
                        1710
004.015                 1711  TLP.AS        EQU     TLP.UNT         [7] = 1 IF ASSIGNED
                        1712
004.016 340             1713  TLP.POR       DB      DFLT.LP
                        1714
004.017 030 000         1715  TLP.BAU       DW      DFLT.BD         [15] = 1 IF TWO STOP BITS
                        1716
004.021 010             1717  TLP.CON       DB      DFLT.LI+DFLT.WD CONFIGURE BYTE FOR H14
                        1718
004.022 054             1719  TLP.FML       DB      DFLT.FL         FORM LENGTH
                        1720
004.023 074             1721  TLP.LC        DB      DFLT.LC         LINE COUNT = LINES/PAGE
                        1722
004.024 001             1723  TLP.LX        DB      DFLT.LX         LINE INDEX = LINE HEAD IS OVER
                        1724
004.025 001             1725  TLP.CX        DB      DFLT.CX         COLUMN INDEX = COLUMN HEAD IS OVER
                        1726
004.026 000             1727  TLP.CTS       DB      DFLT.CS         CONTROL-S FLAG
```

```
004.027                 1730            XTEXT   TBRA


                        1732X **        $TBRA - BRANCH RELATIVE THOUGH TABLE.
                        1733X *
                        1734X *         $TBRA USES THE SUPPLIED INDEX TO SELECT A BYTE FROM THE
                        1735X *         JUMP TABLE. THE CONTENTS OF THIS BYTE ARE ADDED TO THE
                        1736X *         ADDRESS OF THE BYTE, YEILDING THE PROCESSOR ADDRESS.
                        1737X *
                        1738X *         CALL    $TBRA
                        1739X *         DB      LAB1-*          INDEX = 0 FOR LAB1
                        1740X *         DB      LAB2-*          INDEX = 1 FOR LAB2
                        1741X *         DB      LABN-*          INDEX = N-1 FOR LABN
                        1742X *
                        1743X *         ENTRY   (A) = INDEX
                        1744X *                 (RET) = TABLE FWA
                        1745X *         EXIT    TO COMPUTED ADDRESS
                        1746X *         USES    F,H,L
                        1747X
                        1748X
031.076                 1749X $TBRA     EQU     31076A          IN H17 ROM
004.027                 1750            XTEXT   TYPTX


                        1752X **        $TYPTX - TYPE TEXT.
                        1753X *
                        1754X *         $TYPTX IS CALLED TO TYPE A BLOCK OF TEXT ON THE SYSTEM CONSOLE.
                        1755X *
                        1756X *         IMBEDDED ZERO BYTES INDICATE A CARRIAGE RETURN LINE FEED,
                        1757X *         A BYTE WITH THE 200Q BIT SET IS THE LAST BYTE IN THE MESSAGE.
                        1758X *
                        1759X *         ENTRY   (RET) = TEXT
                        1760X *         EXIT    TO (RET+LENGTH)
                        1761X *         USES    A,F
                        1762X
                        1763X
031.136                 1764X $TYPTX    EQU     31136A          IN H17 ROM
                        1765X
031.144                 1766X $TYPTX.   EQU     31144A          IN H17 ROM
                        1767
004.027  116 112       1768            DW      'JN'            DUMMY ADDRESS FOR RELOCATION
004.031                 1769            DS      64              PATCH AREA
                        1770            LON     G
                        1771
004.131  055 000 062   1772            END
         000 065 000
         123 000 130
         000 142 000
         155 000 162
         000 166 000
         174 000 202
         000 210 000
```

222 000 230
000 245 000
254 000 257
000 212 001
224 001 236
001 251 001
263 001 325
001 327 001
331 001 333
001 335 001
003 002 033
002 044 002
047 002 054
002 061 002
064 002 070
002 073 002
076 002 101
002 104 002
111 002 121
002 124 002
131 002 140
002 144 002
151 002 162
002 166 002
171 002 174
002 204 002
207 002 214
002 217 002
233 002 236
002 243 002
246 002 251
002 256 002
262 002 265
002 271 002
276 002 305
002 312 002
315 002 323
002 330 002
333 002 340
002 345 002
350 002 355
002 360 002
365 002 372
002 377 002
002 003 006
003 011 003
016 003 023
003 027 003
033 003 037
003 044 003
060 003 067
003 076 003
104 003 114
003 131 003
136 003 150
003 155 003

```
                164 003 175
                003 211 003
                214 003 222
                003 227 003
                234 003 237
                003 246 003
                251 003 257
                003 262 003
                266 003 301
                003 307 003
                314 003 321
                003 324 003
                334 003 342
                003 351 003
                354 003 361
                003 367 003
                372 003 002
                004 010 004
                013 004 000
                000
ASSEMBLY COMPLETE
 1772 STATEMENTS
    0 ERRORS DETECTED
11406 BYTES FREE
```

```
$CNA    042207   716L   851   864   916
$DCS    042204   714L
$FST    042212   718L
$LBD    042223   724L   919
$PBF    042231   728L   819
$PBV    042234   730L   828
$SNA    042201   712L   799   857
$SOP    042226   726L   797
$TBLS   042215   720L   872   880
$TBRA   031076  1048   1749E
$TYPTX  031136   934   1764E
$TYPTX. 031144  1766E
$WTBLS  042220   722L
.       001346  1023S  1024  1025
.ABUSS  040024   226E
.ALARM  002136   199E
.ALEDS  040013   224E
.CHFLG  000060    86L
.CLEAR  000055    83L
.CLEARA 000056    84L
.CLOSE  000046    76L
.CLRCO  000007    60L
.CONSL  000006    59L
.CRC    002347   207E
.CRCSUM 040027   227E
.CTC    002172   201E
.CTLC   000041    71L
.CTLFLG 040011   223E
.DECODE 000053    81L
.DELET  000050    78L
.DISMT  000061    87L
.DLEDS  040021   225E
.DLY    000053   196E  1407
.DMNMS  000203    98L
.DMOUN  000201    96L
.DOD    003122   210E
.DODA   003356   212E
.DSPMOD 040007   221E
.DSPROT 040006   220E
.DUMP   001374   198E
.ERROR  000057    85L
.EXIT   000000    53L
.HORN   002140   200E
.IDENT  000000   195E
.IOWRK  040002   218E
.LINK   000040    70L
.LOAD   001267   197E
.LOADD  000062    88L
.LOADO  000010    61L
.MFLAG  040010   222E
.MONMS  000202    97L
.MOUNT  000200    95L
.NAME   000054    82L
.OPENC  000045    75L
.OPENR  000042    72L
.OPENU  000044    74L
.OPENW  000043    73L
.PCHL   002264   203E
```

```
.FOSIT  000047      77L
.PRINT  000003      56L
.RCK    003260     211E
.READ   000004      57L
.REGI   040005     219E
.REGPTR 040035     230E
.RENAM  000051      79L
.RESET  000204      99L
.RNB    002331     206E
.RNP    002325     205E
.SCIN   000001      54L
.SCOUT  000002      55L
.SETTP  000052      80L
.SRS    002265     204E
.START  040000     217E
.SYSRES 000012      63L
.TICCNT 040033     229E
.TPERR  002205     202E
.TPERRX 040031     228E
.UIVEC  040037     231E
.VERS   000011      62L
.WNB    003024     209E
.WNP    003017     208E
.WRITE  000005      58L
AC.DLY  000156     598E    1406
AIO.CGN 041047     381L
AIO.CHA 041116     396L
AIO.CNT 041111     392L
AIO.CSI 041050     382L
AIO.DDA 041041     377E
AIO.DES 041055     386L
AIO.DEV 041057     387L
AIO.DIR 041062     390L
AIO.DTA 041053     385L
AIO.EOF 041113     394L
AIO.EOM 041112     393L
AIO.FLG 041043     378L
AIO.GRT 041044     379L
AIO.LGN 041051     383L
AIO.LSI 041052     384L
AIO.SPG 041046     380L
AIO.TFF 041114     395L
AIO.UNI 041061     388L
AIO.VEC 041040     376L
BAU1    000262'    917     920     924L
BAUD    000237'    915L    1003
BAUDI   000003     978     1002E
BELL    000007     108E
BKSP    000010     110E
BOOT.P  000001     356E
C.STX   000002     112E
C.SYN   000026     111E
CB.CLI  000100     165E    180
CB.MTL  000040     164E
CB.SPK  000200     166E
CB.SSI  000020     163E
CDB.H84 000001     299E
CDB.H85 000000     298E
```

```
CHAR.80 000000  519E   761  1014
CHAR.96 000001  520E  1015
CHAR132 000002  521E   761  1016
CO.FLG  000001  448E
CR      000015  104E  1156  1307  1316
CS.FLG  000200  449E
CSL.CHR 000001  426E
CSL.ECH 000200  424E
CSL.WRP 000002  425E
CTLA    000001  119E
CTLB    000002  120E
CTLC    000003  121E
CTLD    000004  122E
CTLO    000017  123E
CTLP    000020  124E
CTLQ    000021  125E
CTLS    000023  126E
CTLZ    000032  127E
CTP.2SB 000010  434E
CTP.BKM 000002  435E
CTP.BKS 000200  431E
CTP.MLI 000040  432E
CTP.MLO 000020  433E
CTP.TAB 000001  436E
D.CON   040110  246L
D.RAM   040240  249L
D.VEC   040130  248L
DC.ABT  000007  142L
DC.CLO  000006  141L
DC.LOD  000011  144L
DC.MAX  000012  145L
DC.MOU  000010  143L
DC.OPR  000003  138L
DC.OPU  000005  140L
DC.OPW  000004  139L
DC.REA  000000  135L
DC.RER  000002  137L
DC.WRI  000001  136L
DEV.DDA 000004  549L
DEV.DVG 000016  561L
DEV.DVL 000014  560L
DEV.FLG 000006  550L
DEV.JMP 000003  548L
DEV.MNU 000011  557L
DEV.MUM 000010  556L
DEV.NAM 000000  540L
DEV.RES 000002  544L
DEV.SPG 000007  555L
DEV.UNT 000012  558L
DEVELEN 000017  563E
DF.CLR  000376  267E
DF.EMP  000377  266E
DFLT.BD 000030  757E  1715
DFLT.CS 000000  772E  1727
DFLT.CX 000001  770E  1725
DFLT.FL 000054  766E  1719
DFLT.LC 000074  767E  1721
DFLT.LI 000000  763E  1717
```

```
DFLT.LP 000340  755E  1713
DFLT.LX 000001  769E  1723
DFLT.WD 000010  761E  1717
DIR.ALD 000025  282L
DIR.CLU 000015  275L
DIR.CRD 000023  281L
DIR.EXT 000010  270L
DIR.FGN 000020  278L
DIR.FLG 000016  276L
DIR.LGN 000021  279L
DIR.LSI 000022  280L
DIR.NAM 000000  269L
DIR.PRO 000013  271L
DIR.VER 000014  272L
DIRELEN 000027  284E  390
DIRIDL  000015  273E
DM.MR   000000  170E
DM.MW   000001  171E
DM.RR   000002  172E
DM.RW   000003  173E
DR.IM   000001  545E
DR.PR   000002  546E
DT.CR   000002  552E
DT.CW   000004  553E  738  741
DT.DD   000001  551E
DV.EL   000000  541E
DV.NU   000001  542E
DVD.CAP 000007  584L
DVD.DVD 000006  583L
DVD.ENT 002000  592E  1025  1044
DVD.MNU 000011  586L
DVD.MUM 000010  585L
DVD.SET 000022  588L
DVD.STE 000053  590E  746  790
DVD.UFL 000012  587L
DVDFLV  000307  579E  737  743
EC.CNA  000004  466L
EC.DDA  000027  485L  1093
EC.DIF  000017  477L
EC.DIW  000035  491L
EC.DNI  000045  499L
EC.DNR  000046  500L
EC.DNS  000005  467L  1077
EC.DSC  000047  501L
EC.EOF  000001  463L
EC.EOM  000002  464L
EC.FAD  000031  487L
EC.FAP  000026  484L
EC.FL   000030  486L
EC.FNF  000014  474L
EC.FND  000011  471L
EC.FNR  000034  490L
EC.FOD  000043  497L
EC.FUC  000013  473L
EC.ICN  000016  476L
EC.IDN  000006  468L
EC.IFC  000020  478L
EC.IFN  000007  469L
```

```
EC.ILC  000003  465L
EC.ILO  000040  494L  801
EC.ILR  000012  472L  1060
EC.ILV  000037  493L  895  924
EC.IOI  000052  504L
EC.IS   000032  488L
EC.NCV  000050  502L
EC.NEM  000021  479L
EC.NOS  000051  503L
EC.NPM  000044  498L
EC.NRD  000010  470L
EC.NVM  000042  496L
EC.OTL  000053  505L
EC.RF   000022  480L
EC.UNA  000036  492L  1161  1199  1239
EC.UND  000015  475L
EC.UUN  000033  489L  805
EC.VPM  000041  495L
EC.WF   000023  481L
EC.WP   000025  483L
EC.WPV  000024  482L
ENL     000212  117E  946
ESC     000033  115E  1578  1579
FF      000014  118E  1205  1232  1267  1286
FLAG    000107' 819L  993
FLAGI   000000  960   964   992E
H14BUG  000000  1E    1519
H84IO   000000  2E    4     32    756   898   942   977   1001  1019  1147  1358  1605
                1651  1693
HELP    000266' 934L  1007
HELPI   000004  982   1006E
I.CONFL 000004  451E  452
I.CONTY 000001  438E  439
I.CONWI 000003  444E  445
I.CSLMD 000000  428E
I.CUSOR 000002  441E  442
I8250   003051' 1148  1373E
IN      003161' 1404  1409  1469E 1523  1608  1612  1650
IN.ADD  003167' 1472  1474E
INC1    003326' 1610  1628L
INC2    003327' 1613  1630L
INCHAR  003277' 1598E
INIT0   003253' 1570L 1575
INIT1   003270' 1572  1577L
INITA   003271' 1564  1569  1578L
INITB   003274' 1568  1579L
INITLP  003233' 1155  1561E
IP.PAD  000360  156E
LF      000012  105E  1318
LPABORT 002032' 1056  1057  1091E
LPC1    002221' 1226  1239L
LPC2    002224' 1237  1242E
LPCLOSE 002165' 1055  1092  1223E
LPIVD   002000' 1043E
LPIVD10 002022' 1046  1060L
LPI.6   000000  514E  765   960   960   964
LPI.8   000001  515E  960   964   964   1566
LPLOADD 002041' 1058  1109E
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LPNSUIT 002026'  1049    1051    1052    1054    1076E
LPO1    002114'  1130    1160L
LPOPENW 002043'  1053    1127E
LPOT1   002253'  1268    1278L
LPOT2   002300'  1282    1285    1288L
LPOT3   002314'  1295L   1301
LPOT4   002335'  1292    1303L
LPOT5   002342'  1305    1307L
LPOT6   002362'  1308    1314L
LPOT7   003013'  1315    1325L
LPOT8   003036'  1326    1328    1334L
LPOT9   003041'  1273    1298    1304    1312    1323    1336L
LPOUTCH 002225'  1157    1194    1262E   1287    1294    1300    1317
LPW1    002126'  1187L   1197
LPW3    002153'  1185    1199L
LPW4    002156'  1189    1202E
LPW5    002157'  1192    1205L
LPWRITE 002120'  1050    1182E
M.FOX   000303   190E
M.PAMB  000021   189E
NL      000012   116E    117     935     935     935     935     936     937     938     940     941     943
                 945     946     1314
NUL2    000000   107E    1303
NULL    000200   106E
OP.CTL  000360   157E
OP.DIG  000360   158E
OP.SEG  000361   159E
OPTTAB  001212'  796     957L
OPTTABE 001324'  957     985L
OUT     003171'  1233    1380    1383    1386    1389    1393    1402    1411    1490E   1663
OUT.ADD 003201'  1494    1497E
OUTC0   003344'  1655L   1660
OUTC0.0 003353'  1658L   1700
OUTC1   003374'  1657    1683L
OUTC2   003375'  1664    1685L
OUTCH.  003377'  1206    1688L
OUTCHAR 003331'  1269    1309    1319    1334    1573    1644E
OVL.IN  000001   323E
OVL.NUM 000014   325E
OVL.RES 000002   324E
OVL.UCS 000200   326E
PIC.COD 000006   533L    581
PIC.ID  000000   528L
PIC.LEN 000002   530L
PIC.PTR 000004   531L
PRCTAB  001325'  795     990L    992     995     998     1002    1006
QUOTE   000047   113E
ROMBOOT 030000   241E
RUBOUT  000177   109E    1327
S.BAUD  040344   300L
S.BOOTF 041034   355L
S.CAADR 040333   455L    1190    1515    1655
S.CACC  041006   339L
S.CCTAB 040335   456L
S.CDB   040343   297L
S.CFWA  040352   307L
S.CODE  041007   340L
S.CONFL 040332   453L
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S.CONTY 040327      440L
S.CONWI 040331      446L
S.CSLMD 040326      429L    439     442     445     452
S.CUSOR 040330      443L
S.DATC  040310      411L
S.DATE  040277      410L
S.DCS   041033      353L
S.DDDTA 040366      318L
S.DDGRP 040364      315L
S.DDLDA 040360      313L
S.DDLEN 040362      314L
S.DDOPC 040370      319L
S.DFWA  040354      308L
S.DIREA 041016      347L
S.DLINK 040346      305L
S.FASER 041013      346L
S.FCI   041021      348L
S.GRT0  024000      237E
S.GRT1  025000      238E
S.GRT2  026000      239E
S.GUP   041027      350L
S.HIMEM 040316      413L
S.INT   040343      251L    293
S.JUMPS 041010      344L
S.MOUNT 041032      352L
S.OFWA  040350      306L
S.OMAX  040324      419L
S.OSN   041004      335L
S.OVLE  041000      332L
S.OVLFL 040371      328L
S.OVLS  040376      331L
S.OVSTK 041035      360L
S.RFWA  040356      309L
S.SCI   041024      349L
S.SCR   041120      398L
S.SDD   041010      345L
S.SOVR  041146      253L    255
S.SSN   041002      334L
S.SYSM  040320      415L
S.TIME  040312      412L
S.UCSF  040372      329L
S.UCSL  040374      330L
S.USRM  040322      417L
S.VAL   040277      250L    408
SC.ACE  000350      597E
SC.UART 000372      666E
SET.H14 000033      512E
SETI    000103'     792     805L
SETNTR  000053'     789E
SETWIDE 000165      517E    1578
STACK   042200      257E
STACKL  001032      255E
SYDD    040130      247E
SYSCALL 000377       46E
TAB     000011      114E    1291
TLP.AS  004015'     1135    1234    1236    1354    1711E
TLP.BAU 004017'     921     1146    1715L
TLP.CON 004021'     889     892     961     965     1563    1717L
```

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TLP.CTS 004026'  1140  1727L
TLP.CX  004025'  1138  1272  1295  1311  1330  1332  1725L
TLP.FML 004022'  1719L
TLP.LC  004023'   969  1280  1721L
TLP.LX  004024'  1137  1271  1283  1320  1322  1723L
TLP.POR 004016'   972  1145  1228  1520  1600  1648  1690  1713L
TLP.UNA 004015'  1707E
TLP.UNT 004015'  1709L  1711
UC.2SB  000004   623E  1399  1400
UC.5BW  000000   619E
UC.6BW  000001   620E
UC.7BW  000002   621E
UC.8BW  000003   622E  1401
UC.BI   000020   642E
UC.CTS  000020   651E  1524
UC.DCS  000001   647E
UC.DDR  000002   648E
UC.DLA  000200   628E  1385
UC.DR   000001   638E  1609
UC.DRL  000010   650E
UC.DSR  000040   652E
UC.DTR  000001   631E
UC.EDA  000001   609E
UC.EPS  000020   625E
UC.FE   000010   641E
UC.IID  000006   616E
UC.IIP  000001   615E
UC.LOO  000020   635E  1382  1410
UC.MSI  000010   612E
UC.OR   000002   639E
UC.OU1  000004   633E
UC.OU2  000010   634E
UC.PE   000004   640E
UC.PEN  000010   624E
UC.RI   000100   653E
UC.RLS  000200   654E
UC.RSI  000004   611E
UC.RTS  000002   632E
UC.SB   000100   627E
UC.SKP  000040   626E
UC.TER  000004   649E
UC.THE  000040   643E  1659
UC.TRE  000002   610E
UC.TSE  000100   644E
UCI.ER  000020   688E
UCI.IE  000002   690E
UCI.IR  000100   686E
UCI.RE  000004   689E
UCI.RQ  000040   687E
UCI.TE  000001   691E
UDR     000000   663E  1231
UMI.16X 000002   681E
UMI.1B  000100   671E
UMI.1X  000001   680E
UMI.2B  000300   673E
UMI.64X 000003   682E
UMI.HB  000200   672E
UMI.LS  000000   676E
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UMI.L6  000004      677E
UMI.L7  000010      678E
UMI.L8  000014      679E
UMI.PA  000020      675E
UMI.PE  000040      674E
UNITASS 003043'    1129      1184    1225    1352E
UNT.DIS 000005      572L
UNT.FLG 000000      569L
UNT.GRT 000001      570L
UNT.GTS 000003      571L
UNT.SIZ 000007      574E
UO.CLK  000001      182E
UO.DDU  000002      181E
UO.HLT  000200      179E
UO.NFR  000100      180E
UR.DLL  000000      604E      1387
UR.DLM  000001      606E      1390
UR.IER  000001      608E      1378
UR.IIR  000002      614E
UR.LCR  000003      618E      1384    1394
UR.LSR  000005      637E      1607    1653    1694
UR.MCR  000004      630E      1381    1408
UR.MSR  000006      646E      1522
UR.RBR  000000      600E      1403    1611
UR.THR  000000      602E      1230    1231    1662
USERFWA 042200      258E       710
USR     000001      664E
USR.FE  000040      695E
USR.OE  000020      696E
USR.PE  000010      697E
USR.RXR 000002      699E
USR.TXE 000004      698E
USR.TXR 000001      700E
VAL     000112'     828L       996
VALI    000001      968        971     995E
VERS    000026       44E
WAIT    003203'    1512E      1654    1699
WAITO   003204'    1515L      1525
WAIT3   003231'    1517       1526    1545L
WIDI    000233'     852        855     860     866     869     873     881     895L
WIDTAB  001337'     871        879    1013L
WIDTH   000115'     850L       999
WIDTHI  000002      974        998E

25174 BYTES FREE
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