```
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. C.,              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
000.040               44X VERS     EQU     2*16+0          VERSION 2.0
                      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
000.063                 89X .OPEN   DS      1               Parametrized Open
                        90X
                        91X
                        92X *       *HDOSOVL1:SYS*  FUNCTIONS
                        93X
000.200                 94X         ORG     200Q
                        95X
000.200                 96X .MOUNT  DS      1               MOUNT  (MUST BE FIRST)
000.201                 97X .DMOUN  DS      1               DISMOUNT
000.202                 98X .MONMS  DS      1               MOUNT/NO MESSAGE
000.203                 99X .DMNMS  DS      1               DISMOUNT/NO MESSAGE
000.204                100X .RESET  DS      1               RESET = DISMOUNT/MOUNT OF UNIT
000.205                101X .CLEAN  DS      1               Clean device
000.206                102X .DAD    DS      1               Dismount All Disks              /80.08.sc/
000.207                103          XTEXT   ASCII
```

```
                        105X **     ASCII CHARACTER EQUIVALENCES.
                        106X
000.015                 107X CR     EQU     13              CARRIAGE RETURN
000.012                 108X LF     EQU     10              LINE FEED
000.200                 109X NULL   EQU     200Q            PAD CHARACTER
000.000                 110X NUL2   EQU     0
000.007                 111X BELL   EQU     7               BELL CHARACTER
000.177                 112X RUBOUT EQU     177Q
000.010                 113X BKSP   EQU     10Q             CTL-H
000.026                 114X C.SYN  EQU     26Q             SYNC
000.002                 115X C.STX  EQU     2               STX
000.047                 116X QUOTE  EQU     47Q
000.011                 117X TAB    EQU     11Q
000.033                 118X ESC    EQU     33Q
000.012                 119X NL     EQU     12Q             NEW LINE (HDOS SYSTEMS)
000.212                 120X ENL    EQU     NL+200Q         NL + END-OF-LINE-FLAG
000.014                 121X FF     EQU     14Q             FORM FEED
000.001                 122X CTLA   EQU     01Q             CTL-A
000.002                 123X CTLB   EQU     02Q             CTL-B
000.003                 124X CTLC   EQU     03Q             CTL-C
000.004                 125X CTLD   EQU     04Q             CTL-D
000.017                 126X CTLO   EQU     17Q             CTL-O
000.020                 127X CTLP   EQU     20Q             CTL-P
000.021                 128X CTLQ   EQU     21Q             CTL-Q
000.023                 129X CTLS   EQU     23Q             CTL-S
000.032                 130X CTLZ   EQU     32Q             CTL-Z
000.207                 131         XTEXT   DDDEF


                        133X **     DEVICE DRIVER COMMUNICATION FLAGS.
                        134X *
                        135X
000.000                 136X        ORG     0
                        137X
000.000                 138X DC.REA DS      1               READ
000.001                 139X DC.WRI DS      1               WRITE
000.002                 140X DC.RER DS      1               READ REGARDLESS
000.003                 141X DC.OPR DS      1               OPEN FOR READ
000.004                 142X DC.OPW DS      1               OPEN FOR WRITE
000.005                 143X DC.OPU DS      1               OPEN FOR UPDATE
000.006                 144X DC.CLO DS      1               CLOSE
000.007                 145X DC.ABT DS      1               ABORT
000.010                 146X DC.MOU DS      1               MOUNT DEVICE
000.011                 147X DC.LOD DS      1               LOAD DEVICE DRIVER
000.012                 148X DC.RDY DS      1               Device Ready                    /80.04.GC/
000.013                 149X DC.MAX DS      1               MAXIMUM ENTRY INDEX
000.014                 150         XTEXT   MTR
```

```
                        153X **     MTR - PAM/8 EQUIVALENCES.
                        154X *
                        155X *      THIS DECK CONTAINS SYMBOLIC DEFINITIONS USED TO
                        156X *      MAKE USE OF THE PAM/8 CODE AND CONTROL BYTES.


                        158X **     IO PORTS
                        159X
    000.360             160X IP.PAD  EQU    360Q          PAD INPUT PORT
    000.360             161X OP.CTL  EQU    360Q          CONTROL OUTPUT PORT
    000.360             162X OP.DIG  EQU    360Q          DIGIT SELECT OUTPUT PORT
    000.361             163X OP.SEG  EQU    361Q          SEGMENT SELECT OUTPUT PORT
    000.362             164X IP.CON  EQU    362Q          H-88/H-89/HA-8-8 Confisuration  /80.07.sc/
    000.362             165X OP2.CTL EQU    362Q          H-88/H-89/HA-8-8 Control Port   /80.07.sc/


                        167X **     FRONT PANEL CONTROL BITS:                           /80.07.sc/
                        168X *
                        169X *      CB.* set in OP.CTL
                        170X *      CB2.* set in OP2.CTL
                        171X *
                        172X
    000.020             173X CB.SSI  EQU    00010000B     SINGLE STEP INTERRUPT
    000.040             174X CB.MTL  EQU    00100000B     MONITOR LIGHT
    000.100             175X CB.CLI  EQU    01000000B     CLOCK INTERRUPT ENABLE
    000.200             176X CB.SPK  EQU    10000000B     SPEAKER ENABLE
                        177X
    000.001             178X CB2.SSI EQU    00000001B     Sinsle Step Interrupt
    000.002             179X CB2.CLI EQU    00000010B     CIock Interrupt Enable
    000.040             180X CB2.ORG EQU    00100000B     ORG 0 Select
    000.100             181X CB2.SID EQU    01000000B     Side 1 Select


                        183X **     Secondary Control Bits
                        184X


                        186X **     MONITOR MODE FLAGS.
                        187X
    000.000             188X DM.MR   EQU    0             MEMORY READ
    000.001             189X DM.MW   EQU    1             MEMORY WRITE
    000.002             190X DM.RR   EQU    2             REGISTER READ
    000.003             191X DM.RW   EQU    3             REGISTER WRITE
```

```
                        193X **     USER OPTION BITS.
                        194X *
                        195X *      THESE BITS ARE SET IN CELL .MFLAG.
                        196X
000.200                 197X UO.HLT EQU     10000000B       DISABLE HALT PROCESSING
000.100                 198X UO.NFR EQU     CB.CLI          NO REFRESH OF FRONT PANEL
000.002                 199X UO.DDU EQU     00000010B       DISABLE DISPLAY UPDATE
000.001                 200X UO.CLK EQU     00000001B       ALLOW PRIVATE INTERRUPT PROCESSING


                        202X **     MONITOR IDENTIFICATION FLAGS
                        203X *
                        204X *      THESE BYTES IDENTIFY THE ROM MONITOR.
                        205X *      THEY ARE THE VARIOUS VALUES OF LOCATION .IDENT
                        206X
000.021                 207X M.PAM8 EQU     021Q            'LXI' INSTRUCTION AT 000.000 IN PAM-8
000.303                 208X M.FOX  EQU     303Q            'JMP' INSTRUCTION AT 000.000 IN FOX ROM


                        210X **     Configuration Flags                                 /80.07.sc/
                        211X *
                        212X *      These bits are read in IP.CON.
                        213X *
                        214X
000.003                 215X CN.174M EQU    00000011B       Port 174Q Device-Type Mask
000.014                 216X CN.170M EQU    00001100B       Port 170Q Device-Type Mask
000.020                 217X CN.PRI  EQU    00010000B       Primary/Secondary:  1=>Primary == 170Q
000.040                 218X CN.MEM  EQU    00100000B       Memory Test/Normal Switch:  0=>Test; 1=>Normal
000.100                 219X CN.BAU  EQU    01000000B       Baud Rate:  0=>9600; 1=>19,200
000.200                 220X CN.ABO  EQU    10000000B       Auto-Boot:  1=>Auto-Boot
                        221X
000.000                 222X CND.H17 EQU    00B             H-17 Disk,              Valid only in CN.174M
000.000                 223X CND.NDI EQU    00B             No Device Installed,    Valid only in CN.170M
000.001                 224X CND.H47 EQU    01B             H-47 Disk


                        226X **     ROUTINE ENTRY POINTS.
                        227X *
                        228X
000.000                 229X .IDENT  EQU    0000A           IDENTIFICATION LOCATION
000.053                 230X .DLY    EQU    0053A           DELAY
001.267                 231X .LOAD   EQU    1267A           TAPE LOAD
001.374                 232X .DUMP   EQU    1374A           TAPE DUMP
002.136                 233X .ALARM  EQU    2136A           ALARM ROUTINE
002.140                 234X .HORN   EQU    2140A           HORN
002.172                 235X .CTC    EQU    2172A           CHECK TAPE CHECKSUM
002.205                 236X .TPERR  EQU    2205A           TAPE ERROR ROUTINE
002.264                 237X .PCHL   EQU    2264A           PCHL INSTRUCTION
002.265                 238X .SRS    EQU    2265A           SCAN RECORD START
002.325                 239X .RNP    EQU    2325A           READ NEXT PAIR
002.331                 240X .RNB    EQU    2331A           READ NEXT BYTE
```

```
002.347                241X .CRC    EQU     2347A          CRC-16 CALCULATOR
003.017                242X .WNP    EQU     3017A          WRITE NEXT PAIR
003.024                243X .WNB    EQU     3024A          WRITE NEXT BYTE
003.122                244X .DOD    EQU     3122A          DECODE FOR OCTAL DISPLAY
003.260                245X .RCK    EQU     3260A          READ CONSOLE KEYSET
003.356                246X .DODA   EQU     3356A          SEGMENT CODE TABLE


                       248X **      RAM CELLS USED BY H8MTR.
                       249X *
                       250X
040.000                251X .START  EQU     40000A         START DUMP ADDRESS
040.002                252X .IOWRK  EQU     40002A         IN OR OUT INSTRUCTION
040.005                253X .REGI   EQU     40005A         DISPLAYED REGISTER INDEX
040.006                254X .DSPROT EQU     40006A         PERIOD FLAG BYTE
040.007                255X .DSPMOD EQU     40007A         DISPLAY MODE
040.010                256X .MFLAG  EQU     40010A         USER OPTION BYTE
040.011                257X .CTLFLG EQU     40011A         PANEL CONTROL BYTE
040.013                258X .ALEDS  EQU     40013A         ABUSS LEDS
040.021                259X .DLEDS  EQU     40021A         DBUSS LEDS
040.024                260X .ABUSS  EQU     40024A         ABUSS REGISTER
040.027                261X .CRCSUM EQU     40027A         CRCSUM WORD
040.031                262X .TPERRX EQU     40031A         TAPE ERROR EXIT VECTOR
040.033                263X .TICCNT EQU     40033A         CLOCK TICK COUNTER
040.035                264X .REGPTR EQU     40035A         REGISTER POINTER
040.037                265X .UIVEC  EQU     40037A         USER INTERRUPT VECTORS
040.064                266X .NMIRET EQU     40064A         H88/H89 NMI Return Address      /80.07.sc/
040.066                267X .CTL2FL EQU     40066A         DP2.CTL Control Byte            /80.07.sc/
000.014                268          XTEXT   HOSEQU


                       270X **      HDOS SYSTEM EQUIVALENCES.
                       271X *
                       272X
024.000                273X S.GRT0  EQU     24000A         SYSTEM AREA FOR  GRT0
025.000                274X S.GRT1  EQU     25000A         SYSTEM AREA FOR  GRT1
026.000                275X S.GRT2  EQU     26000A         SYSTEM AREA FOR  GRT2
                       276X
030.000                277X ROMBOOT EQU     30000A         ROM BOOT ENTRY
                       278X
040.100                279X         ORG     40100A         FREE SPACE FROM PAM-8
                       280X
040.100                281X         DS      8              JUMP TO SYSTEM EXIT
040.110                282X D.CON   DS      16             DISK CONSTANTS
040.130                283X SYDD    EQU     *              SYSTEM DISK ENTRY POINT
040.130                284X D.VEC   DS      24*3           SYSTEM ROM ENTRY VECTORS
040.240                285X D.RAM   DS      31             SYSTEM ROM WORK AREA
040.277                286X S.VAL   DS      36             SYSTEM VALUES
040.343                287X S.INT   DS      115            SYSTEM INTERNAL WORK AREAS
041.126                288X         DS      16
041.146                289X S.SOVR  DS      2              STACK OVERFLOW WARNING
041.150                290X         DS      42200A-*       SYSTEM STACK
001.032                291X STACKL  EQU     *-S.SOVR       STACK SIZE
```

```
                    292X
042.200             293X STACK   EQU     *               LWA+1 SYSTEM STACK
042.200             294X USERFWA EQU     *               USER FWA
042.200             295          XTEXT   DIRDEF

                    297X **      DIRECTORY ENTRY FORMAT.
                    298X
000.000             299X         ORG     0
                    300X
                    301X
000.377             302X DF.EMP  EQU     377Q            FLAGS ENTRY EMPTY
000.376             303X DF.CLR  EQU     376Q            FLAGS ENTRY EMPTY, REST OF DIR ALSO CLEAR
                    304X
000.000             305X DIR.NAM DS      8               NAME
000.010             306X DIR.EXT DS      3               EXTENSION
000.013             307X DIR.PRO DS      1               PROJECT
000.014             308X DIR.VER DS      1               VERSION
000.015             309X DIRIDL  EQU     *               FILE IDENTIFICATION LENGTH
                    310X
000.015             311X DIR.CLU DS      1               CLUSTER FACTOR
000.016             312X DIR.FLG DS      1               FLAGS
000.017             313X         DS      1               RESERVED
000.020             314X DIR.FGN DS      1               FIRST GROUP NUMBER
000.021             315X DIR.LGN DS      1               LAST GROUP NUMBER
000.022             316X DIR.LSI DS      1               LAST SECTOR INDEX (IN LAST GROUP)
000.023             317X DIR.CRD DS      2               CREATION DATE
000.025             318X DIR.ALD DS      2               LAST ALTERATION DATE
                    319X
000.027             320X DIRELEN EQU     *               DIRECTORY ENTRY LENGTH
000.027             321          XTEXT   ESINT

                    323X **      S.INT - SYSTEM INTERNAL WORKAREA DEFINITIONS.
                    324X *
                    325X *       THESE CELLS ARE REFERENCED BY OVERLAYS AND MAIN CODE, AND
                    326X *       MUST THEREFORE RESIDE IN FIXED LOW MEMORY.
                    327X
                    328X
040.343             329X         ORG     S.INT
                    330X
                    331X **      CONSOLE STATUS FLAGS
                    332X
040.343             333X S.CDB   DS      1               CONSOLE DESCRIPTOR BYTE
000.000             334X CDB.H85 EQU     00000000B
000.001             335X CDB.H84 EQU     00000001B       =0 IF H8-5, =1 IF H8-4
040.344             336X S.BAUD  DS      2               [0-14]  H8-4 BAUD RATE, =0 IF H8-5
                    337X *                               [15]    =1 IF BAUD RATE => 2 STOP BITS
                    338X
                    339X **      TABLE ADDRESS WORDS
                    340X
040.346             341X S.DLINK DS      2               ADDRESS OF DATA IN HDOS CODE
040.350             342X S.OFWA  DS      2               FWA  OVERLAY  TABLE
```

```
040:352  343X S:CFWA  DS    2          FWA CHANNEL TABLE
040.354  344X S.DFWA  DS    2          FWA DEVICE  TABLE
040:356  345X S:RFWA  DS    2          FWA RESIDENT HDOS CODE
         346X
         347X **      DEVICE DRIVER DELAYED LOAD FLAGS
         348X
040:360  349X S:DDLDA DS    2          DRIVER LOAD ADDRESS (HIGH BYTE=0 IF NO LOAD PENDING)
040.362  350X S.DDLEN DS    2          CODE LENGTH IN BYTES
040:364  351X S:DDGRP DS    1          GROUP NUMBER FOR DRIVER
040.365  352X         DS    1          HOLD PLACE
         353X *S:DDSEC       DS    2                SECTOR NUMBER FOR DRIVER ( * OBSOLETE ! * )
040.366  354X S.DDDTA DS    2          DEVICE'S ADDRESS IN DEVLST +DEV.RES
040:370  355X S:DDOPC DS    1          OPEN OPCODE PENDEDING
         356X
         357X **      OVERLAY MANAGEMENT FLAGS
         358X
000:001  359X OVL:IN  EQU   00000001B    IN MEMORY
000.002  360X OVL.RES EQU   00000010B    PERMINANTLY RESIDENT
000:014  361X OVL:NUM EQU   00001100B    OVERLAY NUMBER MASK
000.200  362X OVL.UCS EQU   10000000B    USER CODE SWAPPED FOR OVERLAY
         363X
040.371  364X S.OVLFL DS    1          OVERLAY FLAG
040:372  365X S:UCSF  DS    2          FWA SWAPPED USER CODE
040.374  366X S.UCSL  DS    2          LENGTH SWAPPED USER CODE
040:376  367X S:OVLS  DS    2          SIZE OF OVERLAY CODE
041.000  368X S.OVLE  DS    2          ENTRY POINT OF OVERLAY CODE
         369X
041.002  370X S.SSN   DS    2          SWAP AREA SECTOR NUMBER
041:004  371X S:OSN   DS    2          OVERLAY SECTOR NUMBER
         372X
         373X *       SYSCALL PROCESSING WORK AREAS
         374X
041:006  375X S:CACC  DS    1          (ACC) UPON SYSCALL
041.007  376X S.CODE  DS    1          SYSCALL INDEX IN PROGRESS
         377X
         378X *       JUMPS TO ROUTINES IN RESIDENT HDOS CODE
         379X
041.010  380X S.JUMPS DS    0          START OF DUMP VECTORS
041:010  381X S:SDD   DS    3          JUMP TO STAND-IN DEVICE DRIVER
041.013  382X S.FASER DS    3          JUMP TO FATSERR (FATAL SYSTEM ERROR)
041:016  383X S:DIREA DS    3          JUMP TO DIREAD (DISK FILE READ)
041.021  384X S.FCI   DS    3          JUMP TO FCI (FETCH CHANNEL INFO)
041:024  385X S:SCI   DS    3          JUMP TO SCI (STORE CHANNEL INFO)
041.027  386X S.GUP   DS    3          JUMP TO GUF (GET UNIT POINTER)
         387X
041.032  388X S.MOUNT DS    1          <>0 IF THE SYSTEM DISK IS MOUNTED
041:033  389X S:DCS   DS    1          DEFAULT CLUSTER SIZE-1
         390X
041:034  391X S:BOOTF DS    1          BOOT FLAGS
000.001  392X BOOT.P  EQU   00000001B    EXECUTE PROLOGUE UPON BOOTUP
         393X
         394X *       STACK VALUE SAVED FOR OVERLAY SYSCALLS
         395X
041.035  396X S.OVSTK DS    2          VALUE OF SP UPON SYSCALLS USING OVERLAY
         397X
041.037  398X         DS    1          RESERVED
```

```
                        400X **      ACTIVE I/O AREA.
                        401X *
                        402X *       THE AIO.XXX AREA CONTAINS INFORMATION ABOUT THE I/O OPERATION
                        403X *       CURRENTLY BEING PERFORMED.  THE INFORMATION IS OBTAINED FROM
                        404X *       THE CHANNEL TABLE, AND WILL BE RESTORED THERE WHEN DONE.
                        405X *
                        406X *       NORMALLY, THE AIO.XXX INFORMATION WOULD BE OBTAINED DIRECTLY
                        407X *       FROM VARIOUS SYSTEM TABLES VIA POINTER REGISTERS.  SINCE THE
                        408X *       8080 HAS NO GOOD INDEXED ADDRESSING, THE DATA IS MANUALLY
                        409X *       COPIED INTO THE AIO.XXX CELLS BEFORE PROCESSING, AND
                        410X *       BACKDATED AFTER PROCESSING.
                        411X
041.040                 412X AIO.VEC DS      3              JUMP INSTRUCTION
041.041                 413X AIO.DDA EQU     *-2            DEVICE DRIVER ADDRESS
041.043                 414X AIO.FLG DS      1              FLAG BYTE
041.044                 415X AIO.GRT DS      2              ADDRESS OF GROUP RESERV TABLE
041.046                 416X AIO.SPG DS      1              SECTORS PER GROUP
041.047                 417X AIO.CGN DS      1              CURRENT GROUP NUMBER
041.050                 418X AIO.CSI DS      1              CURRENT SECTOR INDEX
041.051                 419X AIO.LGN DS      1              LAST GROUP NUMBER
041.052                 420X AIO.LSI DS      1              LAST SECTOR INDEX
041.053                 421X AIO.DTA DS      2              DEVICE TABLE ADDRESS
041.055                 422X AIO.DES DS      2              DIRECTORY SECTOR
041.057                 423X AIO.DEV DS      2              DEVICE CODE
041.061                 424X AIO.UNI DS      1              UNIT NUMBER (0-9)
                        425X
041.062                 426X AIO.DIR DS      DIRELEN        DIRECTORY ENTRY
                        427X
041.111                 428X AIO.CNT DS      1              SECTOR COUNT
041.112                 429X AIO.EOM DS      1              END OF MEDIA FLAG
041.113                 430X AIO.EOF DS      1              END OF FILE FLAG
041.114                 431X AIO.TFP DS      2              TEMP FILE POINTERS
041.116                 432X AIO.CHA DS      2              ADDRESS OF CHANNEL BLOCK (IUC,DDA)


041.120                 434X S.BDA   DS      1              Boot Device Address (Setup by ROM) /80.09.sc/
041.121                 435X S.SCR   DS      2              SYSTEM SCRATCH AREA ADDRESS
041.123                 436          XTEXT   ESVAL


                        438X **      S.VAL - SYSTEM VALUE DEFINTIONS.
                        439X *
                        440X *       THESE VALUES ARE SET AND MAINTAINED BY THE SYSTEM.
                        441X *
                        442X *       THE DECK HOSEQU MUST BE MODIFIED WHEN THIS IS MODIFIED.
                        443X
                        444X
040.277                 445X         ORG     S.VAL
                        446X
040.277                 447X S.DATE  DS      9              SYSTEM DATE (IN ASCII)
040.310                 448X S.DATC  DS      2              CODED DATE
040.312                 449X S.TIME  DS      4              TIME FROM MIDNIGHT (IN TICS)
```

```
040:316                 450X S.HIMEM DS      2              HARDWARE HIGH MEMORY ADRESS+1
                        451X
040:320                 452X S.SYSM  DS      2              FWA RESIDENT SYSTEM
                        453X
040:322                 454X S.USRM  DS      2              LWA USER MEMORY
                        455X
040:324                 456X S.OMAX  DS      2              MAX OVERLAY SIZE FOR SYSTEM
                        457X
                        458X
                        459X **      THE FOLLOWING FIVE CELLS SHOULD BE MODIFIED/READ ONLY VIA THE .CONSL SYSCALL
                        460X
000.200                 461X CSL.ECH EQU     10000000B      SUPPRESS ECHO
000.004                 462X CSL.RAW EQU     00000100B      Raw Mode I/O                    /80.09.sc/
000.002                 463X CSL.WRP EQU     00000010B      WRAP LINES AT WIDTH
000.001                 464X CSL.CHR EQU     00000001B      OPERATE IN CHARACTER MODE
                        465X
000.000                 466X I.CSLMD EQU     0              S.CSLMD IS FIRST BYTE
040.326                 467X S.CSLMD DS      1              CONSOLE MODE
                        468X
000.200                 469X CTP.BKS EQU     10000000B      TERMINAL PROCESSES BACKSPACES
000.100                 470X CTP.FF  EQU     01000000B      Terminal Processes Form-Feed    /80.09.sc/
000.040                 471X CTP.MLI EQU     00100000B      MAP LOWER CASE TO UPPER ON INPUT
000.020                 472X CTP.MLO EQU     00010000B      MAP LOWER CASE TO UPPER ON OUTPUT
000.010                 473X CTP.2SB EQU     00001000B      TERMINAL NEEDS TWO STOP BITS
000.002                 474X CTP.BKM EQU     00000010B      MAP BKSP (UPON INPUT) TO RUBOUT
000.001                 475X CTP.TAB EQU     00000001B      TERMINAL SUPPORTS TAB CHARACTERS
                        476X
000.001                 477X I.CONTY EQU     1              S.CONTY IS 2ND BYTE
000.000                 478X         ERRNZ   *-S.CSLMD-I.CONTY
040.327                 479X S.CONTY DS      1              CONSOLE TYPE FLAGS
000.002                 480X I.CUSOR EQU     2              S.CUSOR IS 3RD BYTE
000.000                 481X         ERRNZ   *-S.CSLMD-I.CUSOR
040.330                 482X S.CUSOR DS      1              CURRENT CURSOR POSITION
000.003                 483X I.CONWI EQU     3              S.CONWI IS 4TH BYTE
000.000                 484X         ERRNZ   *-S.CSLMD-I.CONWI
040.331                 485X S.CONWI DS      1              CONSOLE WIDTH
                        486X
000.001                 487X CO.FLG  EQU     00000001B      CTL-O FLAG
000.200                 488X CS.FLG  EQU     10000000B      CTL-S FLAG
                        489X
000.004                 490X I.CONFL EQU     4              S.CONFL IS 5TH BYTE
000.000                 491X         ERRNZ   *-S.CSLMD-I.CONFL
040.332                 492X S.CONFL DS      1              CONSOLE FLAGS
                        493X
040.333                 494X S.CAADR DS      2              ADDRESS FOR ABORT PROCESSING (>256 IF VALID)
040.335                 495X S.CCTAB DS      6              ADDR FOR CTL-A, CTL-B, CTL-C PROCESSING
040.343                 496          XTEXT   ECDEF
```

```
                        498X **     ERROR CODE DEFINITIONS.
                        499X
000.000                 500X        ORG     0
000.000                 501X        DS      1           NO ERROR *0
000.001                 502X EC.EOF DS      1           END OF FILE
000.002                 503X EC.EOM DS      1           END OF MEDIA
000.003                 504X EC.ILC DS      1           ILLEGAL SYSCALL CODE
000.004                 505X EC.CNA DS      1           CHANNEL NOT AVAILABLE
000.005                 506X EC.DNS DS      1           DEVICE NOT SUITABLE
000.006                 507X EC.IDN DS      1           ILLEGAL DEVICE NAME
000.007                 508X EC.IFN DS      1           ILLEGAL FILE NAME
000.010                 509X EC.NRD DS      1           NO ROOM FOR DEVICE DRIVER
000.011                 510X EC.FNO DS      1           CHANNEL NOT OPEN
000.012                 511X EC.ILR DS      1           ILLEGAL REQUEST
000.013                 512X EC.FUC DS      1           FILE USAGE CONFLICT
000.014                 513X EC.FNF DS      1           FILE NAME NOT FOUND
000.015                 514X EC.UND DS      1           UNKNOWN DEVICE
000.016                 515X EC.ICN DS      1           ILLEGAL CHANNEL NUMBER
000.017                 516X EC.DIF DS      1           DIRECTORY FULL
000.020                 517X EC.IFC DS      1           ILLEGAL FILE CONTENTS
000.021                 518X EC.NEM DS      1           NOT ENOUGH MEMORY
000.022                 519X EC.RF  DS      1           READ FAILURE
000.023                 520X EC.WF  DS      1           WRITE FAILURE
000.024                 521X EC.WPV DS      1           WRITE PROTECTION VIOLATION
000.025                 522X EC.WP  DS      1           DISK WRITE PROTECTED
000.026                 523X EC.FAP DS      1           FILE ALREADY PRESENT
000.027                 524X EC.DDA DS      1           DEVICE DRIVER ABORT
000.030                 525X EC.FL  DS      1           FILE LOCKED
000.031                 526X EC.FAO DS      1           FILE ALREADY OPEN
000.032                 527X EC.IS  DS      1           ILLEGAL SWITCH
000.033                 528X EC.UUN DS      1           UNKNOWN UNIT NUMBER
000.034                 529X EC.FNR DS      1           FILE NAME REQUIRED
000.035                 530X EC.DIW DS      1           DEVICE IS NOT WRITABLE (OR WRITE LOCKED)
000.036                 531X EC.UNA DS      1           UNIT NOT AVAILABLE
000.037                 532X EC.ILV DS      1           ILLEGAL VALUE
000.040                 533X EC.ILO DS      1           ILLEGAL OPTION
000.041                 534X EC.VPM DS      1           VOLUME PRESENTLY MOUNTED ON DEVICE
000.042                 535X EC.NVM DS      1           NO VOLUME PRESENTLY MOUNTED
000.043                 536X EC.FOD DS      1           FILE OPEN ON DEVICE
000.044                 537X EC.NPM DS      1           NO PROVISIONS MADE FOR REMOUNTING MORE DISKS
000.045                 538X EC.DNI DS      1           DISK NOT INITIALIZED
000.046                 539X EC.DNR DS      1           DISK IS NOT READABLE
000.047                 540X EC.DSC DS      1           DISK STRUCTURE IS CORRUPT
000.050                 541X EC.NCV DS      1           NOT CORRECT VERSION OF HDOS
000.051                 542X EC.NOS DS      1           NO OPERATING SYSTEM MOUNTED
000.052                 543X EC.IOI DS      1           ILLEGAL OVERLAY INDEX
000.053                 544X EC.OTL DS      1           OVERLAY TO LARGE
000.054                 545         XTEXT   H14

                        548X ***    H-14 DEFINITIONS
                        549X *
                        550X
000.033                 551X SET.H14 EQU    033Q
                        552X
000.000                 553X LPI.6  EQU     0
```

```
000,001                 554X LPT.8   EQU     1
                        555X
000,165                 556X SETWIDE EQU     165Q
                        557X
000,000                 558X CHAR.80 EQU     0
000,001                 559X CHAR.96 EQU     1
000,002                 560X CHAR132 EQU     2
000,054                 561          XTEXT   PICDEF


                        563X **      PIC FORMAT EQUIVALENCES.
                        564X
000,000                 565X         ORG     0
                        566X
000,000                 567X PIC.ID  DS      1       377Q = BINARY FILE FLAG
000,001                 568X         DS      1       FILE TYPE (FT.PIC)
000,002                 569X PIC.LEN DS      2       LENGTH OF ENTIRE RECORD
000,004                 570X PIC.PTR DS      2       INDEX OF START OF PIC TABLE
                        571X
000,006                 572X PIC.COD DS      0       CODE STARTS HERE
000,006                 573          XTEXT   DEVDEF


                        575X **      DEVICE TABLE ENTRYS.
                        576X
000,000                 577X         ORG     0
                        578X
000,000                 579X DEV.NAM DS      2       DEVICE NAME
000,000                 580X DV.EL   EQU     00000000B       END OF DEVICE LIST FLAG
000,001                 581X DV.NU   EQU     00000001B       DEVICE ENTRY NOT IN USE
                        582X
000,002                 583X DEV.RES DS      1       DRIVER RESIDENSE CODE
000,001                 584X DR.IM   EQU     00000001B       DRIVER IN MEMORY
000,002                 585X DR.PR   EQU     00000010B       DRIVER PERMINANTLY RESIDENT
                        586X
000,003                 587X DEV.JMP DS      1       JMP TO PROCESSOR
000,004                 588X DEV.DDA DS      2       DRIVER ADDRESS
000,006                 589X DEV.FLG DS      1       FLAG BYTE
000,001                 590X DT.DD   EQU     00000001B       DIRECTORY DEVICE
000,002                 591X DT.CR   EQU     00000010B       CAPABLE OF READ OPERATION
000,004                 592X DT.CW   EQU     00000100B       CAPABLE OF WRITE OPERATION
000,010                 593X DT.RN   EQU     00001000B       Capable of random access        /80.02.sc/
000,020                 594X DT.CH   EQU     00010000B       Capable of Character mode       /80.02.sc/
                        595X
000,007                 596X DEV.MUM DS      1       MOUNTED UNIT MASK
000,010                 597X DEV.MNU DS      1       MAXIMUM NUMBER OF UNITS
000,011                 598X DEV.UNT DS      2       ADDRESS OF UNIT SPECIFIC DATA TABLE
                        599X
000,013                 600X DEV.DVL DS      2       DRIVER BYTE LENGTH
000,015                 601X DEV.DVG DS      1       DRIVER ROUTINE GROUP ADDRESS
                        602X
000,016                 603X DEVELEN EQU     *       DEVICE TABLE ENTRY LENGTH
```

```
                        605X **     UNIT SPECIFIC DEVICE DATA TABLE ENTRIES
                        606X
000.000                 607X        ORG     0
                        608X
000.000                 609X UNT.FLG DS     1           UNIT SPECIFIC  *DEV.FLG*
000.001                 610X UNT.SPG DS     1           Sectors Per Group              /80.04.GC/
000.002                 611X UNT.GRT DS     2           ADDRESS OF GROUP RESERVATION TABLE (IF DT.DD)
000.004                 612X UNT.GTS DS     2           GRT SECTOR NUMBER
000.006                 613X UNT.DIS DS     2           DIRECTORY FIRST SECTOR NUMBER
                        614X
000.010                 615X UNT.SIZ EQU    *           SIZE OF UNIT SPECIFIC DATA TABLE PER UNIT
000.010                 616         XTEXT   DVDDEF



                        618X **     DEVICE DRIVER EQUIVALENCES.
                        619X
000.307                 620X DVDFLV EQU     3070        DEVICE DRIVER FLAG VALUE
                        621X
000.006                 622X        ORG     PIC.COD     STARTS AT PIC CODE AREA
                        623X
000.006                 624X DVD.DVD DS     1           MUST BE DVDFLV, FLAGS TO HDOS AS DRIVER
000.007                 625X DVD.CAP DS     1           DEVICE CAPABILITY FLAG
000.010                 626X DVD.MUM DS     1           MOUNTED UNIT MASK
000.011                 627X DVD.MNU DS     1           MAXIMUM NUMBER OF UNITS
000.012                 628X DVD.UFL DS     8           UNIT SUB-CAPABILITY FLAGS FOR UNITS 0-7
000.022                 629X DVD.SET DS     1           = DVDFLV IFF DRIVER WILL TAKE SET OPTIONS
000.023                 630X DVD.INP DS     2           Pointer to Init Code           /80.07.sc/
000.025                 631X        DS      22          RESERVED, MUST BE 0            /80.07.sc/
000.053                 632X DVD.STE EQU    *           ENTRY FOR 'SET' INVOCATION
                        633X
002.000                 634X DVD.ENT EQU    2000A       DRIVER ENTRY POINT (MUST BE MULT OF 256)
000.053                 635         XTEXT   U8250



                        637X **     8250 UART CONTROL AND BIT DEFINITIONS.
                        638X
000.350                 639X SC.ACE EQU     350Q        SYSTEM CONSOLE PORT IF 8250 ACE
000.156                 640X AC.DLY EQU     110         220 MIL. SEC. DELAY FOR 8250
                        641X
000.000                 642X UR.RBR EQU     0           RECEIVER BUFFER REGISTER (READ ONLY)
                        643X
000.000                 644X UR.THR EQU     0           TRANSMITTER HOLDING REGISTER (WRITE ONLY)
                        645X
000.000                 646X UR.DLL EQU     0           DIVISOR LATCH (LEAST SIGNIFICANT)
                        647X
000.001                 648X UR.DLM EQU     1           DIVISOR LATCH (MOST SIGNIFICANT)
                        649X
000.001                 650X UR.IER EQU     1           INTERRUPT ENABLE REGISTER
000.001                 651X UC.EDA EQU     00000001B    ENABLE RECEIVED DATA AVAILABLE INTERRUPT
000.002                 652X UC.TRE EQU     00000010B    ENABLE TRANSMIT HOLD REGISTER EMPTY INTERRUPT
000.004                 653X UC.RSI EQU     00000100B    ENABLE RECEIVE STATUS INTERRUPT
000.010                 654X UC.MSI EQU     00001000B    ENABLE MODEM STATUS INTERRUPT
```

```
                        655X
000.002                 656X UR.IIR  EQU     2               INTERRUPT IDENTIFICATION REGISTER
000.001                 657X UC.IIP  EQU     00000001B        INVERTED INTERRUPT PENDING (0 MEANS PENDING)
000.006                 658X UC.IID  EQU     00000110B        INTERRUPT ID
                        659X
000.003                 660X UR.LCR  EQU     3               LINE CONTROL REGISTER
000.000                 661X UC.5BW  EQU     00000000B        5 BIT WORDS
000.001                 662X UC.6BW  EQU     00000001B        6 BIT WORDS
000.002                 663X UC.7BW  EQU     00000010B        7 BIT WORDS
000.003                 664X UC.8BW  EQU     00000011B        8 BIT WORDS
000.004                 665X UC.2SB  EQU     00000100B        TWO STOP BITS SELECTED
000.010                 666X UC.PEN  EQU     00001000B        PARITY COMPUTATION ENABLED
000.020                 667X UC.EPS  EQU     00010000B        EVEN PARITY SELECT
000.040                 668X UC.SKP  EQU     00100000B        STICK PARITY
000.100                 669X UC.SB   EQU     01000000B        SET BREAK
000.200                 670X UC.DLA  EQU     10000000B        DIVISOR LATCH ACCESS
                        671X
000.004                 672X UR.MCR  EQU     4               MODEM CONTROL REGISTER
000.001                 673X UC.DTR  EQU     00000001B        DATA TERMINAL READY
000.002                 674X UC.RTS  EQU     00000010B        REQUEST TO SEND
000.004                 675X UC.OU1  EQU     00000100B        OUT 1
000.010                 676X UC.OU2  EQU     00001000B        OUT 2
000.020                 677X UC.LOO  EQU     00010000B        LOOP
                        678X
000.005                 679X UR.LSR  EQU     5               LINE STATUS REGISTER
000.001                 680X UC.DR   EQU     00000001B        DATA READY
000.002                 681X UC.OR   EQU     00000010B        OVERRUN
000.004                 682X UC.PE   EQU     00000100B        PARITY ERROR
000.010                 683X UC.FE   EQU     00001000B        FRAMING ERROR
000.020                 684X UC.BI   EQU     00010000B        BREAK INTERRUPT
000.040                 685X UC.THE  EQU     00100000B        TRANSMITTER HOLDING REGISTER EMPTY
000.100                 686X UC.TSE  EQU     01000000B        TRANSMITTER SHIFT REGISTER EMPTY
                        687X
000.006                 688X UR.MSR  EQU     6               MODEM STATUS REGISTER
000.001                 689X UC.DCS  EQU     00000001B        DELTA CLEAR TO SEND
000.002                 690X UC.DDR  EQU     00000010B        DELTA DATA SET READY
000.004                 691X UC.TER  EQU     00000100B        TRAILING EDGE OF RING
000.010                 692X UC.DRL  EQU     00001000B        DELTA RECEIVE LINE SIGNAL DETECT
000.020                 693X UC.CTS  EQU     00010000B        CLEAR TO SEND
000.040                 694X UC.DSR  EQU     00100000B        DATA SET READY
000.100                 695X UC.RI   EQU     01000000B        RING INDICATOR
000.200                 696X UC.RLS  EQU     10000000B        RECEIVED LINE SIGNAL DETECT
000.053                 697          XTEXT   U8251
```

```
                        700X **     8251 USART BIT DEFINITIONS.
                        701X *
                        702X
                        703X **     PORT ADDRESSES
                        704X
000.000                 705X UDR    EQU     0           DATA REGISTER IS EVEN
000.001                 706X USR    EQU     1           STATUS REGISTER IS NEXT
                        707X
000.372                 708X SC.UART EQU    372Q        CONSOLE USART ADDRESS (IFF 8251)
                        709X
                        710X
                        711X **     MODE INSTRUCTION CONTROL BITS.
                        712X
000.100                 713X UMI.1B EQU     01000000B   1 STOP BIT
000.200                 714X UMI.HB EQU     10000000B   1 1/2 STOP BITS
000.300                 715X UMI.2B EQU     11000000B   2 STOP BITS
000.040                 716X UMI.PE EQU     00100000B   EVEN PARITY
000.020                 717X UMI.PA EQU     00010000B   USE PARITY
000.000                 718X UMI.L5 EQU     00000000B   5 BIT CHARACTERS
000.004                 719X UMI.L6 EQU     00000100B   6 BIT CHARACTERS
000.010                 720X UMI.L7 EQU     00001000B   7 BIT CHARACTERS
000.014                 721X UMI.L8 EQU     00001100B   8 BIT CHARACTERS
000.001                 722X UMI.1X EQU     00000001B   CLOCK X 1
000.002                 723X UMI.16X EQU    00000010B   CLOCK X 16
000.003                 724X UMI.64X EQU    00000011B   CLOCK X 64
                        725X
                        726X **     COMMAND INSTRUCTION BITS.
                        727X
000.100                 728X UCI.IR EQU     01000000B   INTERNAL RESET
000.040                 729X UCI.RO EQU     00100000B   READER-ON CONTROL FLAG
000.020                 730X UCI.ER EQU     00010000B   ERROR RESET
000.004                 731X UCI.RE EQU     00000100B   RECEIVE ENABLE
000.002                 732X UCI.IE EQU     00000010B   ENABLE INTERRUPTS FLAG
000.001                 733X UCI.TE EQU     00000001B   TRANSMIT ENABLE
                        734X
                        735X **     STATUS READ COMMAND BITS.
                        736X
000.100                 737X USR.BD EQU     01000000B   Break Detect                    /80.08.sc/
000.040                 738X USR.FE EQU     00100000B   FRAMING ERROR
000.020                 739X USR.OE EQU     00010000B   OVERRUN ERROR
000.010                 740X USR.PE EQU     00001000B   PARITY ERROR
000.004                 741X USR.TXE EQU    00000100B   TRANSMITTER EMPTY
000.002                 742X USR.RXR EQU    00000010B   RECEIVER READY
000.001                 743X USR.TXR EQU    00000001B   TRANSMITTER READY
000.053                 744         XTEXT   SETCAL


                        746X **     SETCAL - FIXED ADDRESS ROUTINES IN SET
                        747X *
                        748X *      THESE VECTORS ARE FIXED ENTRY POINTS INTO THE
                        749X *      SET PROGRAM TO UTILIZED BY DEVICE DRIVERS IN
                        750X *      PROCESSING SET COMMANDS.
                        751X *
                        752X
```

```
042:201                 753X            ORG     USERFWA+1
                        754X
042:201                 755X $SNA       DS      3
                        756X
042:204                 757X $DCS       DS      3
                        758X
042:207                 759X $CNA       DS      3
                        760X
042:212                 761X $FST       DS      3
                        762X
042:215                 763X $TBLS      DS      3
                        764X
042:220                 765X $WTBLS     DS      3
                        766X
042:223                 767X $LBD       DS      3
                        768X
042:226                 769X $SOP       DS      3
                        770X
042:231                 771X $PBF       DS      3
                        772X
042:234                 773X $PBV       DS      3
                        774X
042:237                 775X            DS      60      RESERVED
                        776             CODE    PIC
                        777
                        778  *          CODE HEADER
                        779
000.006  307            780             DB      DVDFLV                  DEVICE DRIVER FLAG VALUE
000:007  004            781             DB      DT.CW                   DEVICE CAPABILITY
000.010  001            782             DB      00000001B               MOUNTED UNIT MASK
000:011  001            783             DB      1                       ONLY 1 UNIT
000.012  004            784             DB      DT.CW                   0:    CAPABLE OF WRITE
000:013                 785             DS      7                       1-7:  IGNORED
000.022  307            786             DB      DVDFLV
000:023  000 000        787             DW      0                                               /80.09.sc/
                        788
000:025                 789  .          SET     025Q                                            /80.09.sc/
000.000                 790             ERRNZ   *-.                                            /80.09.sc/
000:025                 791             DS      DVD.STE-.               RESERVED AREAS          /80.09.sc/
```

```
                        794  ***     ASSEMBLY CONSTANTS
                        795  *
                        796  *
                        797
                        798  **      DEFAULT DEVICE DEFINITIONS
                        799  *
000.340                 800  DFLT.LP         EQU     340Q            DEFAULT LP0: ADDRESS
000.000                 801              IF      H84IO
000.030                 802  DFLT.BD         EQU     30A             DEFAULT BAUD RATE = 4800 BAUD
                        803              ELSE
                        804  DFLT.BD         EQU     000Q
                        805              ENDIF
000.010                 806  DFLT.WD         EQU     CHAR.80*4+CHAR132*4     DEFAULT (CHAR.80*16+CHAR132*4)
                        807  *                                                       WIDTH = WIDE-132,
                        808  *                                                               NARROW-80
                        809
000.000                 810  DFLT.LI         EQU     LPI.6           6 LINES/INCH
000.054                 811  DFLT.FL         EQU     11*4            11 INCH FORM LEN IN 1/4 INCHES
000.074                 812  DFLT.LC         EQU     60              LINE COUNT = 60 LINES/PAGE
                        813
000.001                 814  DFLT.LX         EQU     1               INITIAL LINE INDEX
000.001                 815  DFLT.CX         EQU     1               INITIAL COLUMN INDEX
                        816
000.000                 817  DFLT.CS         EQU     0               INITIAL CTL-S FLAG VALUE
```

```
                                    820  ***     SET CODE ENTRY POINT
                                    821  *
                                    822  *       SET COMMANDS ENTER HERE
                                    823  *
                                    824  *       ENTRY:  (DE)    = LINE POINTER
                                    825  *               (A)     = UNIT NUMBER
                                    826  *
                                    827  *       EXIT:   'C' CLEAR IF OK
                                    828  *               'C' SET IF ERROR
                                    829  *                (A) = ERROR CODE
                                    830  *
                                    831  *       USES:   ALL
                                    832  *
                                    833
000.053                             834  SETNTR  EQU     *
000.000                             835          ERRNZ   *-DVD.STE
000.053  247                        836          ANA     A
000.054  302 103 000                837          JNZ     SET1
000.057  102                        838          MOV     B,D
000.060  113                        839          MOV     C,E             (BC) = PARAMETER LIST ADDRESS
000.061  021 325 001                840          LXI     D,PRCTAB        (DE) = PROCESSOR TABLE ADDRESS
000.064  041 212 001                841          LXI     H,OPTTAB        (HL) = OPTION TABLE ADDRESS
000.067  315 226 042                842          CALL    $SOP
000.072  330                        843          RC
000.073  315 201 042                844          CALL    $SNA
000.076  310                        845          RZ                      AT END OF LINE
000.077  076 040                    846          MVI     A,EC.ILO        ILLEGAL OPTION
000.101  067                        847          STC
000.102  311                        848          RET
                                    849
000.103  076 033                    850  SET1    MVI     A,EC.UUN
000.105  067                        851          STC
000.106  311                        852          RET


                                    854  ***     PROCESSORS
                                    855  *


                                    857  **      FLAG - PROCESS FLAG OPTIONS
                                    858  *
                                    859  *       PROCESS FLAG TYPE OPTION SPECIFICATIONS
                                    860  *
                                    861  *
                                    862  *       ENTRY, EXIT, AND USE SAME AS PBF
                                    863
000.107  303 231 042                864  FLAG    JMP     $PBF            PROCESS BYTE FLAGS
```

```
                                866  **      VAL - PROCESS VALUE OPTIONS
                                867  *
                                868  *       PROCESS VALUE TYPE OPTION SPECIFICATIONS
                                869  *
                                870  *
                                871  *       ENTRY, EXIT, AND USE SAME AS PBV
                                872
000.112  303 234 042           873  VAL     JMP     $PBV            PROCESS BYTE VALUES



                                875  **      WIDTH - PROCESS WIDTH SPECIFICATIONS
                                876  *
                                877  *       PROCESS H-14 WIDTH OPTION SPECIFICATION.
                                878  *
                                879  *       SPECIFICATION FORMAT:
                                880  *
                                881  *               MMM,NNN         NNN = VALUE FOR NARROW SIDE OF SWITCH
                                882  *                               MMM = VALUE FOR WIDE SIDE OF SWITCH
                                883  *
                                884  *
                                885  *       ENTRY:  (BC)    = TEXT ADDRESS
                                886  *
                                887  *       EXIT:   (BC)    = TEXT ADDRESS UPDATED
                                888  *               'C' CLEAR IF OK
                                889  *               'C' SET IF ERROR
                                890  *                (A) = ERROR CODE
                                891  *
                                892  *       USES:   ALL
                                893  *
                                894
000.115  076 012                895  WIDTH   MVI     A,10            (A) = DEFAULT RADIX
000.117  315 207 042           896          CALL    $CNA            (HL) = VALUE
000.122  332 233 000           897          JC      WID1
000.125  174                   898          MOV     A,H
000.126  247                   899          ANA     A
000.127  302 233 000           900          JNZ     WID1
000.132  135                   901          MOV     D,L             (D) = NARROW VALUE
000.133  315 201 042           902          CALL    $SNA
000.136  012                   903          LDAX    B
000.137  376 054               904          CPI     ','
000.141  302 233 000           905          JNE     WID1
000.144  003                   906          INX     B
000.145  076 012               907          MVI     A,10
000.147  325                   908          PUSH    D               SAVE NARROW VALUE
000.150  315 207 042           909          CALL    $CNA            (HL) = VALUE
000.153  321                   910          POP     D               RESTORE NARROW VALUE
000.154  332 233 000           911          JC      WID1
000.157  174                   912          MOV     A,H
000.160  247                   913          ANA     A
000.161  302 233 000           914          JNZ     WID1
000.164  175                   915          MOV     A,L             (A) = WIDE SETTING
000.165  041 337 001           916          LXI     H,WIDTAB
000.170  315 215 042           917          CALL    $TBLS
000.173  302 233 000           918          JNZ     WID1
```

```
000.176  176            919          MOV     A,M             (A)  = WIDE FLAG
                         920  *       RLC                                      /79.02.GC/
                         921  *       RLC                                      /79.02.GC/
000.177  137            922          MOV     E,A             (E)  = WIDE FLAG VALUE
000.200  172            923          MOV     A,D
000.201  041 337 001    924          LXI     H,WIDTAB
000.204  315 215 042    925          CALL    $TBLS
000.207  302 233 000    926          JNZ     WID1
000.212  176            927          MOV     A,M             (A)  = NARROW FLAG VALUE
000.213  007            928          RLC                                      /79.02.GC/
000.214  007            929          RLC                                      /79.02.GC/
000.215  263            930          ORA     E
000.216  007            931          RLC
000.217  007            932          RLC
000.220  137            933          MOV     E,A             (E)  = COMBINED VALUE
000.221  072 021 004    934          LDA     TLP.CON
000.224  346 303        935          ANI     11000011B       MASK OUT OLD VALUES
000.226  263            936          ORA     E
000.227  062 021 004    937          STA     TLP.CON
000.232  311            938          RET
                        939
000.233  076 037        940  WID1    MVI     A,EC.ILV
000.235  067            941          STC
000.236  311            942          RET
000.000                 943          IF      H84IO


                        945  **      BAUD - PROCESS BAUD RATE
                        946  *
                        947  *       PROCESS BAUD RATE OPTION SPECIFICATION.
                        948  *
                        949  *
                        950  *       ENTRY:  (BC)    = TEXT ADDRESS
                        951  *
                        952  *       EXIT:   (BC)    = TEXT ADDRESS UPDATED
                        953  *               'C' CLEAR IF OK
                        954  *               'C' SET IF ERROR
                        955  *                (A) = ERROR CODE
                        956  *
                        957  *       USES:   ALL
                        958  *
                        959
000.237  076 012        960  BAUD    MVI     A,10            (A) = DEFAULT RADIX
000.241  315 207 042    961          CALL    $CNA
000.244  332 262 000    962          JC      BAU1
000.247  353            963          XCHG                    (DE) = BAUD RATE
000.250  315 223 042    964          CALL    $LBD
000.253  302 262 000    965          JNZ     BAU1
000.256  042 017 004    966          SHLD    TLP.BAU         SET BAUD RATE WORD
000.261  311            967          RET
                        968
000.262  076 037        969  BAU1    MVI     A,EC.ILV        ILLEGAL VALUE
000.264  067            970          STC
000.265  311            971          RET
```

```
                                 972           ENDIF


                                 974  **       HELP - PROCESS HELP OPTION
                                 975  *
                                 976  *       TYPE VALID OPTIONS ON USER CONSOLE
                                 977  *
                                 978
000.266  315 136 031            979  HELP     CALL     $TYPTX
000.271  012 012 123            980           DB       NL,NL,'Set Options:',NL,NL
000.311  066 114 120            981           DB       '6LPI(8LPI)     6(8) Lines/inch',NL
000.344  120 101 107            982           DB       'PAGE nnn       Lines/page',NL
000.370  120 117 122            983           DB       'PORT nnn       Port number',NL
001.015  127 111 104            984           DB       'WIDTH m;n      Wide(m)/Narrow(n) sides of '
001.062  167 151 144            985           DB       'width switch;',NL
001.100  011 011 160            986           DB       '               possible values:  80;96;132',NL
000.000                         987           IF       H84IO
001.136  102 101 125            988           DB       'BAUD nnn       Baud rate',NL
                                 989           ENDIF
001.161  110 105 114            990           DB       'HELP           Type this text',NL
001.206  012 212                991           DB       NL,ENL
001.210  257                    992           XRA      A               CLEAR CARRY
001.211  311                    993           RET
```

```
                        995  ***     TABLES
                        996  *
                        997  *


                        999  **      OPTTAB - OPTION TABLE
                       1000  *
                       1001
001,212  324 001        1002  OPTTAB  DW      OPTTABE
001,214  006            1003          DB      6
                       1004
001,215  066 114 120    1005          DB      '6LP','I'+200Q,FLAGI,LPI,6!LPI,8,LPI,6
001,224  021 004        1006          DW      TLP,CON
001,226  000            1007          DB      0
                       1008
001,227  070 114 120    1009          DB      '8LP','I'+200Q,FLAGI,LPI,6!LPI,8,LPI,8
001,236  021 004        1010          DW      TLP,CON
001,240  000            1011          DB      0
                       1012
001,241  120 101 107    1013          DB      'PAG','E'+200Q,VALI,10,0,255
001,251  023 004        1014          DW      TLP,LC
                       1015
001,253  120 117 122    1016          DB      'POR','T'+200Q,VALI,8,0,377Q
001,263  016 004        1017          DW      TLP,POR
                       1018
001,265  127 111 104    1019          DB      'WIDT','H'+200Q,WIDTHI
001,273  000 000 000    1020          DB      0,0,0,0,0
                       1021
000,000                1022          IF      H84IO
001,300  102 101 125    1023          DB      'BAU','D'+200Q,BAUDI
001,305  000 000 000    1024          DB      0,0,0,0,0
                       1025          ENDIF
                       1026
001,312  110 105 114    1027          DB      'HEL','P'+200Q,HELPI
001,317  000 000 000    1028          DB      0,0,0,0,0
                       1029
001,324  000            1030  OPTTABE DB      0


                       1032  **      PRCTAB - PROCESSOR TABLE
                       1033  *
                       1034
001,325                1035  PRCTAB  DS      0
                       1036
000,000                1037  FLAGI   EQU     *-PRCTAB/2
001,325  107 000        1038          DW      FLAG
                       1039
000,001                1040  VALI    EQU     *-PRCTAB/2
001,327  112 000        1041          DW      VAL
                       1042
000,002                1043  WIDTHI  EQU     *-PRCTAB/2
001,331  115 000        1044          DW      WIDTH
```

```
                                1045
000.000                         1046            IF      H84IO
000.003                         1047    BAUDI   EQU     *-PRCTAB/2
001.333 237 000                 1048            DW      BAUD
                                1049            ENDIF
                                1050
000.004                         1051    HELPI   EQU     *-PRCTAB/2
001.335 266 000                 1052            DW      HELP
                                1053


                                1055    **      WIDTAB - WIDTH TABLE
                                1056    *
                                1057
001.337                         1058    WIDTAB  DS      0
001.337 120 000                 1059            DB      80,CHAR.80
001.341 140 001                 1060            DB      96,CHAR.96
001.343 204 002                 1061            DB      132,CHAR132
001.345 000                     1062            DB      0


000.000                         1064            IF      H84IO
                                1065            ELSE
                                1066            DS      066Q
                                1067            ENDIF
001.346                         1068    .       SET     1346A
000.000                         1069            ERRNZ   *-.
001.346                         1070            DS      DVD.ENT-.
```

```
                                1073  ***     LPDVD ENTRY POINT
                                1074  *
                                1075  *       ENTRY:  (A)   = PROCESS CODE
                                1076  *               (BC)  = BYTE COUNT
                                1077  *               (DE)  = BUFFER ADDRESS  AS PER ROUTINE
                                1078  *
                                1079  *       EXIT:   (PSW) = 'C' CLEAR IF NO ERRORS
                                1080  *                     = 'C' SET IF ERROR
                                1081  *                       (A)   = ERROR CODE
                                1082  *
                                1083  *       USES:   ALL
                                1084  *
                                1085
                                1086
                                1087
002.000                         1088  LPDVD   EQU     *
000.000                         1089          ERRNZ   *-DVD.ENT
002.000  376 011                1090          CPI     #9
002.002  322 022 002            1091          JNC     LPDVD10                 IF ILLEGAL PROCESS CODE
                                1092
002.005  315 076 031            1093          CALL    $TBRA                   ENTRY PROCESSOR
002.010  016                    1094          DB      LPNSUIT-*               READ
002.011  107                    1095          DB      LPWRITE-*               WRITE
002.012  014                    1096          DB      LPNSUIT-*               READR
002.013  013                    1097          DB      LPNSUIT-*               OPENR
002.014  027                    1098          DB      LPOPENW-*               OPENW
002.015  011                    1099          DB      LPNSUIT-*               OPENU
002.016  147                    1100          DB      LPCLOSE-*               CLOSE
002.017  013                    1101          DB      LPABORT-*               ABORT
002.020  012                    1102          DB      LPABORT-*               MOUNT
002.021  020                    1103          DB      LPLOADD-*               LOADD
                                1104
002.022  076 012                1105  LPDVD10 MVI     A,EC.ILR                        ILLEGAL REQUEST
002.024  067                    1106          STC
002.025  311                    1107          RET
                                1108
```

```
                                1111  ***     LPNSUIT - LINE PRINTER NOT SUITABLE
                                1112  *
                                1113  *       ENTRY:  NONE
                                1114  *
                                1115  *       EXIT:   (PSW) = 'C' SET FLAGGING ERROR
                                1116  *                       (A)   = ERROR CODE
                                1117  *
                                1118  *       USES:   PSW
                                1119  *
                                1120
002.026                         1121  LPNSUIT EQU   *
002.026  076 005                1122          MVI   A,EC.DNS                  DEVICE NOT SUITABLE ERROR CODE
002.030  067                    1123          STC
002.031  311                    1124          RET


                                1126  ***     LPABORT - LINE PRINTER ABORT
                                1127  *
                                1128  *       ENTRY:  NONE
                                1129  *
                                1130  *       EXIT:   (PSW) = 'C' SET FLAGGING ERROR
                                1131  *                       (A)   = ERROR CODE
                                1132  *
                                1133  *       USES:   PSW
                                1134  *
                                1135
002.032                         1136  LPABORT EQU   *
002.032  315 165 002            1137          CALL  LPCLOSE
002.035  076 027                1138          MVI   A,EC.DDA                  DEVICE DRIVER ABORT ERROR CODE
002.037  067                    1139          STC
002.040  311                    1140          RET


                                1142  ***     LPLOADD -  LOAD LP:
                                1143  *
                                1144  *       LPLOADD PROCESS THE LOAD DEVICE DRIVER ENTRY POINT.
                                1145  *
                                1146  *
                                1147  *       ENTRY:  NONE
                                1148  *
                                1149  *       EXIT:   NONE
                                1150  *
                                1151  *       USES:   (F)
                                1152  *
                                1153
002.041                         1154  LPLOADD EQU   *
002.041  247                    1155          ANA   A         CLEAR CARRY
002.042  311                    1156          RET
```

```
                                1159  ***     LPOPENW - LINE PRINTER OPEN FOR WRITE
                                1160  *
                                1161  *       SET UP LINE PRINTER FOR OUTPUT
                                1162  *
                                1163  *       ENTRY   NONE
                                1164  *
                                1165  *       EXIT    (PSW) = 'C' CLEAR => NO ERROR
                                1166  *                       'C' SET => ERROR
                                1167  *                       (A)  = ERROR CODE
                                1168  *
                                1169  *       USES    ALL
                                1170  *
                                1171
002.043                         1172  LPOPENW EQU   *
                                1173
002.043  315 043 003            1174          CALL  UNITASS
002.046  302 114 002            1175          JNZ   LPO1                      ALREADY ASSIGNED
                                1176
                                1177  *       FLAG ASSIGNED, INITIALIZE INDICES, AND CTL-S FLAG
                                1178
002.051  076 200                1179          MVI   A,10000000B
002.053  062 015 004            1180          STA   TLP.AS
002.056  076 001                1181          MVI   A,1
002.060  062 024 004            1182          STA   TLP.LX
002.063  062 025 004            1183          STA   TLP.CX
002.066  257                    1184          XRA   A
002.067  062 026 004            1185          STA   TLP.CTS
                                1186
                                1187
                                1188  *       INITIALIZE PORT
                                1189
002.072  072 016 004            1190          LDA   TLP.POR
002.075  052 017 004            1191          LHLD  TLP.BAU
000.000                         1192          IF    H84IO
002.100  315 051 003            1193          CALL  I8250
                                1194          ELSE
                                1195          CALL  I8251
                                1196          ENDIF
                                1197
                                1198  *       INITIALIZE LP:
                                1199
002.103  315 233 003            1200          CALL  INITLP
002.106  076 015                1201          MVI   A,CR
002.110  315 225 002            1202          CALL  LPOUTCH
002.113  311                    1203          RET
                                1204
002.114  067                    1205  LPO1    STC
002.115  076 036                1206          MVI   A,EC.UNA                  UNIT NOT AVAILABLE, ALREADY ASSIGNED
002.117  311                    1207          RET
```

```
                                1210  ***     LPWRITE - LINE PRINTER WRITE
                                1211  *
                                1212  *       WRITE BYTES TO LP: DEVICE
                                1213  *
                                1214  *
                                1215  *       ENTRY:  (BC) = BYTE COUNT
                                1216  *               (DE) = ADDRESS OF DATA BUFFER
                                1217  *
                                1218  *       EXIT:   (PSW) = 'C' CLEAR => NO ERROR
                                1219  *                     = 'C' SET   =>    ERROR
                                1220  *                       (A)   = ERROR CODE
                                1221  *                       (BC)  = UNUSED BYTE COUNT
                                1222  *                       (DE)  = ADDRESS OF NEXT BYTE TO BE WRITTEN
                                1223  *
                                1224  *       USES:   ALL
                                1225  *
                                1226
002.120                         1227  LPWRITE EQU   *
                                1228
002.120  315 043 003            1229          CALL  UNITASS
002.123  312 153 002            1230          JZ    LPW3                      NOT ASSIGNED
                                1231
002.126  170                    1232  LPW1    MOV   A,B
002.127  261                    1233          ORA   C
002.130  312 156 002            1234          JZ    LPW4                      LAST BYTE WRITTEN
002.133  072 334 040            1235          LDA   S.CAADR+1
002.136  247                    1236          ANA   A
002.137  302 157 002            1237          JNZ   LPW5                      CTL-Z,-A,-B,-C HIT
002.142  032                    1238          LDAX  D                   (A) = BYTE TO BE WRITTEN
002.143  315 225 002            1239          CALL  LPOUTCH
002.146  023                    1240          INX   D                   INCREMENT ADDRESS
002.147  013                    1241          DCX   B                   DECREMENT COUNT
002.150  303 126 002            1242          JMP   LPW1
                                1243
002.153  076 036                1244  LPW3    MVI   A,EC.UNA            UNIT NOT AVAILABLE ERROR CODE
002.155  067                    1245          STC
                                1246
002.156                         1247  LPW4    EQU     *
002.156  311                    1248          RET
                                1249
002.157  076 014                1250  LPW5    MVI     A,FF
002.161  315 377 003            1251          CALL    OUTCH.
002.164  311                    1252          RET
```

```
                                1255  ***     LPCLOSE - CLOSE LINE PRINTER FOR OUTPUT
                                1256  *
                                1257  *       REMOVE SELECTED LP: DEVICE FROM TABLE OF CURRENTLY ACTIVE DEVICES.
                                1258  *
                                1259  *       ENTRY   NONE
                                1260  *
                                1261  *       EXIT    (PSW) = 'C' CLEAR => NO ERROR
                                1262  *                     = 'C' SET   =>    ERROR
                                1263  *                       (A)   = ERROR CODE
                                1264  *
                                1265  *       USES    ALL
                                1266  *
                                1267
002,165                         1268  LPCLOSE EQU   *
                                1269
002,165  315 043 003           1270          CALL  UNITASS
002,170  312 221 002           1271          JZ    LPC1                      UNIT FREE
                                1272
002,173  072 016 004           1273          LDA   TLP,POR
002,176  147                   1274          MOV   H,A
002,177  056 000               1275          MVI   L,UR,THR
000,000                         1276          ERRNZ   UR,THR-UDR
002,201  076 014               1277          MVI   A,FF
002,203  315 171 003           1278          CALL  OUT
002,206  072 015 004           1279          LDA   TLP,AS
002,211  346 177               1280          ANI   #01111111B                CLEAR ASSIGNED BIT
002,213  062 015 004           1281          STA   TLP,AS
002,216  303 224 002           1282          JMP   LPC2
                                1283
002,221  076 036               1284  LPC1    MVI   A,EC,UNA                  UNIT NOT AVAILABLE ERROR CODE
002,223  067                   1285          STC
                                1286
002,224                         1287  LPC2    EQU   *
002,224  311                   1288          RET
```

```
                                1292  ***     LPOUTCH - LINE PRINTER OUTPUT CHARACTER
                                1293  *
                                1294  *       The special characters processed are:
                                1295  *
                                1296  *                       NULL
                                1297  *                       TAB
                                1298  *
                                1299  *       ENTRY:  (A)   = BYTE TO BE WRITTEN
                                1300  *               (HL)  = UNIT NUMBER OF OUTPUT DEVICE
                                1301  *
                                1302  *       EXIT:   Column Index updated
                                1303  *
                                1304  *       USES:   (PSW)
                                1305  *
                                1306
002.225                         1307  LPOUTCH EQU   *
002.225  345                    1308          PUSH  H
                                1309
                                1310
002.226  346 177               1311          ANI   177Q                      MAP OUT HIGH BIT
002.230  376 014               1312          CPI   FF
002.232  302 253 002           1313          JNZ   LPOT1                     IF  NOT FORM FEED
002.235  315 331 003           1314          CALL  OUTCHAR
002.240  076 001               1315          MVI   A,#1
002.242  062 024 004           1316          STA   TLP.LX                    UNIT LINE INDEX = 1
002.245  062 025 004           1317          STA   TLP.CX                    UNIT COLUMN INDEX = 1
002.250  303 041 003           1318          JMP   LPOT9
                                1319
                                1320
                                1321  *       CHECK FOR LINE OVER-FLOW
                                1322
002.253  345                   1323  LPOT1   PUSH  H
002.254  365                   1324          PUSH  PSW
002.255  072 023 004           1325          LDA   TLP.LC
002.260  267                   1326          ORA   A
002.261  312 300 002           1327          JZ    LPOT2                     LINES/PAGE = 0
002.264  041 024 004           1328          LXI   H,TLP.LX
002.267  276                   1329          CMP   M
002.270  322 300 002           1330          JNC   LPOT2                     TLP.LC >= TLP.LX
002.273  076 014               1331          MVI   A,FF
002.275  315 225 002           1332          CALL  LPOUTCH
002.300  361                   1333  LPOT2   POP   PSW
002.301  341                   1334          POP   H
                                1335
002.302  376 011               1336          CPI   TAB
002.304  302 335 002           1337          JNZ   LPOT4                     IF  NOT TAB
002.307  076 040               1338          MVI   A,' '                     IF PRESENTLY AT TAB STOP FORCE
002.311  315 225 002           1339          CALL  LPOUTCH                     TO THE NEXT ONE
002.314  072 025 004           1340  LPOT3   LDA   TLP.CX
002.317  075                   1341          DCR   A
002.320  346 007               1342          ANI   #7                        CHECK FOR MULTIPLE OF 8
002.322  312 041 003           1343          JZ    LPOT9
002.325  076 040               1344          MVI   A,' '
002.327  315 225 002           1345          CALL  LPOUTCH
002.332  303 314 002           1346          JMP   LPOT3
                                1347
```

```
002.335  376 000      1348  LPOT4   CPI   NUL2
002.337  312 041 003  1349          JZ    LPOT9                    IGNORE NULLS!!!
000.000               1350          ERRNZ   *-LPOT5
                      1351
002.342  376 015      1352  LPOT5   CPI   CR
002.344  302 362 002  1353          JNZ   LPOT6                    NOT CARRIAGE RETURN
002.347  315 331 003  1354          CALL  OUTCHAR
002.352  076 001      1355          MVI   A,#1
002.354  062 025 004  1356          STA   TLP.CX                   COLUMN INDEX = 1
002.357  303 041 003  1357          JMP   LPOT9
                      1358
002.362  376 012      1359  LPOT6   CPI   NL
002.364  302 013 003  1360          JNZ   LPOT7
002.367  076 015      1361          MVI   A,CR
002.371  315 225 002  1362          CALL  LPOUTCH
002.374  076 012      1363          MVI   A,LF
002.376  315 331 003  1364          CALL  OUTCHAR
003.001  072 024 004  1365          LDA   TLP.LX
003.004  074          1366          INR   A                        UPDATE LINE INDEX
003.005  062 024 004  1367          STA   TLP.LX
003.010  303 041 003  1368          JMP   LPOT9
                      1369
003.013  376 040      1370  LPOT7   CPI   ' '
003.015  332 036 003  1371          JC    LPOT8                    (A) < ' '  => NON-PRINT
003.020  376 177      1372          CPI   RUBOUT
003.022  322 036 003  1373          JNC   LPOT8                    (A) >= RUBOUT  => NON-PRINT
003.025  365          1374          PUSH  PSW
003.026  072 025 004  1375          LDA   TLP.CX
003.031  074          1376          INR   A
003.032  062 025 004  1377          STA   TLP.CX
003.035  361          1378          POP   PSW
003.036  315 331 003  1379  LPOT8   CALL  OUTCHAR
                      1380
003.041  341          1381  LPOT9   POP   H
003.042  311          1382          RET
```

```
                                1385  **      UNITASS - UNIT ASSIGNED
                                1386  *
                                1387  *       CHECK LP: DEVICE TABLE TO SEE IF SPECIFIED UNIT IS ASSIGNED.
                                1388  *
                                1389  *       ENTRY   (HL)  = UNIT NUMBER
                                1390  *
                                1391  *       EXIT    (PSW) = 'Z' SET   => UNIT FREE
                                1392  *                     = 'Z' CLEAR => UNIT ASSIGNED
                                1393  *
                                1394  *       USES    (PSW)
                                1395  *
                                1396
003.043                         1397  UNITASS EQU   *
                                1398
003.043  072 015 004            1399          LDA   TLP.AS
003.046  346 200                1400          ANI   10000000B                                 [7] = 1  =>  ASSIGNED
                                1401
003.050  311                    1402          RET
000.000                         1403          IF    H84IO


                                1405  **      I8250 - INITIALIZE 8250
                                1406  *
                                1407  *       INITIALIZE AN 8250 PORT.  STOLEN AS CAP FROM CONSL. DRIVER.
                                1408  *
                                1409  *       ENTRY   (A)          =  PORT ADDRESS
                                1410  *               (HL)[0-14]   =  NEW BAUD RATE
                                1411  *               (HL)[15]     =  1 IF TWO STOP BITS
                                1412  *
                                1413  *       EXIT    NONE
                                1414  *
                                1415  *       USES    (A)
                                1416  *
                                1417
003.051                         1418  I8250   EQU   *
003.051  325                    1419          PUSH  D
                                1420
003.052  353                    1421          XCHG
003.053  147                    1422          MOV   H,A
003.054  056 001                1423          MVI   L,UR.IER                                  /79.02.GC/
003.056  257                    1424          XRA   A                                         /79.02.GC/
003.057  315 171 003            1425          CALL  OUT                                       /79.02.GC/
003.062  056 004                1426          MVI   L,UR.MCR                                  /79.01.GC/
003.064  076 020                1427          MVI   A,UC.LOO                                  /79.01.GC/
003.066  315 171 003            1428          CALL  OUT             SET LOOP-BACK             /79.01.GC/
003.071  056 003                1429          MVI   L,UR.LCR
003.073  076 200                1430          MVI   A,UC.DLA
003.075  315 171 003            1431          CALL  OUT
003.100  056 000                1432          MVI   L,UR.DLL
003.102  173                    1433          MOV   A,E
003.103  315 171 003            1434          CALL  OUT
003.106  056 001                1435          MVI   L,UR.DLM
003.110  172                    1436          MOV   A,D
003.111  346 177                1437          ANI   177Q
```

```
003.113  315 171 003  1438          CALL  OUT
003.116  056 003      1439          MVI   L,UR.LCR
003.120  172          1440          MOV   A,D
003.121  007          1441          RLC
003.122  007          1442          RLC
003.123  007          1443          RLC
000.000               1444          ERRNZ UC.2SB-4
003.124  346 004      1445          ANI   UC.2SB
003.126  366 003      1446          ORI   UC.8BW                    8 BIT WORDS
003.130  315 171 003  1447          CALL  OUT
003.133  056 000      1448          MVI   L,UR.RBR
003.135  315 161 003  1449          CALL  IN                       REMOVE GARBAGE
                      1450
003.140  076 156      1451          MVI   A,AC.DLY                                  /79.01.GC/
003.142  315 053 000  1452          CALL  .DLY          WAIT FOR 8250 TO SETTLE     /79.01.GC/
003.145  056 004      1453          MVI   L,UR.MCR                                  /79.01.GC/
003.147  315 161 003  1454          CALL  IN                                        /79.01.GC/
003.152  346 357      1455          ANI   377Q-UC.LOO                               /79.01.GC/
003.154  315 171 003  1456          CALL  OUT           TURN OFF LOOP-BACK          /79.01.GC/
                      1457
003.157  321          1458          POP   D
003.160  311          1459          RET
                      1460          ELSE
                      1461  I8251   SPACE 4,10
                      1462  **      I8251 - INITIALIZE 8251
                      1463  *
                      1464  *       INITIALIZE AN 8251 PORT
                      1465  *
                      1466  *       ENTRY   (A)      = PORT ADDRESS
                      1467  *               (HL)[15] = 1 IF TWO STOP BITS
                      1468  *
                      1469  *       EXIT    NONE
                      1470  *
                      1471  *       USES    ALL
                      1472  *
                      1473
                      1474  I8251   EQU   *
                      1475          XCHG
                      1476          MOV   H,A
                      1477          MVI   L,USR
                      1478          MOV   A,D
                      1479          ANI   200Q                     (A) = 200Q IF TWO STOP BITS
                      1480          ERRNZ   200Q+UMI.1B-UMI.2B
                      1481          ORI   UMI.1B+UMI.L8+UMI.16X
                      1482          STA   I8251.B
                      1483          LXI   B,I8251.A
                      1484  I8251.1 LDAX  B
                      1485          CPI   #377Q
                      1486          JZ    I8251.2
                      1487          CALL  OUT
                      1488          INX   B
                      1489          JMP   I8251.1
                      1490  I8251.2 MVI   A,UCI.ER+UCI.TE+UCI.RE
                      1491          CALL  OUT
                      1492          MVI   L,UDR
                      1493          CALL  IN
```

```
1494            RET
1495 I8251.A    DB      0,0,0,0,0,0
1496            DB      UCI.IR
1497 I8251.B    DB      0                       CONFIGURATION BYTE
1498            DB      377Q
1499            ENDIF
```

```
                                1502  **      IN - INPUT
                                1503  *
                                1504  *       INPUT BYTE FROM SPECIFIED PORT
                                1505  *
                                1506  *       ENTRY   (H)   = PORT ADDRESS
                                1507  *               (L)   = OFFSET
                                1508  *
                                1509  *       EXIT    (A)   = BYTE READ
                                1510  *
                                1511  *       USES    (PSW)
                                1512  *
                                1513
003.161                         1514  IN      EQU   *
003.161  174                    1515          MOV   A,H
003.162  205                    1516          ADD   L
003.163  062 167 003            1517          STA   IN.ADD
003.166  333 000                1518          IN    *-*
003.167                         1519  IN.ADD  EQU   *-1
003.170  311                    1520          RET


                                1522  **      OUT - OUTPUT
                                1523  *
                                1524  *       OUTPUT BYTE TO SPECIFIED PORT
                                1525  *
                                1526  *       ENTRY   (A)   = BYTE TO BE WRITTEN
                                1527  *               (H)   = PORT ADDRESS
                                1528  *               (L)   = OFFSET
                                1529  *
                                1530  *       EXIT    NONE
                                1531  *
                                1532  *       USES    NONE
                                1533  *
                                1534
003.171                         1535  OUT     EQU   *
003.171  365                    1536          PUSH  PSW
003.172  174                    1537          MOV   A,H
003.173  205                    1538          ADD   L
003.174  062 201 003            1539          STA   OUT.ADD
003.177  361                    1540          POP   PSW
003.200  323 000                1541          OUT   *-*
003.201                         1542  OUT.ADD EQU   *-1
003.202  311                    1543          RET
```

```
                                1546  **      WAIT - WAIT FOR H14
                                1547  *
                                1548  *       WAIT UNTIL CTL-S, FLAG CLEAR
                                1549  *
                                1550  *       ENTRY   NONE
                                1551  *
                                1552  *       EXIT    NONE
                                1553  *
                                1554  *       USES    (PSW)
                                1555  *
                                1556
003.203                         1557  WAIT    EQU   *
003.203  345                   1558          PUSH  H
                                1559
003.204  072 334 040           1560  WAIT0   LDA   S.CAADR+1
003.207  247                   1561          ANA   A
003.210  302 231 003           1562          JNZ   WAIT3                     IF  CTL-Z,-A,-B,-C  HIT
                                1563
000.000                         1564          IF      H14BUG
003.213  072 016 004           1565          LDA     TLP.POR
003.216  147                   1566          MOV     H,A
003.217  056 006               1567          MVI     L,UR.MSR
003.221  315 161 003           1568          CALL    IN
003.224  346 020               1569          ANI     UC.CTS
003.226  302 204 003           1570          JNZ     WAIT0           INVERTED SIGNAL!!!
000.000                         1571          ERRNZ   WAIT3-*
                                1572          ELSE
                                1573          CALL  INCHAR
                                1574          ANI   #177Q
                                1575          CPI   CTLS
                                1576          JNZ   WAIT1
                                1577          MVI   A,#1
                                1578          STA   TLP.CTS
                                1579          JMP   WAIT2
                                1580  WAIT1   CPI   CTLQ
                                1581          JNZ   WAIT2                     IGNORE ALL OTHER CHARACTERS
                                1582          MVI   A,#0
                                1583          STA   TLP.CTS
                                1584
                                1585  WAIT2   LDA   TLP.CTS
                                1586          ANA   A
                                1587          JNZ   WAIT0
                                1588          ENDIF
                                1589
003.231  341                   1590  WAIT3   POP   H
003.232  311                   1591          RET
```

```
                                1594  **      INITLP - INITIALIZE LP:
                                1595  *
                                1596  *       INITIALIZE DEVICE LP:, THE H14 LINE PRINTER, BY SENDING THE
                                1597  *       CORRECT ESCAPE SEQUENCES.
                                1598  *
                                1599  *       ENTRY   (L)   = UNIT NUMBER
                                1600  *
                                1601  *       EXIT    NONE
                                1602  *
                                1603  *       USES    (PSW),(HL)
                                1604  *
                                1605
003.233                         1606  INITLP  EQU   *
                                1607
003.233  072 021 004          1608          LDA   TLP.CON
003.236  062 273 003          1609          STA   INITA+2
003.241  346 001              1610          ANI   #1
000.000                         1611          ERRNZ   LPI,8-1
003.243  306 170              1612          ADI   #170Q
003.245  062 275 003          1613          STA   INITB+1
003.250  041 271 003          1614          LXI   H,INITA
003.253  176                  1615  INIT0   MOV   A,M
003.254  376 377              1616          CPI   #377Q
003.256  312 270 003          1617          JZ    INIT1                     IF  TO END OF SEQUENCES
003.261  315 331 003          1618          CALL  OUTCHAR
003.264  043                  1619          INX   H
003.265  303 253 003          1620          JMP   INIT0
                                1621
003.270  311                  1622  INIT1   RET
003.271  033 165 000          1623  INITA   DB      ESC,SETWIDE,0
003.274  033 000 377          1624  INITB   DB      ESC,0,377Q
                                1625
                                1626
                                1627
```

```
                                1630  **      INCHAR - INPUT CHARACTER
                                1631  *
                                1632  *       INPUT CHARACTER FROM SPECIFIED DEVICE
                                1633  *
                                1634  *       ENTRY   NONE
                                1635  *
                                1636  *       EXIT    (PSW) = 'Z' CLEAR IF THERE IS A CHARACTER
                                1637  *                       (A) = CHARACTER
                                1638  *                   = 'Z' SET   IF THERE IS NOT A CHARACTER
                                1639  *
                                1640  *       USES    (PSW)
                                1641  *
                                1642
003.277                         1643  INCHAR  EQU   *
003.277  345                    1644          PUSH  H
003.300  072 016 004            1645          LDA   TLP.POR
003.303  147                    1646          MOV   H,A
                                1647
                                1648  *       CHECK FOR DATA
                                1649
000.000                         1650          IF      H84IO
                                1651
003.304  056 005               1652          MVI   L,UR.LSR
003.306  315 161 003            1653          CALL  IN
003.311  346 001                1654          ANI   UC.DR                     'Z' SET IF THERE IS DATA
003.313  312 326 003            1655          JZ    INC1                      NO DATA
003.316  056 000               1656          MVI   L,UR.RBR
003.320  315 161 003            1657          CALL  IN
003.323  303 327 003            1658          JMP   INC2
                                1659
                                1660          ELSE
                                1661
                                1662          MVI   L,USR
                                1663          CALL  IN
                                1664          ANI   USR.RXR                   'Z' SET IF THERE IS NO DATA
                                1665          JZ    INC1                      NO DATA
                                1666          MVI   L,UDR
                                1667          CALL  IN
                                1668          ANA   A                         IGNORE NULL CHARACTERS
                                1669          JMP   INC2
                                1670
                                1671          ENDIF
                                1672
003.326  067                    1673  INC1    STC
                                1674
003.327  341                    1675  INC2    POP   H
003.330  311                    1676          RET
```

```
                                1678  **      OUTCHAR - OUTPUT CHARACTER
                                1679  *
                                1680  *       OUTPUT CHARACTER TO SPECIFIED DEVICE
                                1681  *
                                1682  *       ENTRY   (A)   = CHARACTER
                                1683  *
                                1684  *       EXIT    NONE
                                1685  *
                                1686  *       USES    (PSW)
                                1687  *
                                1688
003.331                         1689  OUTCHAR EQU   *
003.331  345                    1690          PUSH  H
                                1691
003.332  365                    1692          PUSH  PSW
003.333  072 016 004            1693          LDA   TLP.POR
003.336  147                    1694          MOV   H,A
                                1695
000.000                         1696          IF      H84IO
                                1697
003.337  056 005                1698          MVI   L,UR.LSR
003.341  315 203 003            1699          CALL  WAIT
003.344  072 334 040            1700  OUTCO   LDA   S.CAADR+1
003.347  247                    1701          ANA   A
003.350  302 374 003            1702          JNZ   OUTC1                     IF  CTL-Z,-A,-B,-C HIT
003.353  315 161 003            1703  OUTCO.0 CALL  IN
003.356  346 040                1704          ANI   UC.THE
003.360  312 344 003            1705          JZ    OUTCO                     IF  NOT READY FOR TRANSMIT
003.363  361                    1706          POP   PSW
003.364  056 000                1707          MVI   L,UR.THR
003.366  315 171 003            1708          CALL  OUT
003.371  303 375 003            1709          JMP   OUTC2
                                1710
                                1711          ELSE
                                1712
                                1713          MVI   L,USR
                                1714          CALL  WAIT
                                1715  OUTCO   LDA   S.CAADR+1
                                1716          ANA   A
                                1717          JNZ   OUTC1                     IF  CTL-Z,-A,-B,-C HIT
                                1718  OUTCO.0 CALL  IN
                                1719          ANI   USR.TXR
                                1720          JZ    OUTCO                     IF  NOT READY FOR TRANSMIT
                                1721          POP   PSW
                                1722          MVI   L,UDR
                                1723          CALL  OUT
                                1724          JMP   OUTC2
                                1725
                                1726          ENDIF
                                1727
003.374  361                    1728  OUTC1   POP   PSW
                                1729
003.375  341                    1730  OUTC2   POP   H
003.376  311                    1731          RET
                                1732
003.377  345                    1733  OUTCH.  PUSH    H
```

```
004.000  365           1734          PUSH    PSW
004.001  072 016 004   1735          LDA     TLP.POR
004.004  147           1736          MOV     H,A
                       1737
000.000                1738          IF      H84IO
004.005  056 005       1739          MVI     L,UR.LSR
                       1740          ELSE
                       1741          MVI     L,USR
                       1742          ENDIF
                       1743
004.007  315 203 003   1744          CALL    WAIT
004.012  303 353 003   1745          JMP     OUTC0.0
```

```
                        1748  ***     TLP.UNT - TABLE OF LP: UNIT CONSTANTS
                        1749  *
                        1750  *
                        1751
004:015                 1752  TLP.UNA EQU   *
                        1753
004:015 000             1754  TLP.UNT DB    0             UNIT NUMBER
                        1755
004:015                 1756  TLP.AS  EQU   TLP.UNT       [7] = 1 IF ASSIGNED
                        1757
004:016 340             1758  TLP.FOR DB    DFLT.LP
                        1759
004:017 030 000         1760  TLP.BAU DW    DFLT.BD       [15] = 1 IF TWO STOP BITS
                        1761
004:021 010             1762  TLP.CON DB    DFLT.LI+DFLT.WD CONFIGURE BYTE FOR H14
                        1763
004:022 054             1764  TLP.FML DB    DFLT.FL       FORM LENGTH
                        1765
004:023 074             1766  TLP.LC  DB    DFLT.LC       LINE COUNT = LINES/PAGE
                        1767
004:024 001             1768  TLP.LX  DB    DFLT.LX       LINE INDEX = LINE HEAD IS OVER
                        1769
004:025 001             1770  TLP.CX  DB    DFLT.CX       COLUMN INDEX = COLUMN HEAD IS OVER
                        1771
004:026 000             1772  TLP.CTS DB    DFLT.CS       CONTROL-S FLAG
```

```
004.027                 1775          XTEXT   TBRA


                        1777X **      $TBRA - BRANCH RELATIVE THOUGH TABLE.
                        1778X *
                        1779X *       $TBRA USES THE SUPPLIED INDEX TO SELECT A BYTE FROM THE
                        1780X *       JUMP TABLE. THE CONTENTS OF THIS BYTE ARE ADDED TO THE
                        1781X *       ADDRESS OF THE BYTE, YEILDING THE PROCESSOR ADDRESS.
                        1782X *
                        1783X *       CALL    $TBRA
                        1784X *       DB      LAB1-*          INDEX = 0 FOR LAB1
                        1785X *       DB      LAB2-*          INDEX = 1 FOR LAB2
                        1786X *       DB      LABN-*          INDEX = N-1 FOR LABN
                        1787X *
                        1788X *       ENTRY   (A) = INDEX
                        1789X *               (RET) = TABLE FWA
                        1790X *       EXIT    TO COMPUTED ADDRESS
                        1791X *       USES    F,H,L
                        1792X
                        1793X
031.076                 1794X $TBRA   EQU     31076A          IN H17 ROM
004.027                 1795          XTEXT   TYPTX


                        1797X **      $TYPTX - TYPE TEXT.
                        1798X *
                        1799X *       $TYPTX IS CALLED TO TYPE A BLOCK OF TEXT ON THE SYSTEM CONSOLE.
                        1800X *
                        1801X *       IMBEDDED ZERO BYTES INDICATE A CARRIAGE RETURN LINE FEED,
                        1802X *       A BYTE WITH THE 200Q BIT SET IS THE LAST BYTE IN THE MESSAGE.
                        1803X *
                        1804X *       ENTRY   (RET) = TEXT
                        1805X *       EXIT    TO (RET+LENGTH)
                        1806X *       USES    A,F
                        1807X
                        1808X
031.136                 1809X $TYPTX  EQU     31136A          IN H17 ROM
                        1810X
031.144                 1811X $TYPTX. EQU     31144A          IN H17 ROM
                        1812
004.027  116 112       1813          DW      'JN'            DUMMY ADDRESS FOR RELOCATION
004.031                 1814          DS      64              PATCH AREA
                        1815          LON     G
                        1816
004.131  055 000 062   1817          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
  1817 STATEMENTS
     0 ERRORS DETECTED
 11146 BYTES FREE
```

```
$CNA    042207  759L    896     909     961
$DCS    042204  757L
$FST    042212  761L
$LBD    042223  767L    964
$PBF    042231  771L    864
$PBV    042234  773L    873
$SNA    042201  755L    844     902
$SOP    042226  769L    842
$TBLS   042215  763L    917     925
$TBRA   031076  1093    1794E
$TYPTX  031136  979     1809E
$TYPTX. 031144  1811E
$WTBLS  042220  765L
.       001346  789S    790     791     1068S   1069    1070
.ABUSS  040024  260E
.ALARM  002136  233E
.ALEDS  040013  258E
.CHFLG  000060   86L
.CLEAN  000205  101L
.CLEAR  000055   83L
.CLEARA 000056   84L
.CLOSE  000046   76L
.CLRCO  000007   60L
.CONSL  000006   59L
.CRC    002347  241E
.CRCSUM 040027  261E
.CTC    002172  235E
.CTL2FL 040066  267E
.CTLC   000041   71L
.CTLFLG 040011  257E
.DAD    000206  102L
.DECODE 000053   81L
.DELET  000050   78L
.DISMT  000061   87L
.DLEDS  040021  259E
.DLY    000053  230E    1452
.DMNMS  000203   99L
.DMOUN  000201   97L
.DOD    003122  244E
.DODA   003356  246E
.DSPMOD 040007  255E
.DSPROT 040006  254E
.DUMP   001374  232E
.ERROR  000057   85L
.EXIT   000000   53L
.HORN   002140  234E
.IDENT  000000  229E
.IOWRK  040002  252E
.LINK   000040   70L
.LOAD   001267  231E
.LOADD  000062   88L
.LOADO  000010   61L
.MFLAG  040010  256E
.MONMS  000202   98L
.MOUNT  000200   96L
.NAME   000054   82L
.NMIRET 040064  266E
.OPEN   000063   89L
```

```
.OPENC  000045  75L
.OPENR  000042  72L
.OPENU  000044  74L
.OPENW  000043  73L
.PCHL   002364  237E
.POSIT  000047  77L
.PRINT  000003  56L
.RCK    003260  245E
.READ   000004  57L
.REGI   040005  253E
.REGPTR 040035  264E
.RENAM  000051  79L
.RESET  000204  100L
.RNB    002331  240E
.RNP    002325  239E
.SCIN   000001  54L
.SCOUT  000002  55L
.SETTP  000052  80L
.SRS    002265  238E
.START  040000  251E
.SYSRES 000012  63L
.TICCNT 040033  263E
.TPERR  002205  236E
.TPERRX 040031  262E
.UIVEC  040037  265E
.VERS   000011  62L
.WNB    003024  243E
.WNF    003017  242E
.WRITE  000005  58L
AC.DLY  000156  640E    1451
AIO.CGN 041047  417L
AIO.CHA 041116  432L
AIO.CNT 041111  428L
AIO.CSI 041050  418L
AIO.DDA 041041  413E
AIO.DES 041055  422L
AIO.DEV 041057  423L
AIO.DIR 041062  426L
AIO.DTA 041053  421L
AIO.EOF 041113  430L
AIO.EOM 041112  429L
AIO.FLG 041043  414L
AIO.GRT 041044  415L
AIO.LGN 041051  419L
AIO.LSI 041052  420L
AIO.SPG 041046  416L
AIO.TFP 041114  431L
AIO.UNI 041061  424L
AIO.VEC 041040  412L
BAUI    000262' 962     965     969L
BAUD    000237' 960L    1048
BAUDI   000003  1023    1047E
BELL    000007  111E
BKSP    000010  113E
BOOT.P  000001  392E
C.STX   000002  115E
C.SYN   000026  114E
CB.CLI  000100  175E    198
```

```
CB.MTL  000040  174E
CB.SPK  000200  176E
CB.SSI  000020  173E
CB2.CLI 000002  179E
CB2.ORG 000040  180E
CB2.SID 000100  181E
CB2.SSI 000001  178E
CDB.H84 000001  335E
CDB.H85 000000  334E
CHAR.80 000000  558E   806   1059
CHAR.96 000001  559E  1060
CHAR132 000002  560E   806   1061
CN.170M 000014  216E
CN.174M 000003  215E
CN.ABO  000200  220E
CN.BAU  000100  219E
CN.MEM  000040  218E
CN.PRI  000020  217E
CND.H17 000000  222E
CND.H47 000001  224E
CND.NDI 000000  223E
CO.FLG  000001  487E
CR      000015  107E  1201  1352  1361
CS.FLG  000200  488E
CSL.CHR 000001  464E
CSL.ECH 000200  461E
CSL.RAW 000004  462E
CSL.WRP 000002  463E
CTLA    000001  122E
CTLB    000002  123E
CTLC    000003  124E
CTLD    000004  125E
CTLO    000017  126E
CTLP    000020  127E
CTLQ    000021  128E
CTLS    000023  129E
CTLZ    000032  130E
CTP.2SB 000010  473E
CTP.BKM 000002  474E
CTP.BKS 000200  469E
CTP.FF  000100  470E
CTP.MLI 000040  471E
CTP.MLO 000020  472E
CTP.TAB 000001  475E
D.CON   040110  282L
D.RAM   040240  285L
D.VEC   040130  284L
DC.ABT  000007  145L
DC.CLO  000006  144L
DC.LOD  000011  147L
DC.MAX  000013  149L
DC.MOU  000010  146L
DC.OPR  000003  141L
DC.OPU  000005  143L
DC.OPW  000004  142L
DC.RDY  000012  148L
DC.REA  000000  138L
DC.RER  000002  140L
```

```
DC.WRI  000001      139L
DEV.DDA 000004      588L
DEV.DVB 000015      601L
DEV.DVL 000013      600L
DEV.FLG 000006      589L
DEV.JMP 000003      587L
DEV.MNU 000010      597L
DEV.MUM 000007      596L
DEV.NAM 000000      579L
DEV.RES 000002      583L
DEV.UNT 000011      598L
DEVELEN 000016      603E
DF.CLR  000376      303E
DF.EMP  000377      302E
DFLT.BD 000030      802E      1760
DFLT.CS 000000      817E      1772
DFLT.CX 000001      815E      1770
DFLT.FL 000054      811E      1764
DFLT.LC 000074      812E      1766
DFLT.LI 000000      810E      1762
DFLT.LP 000340      800E      1758
DFLT.LX 000001      814E      1768
DFLT.WD 000010      806E      1762
DIR.ALD 000025      318L
DIR.CLU 000015      311L
DIR.CRD 000023      317L
DIR.EXT 000010      306L
DIR.FGN 000020      314L
DIR.FLG 000016      312L
DIR.LGN 000021      315L
DIR.LSI 000022      316L
DIR.NAM 000000      305L
DIR.PRO 000013      307L
DIR.VER 000014      308L
DIRELEN 000027      320E      426
DIRIDL  000015      309E
DM.MR   000000      188E
DM.MW   000001      189E
DM.RR   000002      190E
DM.RW   000003      191E
DR.IM   000001      584E
DR.PR   000002      585E
DT.CH   000020      594E
DT.CR   000002      591E
DT.CW   000004      592E      781       784
DT.DD   000001      590E
DT.RN   000010      593E
DV.EL   000000      580E
DV.NU   000001      581E
DVD.CAP 000007      625L
DVD.DVD 000006      624L
DVD.ENT 002000      634E      1070      1089
DVD.INP 000023      630L
DVD.MNU 000011      627L
DVD.MUM 000010      626L
DVD.SET 000022      629L
DVD.STE 000053      632E      791       835
DVD.UFL 000012      628L
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DVDFLV  000307      620E      780     786
EC.CNA  000004      505L
EC.DDA  000027      524L     1138
EC.DIF  000017      516L
EC.DIW  000035      530L
EC.DNI  000045      538L
EC.DNR  000046      539L
EC.DNS  000005      506L     1122
EC.DSC  000047      540L
EC.EOF  000001      502L
EC.EOM  000002      503L
EC.FAD  000031      526L
EC.FAP  000026      523L
EC.FL   000030      525L
EC.FNF  000014      513L
EC.FNO  000011      510L
EC.FNR  000034      529L
EC.FOD  000043      536L
EC.FUC  000013      512L
EC.IDN  000016      515L
EC.IDN  000006      507L
EC.IFC  000020      517L
EC.IFN  000007      508L
EC.ILC  000003      504L
EC.ILO  000040      533L      846
EC.ILR  000012      511L     1105
EC.ILV  000037      532L      940     969
EC.IOI  000052      543L
EC.IS   000032      527L
EC.NCV  000050      541L
EC.NEM  000021      518L
EC.NOS  000051      542L
EC.NPM  000044      537L
EC.NRD  000010      509L
EC.NVM  000042      535L
EC.OTL  000053      544L
EC.RF   000022      519L
EC.UNA  000036      531L     1206    1244    1284
EC.UND  000015      514L
EC.UUN  000033      528L      850
EC.VPM  000041      534L
EC.WF   000023      520L
EC.WP   000025      522L
EC.WPV  000024      521L
ENL     000212      120E      991
ESC     000033      118E     1623    1624
FF      000014      121E     1250    1277    1312    1331
FLAG    000107'     864L     1038
FLAGI   000000     1005      1009    1037E
H14BUG  000000       1E      1564
H84IO   000000       2E         4      32     801     943     987    1022    1046    1064    1192    1403    1650
                   1696      1738
HELP    000266'     979L     1052
HELPI   000004     1027     1051E
I.CONFL 000004      490E      491
I.CONTY 000001      477E      478
I.CONWI 000003      483E      484
I.CSLMD 000000      466E
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I.CUSOR 000002   480E   481
I8250   003051'  1193   1418E
IN      003161'  1449   1454   1514E  1568   1653   1657   1703
IN.ADD  003167'  1517   1519E
INC1    003326'  1655   1673L
INC2    003327'  1658   1675L
INCHAR  003277'  1643E
INIT0   003253'  1615L  1620
INIT1   003270'  1617   1622L
INITA   003271'  1609   1614   1623L
INITB   003274'  1613   1624L
INITLP  003233'  1200   1606E
IP.CON  000362   164E
IP.PAD  000360   160E
LF      000012   108E   1363
LPABORT 002032'  1101   1102   1136E
LPC1    002221'  1271   1284L
LPC2    002234'  1282   1287E
LPCLOSE 002165'  1100   1137   1268E
LPDVD   002000'  1088E
LPDVD10 002022'  1091   1105L
LPT:6   000000   553E   810    1005   1005   1009
LPT.8   000001   554E   1005   1009   1009   1611
LPLOADD 002041'  1103   1154E
LPNSUIT 002026'  1094   1096   1097   1099   1121E
LPO1    002114'  1175   1205L
LPOPENW 002043'  1098   1172E
LPOT1   002253'  1313   1323L
LPOT2   002300'  1327   1330   1333L
LPOT3   002314'  1340L  1346
LPOT4   002335'  1337   1348L
LPOT5   002342'  1350   1352L
LPOT6   002362'  1353   1359L
LPOT7   003013'  1360   1370L
LPOT8   003036'  1371   1373   1379L
LPOT9   003041'  1318   1343   1349   1357   1368   1381L
LPOUTCH 002225'  1202   1239   1307E  1332   1339   1345   1362
LPW1    002126'  1232L  1242
LPW3    002153'  1230   1244L
LPW4    002156'  1234   1247E
LPW5    002157'  1237   1250L
LPWRITE 002120'  1095   1227E
M.FOX   000303   208E
M:PAM8  000021   207E
NL      000012   119E   120    980    980    980    980    981    982    983    985    986    988
                 990    991    1359
NUL2    000000   110E   1348
NULL    000200   109E
OP.CTL  000360   161E
OP.DTG  000360   162E
OP.SEG  000361   163E
OP2:CTL 000362   165E
OPTTAB  001212'  841    1002L
OPTTABE 001324'  1002   1030L
OUT     003171'  1278   1425   1428   1431   1434   1438   1447   1456   1535E  1708
OUT.ADD 003201'  1539   1542E
OUTCO   003344'  1700L  1705
OUTCO.0 003353'  1703L  1745
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OUTC1   003374'  1702  1228L
OUTC2   003375'  1709  1730L
OUTCH   003377'  1251  1733L
OUTCHAR 003331'  1314  1354  1364  1379  1618  1689E
OVL.IN  000001   359E
OVL.NUM 000014   361E
OVL.RES 000002   360E
OVL.UCS 000200   362E
PIC.COD 000006   572L  622
PIC.ID  000000   567L
PIC.LEN 000002   569L
PIC.PTR 000004   570L
PRCTAB  001325'  840   1035L 1037  1040  1043  1047  1051
QUOTE   000047   116E
ROMBOOT 030000   277E
RUBOUT  000177   112E  1372
S.BAUD  040344   336L
S.BDA   041120   434L
S.BOOTF 041034   391L
S.CAADR 040333   494L  1235  1560  1700
S.CACC  041006   375L
S.CCTAB 040335   495L
S.CDB   040343   333L
S.CFWA  040352   343L
S.CODE  041007   376L
S.CONFL 040332   492L
S.CONTY 040327   479L
S.CONWI 040331   485L
S.CSLMD 040326   467L  478   481   484   491
S.CUSOR 040330   482L
S.DATC  040310   448L
S.DATE  040277   447L
S.DCS   041033   389L
S.DDDTA 040366   354L
S.DDGRP 040364   351L
S.DDLDA 040360   349L
S.DDLEN 040362   350L
S.DDOPC 040370   355L
S.DFWA  040354   344L
S.DIREA 041016   383L
S.DLINK 040346   341L
S.FASER 041013   382L
S.FCI   041021   384L
S.GRT0  024000   273E
S.GRT1  025000   274E
S.GRT2  026000   275E
S.GUP   041027   386L
S.HIMEM 040316   450L
S.INT   040343   287L  329
S.JUMPS 041010   380L
S.MOUNT 041032   388L
S.OFWA  040350   342L
S.OMAX  040324   456L
S.OSN   041004   371L
S.OVLE  041000   368L
S.OVLFL 040371   364L
S.OVLS  040376   367L
S.OVSTK 041035   396L
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S.RFWA  040356  345L
S.SCI   041024  385L
S.SCR   041121  435L
S.SDD   041010  381L
S.SDVR  041146  289L  291
S.SSN   041002  370L
S.SYSM  040320  452L
S.TIME  040312  449L
S.UCSF  040372  365L
S.UCSL  040374  366L
S.USRM  040322  454L
S.VAL   040277  286L  445
SC.ACE  000350  639E
SC.UART 000372  708E
SET.H14 000033  551E
SET1    000103' 837   850L
SETNTR  000053' 834E
SETWIDE 000165  556E  1623
STACK   042200  293E
STACKL  001032  291E
SYDD    040130  283E
SYSCALL 000377   46E
TAB     000011  117E  1336
TLP.AS  004015' 1180  1279  1281  1399  1756E
TLP.BAU 004017' 966   1191  1760L
TLP.CON 004021' 934   937   1006  1010  1608  1762L
TLP.CTS 004026' 1185  1772L
TLP.CX  004025' 1183  1317  1340  1356  1375  1377  1770L
TLP.FML 004022' 1764L
TLP.LC  004023' 1014  1325  1766L
TLP.LX  004024' 1182  1316  1328  1365  1367  1768L
TLP.POR 004016' 1017  1190  1273  1565  1645  1693  1735  1758L
TLP.UNA 004015' 1752E
TLP.UNT 004015' 1754L 1756
UC.2SB  000004  665E  1444  1445
UC.5BW  000000  661E
UC.6BW  000001  662E
UC.7BW  000002  663E
UC.8BW  000003  664E  1446
UC.BI   000020  684E
UC.CTS  000020  693E  1569
UC.DCS  000001  689E
UC.DDR  000002  690E
UC.DLA  000200  670E  1430
UC.DR   000001  680E  1654
UC.DRL  000010  692E
UC.DSR  000040  694E
UC.DTR  000001  673E
UC.EDA  000001  651E
UC.EPS  000020  667E
UC.FE   000010  683E
UC.IID  000006  658E
UC.IIP  000001  657E
UC.LOO  000020  677E  1427  1455
UC.MSI  000010  654E
UC.OR   000002  681E
UC.OU1  000004  675E
UC.OU2  000010  676E
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UC.PE   000004    682E
UC.PEN  000010    666E
UC.RI   000100    695E
UC.RLS  000200    696E
UC.RSI  000004    653E
UC.RTS  000002    674E
UC.SB   000100    669E
UC.SKP  000040    668E
UC.TER  000004    691E
UC.THE  000040    685E    1704
UC.TRE  000002    652E
UC.TSE  000100    686E
UCI.ER  000020    730E
UCI.IE  000002    732E
UCI.IR  000100    728E
UCI.RE  000004    731E
UCI.RO  000040    729E
UCI.TE  000001    733E
UDR     000000    705E    1276
UMI.16X 000002    723E
UMI.1B  000100    713E
UMI.1X  000001    722E
UMI.2B  000300    715E
UMI.64X 000003    724E
UMI.HB  000200    714E
UMI.L5  000000    718E
UMI.L6  000004    719E
UMI.L7  000010    720E
UMI.L8  000014    721E
UMI.PA  000020    717E
UMI.PE  000040    716E
UNITASS 003043    1174    1229    1270    1397E
UNT.DIS 000006    613L
UNT.FLG 000000    609L
UNT.GRT 000002    611L
UNT.GTS 000004    612L
UNT.SIZ 000010    615E
UNT.SPG 000001    610L
UO.CLK  000001    200E
UO.DDU  000002    199E
UO.HLT  000200    197E
UO.NFR  000100    198E
UR.DLL  000000    646E    1432
UR.DLM  000001    648E    1435
UR.IER  000001    650E    1423
UR.IIR  000002    656E
UR.LCR  000003    660E    1429    1439
UR.LSR  000005    679E    1652    1698    1739
UR.MCR  000004    672E    1426    1453
UR.MSR  000006    688E    1567
UR.RBR  000000    642E    1448    1656
UR.THR  000000    644E    1275    1276    1707
USERFWA 042200    294E     753
USR     000001    706E
USR.BD  000100    737E
USR.FE  000040    738E
USR.OE  000020    739E
USR.PE  000010    740E
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```
USR.RXR 000002      742E
USR.TXE 000004      741E
USR.TXR 000001      743E
VAL     000112'     873L    1041
VALI    000001      1013    1016    1040E
VERS    000040       44E
WAIT    003203'     1557E   1699    1744
WAIT0   003204'     1560L   1570
WAIT3   003231'     1562    1571    1590L
WIDI    000233'      897     900     905     911     914     918     926     940L
WIDTAB  001337'      916     924     1058L
WIDTH   000115'     895L    1044
WIDTHI  000002      1019    1043E

24864 BYTES FREE
```