```
                2  ***     SYINIT  -  SY:  Initialization Parameters
                3  *
                4  *       SYINIT contains the initialization parameters for
                5  *       an H17.  Most of these routines have been taken
                6  *       from previous versions of  *INIT*.  These parameters
                7  *       include:
                8  *
                9  *               Read-Only Boot Driver
               10  *               Volume Parameters
               11  *                 cluster sizes
               12  *                 directory offsets
               13  *               Init subfunctions
               14  *
               15  *
               16  *        G. C.,          /80.05.sc/
               17  *
               18  *       Copyright 1980, by:
               19  *
               20  *               Heath Co.
               21  *               Benton Harbor, MI
               22  *                     49022
               23  *
```

```
                        26  **      Assembly Constants
                        27  *
                        28
000.012                 29  ERPTCNT EQU     10              Soft Error retry count
                        30
000.001                 31  RESIDE  EQU     1               Not Assembled with resident HDOS Assembler
```

```
000.000                 34          XTEXT   MTR
```

```
                        37X **      MTR - PAM/8 EQUIVALENCES.
                        38X *
                        39X *       THIS DECK CONTAINS SYMBOLIC DEFINITIONS USED TO
                        40X *       MAKE USE OF THE PAM/8 CODE AND CONTROL BYTES.


                        42X **      IO PORTS
                        43X
    000.360             44X IP.PAD  EQU     360Q            PAD INPUT PORT
    000.360             45X OP.CTL  EQU     360Q            CONTROL OUTPUT PORT
    000.360             46X OP.DIG  EQU     360Q            DIGIT SELECT OUTPUT PORT
    000.361             47X OP.SEG  EQU     361Q            SEGMENT SELECT OUTPUT PORT
    000.362             48X IP.CON  EQU     362Q            H-88/H-89/HA-8-8 Configuration  /80.07.sc/
    000.362             49X OP2.CTL EQU     362Q            H-88/H-89/HA-8-8 Control Port   /80.07.sc/


                        51X **      FRONT PANEL CONTROL BITS.                               /80.07.sc/
                        52X *
                        53X *       CB.*  set in OP.CTL
                        54X *       CB2.* set in OP2.CTL
                        55X *
                        56X
    000.020             57X CB.SSI  EQU     00010000B       SINGLE STEP INTERRUPT
    000.040             58X CB.MTL  EQU     00100000B       MONITOR LIGHT
    000.100             59X CB.CLI  EQU     01000000B       CLOCK INTERRUPT ENABLE
    000.200             60X CB.SPK  EQU     10000000B       SPEAKER ENABLE
                        61X
    000.001             62X CB2.SSI EQU     00000001B       Single Step Interrupt
    000.002             63X CB2.CLI EQU     00000010B       Clock Interrupt Enable
    000.040             64X CB2.ORG EQU     00100000B       ORG 0 Select
    000.100             65X CB2.SID EQU     01000000B       Side 1 Select


                        67X **      Secondary Control Bits
                        68X


                        70X **      MONITOR MODE FLAGS.
                        71X
    000.000             72X DM.MR   EQU     0               MEMORY READ
    000.001             73X DM.MW   EQU     1               MEMORY WRITE
    000.002             74X DM.RR   EQU     2               REGISTER READ
    000.003             75X DM.RW   EQU     3               REGISTER WRITE
```

```
                        77X **      USER OPTION BITS.
                        78X *
                        79X *       THESE BITS ARE SET IN CELL .MFLAG.
                        80X
000.200                 81X UO.HLT  EQU     10000000B       DISABLE HALT PROCESSING
000.100                 82X UO.NFR  EQU     CB.CLI          NO REFRESH OF FRONT PANEL
000.002                 83X UO.DDU  EQU     00000010B       DISABLE DISPLAY UPDATE
000.001                 84X UO.CLK  EQU     00000001B       ALLOW PRIVATE INTERRUPT PROCESSING


                        86X **      MONITOR IDENTIFICATION FLAGS
                        87X *
                        88X *       THESE BYTES IDENTIFY THE ROM MONITOR.
                        89X *       THEY ARE THE VARIOUS VALUES OF LOCATION .IDENT
                        90X
000.021                 91X M.PAM8  EQU     021Q            'LXI' INSTRUCTION AT 000.000 IN PAM-8
000.303                 92X M.FOX   EQU     303Q            'JMP' INSTRUCTION AT 000.000 IN FOX ROM


                        94X **      Configuration Flags                                 /80.07.sc/
                        95X *
                        96X *       These bits are read in IP.CON.
                        97X *
                        98X
000.003                 99X CN.174M EQU     00000011B       Port 174Q Device-Type Mask
000.014                100X CN.170M EQU     00001100B       Port 170Q Device-Type Mask
000.020                101X CN.PRI  EQU     00010000B       Primary/Secondary:  1=>primary == 170Q
000.040                102X CN.MEM  EQU     00100000B       Memory Test/Normal Switch:  0=>Test; 1=>Normal
000.100                103X CN.BAU  EQU     01000000B       Baud Rate:  0=>9600; 1=>19,200
000.200                104X CN.ABO  EQU     10000000B       Auto-Boot:  1=>Auto-Boot
                       105X
000.000                106X CND.H17 EQU     00B             H-17 Disk;              Valid only in CN.174M
000.000                107X CND.NDI EQU     00B             No Device Installed;    Valid only in CN.170M
000.001                108X CND.H47 EQU     01B             H-47 Disk


                       110X **      ROUTINE ENTRY POINTS.
                       111X *
                       112X
000.000                113X .IDENT  EQU     0000A           IDENTIFICATION LOCATION
000.053                114X .DLY    EQU     0053A           DELAY
001.267                115X .LOAD   EQU     1267A           TAPE LOAD
001.374                116X .DUMP   EQU     1374A           TAPE DUMP
002.136                117X .ALARM  EQU     2136A           ALARM ROUTINE
002.140                118X .HORN   EQU     2140A           HORN
002.172                119X .CTC    EQU     2172A           CHECK TAPE CHECKSUM
002.205                120X .TPERR  EQU     2205A           TAPE ERROR ROUTINE
002.264                121X .PCHL   EQU     2264A           PCHL INSTRUCTION
002.265                122X .SRS    EQU     2265A           SCAN RECORD START
002.325                123X .RNP    EQU     2325A           READ NEXT PAIR
002.331                124X .RNB    EQU     2331A           READ NEXT BYTE
```

```
002.347  125X .CRC    EQU   2347A   CRC-16 CALCULATOR
003.017  126X .WNP    EQU   3017A   WRITE NEXT PAIR
003.024  127X .WNB    EQU   3024A   WRITE NEXT BYTE
003.122  128X .DOD    EQU   3122A   DECODE FOR OCTAL DISPLAY
003.260  129X .RCK    EQU   3260A   READ CONSOLE KEYSET
003.356  130X .DODA   EQU   3356A   SEGMENT CODE TABLE

         132X **      RAM CELLS USED BY H8MTR.
         133X *
         134X
040.000  135X .START  EQU   40000A  START DUMP ADDRESS
040.002  136X .IOWRK  EQU   40002A  IN OR OUT INSTRUCTION
040.005  137X .REGI   EQU   40005A  DISPLAYED REGISTER INDEX
040.006  138X .DSPRQT EQU   40006A  PERIOD FLAG BYTE
040.007  139X .DSPMOD EQU   40007A  DISPLAY MODE
040.010  140X .MFLAG  EQU   40010A  USER OPTION BYTE
040.011  141X .CTLFLG EQU   40011A  PANEL CONTROL BYTE
040.013  142X .ALEDS  EQU   40013A  ABUSS LEDS
040.021  143X .DLEDS  EQU   40021A  DBUSS LEDS
040.024  144X .ABUSS  EQU   40024A  ABUSS REGISTER
040.027  145X .CRCSUM EQU   40027A  CRCSUM WORD
040.031  146X .TPERRX EQU   40031A  TAPE ERROR EXIT VECTOR
040.033  147X .TICCNT EQU   40033A  CLOCK TICK COUNTER
040.035  148X .REGPTR EQU   40035A  REGISTER POINTER
040.037  149X .UIVEC  EQU   40037A  USER INTERRUPT VECTORS
040.064  150X .NMIRET EQU   40064A  H88/H89 NMI Return Address      /80.07.sc/
040.066  151X .CTL2FL EQU   40066A  OP2.CTL Control Byte            /80.07.sc/
000.000  152        XTEXT  BOODEF

         154X **      BOODEF - SPECIAL BOOT-HDOS INTERFACE DEFINTIONS.   /80.05.sc/
         155X
051.000  156X SB.ORG  EQU   51000A  ORG FOR LOAD OF INITIAL HDOS.SAV
014.000  157X SB.OVMX EQU   14000A  SIZE OF HOLD AREA FOR SWAPPED USER CODE
         158X *                     (=MAX SIZE OF HDOSOVL.SYS)
         159X
042.200  160X         ORG   42200A
         161X
042.200  162X SB.BOO  DS    3       Jump to Boot routine
042.203  163X SB.VER  DS    1       Version of INIT that built disk
042.204  164X SB.FLG  DS    1       Boot Flags
000.001  165X BFLG.A  EQU   00000001B  Auto-Boot: 1 => Boot
042.205  166X SB.BAU  DS    2       Baud Rate Divisor (0=>ignore)
042.207  167X SB.DAT  DS    2       Default Date
000.027  168X         ERRMI SB.BOO+32-*
042.211  169X         DS    SB.BOO+32-*  Reserved
042.240  170X SB.BPE  EQU   *       End of BOOT-parameters
         171X
042.240  172X SB.DRV  DS    SB.BOO+512-*  Primary Boot
         173X
044.200  174X SB.SDB  EQU   *       Secondary Boot
044.200  175        XTEXT  ECDEF
```

```
                    177X **     ERROR CODE DEFINITIONS.
                    178X
000.000             179X        ORG     0
000.000             180X        DS      1           NO ERROR #0
000.001             181X EC.EOF DS      1           END OF FILE
000.002             182X EC.EOM DS      1           END OF MEDIA
000.003             183X EC.ILC DS      1           ILLEGAL SYSCALL CODE
000.004             184X EC.CNA DS      1           CHANNEL NOT AVAILABLE
000.005             185X EC.DNS DS      1           DEVICE NOT SUITABLE
000.006             186X EC.IDN DS      1           ILLEGAL DEVICE NAME
000.007             187X EC.IFN DS      1           ILLEGAL FILE NAME
000.010             188X EC.NRD DS      1           NO ROOM FOR DEVICE DRIVER
000.011             189X EC.FNO DS      1           CHANNEL NOT OPEN
000.012             190X EC.ILR DS      1           ILLEGAL REQUEST
000.013             191X EC.FUC DS      1           FILE USAGE CONFLICT
000.014             192X EC.FNF DS      1           FILE NAME NOT FOUND
000.015             193X EC.UND DS      1           UNKNOWN DEVICE
000.016             194X EC.ICN DS      1           ILLEGAL CHANNEL NUMBER
000.017             195X EC.DIF DS      1           DIRECTORY FULL
000.020             196X EC.IFC DS      1           ILLEGAL FILE CONTENTS
000.021             197X EC.NEM DS      1           NOT ENOUGH MEMORY
000.022             198X EC.RF  DS      1           READ FAILURE
000.023             199X EC.WF  DS      1           WRITE FAILURE
000.024             200X EC.WPV DS      1           WRITE PROTECTION VIOLATION
000.025             201X EC.WP  DS      1           DISK WRITE PROTECTED
000.026             202X EC.FAP DS      1           FILE ALREADY PRESENT
000.027             203X EC.DDA DS      1           DEVICE DRIVER ABORT
000.030             204X EC.FL  DS      1           FILE LOCKED
000.031             205X EC.FAO DS      1           FILE ALREADY OPEN
000.032             206X EC.IS  DS      1           ILLEGAL SWITCH
000.033             207X EC.UUN DS      1           UNKNOWN UNIT NUMBER
000.034             208X EC.FNR DS      1           FILE NAME REQUIRED
000.035             209X EC.DIW DS      1           DEVICE IS NOT WRITABLE (OR WRITE LOCKED)
000.036             210X EC.UNA DS      1           UNIT NOT AVAILABLE
000.037             211X EC.ILV DS      1           ILLEGAL VALUE
000.040             212X EC.ILO DS      1           ILLEGAL OPTION
000.041             213X EC.VPM DS      1           VOLUME PRESENTLY MOUNTED ON DEVICE
000.042             214X EC.NVM DS      1           NO VOLUME PRESENTLY MOUNTED
000.043             215X EC.FOD DS      1           FILE OPEN ON DEVICE
000.044             216X EC.NPM DS      1           NO PROVISIONS MADE FOR REMOUNTING MORE DISKS
000.045             217X EC.DNI DS      1           DISK NOT INITIALIZED
000.046             218X EC.DNR DS      1           DISK IS NOT READABLE
000.047             219X EC.DSC DS      1           DISK STRUCTURE IS CORRUPT
000.050             220X EC.NCV DS      1           NOT CORRECT VERSION OF HDOS
000.051             221X EC.NOS DS      1           NO OPERATING SYSTEM MOUNTED
000.052             222X EC.IOI DS      1           ILLEGAL OVERLAY INDEX
000.053             223X EC.OTL DS      1           OVERLAY TO LARGE
000.054             224         XTEXT   H17DEF
```

```
                        226X **     H17 CONTROL INFORMATION.
                        227X
000.177                 228X DP.DC  EQU     07FH            DISK CONTROL PORT
                        229X
000.001                 230X DF.HD  EQU     00000001B       HOLE DETECT
000.002                 231X DF.T0  EQU     00000010B       TRACK 0 DETECT
000.004                 232X DF.WP  EQU     00000100B       WRITE PROTECT
000.010                 233X DF.SD  EQU     00001000B       SYNC DETECT
                        234X
000.001                 235X DF.WG  EQU     00000001B       WRITE GATE ENABLE
000.002                 236X DF.DS0 EQU     00000010B       DRIVE SELECT 0
000.004                 237X DF.DS1 EQU     00000100B       DRIVE SELECT 1
000.010                 238X DF.DS2 EQU     00001000B       DRIVE SELECT 2
000.020                 239X DF.MO  EQU     00010000B       MOTOR ON (BOTH DRIVES)
000.040                 240X DF.DI  EQU     00100000B       DIRECTION (0=OUT)
000.100                 241X DF.ST  EQU     01000000B       STEP COMMAND (ACTIVE HIGH)
000.200                 242X DF.WR  EQU     10000000B       WRITE ENABLE RAM
                        243X
                        244X
                        245X
                        246X *      Drives other than Wansco's need a delay after write before step
                        247X
000.173                 248X H17SDL EQU     900/15*1024/500+1       H17 step delay, 900 mic sec /80.06.sc/
                        249X *                                       = 900/15*2.048
                        250X
                        251X
                        252X
                        253X **     DISK UART PORTS AND CONTROL FLAGS.
                        254X
000.174                 255X UP.DP  EQU     07CH            DATA PORT
000.175                 256X UP.FC  EQU     07DH            FILL CHARACTER
000.175                 257X UP.ST  EQU     07DH            STATUS FLAGS
000.176                 258X UP.SC  EQU     07EH            SYN CHARACTER (OUTPUT)
000.176                 259X UP.SR  EQU     07EH            SYNC RESET (INPUT)
                        260X
000.001                 261X UF.RDA EQU     00000001B       RECEIVE DATA AVAILABLE
000.002                 262X UF.ROR EQU     00000010B       RECEIVER OVERRUN
000.004                 263X UF.RPE EQU     00000100B       RECEIVER PARITY ERROR
000.100                 264X UF.FCT EQU     01000000B       FILL CHAR TRANSMITTED
000.200                 265X UF.TBM EQU     10000000B       TRANSMITTER BUFFER EMPTY
                        266X
                        267X
                        268X
                        269X **     CHARACTER DEFINITIONS.
                        270X
000.375                 271X C.DSYN EQU     0FDH            PREFIX SYNC CHARACTER
000.054                 272         XTEXT   DDDEF           DEVICE DRIVER CONSTANTS
```

```
                    274X **     DEVICE DRIVER COMMUNICATION FLAGS.
                    275X *
                    276X
000.000             277X        ORG     0
                    278X
000.000             279X DC.REA DS      1           READ
000.001             280X DC.WRI DS      1           WRITE
000.002             281X DC.RER DS      1           READ REGARDLESS
000.003             282X DC.OPR DS      1           OPEN FOR READ
000.004             283X DC.OPW DS      1           OPEN FOR WRITE
000.005             284X DC.OPU DS      1           OPEN FOR UPDATE
000.006             285X DC.CLO DS      1           CLOSE
000.007             286X DC.ABT DS      1           ABORT
000.010             287X DC.MOU DS      1           MOUNT DEVICE
000.011             288X DC.LOD DS      1           LOAD DEVICE DRIVER
000.012             289X DC.RDY DS      1           Device Ready                /80.04.GC/
000.013             290X DC.MAX DS      1           MAXIMUM ENTRY INDEX
000.014             291         XTEXT   PICDEF


                    293X **     PIC FORMAT EQUIVALENCES.
                    294X
000.000             295X        ORG     0
                    296X
000.000             297X PIC.ID DS      1           377Q = BINARY FILE FLAG
000.001             298X        DS      1           FILE TYPE (FT.PIC)
000.002             299X PIC.LEN DS     2           LENGTH OF ENTIRE RECORD
000.004             300X PIC.PTR DS     2           INDEX OF START OF PIC TABLE
                    301X
000.006             302X PIC.COD DS     0           CODE STARTS HERE
000.006             303         XTEXT   LABDEF


                    305X **     DISK LABEL SECTOR FORMATS.
                    306X
000.000             307X        ORG     0
000.000             308X LAB.SER DS     1           SERIAL NUMBER OF VOLUME
000.001             309X LAB.IND DS     2           INITIALIZATION DATE
000.003             310X LAB.DIS DS     2           SECTOR NUMBER OF 1ST DIRECTORY SECTOR
000.005             311X LAB.GRT DS     2           INDEX OF GRT SECTOR
000.007             312X LAB.SPG DS     1           SECTORS PER GROUP
                    313X
000.000             314X LAB.DAT EQU    0           DATA VOLUME ONLY
000.001             315X LAB.SYS EQU    1           SYSTEM VOLUME
000.002             316X LAB.NOD EQU    2           => LAB.NOD MEANS VOLUME HAS NO DIRECTORY
                    317X
000.010             318X LAB.VLT DS     1           VOLUME TYPE
000.011             319X LAB.VER DS     1           VERSION OF INIT17 THAT INITED DISK
                    320X
000.012             321X LAB.RGT DS     2           RGT sector number           /80.06.sc/
                    322X
000.014             323X LAB.VPR EQU    *           Volume dependant data       /80.05.sc/
000.014             324X LAB.SIZ DS     2            Volume Size (Bytes/256)    /80.05.sc/
000.016             325X LAB.PSS DS     2            Physical Sector Size       /80.05.sc/
```

```
000.020                 326X LAB.VFL DS      1              Volume dependant Flags          /80.09.sc/
000.001                 327X VFL.NSD EQU     00000001B        Number of Sides:  1 => 2      /80.09.sc/
000.005                 328X LAB.VPL EQU     *-LAB.VPR      Length of volume dependant data /80.05.sc/
                        329X
000.000                 330X         ERRMI   5-LAB.VPL                                      /80.05.sc/
000.021                 331X         DS      5-LAB.VPL      Reserved                        /80.05.sc/
                        332X
000.021                 333X LAB.LAB DS      60             LABEL
000.074                 334X LAB.LBL EQU     *-LAB.LAB      LABEL LENGTH
000.115                 335X         DS      2              Reserved for 0 bytes            /80.09.sc/
                        336X
000.117                 337X LAB.AUX EQU     *              Auxiliary Data                  /80.09.sc/
000.117                 338X LAB.SPT DS      1               Sectors per Track              /80.09.sc/
000.001                 339X LAB.AXL EQU     *-LAB.AUX      Length of Aux. Data             /80.09.sc/
000.120                 340          XTEXT   DIRDEF

                        342X **      DIRECTORY ENTRY FORMAT.
                        343X
000.000                 344X         ORG     0
                        345X
                        346X
000.377                 347X DF.EMP  EQU     377Q           FLAGS ENTRY EMPTY
000.376                 348X DF.CLR  EQU     376Q           FLAGS ENTRY EMPTY, REST OF DIR ALSO CLEAR
                        349X
000.000                 350X DIR.NAM DS      8              NAME
000.010                 351X DIR.EXT DS      3              EXTENSION
000.013                 352X DIR.PRO DS      1              PROJECT
000.014                 353X DIR.VER DS      1              VERSION
000.015                 354X DIRIDL  EQU     *              FILE IDENTIFICATION LENGTH
                        355X
000.015                 356X DIR.CLU DS      1              CLUSTER FACTOR
000.016                 357X DIR.FLG DS      1              FLAGS
000.017                 358X         DS      1              RESERVED
000.020                 359X DIR.FGN DS      1              FIRST GROUP NUMBER
000.021                 360X DIR.LGN DS      1              LAST GROUP NUMBER
000.022                 361X DIR.LSI DS      1              LAST SECTOR INDEX (IN LAST GROUP)
000.023                 362X DIR.CRD DS      2              CREATION DATE
000.025                 363X DIR.ALD DS      2              LAST ALTERATION DATE
                        364X
000.027                 365X DIRELEN EQU     *              DIRECTORY ENTRY LENGTH
000.027                 366          XTEXT   HOSEQU

                        368X **      HDOS SYSTEM EQUIVALENCES.
                        369X *
                        370X
024.000                 371X S.GRT0  EQU     24000A         SYSTEM AREA FOR  GRT0
025.000                 372X S.GRT1  EQU     25000A         SYSTEM AREA FOR  GRT1
026.000                 373X S.GRT2  EQU     26000A         SYSTEM AREA FOR  GRT2
                        374X
030.000                 375X ROMBOOT EQU     30000A         ROM BOOT ENTRY
                        376X
```

```
040.100                 377X            ORG     40100A          FREE SPACE FROM PAM-8
                        378X
040.100                 379X            DS      8               JUMP TO SYSTEM EXIT
040.110                 380X D.CON      DS      16              DISK CONSTANTS
040.130                 381X SYDD       EQU     *               SYSTEM DISK ENTRY POINT
040.130                 382X D.VEC      DS      24*3            SYSTEM ROM ENTRY VECTORS
040.240                 383X D.RAM      DS      31              SYSTEM ROM WORK AREA
040.277                 384X S.VAL      DS      36              SYSTEM VALUES
040.343                 385X S.INT      DS      115             SYSTEM INTERNAL WORK AREAS
041.126                 386X            DS      16
041.146                 387X S.SOVR     DS      2               STACK OVERFLOW WARNING
041.150                 388X            DS      42200A-*        SYSTEM STACK
001.032                 389X STACKL     EQU     *-S.SOVR        STACK SIZE
                        390X
042.200                 391X STACK      EQU     *               LWA+1 SYSTEM STACK
042.200                 392X USERFWA    EQU     *               USER FWA
042.200                 393             XTEXT   HOSDEF


                        395X **         HOSDEF - DEFINE HOS PARAMETER.
                        396X *
                        397X
                        398X
000.040                 399X VERS       EQU     2*16+0          VERSION 2.0
                        400X
000.377                 401X SYSCALL    EQU     377Q            SYSCALL INSTRUCTION
                        402X
                        403X
000.000                 404X            ORG     0
                        405X
                        406X *          RESIDENT FUNCTIONS
                        407X
000.000                 408X .EXIT      DS      1               EXIT (MUST BE FIRST)
000.001                 409X .SCIN      DS      1               SCIN
000.002                 410X .SCOUT     DS      1               SCOUT
000.003                 411X .PRINT     DS      1               PRINT
000.004                 412X .READ      DS      1               READ
000.005                 413X .WRITE     DS      1               WRITE
000.006                 414X .CONSL     DS      1               SET/CLEAR CONSOLE OPTIONS
000.007                 415X .CLRCO     DS      1               CLEAR CONSOLE BUFFER
000.010                 416X .LOADO     DS      1               LOAD AN OVERLAY
000.011                 417X .VERS      DS      1               RETURN HDOS VERSION NUMBER
000.012                 418X .SYSRES    DS      1               PRECEDING FUNCTIONS ARE RESIDENT
                        419X
                        420X
                        421X *          *HDOSOVL0.SYS*  FUNCTIONS
                        422X
000.040                 423X            ORG     40A
                        424X
000.040                 425X .LINK      DS      1               LINK  (MUST BE FIRST)
000.041                 426X .CTLC      DS      1               CTL-C
000.042                 427X .OPENR     DS      1               OPENR
000.043                 428X .OPENW     DS      1               OPENW
000.044                 429X .OPENU     DS      1               OPENU
000.045                 430X .OPENC     DS      1               OPENC
```

```
000.046                 431X .CLOSE  DS      1               CLOSE
000.047                 432X .POSIT  DS      1               POSITION
000.050                 433X .DELET  DS      1               DELETE
000.051                 434X .RENAM  DS      1               RENAME
000.052                 435X .SETTP  DS      1               SETTOP
000.053                 436X .DECODE DS      1               NAME DECODE
000.054                 437X .NAME   DS      1               GET FILE NAME FROM CHANNEL
000.055                 438X .CLEAR  DS      1               CLEAR CHAN
000.056                 439X .CLEARA DS      1               CLEAR ALL CHANS
000.057                 440X .ERROR  DS      1               LOOKUP ERROR
000.060                 441X .CHFLG  DS      1               CHANGE FLAGS
000.061                 442X .DISMT  DS      1               FLAG SYSTEM DISK DISMOUNTED
000.062                 443X .LOADD  DS      1               LOAD DEVICE DRIVER
000.063                 444X .OPEN   DS      1               Parametrized Open
                        445X
                        446X
                        447X *       *HDOSOVL1.SYS*  FUNCTIONS
                        448X
000.200                 449X         ORG     200Q
                        450X
000.200                 451X .MOUNT  DS      1               MOUNT  (MUST BE FIRST)
000.201                 452X .DMOUN  DS      1               DISMOUNT
000.202                 453X .MONMS  DS      1               MOUNT/NO MESSAGE
000.203                 454X .DMNMS  DS      1               DISMOUNT/NO MESSAGE
000.204                 455X .RESET  DS      1               RESET = DISMOUNT/MOUNT OF UNIT
000.205                 456X .CLEAN  DS      1               Clean device
000.206                 457X .DAD    DS      1               Dismount All Disks              /80.08.sc/
000.207                 458          XTEXT   EDRAM


                        460X **      EDRAM - DISK RAM WORKAREA DEFINITION.
                        461X *
                        462X *       ZEROED UPON BOOTING UP.
                        463X *
                        464X *       HOSEQU MUST BE CHANGED WHEN THIS DECK IS CHANGED.
                        465X
                        466X
040.240                 467X         ORG     D.RAM
                        468X
040.240                 469X D.IT    DS      1               TARGET TRACK (CURRENT OPERATION)
040.241                 470X D.TS    DS      1               TARGET SECTOR (CURRENT OPERATION)
                        471X
040.242                 472X D.DVCTL DS      1               DEVICE CONTROL BYTE
                        473X
040.243                 474X D.DLYMO DS      1               MOTOR ON DELAY COUNT
040.244                 475X D.DLYHS DS      1               HEAD SETTLE DELAY COUNTER
                        476X
040.245                 477X D.TRKPT DS      2               ADDRESS IN D.DRVTB FOR TRACK NUMBER
040.247                 478X D.VOLPT DS      2               ADDRESS IN D.DRVTB FOR VOLUME NUMBER
                        479X
040.251                 480X D.DRVTB DS      2*4             TRACK NUMBER AND VOLUME NUMBER FOR 4 DRIVES
                        481X
040.261                 482X D.HECNT DS      1               HARD ERROR COUNT
040.262                 483X D.SECNT DS      2               SOFT ERROR COUNT
```

```
040.264                 484X D.OECNT DS      1              OPERATION ERROR COUNT
                        485X
                        486X *       GLOBAL DISK ERROR COUNTERS
                        487X
040.265                 488X D.ERR   DS      0              BEGINNING OF ERROR BLOCK
040.265                 489X D.E.MDS DS      1              MISSING DATA SYNC
040.266                 490X D.E.HSY DS      1              MISSING HEADER SYNC
040.267                 491X D.E.CHK DS      1              DATA CHECKSUM
040.270                 492X D.E.HCK DS      1              HEADER CHECKSUM
040.271                 493X D.E.VOL DS      1              WRONG VOLUME NUMBER
040.272                 494X D.E.TRK DS      1              BAD TRACK SEEK
040.273                 495X D.ERRL  DS      0              LIMIT OF ERROR COUNTERS
                        496X
                        497X *       I/O OPERATION COUNTS
                        498X
040.273                 499X D.OPR   DS      2
040.275                 500X D.OPW   DS      2
                        501X
000.037                 502X D.RAML  EQU     *-D.RAM
040.277                 503          XTEXT   EDVEC



                        505X **      JMP VECTORS FOR ROM CODE
                        506X *
                        507X *       SEE DISK ROM FOR ADDRESSES
                        508X *
                        509X *       HOSEQU MUST BE ALTERED WHEN THIS TABLE IS ALTERED.
                        510X
040.130                 511X         ORG     D.VEC
                        512X
040.130                 513X D.SYDD  DS      3              JMP  R.SYDD (MUST BE FIRST)
040.133                 514X D.MOUNT DS      3              JMP  R.MOUNT
040.136                 515X D.XOK   DS      3              JMP  R.XOK
040.141                 516X D.ABORT DS      3              JMP  R.ABORT
040.144                 517X D.XIT   DS      3              JMP  R.XIT
040.147                 518X D.READ  DS      3              JMP  R.READ
040.152                 519X D.READR DS      3              JMP  R.READR
040.155                 520X D.WRITE DS      3              JMP  R.WRITE
040.160                 521X D.CDE   DS      3              JMP  R.CDE
040.163                 522X D.DTS   DS      3              JMP  R.DTS
040.166                 523X D.SDT   DS      3              JMP  R.SDT
040.171                 524X D.MAI   DS      3              JMP  R.MAI
040.174                 525X D.MAO   DS      3              JMP  R.MAO
040.177                 526X D.LPS   DS      3              JMP  R.LPS
040.202                 527X D.RDB   DS      3              JMP  R.RDB
040.205                 528X D.SDP   DS      3              JMP  R.SDP
040.210                 529X D.STS   DS      3              JMP  R.STS
040.213                 530X D.STZ   DS      3              JMP  R.STZ
040.216                 531X D.UDLY  DS      3              JMP  R.UDLY
040.221                 532X D.WSC   DS      3              JMP  R.WSC
040.224                 533X D.WSP   DS      3              JMP  R.WSP
040.227                 534X D.WNB   DS      3              JMP  R.WNB
040.232                 535X D.ERRT  DS      3              JMP  R.ERRT
040.235                 536X D.DLY   DS      3              JMP  R.DLY
```

```
040.240                 537           XTEXT   ESVAL



                        539X **       S.VAL - SYSTEM VALUE DEFINTIONS.
                        540X *
                        541X *        THESE VALUES ARE SET AND MAINTAINED BY THE SYSTEM.
                        542X *
                        543X *        THE DECK HOSEQU MUST BE MODIFIED WHEN THIS IS MODIFIED.
                        544X
                        545X
040.277                 546X          ORG     S.VAL
                        547X
040.277                 548X S.DATE   DS      9               SYSTEM DATE (IN ASCII)
040.310                 549X S.DATC   DS      2               CODED DATE
040.312                 550X S.TIME   DS      4               TIME FROM MIDNIGHT (IN TICS)
040.316                 551X S.HIMEM  DS      2               HARDWARE HIGH MEMORY ADRESS+1
                        552X
040.320                 553X S.SYSM   DS      2               FWA RESIDENT SYSTEM
                        554X
040.322                 555X S.USRM   DS      2               LWA USER MEMORY
                        556X
040.324                 557X S.OMAX   DS      2               MAX OVERLAY SIZE FOR SYSTEM
                        558X
                        559X
                        560X **       THE FOLLOWING FIVE CELLS SHOULD BE MODIFIED/READ ONLY VIA THE .CONSL SYSCALL
                        561X
000.200                 562X CSL.ECH  EQU     10000000B       SUPPRESS ECHO
000.004                 563X CSL.RAW  EQU     00000100B       Raw Mode I/O                    /80.09.sc/
000.002                 564X CSL.WRP  EQU     00000010B       WRAP LINES AT WIDTH
000.001                 565X CSL.CHR  EQU     00000001B       OPERATE IN CHARACTER MODE
                        566X
000.000                 567X I.CSLMD  EQU     0               S.CSLMD IS FIRST BYTE
040.326                 568X S.CSLMD  DS      1               CONSOLE MODE
                        569X
000.200                 570X CTP.BKS  EQU     10000000B       TERMINAL PROCESSES BACKSPACES
000.100                 571X CTP.FF   EQU     01000000B       Terminal Processes Form-Feed    /80.09.sc/
000.040                 572X CTP.MLI  EQU     00100000B       MAP LOWER CASE TO UPPER ON INPUT
000.020                 573X CTP.MLO  EQU     00010000B       MAP LOWER CASE TO UPPER ON OUTPUT
000.010                 574X CTP.2SB  EQU     00001000B       TERMINAL NEEDS TWO STOP BITS
000.002                 575X CTP.BKM  EQU     00000010B       MAP BKSP (UPON INPUT) TO RUBOUT
000.001                 576X CTP.TAB  EQU     00000001B       TERMINAL SUPPORTS TAB CHARACTERS
                        577X
000.001                 578X I.CONTY  EQU     1               S.CONTY IS 2ND BYTE
000.000                 579X          ERRNZ   *-S.CSLMD-I.CONTY
040.327                 580X S.CONTY  DS      1               CONSOLE TYPE FLAGS
000.002                 581X I.CUSOR  EQU     2               S.CUSOR IS 3RD BYTE
000.000                 582X          ERRNZ   *-S.CSLMD-I.CUSOR
040.330                 583X S.CUSOR  DS      1               CURRENT CURSOR POSITION
000.003                 584X I.CONWI  EQU     3               S.CONWI IS 4TH BYTE
000.000                 585X          ERRNZ   *-S.CSLMD-I.CONWI
040.331                 586X S.CONWI  DS      1               CONSOLE WIDTH
                        587X
000.001                 588X CO.FLG   EQU     00000001B       CTL-O FLAG
000.200                 589X CS.FLG   EQU     10000000B       CTL-S FLAG
```

```
                    590X
000.004             591X I.CONFL EQU     4              S.CONFL IS 5TH BYTE
000.000             592X         ERRNZ   *-S.CSLMD-I.CONFL
040.332             593X S.CONFL DS      1              CONSOLE FLAGS
                    594X
040.333             595X S.CAADR DS      2              ADDRESS FOR ABORT PROCESSING (>256 IF VALID)
040.335             596X S.CCTAB DS      6              ADDR FOR CTL-A, CTL-B, CTL-C PROCESSING
040.343             597          XTEXT   ESINT



                    599X **      S.INT - SYSTEM INTERNAL WORKAREA DEFINITIONS.
                    600X *
                    601X *       THESE CELLS ARE REFERENCED BY OVERLAYS AND MAIN CODE, AND
                    602X *       MUST THEREFORE RESIDE IN FIXED LOW MEMORY.
                    603X
                    604X
040.343             605X         ORG     S.INT
                    606X
                    607X **      CONSOLE STATUS FLAGS
                    608X
040.343             609X S.CDB   DS      1              CONSOLE DESCRIPTOR BYTE
000.000             610X CDB.H85 EQU     00000000B
000.001             611X CDB.H84 EQU     00000001B      =0 IF H8-5, =1 IF H8-4
040.344             612X S.BAUD  DS      2              [0-14]  H8-4 BAUD RATE, =0 IF H8-5
                    613X *                              [15]    =1 IF BAUD RATE => 2 STOP BITS
                    614X
                    615X **      TABLE ADDRESS WORDS
                    616X
040.346             617X S.DLINK DS      2              ADDRESS OF DATA IN HDOS CODE
040.350             618X S.OFWA  DS      2              FWA  OVERLAY  TABLE
040.352             619X S.CFWA  DS      2              FWA  CHANNEL  TABLE
040.354             620X S.DFWA  DS      2              FWA  DEVICE  TABLE
040.356             621X S.RFWA  DS      2              FWA  RESIDENT HDOS CODE
                    622X
                    623X **      DEVICE DRIVER DELAYED LOAD FLAGS
                    624X
040.360             625X S.DDLDA DS      2              DRIVER LOAD ADDRESS (HIGH BYTE=0 IF NO LOAD PENDING)
040.362             626X S.DDLEN DS      2              CODE LENGTH IN BYTES
040.364             627X S.DDGRP DS      1              GROUP NUMBER FOR DRIVER
040.365             628X         DS      1              HOLD PLACE
                    629X *S.DDSEC        DS      2              SECTOR NUMBER FOR DRIVER ( * OBSOLETE ! * )
040.366             630X S.DDDTA DS      2              DEVICE'S ADDRESS IN DEVLST +DEV.RES
040.370             631X S.DDOPC DS      1              OPEN OPCODE PENDEDING
                    632X
                    633X **      OVERLAY MANAGEMENT FLAGS
                    634X
000.001             635X OVL.IN  EQU     00000001B      IN MEMORY
000.002             636X OVL.RES EQU     00000010B      PERMINANTLY RESIDENT
000.014             637X OVL.NUM EQU     00001100B      OVERLAY NUMBER MASK
000.200             638X OVL.UCS EQU     10000000B      USER CODE SWAPPED FOR OVERLAY
                    639X
040.371             640X S.OVLFL DS      1              OVERLAY FLAG
040.372             641X S.UCSF  DS      2              FWA SWAPPED USER CODE
040.374             642X S.UCSL  DS      2              LENGTH SWAPPED USER CODE
```

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040.376                643X S.OVLS  DS      2               SIZE OF OVERLAY CODE
041.000                644X S.OVLE  DS      2               ENTRY POINT OF OVERLAY CODE
                       645X
041.002                646X S.SSN   DS      2               SWAP AREA SECTOR NUMBER
041.004                647X S.OSN   DS      2               OVERLAY SECTOR NUMBER
                       648X
                       649X *       SYSCALL PROCESSING WORK AREAS
                       650X
041.006                651X S.CACC  DS      1               (ACC) UPON SYSCALL
041.007                652X S.CODE  DS      1               SYSCALL INDEX IN PROGRESS
                       653X
                       654X *       JUMPS TO ROUTINES IN RESIDENT HDOS CODE
                       655X
041.010                656X S.JUMPS DS      0               START OF DUMP VECTORS
041.010                657X S.SDD   DS      3               JUMP TO STAND-IN DEVICE DRIVER
041.013                658X S.FASER DS      3               JUMP TO FATSERR (FATAL SYSTEM ERROR)
041.016                659X S.DIREA DS      3               JUMP TO DIREAD (DISK FILE READ)
041.021                660X S.FCI   DS      3               JUMP TO FCI (FETCH CHANNEL INFO)
041.024                661X S.SCI   DS      3               JUMP TO SCI (STORE CHANNEL INFO)
041.027                662X S.GUP   DS      3               JUMP TO GUP (GET UNIT POINTER)
                       663X
041.032                664X S.MOUNT DS      1               <>0 IF THE SYSTEM DISK IS MOUNTED
041.033                665X S.DCS   DS      1               DEFAULT CLUSTER SIZE-1
                       666X
041.034                667X S.BOOTF DS      1               BOOT FLAGS
000.001                668X BOOT.P  EQU     00000001B       EXECUTE PROLOGUE UPON BOOTUP
                       669X
                       670X *       STACK VALUE SAVED FOR OVERLAY SYSCALLS
                       671X
041.035                672X S.OVSTK DS      2               VALUE OF SP UPON SYSCALLS USING OVERLAY
                       673X
041.037                674X         DS      1               RESERVED


                       676X **      ACTIVE I/O AREA.
                       677X *
                       678X *       THE AIO.XXX AREA CONTAINS INFORMATION ABOUT THE I/O OPERATION
                       679X *       CURRENTLY BEING PERFORMED. THE INFORMATION IS OBTAINED FROM
                       680X *       THE CHANNEL TABLE, AND WILL BE RESTORED THERE WHEN DONE.
                       681X *
                       682X *       NORMALLY, THE AIO.XXX INFORMATION WOULD BE OBTAINED DIRECTLY
                       683X *       FROM VARIOUS SYSTEM TABLES VIA POINTER REGISTERS. SINCE THE
                       684X *       8080 HAS NO GOOD INDEXED ADDRESSING, THE DATA IS MANUALLY
                       685X *       COPIED INTO THE AIO.XXX CELLS BEFORE PROCESSING, AND
                       686X *       BACKDATED AFTER PROCESSING.
                       687X
041.040                688X AIO.VEC DS      3               JUMP INSTRUCTION
041.041                689X AIO.DDA EQU     *-2             DEVICE DRIVER ADDRESS
041.043                690X AIO.FLG DS      1               FLAG BYTE
041.044                691X AIO.GRT DS      2               ADDRESS OF GROUP RESERV TABLE
041.046                692X AIO.SPG DS      1               SECTORS PER GROUP
041.047                693X AIO.CGN DS      1               CURRENT GROUP NUMBER
041.050                694X AIO.CSI DS      1               CURRENT SECTOR INDEX
041.051                695X AIO.LGN DS      1               LAST GROUP NUMBER
```

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041.052                 696X AIO.LSI DS      1              LAST SECTOR INDEX
041.053                 697X AIO.DTA DS      2              DEVICE TABLE ADDRESS
041.055                 698X AIO.DES DS      2              DIRECTORY SECTOR
041.057                 699X AIO.DEV DS      2              DEVICE CODE
041.061                 700X AIO.UNI DS      1              UNIT NUMBER (0-9)
                        701X
041.062                 702X AIO.DIR DS      DIRELEN        DIRECTORY ENTRY
                        703X
041.111                 704X AIO.CNT DS      1              SECTOR COUNT
041.112                 705X AIO.EOM DS      1              END OF MEDIA FLAG
041.113                 706X AIO.EOF DS      1              END OF FILE FLAG
041.114                 707X AIO.TFP DS      2              TEMP FILE POINTERS
041.116                 708X AIO.CHA DS      2              ADDRESS OF CHANNEL BLOCK (IOC.DDA)


041.120                 710X S.BDA   DS      1              Boot Device Address (Setup by ROM) /80.09.sc/
041.121                 711X S.SCR   DS      2              SYSTEM SCRATCH AREA ADDRESS
041.123                 712          XTEXT   H17ROM


                        714X **      H17 ROM DEFINITIONS
                        715X
036.235                 716X R.WHD   EQU     36235A
036.271                 717X R.WNH   EQU     36271A
035.303                 718X R.DLY   EQU     35303A
041.123                 719          XTEXT   HDSROM


                        721X **      HDOS H17 ROM ENTRY POINTS.
031.253                 722X         ORG     31253A
                        723X *DWRITE EQU     *                      Obsolete                /80.04.sc/
031.253                 724X         DS      31256A-31253A
                        725X *DREAD  EQU     *                      Obsolete                /80.04.sc/
031.256                 726X         DS      31275A-31256A
031.275                 727X S.READ  EQU     *
031.275                 728X         DS      31321A-31266A
031.330                 729X S.WRITE EQU     *
031.330                 730X         DS      31325A-31311A
031.344                 731X ERR.FNO EQU     *
031.344                 732X         DS      31331A-31325A
031.350                 733X ERR.ILR EQU     *
031.350                 734X         DS      31335A-31331A
031.354                 735X CFF     EQU     *
031.354                 736X         DS      31363A-31335A
032.002                 737X DCA     EQU     *
032.002                 738X         DS      32114A-31363A
032.133                 739X FFB     EQU     *
032.133                 740X         DS      32166A-32114A
032.205                 741X FFL     EQU     *
032.205                 742X         DS      32204A-32166A
                        743X *LDD    EQU     *
```

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032.223                 744X            DS      32372A-32204A+1
033.012                 745X LDO        EQU     *
033.012                 746X            DS      33135A-33002A
033.145                 747X PDI        EQU     *
033.145                 748X            DS      33154A-33124A
033.175                 749X REL.       EQU     *
033.175                 750X            DS      33156A-33154A
033.177                 751X REL        EQU     *
033.177                 752X            DS      33212A-33156A
033.233                 753X TFE        EQU     *
033.233                 754X            DS      33232A-33206A
033.257                 755X RUC        EQU     *
                        756X
037.132                 757X BOOTA      EQU     37132A          Boot Vectors                    /80.06.sc/
000.130                 758X BOOTAL     EQU     00130A          Length of boot vectors          /80.06.sc/
                        759X
034.031                 760X CLOCK      EQU     34031A          Clock vector                    /80.06.GC/
033.257                 761             XTEXT   ASCII

                        763X **         ASCII CHARACTER EQUIVALENCES.
                        764X
000.015                 765X CR         EQU     13              CARRIAGE RETURN
000.012                 766X LF         EQU     10              LINE FEED
000.200                 767X NULL       EQU     200Q            PAD CHARACTER
000.000                 768X NUL2       EQU     0
000.007                 769X BELL       EQU     7               BELL CHARACTER
000.177                 770X RUBOUT     EQU     177Q
000.010                 771X BKSP       EQU     10Q             CTL-H
000.026                 772X C.SYN      EQU     26Q             SYNC
000.002                 773X C.STX      EQU     2               STX
000.047                 774X QUOTE      EQU     47Q
000.011                 775X TAB        EQU     11Q
000.033                 776X ESC        EQU     33Q
000.012                 777X NL         EQU     12Q             NEW LINE (HDOS SYSTEMS)
000.212                 778X ENL        EQU     NL+200Q         NL + END-OF-LINE-FLAG
000.014                 779X FF         EQU     14Q             FORM FEED
000.001                 780X CTLA       EQU     01Q             CTL-A
000.002                 781X CTLB       EQU     02Q             CTL-B
000.003                 782X CTLC       EQU     03Q             CTL-C
000.004                 783X CTLD       EQU     04Q             CTL-D
000.017                 784X CTLO       EQU     17Q             CTL-O
000.020                 785X CTLP       EQU     20Q             CTL-P
000.021                 786X CTLQ       EQU     21Q             CTL-Q
000.023                 787X CTLS       EQU     23Q             CTL-S
000.032                 788X CTLZ       EQU     32Q             CTL-Z
033.257                 789             XTEXT   INIDEF
```

```
                        791X **       INIDEF  -  Init Sub-Function Definitions
                        792X *
                        793X
000.000                 794X          ORG     0
                        795X
000.000                 796X INI.CMV  DS      1               Check Media Validity
000.001                 797X INI.IDS  DS      1               Initialize Disk Surface
000.002                 798X INI.DBI  DS      1               Directory Block Interleave
000.003                 799X INI.PAR  DS      1               Parameters
                        800X
000.004                 801X INI.MAX  EQU     *


                        803X **       Definition of Shared Routines
                        804X *
                        805X
054.000                 806X INITVEC  EQU     54000A          Vector Address
                        807X
054.000                 808X          ORG     INITVEC
                        809X
054.000                 810X $$VER    DS      1               Version of Init
                        811X
054.001                 812X $$BITC   DS      3               Bit CLEAR
                        813X
054.004                 814X $$BITS   DS      3               Bit SET
                        815X
054.007                 816X $$BUFF   DS      2               256 byte buffer
                        817X
054.011                 818X $$CHL    DS      3               Complement HL
                        819X
054.014                 820X $$CNO    DS      3               Check  NO
                        821X
054.017                 822X $$CYS    DS      3               Check  YES
                        823X
054.022                 824X $$DRVR   DS      3               Device Driver
                        825X
054.025                 826X $$DRVR.  DS      3               Device Driver with ERROR detection
                        827X
054.030                 828X $$ITL.   DS      3               Input Text Line
                        829X
054.033                 830X $$MOVE   DS      3               Move bytes
                        831X
054.036                 832X $$TBRA   DS      3               Table Branch
                        833X
054.041                 834X $$TYPTX  DS      3               Type Text
                        835X
054.044                 836X $$VSN    DS      3               Volume Serial Number
                        837X
054.047                 838X $$MAX    EQU     *
```

```
                                841  ***     Drive Parameters
                                842  *
                                843
        000.001                 844          IF      RESIDE
                                845          CODE    P,SB.BOO
                                846          ELSE
                                847          CODE    P,SB.BOO-PIC.COD
                                848          ENDIF
                                849
                                850          CODE    +REL
                                851
        042.200  303 240 042   852          JMP     PBOOT           Execute Primary Boot
                                853
        042.203                 854          SET     42203A
        000.000                 855          ERRNZ   *-.
        000.035                 856          ERRMI   SB.BPE-.
                                857
        042.203                 858          DS      SB.BPE-.
                                859
        042.240  001 130 000   860  PBOOT   LXI     B,BOOTAL
        042.243  021 132 037   861          LXI     D,BOOTA
        042.246  041 110 040   862          LXI     H,D.CON         Move in vectors normally set up at ROM boot
        042.251  315 252 030   863          CALL    $MOVE
                                864
        042.254  041 265 042   865          LXI     H,R.SDP
        042.257  042 206 040   866          SHLD    D.SDP+1         Patch Device Parameter Entry
                                867
        042.262  303 200 044   868          JMP     SB.SDB          Entire Boot already in RAM
                                869
        042.265                 870          XTEXT   MOVE



                                872X **      $MOVE - MOVE DATA
                                873X *
                                874X *       $MOVE MOVES A BLOCK OF BYTES TO A NEW MEMORY ADDRESS.
                                875X *       IF THE MOVE IS TO A LOWER ADDRESS, THE BYTES ARE MOVED FROM
                                876X *       FIRST TO LAST.
                                877X *
                                878X *       IF THE MOVE IS TO A HIGHER ADDRESS, THE BYTES ARE MOVED FROM
                                879X *       LAST TO FIRST.
                                880X *
                                881X *       THIS IS DONE SO THAT AN OVERLAPED MOVE WILL NOT 'RIPPLE'.
                                882X *
                                883X *       ENTRY   (BC) = COUNT
                                884X *               (DE) = FROM
                                885X *               (HL) = TO
                                886X *       EXIT    MOVED
                                887X *               (DE) = ADDRESS OF NEXT FROM BYTE
                                888X *               (HL) = ADDRESS OF NEXT *TO* BYTE
                                889X *               'C' CLEAR
                                890X *       USES    ALL
                                891X
                                892X
        030.252                 893X $MOVE   EQU     30252A          IN H17 ROM
```

```
                                895  **      R.SDP   -  SETUP DEVICE PARAMETERS
                                896  *
                                897  *       SDP SETS UP ARGUMENTS FOR THE SPECIFIC UNIT.
                                898  *
                                899  *               D.DVCTL = MOTOR ON
                                900  *               D.TRKPT =ADDRESS OF DEVICE TRACK NUMBER
                                901  *
                                902  *
                                903  *       Modified to access drive 3, or SY2:.
                                904  *
                                905  *       ENTRY:  AIO.UNI = UNIT NUMBER
                                906  *
                                907  *       EXIT:   (HL) = (D.TRKPT)
                                908  *
                                909  *       USES:   (PSW),(HL)
                                910  *
                                911
036.073                         912  R.SDP.  EQU     036073A                 THE GOOD ROM CODE ENTRY POINT
                                913
042.265  076 012                914  R.SDP   MVI     A,ERPTCNT
042.267  062 264 040            915          STA     D.OECNT                 SET MAX ERROR COUNT FOR THE OPERATION
042.272  072 061 041            916          LDA     AIO.UNI
042.275  365                    917          PUSH    PSW
042.276  376 002                918          CPI     1+1
                                919
042.300  332 073 036            920          JC      R.SDP.                  UNIT 0 OR 1
000.000                         921          ERRNZ   DF.DS0-2
000.000                         922          ERRNZ   DF.DS1-4
                                923
042.303  076 003                924          MVI     A,3                     UNIT 2
000.000                         925          ERRNZ   DF.DS2-8
042.305  303 073 036            926          JMP     R.SDP.
                                927
042.310                         928          SET     42310A
000.000                         929          ERRNZ   *-.
001.270                         930          ERRMI   SB.SDB-.
                                931
042.310                         932          DS      SB.SDB-.        Reserve the rest of the boot track
```

```
                                935  ***     INIT
                                936  *
                                937  *       INIT processes the sub-functions required by  *INIT*
                                938  *
                                939
000.000                         940          ERRNZ   *-SB.SDB
                                941
044.200 376 004                 942  INIT    CPI     INI.MAX
044.202 077                     943          CMC
044.203 330                     944          RC              Illegal sub-function code
                                945
044.204 315 036 054             946          CALL    $$TBRA
044.207                         947  INITA   EQU     *
                                948
000.000                         949          ERRNZ   *-INITA-INI.CMV
044.207 004                     950          DB      CMV-*           Check Media Validity
                                951
000.000                         952          ERRNZ   *-INITA-INI,IDS
044.210 040                     953          DB      IDS-*           Initialize Diskette Surface
                                954
000.000                         955          ERRNZ   *-INITA-INI.DBI
044.211 271                     956          DB      DBI-*           Directory Block Interleave
                                957
000.000                         958          ERRNZ   *-INITA-INI.PAR
044.212 311                     959          DB      PAR-*           Volume Parameters
                                960
000.000                         961          ERRNZ   *-INITA-INI.MAX Insure enoush processors exist
```

```
                                964  **      CMV     - Check Media Validity
                                965  *
                                966  *       CMV checks the validity of the media in the specified unit
                                967  *
                                968  *       ENTRY:  NONE
                                969  *
                                970  *       EXIT:   PSW     = 'C' clear if no errors
                                971  *                         'C' set   if    errors
                                972  *
                                973  *       USES:   ALL
                                974  *
                                975
044.213  315 223 044           976  CMV     CALL    CMV.
044.216  320                   977          RNC                     No problems
                                978
044.217  315 223 044           979          CALL    CMV.            Try again
044.222  311                   980          RET


044.223  076 020               982  CMV.    MVI     A,DF.MO
044.225  315 253 045           983          CALL    OCB
044.230  315 272 045           984          CALL    W1S             WAIT ONE SECOND
044.233  315 271 036           985          CALL    R.WNH           WAIT FOR NO HOLE
044.236  315 235 036           986          CALL    R.WHD           WAIT FOR HOLE DETECT
044.241  315 271 036           987          CALL    R.WNH           WAIT FOR NO HOLE DETECT
                                988
                                989  *       CHECK INSERTED MEDIA
                                990
044.244  315 130 045           991          CALL    CIM             CHECK INSERTED MEDIA
044.247  311                   992          RET
```

```
                                995  **      IDS - INITIALIZE DISK SURFACE.
                                996  *
                                997  *       IDS IS CALLED TO INITIALIZE THE DISK SURFACE WITH RECORD LABELS,
                                998  *       AND A TEST PATTERN.
                                999  *
                               1000  *       ENTRY   MAXTRK = MAX TRACK NUMBER
                               1001  *       EXIT    NONE
                               1002  *       USES    ALL
                               1003
                               1004
044.250  315 025 054           1005  IDS     CALL    $$DRVR.         RESET DEVICE
044.253  007                   1006          DB      DC.ABT
                               1007
044.254  257                 1008          XRA     A
044.255  062 342 044           1009          STA     IDSA            SET VOLUME NUMBER
044.260  323 175               1010          OUT     UP.FC           SET FILL CHARACTER
044.262  107                   1011          MOV     B,A             (B) = TRACK NUMBER
044.263  117                   1012          MOV     C,A             (C) = SECTOR NUMBER
                               1013
                               1014  *       ERASE THIS TRACK
                               1015
044.264  373                   1016  IDS1    EI
044.265  076 020               1017          MVI     A,DF.MO
044.267  315 253 045           1018          CALL    OCB
044.272  062 242 040           1019          STA     D.DVCTL         SET DEVICE CONTROL
044.275  076 043               1020          MVI     A,70/2
044.277  315 303 035           1021          CALL    R.DLY           WAIT HEAD SETTLE
                               1022
044.302  076 021               1023          MVI     A,DF.MO+DF.WG
044.304  315 253 045           1024          CALL    OCB
044.307  076 175               1025          MVI     A,250/2
044.311  315 303 035           1026          CALL    R.DLY           LET TRACK ERASE
044.314  315 304 045           1027          CALL    WIH             WAIT INDEX HOLE
044.317  363                   1028          DI                      DISABLE INTERRUPTS
                               1029
                               1030  *       WRITE 10 SECTOR HEADERS ON THIS TRACK
                               1031
044.320  076 377               1032  IDS2    MVI     A,377Q
044.322  062 243 040           1033          STA     D.DLYMO         LEAVE MOTOR ON
044.325  315 235 036           1034          CALL    R.WHD           WAIT HOLE DETECT
044.330  076 001               1035          MVI     A,1
044.332  141                   1036          MOV     H,C             SAVE (C) IN H
044.333  016 012               1037          MVI     C,10
044.335  315 224 040           1038          CALL    D.WSP           WRITE SYNC PATTERN
044.340  114                   1039          MOV     C,H             RESTORE (C)
044.341  076 000               1040          MVI     A,0
044.342                        1041  IDSA    EQU     *-1             TRACK SERIAL
044.343  315 227 040           1042          CALL    D.WNB           WRITE BYTE
044.346  170                   1043          MOV     A,B             (A) = TRACK
044.347  315 227 040           1044          CALL    D.WNB
044.352  171                   1045          MOV     A,C             (A) = SECTOR
044.353  315 227 040           1046          CALL    D.WNB
044.356  172                   1047          MOV     A,D
044.357  315 227 040           1048          CALL    D.WNB           WRITE CHECK BYTE
044.362  257                   1049          XRA     A
044.363  315 227 040           1050          CALL    D.WNB           WRITE BYTE
```

```
044.366  076 001      1051          MVI     A,1
044.370  141          1052          MOV     H,C             SAVE (C) IN H
044.371  016 012      1053          MVI     C,10
044.373  315 224 040  1054          CALL    D.WSP           WRITE SYNC PATTERN
044.376  114          1055          MOV     C,H             RESTORE (C)
                      1056
044.377  046 200      1057          MVI     H,128
045.001  076 107      1058  IDS3    MVI     A,'G'
045.003  315 227 040  1059          CALL    D.WNB           WRITE TEST PATTERN
045.006  076 114      1060          MVI     A,'L'
045.010  315 227 040  1061          CALL    D.WNB           WRITE
045.013  045          1062          DCR     H
045.014  302 001 045  1063          JNZ     IDS3            WRITE 256
                      1064
045.017  172          1065          MOV     A,D
045.020  315 227 040  1066          CALL    D.WNB
045.023  315 227 040  1067          CALL    D.WNB
045.026  315 227 040  1068          CALL    D.WNB           WRITE CHECKSUM, LET TUNNEL GAP PASS
                      1069
045.031  072 242 040  1070          LDA     D.DVCTL
045.034  323 177      1071          OUT     DP.DC           OFF WRITE GATE
045.036  014          1072          INR     C               COUNT SECTOR
045.037  076 012      1073          MVI     A,10
045.041  221          1074          SUB     C
045.042  302 320 044  1075          JNE     IDS2            NOT NEW TRACK
045.045  373          1076          EI                      RESTORE INTERRUPTS
045.046  004          1077          INR     B               COUNT NEW TRACK
045.047  117          1078          MOV     C,A             ZERO SECTOR
045.050  315 044 054  1079          CALL    $$VSN           A  = Serial Number              /80.05.sc/
045.053  062 342 044  1080          STA     IDSA            USE VOLUME NUMBER FOR OTHER TRACKS
045.056  072 341 045  1081          LDA     MAXTRK
045.061  270          1082          CMP     B
045.062  312 100 045  1083          JE      IDS4            ALL DONE
                      1084
045.065  076 173      1085          MVI     A,H17SDL                                        /80.06.sc/
045.067  315 216 040  1086          CALL    D.UDLY          Wait for write gate to settle   /80.06.sc/
                      1087
045.072  315 171 040  1088          CALL    D.MAI           MOVE ARM IN
045.075  303 264 044  1089          JMP     IDS1            WRITE NEXT TRACK
                      1090
                      1091  *       ALL DONE.
                      1092
045.100  247          1093  IDS4    ANA     A               clear carry
                      1094
045.101  311          1095          RET
```

```
                                1098  **      DBI     - Directory Block Interleave
                                1099  *
                                1100  *       DBI returns a pointer to the directory block
                                1101  *       interleave table.  The table is in the form
                                1102  *       of offsets.
                                1103  *
                                1104  *       Link the blocks in the order:
                                1105  *
                                1106  *         23  67                    DIRECTORY
                                1107  *       01  45  89
                                1108  *         23' 67'
                                1109  *       01' 45'
                                1110  *
                                1111  *               89'               GRT
                                1112  *
                                1113
045.102  041 107 045           1114  DBI     LXI     H,DBIA
045.105  247                   1115          ANA     A
045.106  311                   1116          RET
                                1117
045.107  001 003 000           1118  DBIA    DB      1,3,0,2,4
045.114  006 010 005           1119          DB      6,8,5,7,9
045.121  013 012               1120          DB      11,10
```

```
                                1123  **      PAR     - Volume Parameters
                                1124  *
                                1125  *       PAR returns a pointer to the volume parameters as defined
                                1126  *       in  *LABDEF*.
                                1127  *
                                1128  *       NOTE:   These parameters should only be checked after
                                1129  *               IDS has been called, in case the volume is of
                                1130  *               some special type, eg. double sided, etc.
                                1131  *
                                1132  *       ENTRY:  NONE
                                1133  *
                                1134  *       EXIT:   HL      = Address of Volume Parameters
                                1135  *
                                1136  *       USES:   PSW,HL
                                1137  *
                                1138
045.123                         1139  PAR     EQU     *
045.123  041 342 045           1140          LXI     H,PARAM
045.126  247                   1141          ANA     A
045.127  311                   1142          RET
```

```
                                1146  **      CIM     -  CHECK INSERTED MEDIA
                                1147  *
                                1148  *       CIM CHECKS THE INSERTED MEDIA
                                1149  *
                                1150  *
                                1151  *       ENTRY   NONE
                                1152  *
                                1153  *       EXIT    (PSW)   = 'C' CLEAR IF GOOD MEDIA
                                1154  *                       = 'C' SET   IF BAD  MEDIA
                                1155  *
                                1156
000.002                         1157  CIM.DLY EQU     2                       NUMBER OF SECONDS ALLOWED FOR CHECK
000.334                         1158  CIM.CNT EQU     300/60*11*CIM.DLY*2     300 RPM, 60 SEC./MIN., 11 HOLES/TRACK
000.320                         1159  CIM.MIN EQU     1000*11*CIM.DLY/21/10*2 MIN TOLERANCE COUNT = 21 MIL. SEC. GAP
000.346                         1160  CIM.MAX EQU     1000*11*CIM.DLY/19/10*2 MAX TOLERANCE COUNT = 19 MIL. SEC. GAP
                                1161
045.130  001 000 000            1162  CIM     LXI     B,0                     ZERO TRANSITION COUNT
045.133  052 033 040            1163          LHLD    .TICCNT                 GET CURRENT TIC
045.136  021 350 003            1164          LXI     D,CIM.DLY*1000/2        SET DELAY
045.141  031                    1165          DAD     D
045.142  315 011 054            1166          CALL    $$CHL                   (HL) = -(HL)
045.145  124                    1167          MOV     D,H
045.146  135                    1168          MOV     E,L                     (DE) = -(TARGET STOP TIME)
                                1169
                                1170  *       INITIALIZE HOLE DETECT FLAG
                                1171
045.147  333 177                1172          IN      DP.DC                   DISK CONTROL PORT
045.151  346 001                1173          ANI     DF.HD                   HOLE DETECT
045.153  062 221 045            1174          STA     CIMA                    SET INITIAL VALUE
                                1175
                                1176  *       COUNT THE NUMBER OF TRANSITIONS IN CIM.DLY SECONDS
                                1177
045.156  041 221 045            1178  CIM1    LXI     H,CIMA                  'M' POINTS TO THE FLAG BYTE
045.161  333 177                1179          IN      DP.DC                   DISK CONTROL PORT
045.163  346 001                1180          ANI     DF.HD                   HOLE DETECT
045.165  276                    1181          CMP     M
045.166  312 173 045            1182          JZ      CIM2                    NO TRANSITION DETECTED
045.171  003                    1183          INX     B                       COUNT TRANSITION
045.172  167                    1184          MOV     M,A
045.173  052 033 040            1185  CIM2    LHLD    .TICCNT
045.176  031                    1186          DAD     D
045.177  174                    1187          MOV     A,H
045.200  247                    1188          ANA     A
045.201  372 156 045            1189          JM      CIM1                    IT IS NOT TIME TO STOP YET
                                1190
                                1191  *       COMPARE THE COUNT TO EXPECTED VALUES
                                1192
045.204  170                    1193          MOV     A,B
045.205  376 000                1194          CPI     CIM.CNT/256
000.000                         1195  .,      SET     CIM.CNT/256
000.000                         1196          ERRNZ   CIM.MIN/256-.,
000.000                         1197          ERRNZ   CIM.MAX/256-.,
045.207  067                    1198          STC                             ASSUME BAD VALUE
045.210  300                    1199          RNZ                             NOT A GOOD VALUE
045.211  171                    1200          MOV     A,C
045.212  376 320                1201          CPI     $CIM.MIN
```

```
045.214  330           1202          RC                      LESS THAN THE MINIMUM ACCEPTABLE COUNT VALUE
045.215  376 347       1203          CPI     #CIM.MAX+1
045.217  077           1204          CMC
045.220  311           1205          RET
                       1206
045.221  000           1207  CIMA    DB      0


                       1209  **      CGT - COUNT GAP TIMING.
                       1210  *
                       1211  *       CGT COMPUTES THE GAP TIMING BY COUNTING THE NUMBER OF
                       1212  *       TWO MILISECOND DELAY INTERVALS IN THE INTER-RECORD GAP.
                       1213  *       THE TIME FOR THE CURRENT HOLE TO PASS IS INCLUDED IN
                       1214  *       THE COUNT.
                       1215  *
                       1216  *       ENTRY   DISK OVER BEGINNING OF HOLE
                       1217  *       EXIT    (HL) = COUNT
                       1218  *       USES    (PSW),(DE),(HL)
                       1219  *
                       1220
045.222  052 033 040   1221  CGT     LHLD    .TICCNT
                       1222
045.225  333 177       1223  CGT1    IN      DP.DC
000.000                1224          ERRNZ   DF.HD-1
045.227  037           1225          RAR
045.230  332 225 045   1226          JC      CGT1            HOLE PRESENT
                       1227
045.233  315 011 054   1228          CALL    $$CHL
045.236  124           1229          MOV     D,H             SAVE (-START) TIC COUNT
045.237  135           1230          MOV     E,L              WHILE WE HAVE THE TIME!
                       1231
045.240  333 177       1232  CGT2    IN      DP.DC
000.000                1233          ERRNZ   DF.HD-1
045.242  037           1234          RAR
045.243  322 240 045   1235          JNC     CGT2            COUNT HOLE NOT PRESENT
                       1236
045.246  052 033 040   1237          LHLD    .TICCNT         GET CURRENT TIC COUNT
045.251  031           1238          DAD     D               DELAY = CURRENT + (-START)
045.252  311           1239          RET


                       1241  **      OCB     - Output Command Byte
                       1242  *
                       1243  *       OCB outputs the command byte selecting the unit
                       1244  *       specified in AIO.UNI
                       1245  *
                       1246  *       ENTRY:  PSW     = command byte
                       1247  *               AIO.UNI = unit of device to select
                       1248  *
                       1249  *       EXIT:   NONE
                       1250  *
                       1251  *       USES:   PSW
```

```
                                1252  *
                                1253
045.253  305                    1254  OCB     PUSH    B
045.254  365                    1255          PUSH    PSW
045.255  072 061 041            1256          LDA     AIO.UNI
045.260  074                    1257          INR     A
045.261  107                    1258          MOV     B,A             B = bit to set
000.000                         1259          ERRNZ   DF.DS0-2
000.000                         1260          ERRNZ   DF.DS1-4
000.000                         1261          ERRNZ   DF.DS2-8
045.262  361                    1262          POP     PSW
045.263  315 004 054            1263          CALL    $$BITS
045.266  301                    1264          POP     B
045.267  323 177                1265          OUT     DP.DC           Output to drive command
045.271  311                    1266          RET


                                1268  **      WIS - WAIT ONE SECOND.
                                1269  *
                                1270  *       WIS IS CALLED TO DELAY ONE SECOND.
                                1271
                                1272
045.272  076 372                1273  WIS     MVI     A,250
045.274  315 303 035            1274          CALL    R.DLY
045.277  076 372                1275          MVI     A,250
045.301  303 303 035            1276          JMP     R.DLY           DELAY AND EXIT


                                1278  **      WIH - WAIT INDEX HOLE.
                                1279  *
                                1280  *       WIH WAITS UNTIL THE INDEX HOLE HAS PASSED THE SENSOR.
                                1281  *
                                1282  *       NOTE:   THIS ROUTINE ASSUMES THAT THE DRIVE WILL NOT BE THAT FAR
                                1283  *               OFF IN TOLERANCE AS IT DOES NOT EVEN CHECK THE HIGH ORDER
                                1284  *               BYTE OF THE COUNT, WHICH SHOULD BE ZERO!
                                1285  *
                                1286  *
                                1287  *       ENTRY   DISK MOVING
                                1288  *       EXIT    INDEX HOLE JUST PAST (DISK IN INTERHOLE GAP)
                                1289  *       USES    A,F,H,L
                                1290
                                1291
045.304  325                    1292  WIH     PUSH    D
045.305  315 271 036            1293          CALL    R.WNH           WAIT NO HOLE
045.310  315 235 036            1294  WIH1    CALL    R.WHD           WAIT HOLE DETECT
045.313  315 222 045            1295          CALL    CGT             COMPUTE GAP TIME
045.316  175                    1296          MOV     A,L
045.317  376 006                1297          CPI     1000/100/2+1
045.321  332 310 045            1298          JC      WIH1            DONT HAVE FULL SECTOR TIMING
                                1299
                                1300  *       HAVE FULL SECTOR TIMING. WAIT FOR SHORT GAP NOW
                                1301
```

```
045.324  315 222 045  1302  WIH2    CALL    CGT
045.327  175         1303          MOV     A,L
045.330  376 006     1304          CPI     1000/100/2+1
045.332  322 324 045 1305          JNC     WIH2            NOT YET
045.335  321         1306          POP     D
045.336  303 271 036 1307          JMP     R.WNH           GOT INDEX HOLE, WAIT FOR PASS AND RETURN
                      1308
```

```
                        1311  **      Data and Buffers
                        1312  *
                        1313
045.341  050           1314  MAXTRK  DB      40              Maximum Number of Tracks
                        1315
                        1316
045.342                 1317  PARAM   EQU     *
                        1318
000.000                 1319          ERRNZ   *-PARAM+LAB.VPR-LAB.SIZ
045.342  220 001        1320  VOLSIZ  DW      400             Volume Size (bytes/256)
                        1321
000.000                 1322          ERRNZ   *-PARAM+LAB.VPR-LAB.PSS
045.344  000 001        1323  SECSIZ  DW      256             Physical Sector Size (bytes)
                        1324
000.000                 1325          ERRNZ   *-PARAM+LAB.VPR-LAB.VFL
045.346  000            1326  VOLFLG  DB      0               Device Dependant/Volume Dependant Flags
                        1327
000.000                 1328          ERRNZ   *-PARAM-LAB.VFL Insure enough parameters are defined
                        1329
045.347                 1330  PARAM2  EQU     *               Auxiliary Parameters
                        1331
000.000                 1332          ERRNZ   *-PARAM2-LAB.SPT+LAB.AUX
045.347  012            1333  SPT     DB      10              Sectors per Track
                        1334
000.000                 1335          ERRNZ   *-PARAM2-LAB.AXL        Insure enough Auxiliary Parameters
                        1336
045.350  201 042 255    1337          END
ASSEMBLY COMPLETE
 1337 STATEMENTS
    0 ERRORS DETECTED
11478 BYTES FREE
```

```
$$BITC  054001    812L
$$BITS  054004    814L    1263
$$BUFF  054007    816L
$$CHL   054011    818L    1166    1228
$$CNO   054014    820L
$$CYS   054017    822L
$$DRVR  054022    824L
$$DRVR. 054025    826L    1005
$$ITL.  054030    828L
$$MAX   054047    838E
$$MOVE  054033    830L
$$TBRA  054036    832L     946
$$TYPTX 054041    834L
$$VER   054000    810L
$$VSN   054044    836L    1079
$MOVE   030252    863      893E
.       042310    854S     855     856     858     928S    929     930     932
..      000000   1195S    1196    1197
.ABUSS  040024    144E
.ALARM  002136    117E
.ALEDS  040013    142E
.CHFLG  000060    441L
.CLEAN  000205    456L
.CLEAR  000055    438L
.CLEARA 000056    439L
.CLOSE  000046    431L
.CLRCO  000007    415L
.CONSL  000006    414L
.CRC    002347    125E
.CRCSUM 040027    145E
.CTC    002172    119E
.CTL2FL 040066    151E
.CTLC   000041    426L
.CTLFLG 040011    141E
.DAD    000206    457L
.DECODE 000053    436L
.DELET  000050    433L
.DISMT  000061    442L
.DLEDS  040021    143E
.DLY    000053    114E
.DMNMS  000203    454L
.DMOUN  000201    452L
.DOD    003122    128E
.DODA   003356    130E
.DSPMOD 040007    139E
.DSPROT 040006    138E
.DUMP   001374    116E
.ERROR  000057    440L
.EXIT   000000    408L
.HORN   002140    118E
.IDENT  000000    113E
.IOWRK  040002    136E
.LINK   000040    425L
.LOAD   001267    115E
.LOADD  000062    443L
.LOADO  000010    416L
.MFLAG  040010    140E
.MONMS  000202    453L
```

```
.MOUNT  000200      451L
.NAME   000054      437L
.NMIRET 040064      150E
.OPEN   000063      444L
.OPENC  000045      430L
.OPENR  000042      427L
.OPENU  000044      429L
.OPENW  000043      428L
.PCHL   002264      121E
.POSIT  000047      432L
.PRINT  000003      411L
.RCK    003260      129E
.READ   000004      412L
.REGI   040005      137E
.REGPTR 040035      148E
.RENAM  000051      434L
.RESET  000204      455L
.RNB    002331      124E
.RNP    002325      123E
.SCIN   000001      409L
.SCOUT  000002      410L
.SETTP  000052      435L
.SRS    002265      122E
.START  040000      135E
.SYSRES 000012      418L
.TICCNT 040033      147E    1163    1185    1221    1237
.TPERR  002205      120E
.TPERRX 040031      146E
.UIVEC  040037      149E
.VERS   000011      417L
.WNB    003024      127E
.WNP    003017      126E
.WRITE  000005      413L
AIO.CGN 041047      693L
AIO.CHA 041116      708L
AIO.CNT 041111      704L
AIO.CSI 041050      694L
AIO.DDA 041041      689E
AIO.DES 041055      698L
AIO.DEV 041057      699L
AIO.DIR 041062      702L
AIO.DTA 041053      697L
AIO.EOF 041113      706L
AIO.EOM 041112      705L
AIO.FLG 041043      690L
AIO.GRT 041044      691L
AIO.LGN 041051      695L
AIO.LSI 041052      696L
AIO.SPG 041046      692L
AIO.TFP 041114      707L
AIO.UNI 041061      700L    916     1256
AIO.VEC 041040      688L
BELL    000007      769E
BFLG.A  000001      165E
BKSP    000010      771E
BOOT.P  000001      668E
BOOTA   037132      757E    861
BOOTAL  000130      758E    860
```

```
C.BSYN  000375  271E
C.STX   000002  773E
C.SYN   000026  772E
CB.CLI  000100   59E    82
CB.MTL  000040   58E
CB.SPK  000200   60E
CB.SSI  000020   57E
CB2.CLI 000002   63E
CB2.ORG 000040   64E
CB2.SID 000100   65E
CB2.SSI 000001   62E
CDB.H84 000001  611E
CDB.H85 000000  610E
CFF     031354  735E
CGT     045222' 1221L  1295  1302
CGT1    045225' 1223L  1226
CGT2    045240' 1232L  1235
CIM     045130'  991   1162L
CIM.CNT 000334 1158E  1194  1195
CIM.DLY 000002 1157E  1158  1159  1160  1164
CIM.MAX 000346 1160E  1197  1203
CIM.MIN 000320 1159E  1196  1201
CIM1    045156' 1178L  1189
CIM2    045173' 1182   1185L
CIMA    045221' 1174   1178  1207L
CLOCK   034031  760E
CMV     044213'  950    976L
CMV.    044223'  976    979   982L
CN.170M 000014  100E
CN.174M 000003   99E
CN.ABO  000200  104E
CN.BAU  000100  103E
CN.MEM  000040  102E
CN.PRI  000020  101E
CND.H17 000000  106E
CND.H47 000001  108E
CND.NDI 000000  107E
CO.FLG  000001  588E
CR      000015  765E
CS.FLG  000200  589E
CSL.CHR 000001  565E
CSL.ECH 000200  562E
CSL.RAW 000004  563E
CSL.WRP 000002  564E
CTLA    000001  780E
CTLB    000002  781E
CTLC    000003  782E
CTLD    000004  783E
CTLO    000017  784E
CTLP    000020  785E
CTLQ    000021  786E
CTLS    000023  787E
CTLZ    000032  788E
CTP.2SB 000010  574E
CTP.BKM 000002  575E
CTP.BKS 000200  570E
CTP.FF  000100  571E
CTP.MLI 000040  572E
```

```
CTP.MLO 000020       573E
CTP.TAB 000001       576E
D.ABORT 040141       516L
D.CDE   040160       521L
D.CON   040110       380L      862
D.DLY   040235       536L
D.DLYHS 040244       475L
D.DLYMO 040243       474L     1033
D.DRVTB 040251       480L
D.DTS   040163       522L
D.DVCTL 040242       472L     1019    1070
D.E.CHK 040267       491L
D.E.HCK 040270       492L
D.E.HSY 040266       490L
D.E.MDS 040265       489L
D.E.TRK 040272       494L
D.E.VOL 040271       493L
D.ERR   040265       488L
D.ERRL  040273       495L
D.ERRT  040232       535L
D.HECNT 040261       482L
D.LPS   040177       526L
D.MAI   040171       524L     1088
D.MAO   040174       525L
D.MOUNT 040133       514L
D.OECNT 040264       484L      915
D.OPR   040273       499L
D.OPW   040275       500L
D.RAM   040240       383L      467     502
D.RAML  000037       502E
D.RDB   040202       527L
D.READ  040147       518L
D.READR 040152       519L
D.SDP   040205       528L      866
D.SDT   040166       523L
D.SECNT 040262       483L
D.STS   040210       529L
D.STZ   040213       530L
D.SYDD  040130       513L
D.TRKPT 040245       477L
D.TS    040241       470L
D.TT    040240       469L
D.UDLY  040216       531L     1086
D.VEC   040130       382L      511
D.VOLPT 040247       478L
D.WNB   040227       534L     1042    1044    1046    1048    1050    1059    1061    1066    1067    1068
D.WRITE 040155       520L
D.WSC   040221       532L
D.WSP   040224       533L     1038    1054
D.XIT   040144       517L
D.XOK   040136       515L
DBI     045102'      956      1114L
DBIA    045107'     1114      1118L
DC.ABT  000007       286L     1006
DC.CLO  000006       285L
DC.LOD  000011       288L
DC.MAX  000013       290L
DC.MOU  000010       287L
```

```
DC.OPR  000003      282L
DC.OPU  000005      284L
DC.OPW  000004      283L
DC.RDY  000012      289L
DC.REA  000000      279L
DC.RER  000002      281L
DC.WRI  000001      280L
DCA     032002      737E
DF.CLR  000376      348E
DF.DI   000040      240E
DF.DSO  000002      236E      921    1259
DF.DS1  000004      237E      922    1260
DF.DS2  000010      238E      925    1261
DF.EMP  000377      347E
DF.HD   000001      230E     1173    1180    1224    1233
DF.MO   000020      239E      982    1017    1023
DF.SD   000010      233E
DF.ST   000100      241E
DF.TO   000002      231E
DF.WG   000001      235E     1023
DF.WP   000004      232E
DF.WR   000200      242E
DIR.ALD 000025      363L
DIR.CLU 000015      356L
DIR.CRD 000023      362L
DIR.EXT 000010      351L
DIR.FGN 000020      359L
DIR.FLG 000016      357L
DIR.LGN 000021      360L
DIR.LSI 000022      361L
DIR.NAM 000000      350L
DIR.PRO 000013      352L
DIR.VER 000014      353L
DIRELEN 000027      365E      702
DIRIDL  000015      354E
DM.MR   000000       72E
DM.MW   000001       73E
DM.RR   000002       74E
DM.RW   000003       75E
DP.DC   000177      228E     1071    1172    1179    1223    1232    1265
EC.CNA  000004      184L
EC.DDA  000027      203L
EC.DIF  000017      195L
EC.DIW  000035      209L
EC.DNI  000045      217L
EC.DNR  000046      218L
EC.DNS  000005      185L
EC.DSC  000047      219L
EC.EOF  000001      181L
EC.EOM  000002      182L
EC.FAO  000031      205L
EC.FAP  000026      202L
EC.FL   000030      204L
EC.FNF  000014      192L
EC.FNO  000011      189L
EC.FNR  000034      208L
EC.FOD  000043      215L
EC.FUC  000013      191L
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EC.ICN  000016       194L
EC.IDN  000006       186L
EC.IFC  000020       196L
EC.IFN  000007       187L
EC.ILC  000003       183L
EC.ILD  000040       212L
EC.ILR  000012       190L
EC.ILV  000037       211L
EC.IOI  000052       222L
EC.IS   000032       206L
EC.NCV  000050       220L
EC.NEM  000021       197L
EC.NOS  000051       221L
EC.NPM  000044       216L
EC.NRD  000010       188L
EC.NVM  000042       214L
EC.OTL  000053       223L
EC.RF   000022       198L
EC.UNA  000036       210L
EC.UND  000015       193L
EC.UUN  000033       207L
EC.VPM  000041       213L
EC.WF   000023       199L
EC.WP   000025       201L
EC.WPV  000024       200L
ENL     000212       778E
ERPTCNT 000012        29E      914
ERR.FNO 031344       731E
ERR.ILR 031350       733E
ESC     000033       776E
FF      000014       779E
FFB     032133       739E
FFL     032205       741E
H17SDL  000173       248E     1085
I.CONFL 000004       591E      592
I.CONTY 000001       578E      579
I.CONWI 000003       584E      585
I.CSLMD 000000       567E
I.CUSOR 000002       581E      582
IDS     044250'      953      1005L
IDS1    044264'     1016L     1089
IDS2    044320'     1032L     1075
IDS3    045001'     1058L     1063
IDS4    045100'     1083      1093L
IDSA    044342'     1009      1041E   1080
INI.CMV 000000       798L      949
INI.DBI 000002       798L      955
INI.IDS 000001       797L      952
INI.MAX 000004       801E      942     961
INI.PAR 000003       799L      958
INIT    044200'      942L
INITA   044207'      947E      949     952     955     958     961
INITVEC 054000       806E      808
IP.CON  000362        48E
IP.PAD  000360        44E
LAB.AUX 000117       337E      339    1332
LAB.AXL 000001       339E     1335
LAB.DAT 000000       314E
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LAB.DIS 000003  310L
LAB.GRT 000005  311L
LAB.IND 000001  309L
LAB.LAB 000021  333L  334
LAB.LBL 000074  334E
LAB.NOD 000002  316E
LAB.PSS 000016  325L  1322
LAB.RGT 000012  321L
LAB.SER 000000  308L
LAB.SIZ 000014  324L  1319
LAB.SPC 000007  312L
LAB.SPT 000117  338L  1332
LAB.SYS 000001  315E
LAB.VER 000011  319L
LAB.VFL 000020  326L  1325
LAB.VLT 000010  318L
LAB.VPL 000005  328E  330  331  1328
LAB.VPR 000014  323E  328  1319  1322  1325
LDO     033012  745E
LF      000012  766E
M.FOX   000303  92E
M.PAM8  000021  91E
MAXTRK  045341' 1081  1314L
NL      000012  777E  778
NUL2    000000  768E
NULL    000200  767E
OCB     045253' 983  1018  1024  1254L
OP.CTL  000360  45E
OP.DIG  000360  46E
OP.SEG  000361  47E
OP2.CTL 000362  49E
OVL.IN  000001  635E
OVL.NUM 000014  637E
OVL.RES 000002  636E
OVL.UCS 000200  638E
PAR     045123' 959  1139E
PARAM   045342' 1140  1317E  1319  1322  1325  1328
PARAM2  045347' 1330E  1332  1335
PBOOT   042240' 852  860L
PDI     033145  747E
PIC.COD 000006  302L  847
PIC.ID  000000  297L
PIC.LEN 000002  299L
PIC.PTR 000004  300L
QUOTE   000047  774E
R.DLY   035303  718E  1021  1026  1274  1276
R.SDP   042265' 865  914L
R.SDP.  036073  912E  920  926
R.WHD   036235  716E  986  1034  1294
R.WNH   036271  717E  985  987  1293  1307
REL     033177  751E
REL.    033175  749E
RESIDE  000001  31E  844
ROMBOOT 030000  375E
RUBOUT  000177  770E
RUC     033257  755E
S.BAUD  040344  612L
S.BDA   041120  710L
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S.BOOTF 041034      667L
S.CAADR 040333      595L
S.CACC  041006      651L
S.CCTAB 040335      596L
S.CDB   040343      609L
S.CFWA  040352      619L
S.CODE  041007      652L
S.CONFL 040332      593L
S.CONTY 040327      580L
S.CONWI 040331      586L
S.CSLMD 040326      568L      579     582     585     592
S.CUSOR 040330      583L
S.DATC  040310      549L
S.DATE  040277      548L
S.DCS   041033      665L
S.DDDTA 040366      630L
S.DDGRP 040364      627L
S.DDLDA 040360      625L
S.DDLEN 040362      626L
S.DDOPC 040370      631L
S.DFWA  040354      620L
S.DIREA 041016      659L
S.DLINK 040346      617L
S.FASER 041013      658L
S.FCI   041021      660L
S.GRT0  024000      371E
S.GRT1  025000      372E
S.GRT2  026000      373E
S.GUP   041027      662L
S.HIMEM 040316      551L
S.INT   040343      385L      605
S.JUMPS 041010      656L
S.MOUNT 041032      664L
S.OFWA  040350      618L
S.OMAX  040324      557L
S.OSN   041004      647L
S.OVLE  041000      644L
S.OVLFL 040371      640L
S.OVLS  040376      643L
S.OVSTK 041035      672L
S.READ  031275      727E
S.RFWA  040356      621L
S.SCI   041024      661L
S.SCR   041121      711L
S.SDD   041010      657L
S.SOVR  041146      387L      389
S.SSN   041002      646L
S.SYSM  040320      553L
S.TIME  040312      550L
S.UCSF  040372      641L
S.UCSL  040374      642L
S.USRM  040322      555L
S.VAL   040277      384L      546
S.WRITE 031330      729E
SB.BAU  042205      166L
SB.BOO  042200      162L      168     169     172     847
SB.BPE  042240      170E      856     858
SB.DAT  042207      167L
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SB.DRV  042240      172L
SB.FLG  042204      164L
SB.ORG  051000      156E
SB.OVMX 014000      157E
SB.SDB  044200      174E      868     930     932     940
SB.VER  042203      163L
SECSIZ  045344'    1323L
SPT     045347'    1333L
STACK   042200      391E
STACKL  001032      389E
SYDD    040130      381E
SYSCALL 000377      401E
TAB     000011      775E
TFE     033233      753E
UF.FCT  000100      264E
UF.RDA  000001      261E
UF.ROR  000002      262E
UF.RPE  000004      263E
UF.TBM  000200      265E
UO.CLR  000001       84E
UO.DDU  000002       83E
UO.HLT  000200       81E
UO.NFR  000100       82E
UP.DP   000174      255E
UP.FC   000175      256E      1010
UP.SC   000176      258E
UP.SR   000176      259E
UP.ST   000175      257E
USERFWA 042200      392E
VERS    000040      399E
VFL.NSD 000001      327E
VOLFLG  045346'    1326L
VOLSIZ  045342'    1320L
WIS     045272'     984      1273L
WIH     045304'    1027      1292L
WIH1    045310'    1294L     1298
WIH2    045324'    1302L     1305

26284 BYTES FREE
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