PREMRK
1/9/72

```
ASG        /E0,TY10
RDS
ASM /S
DATE     /   /      TIME 00H-39M-51S-
```

PROGRAM

on IPL-Disk paper-tape:

```
00000                                  IDENT     PREMRK
00001                                  ENTRY     PREMRK
00002  0000  8F20                      AB.L      PREMRK
       0002  0000  F→ZDC
00003                          IPLDD   EQU       *
00004  0004  0000                      DATA      0          SECTOR ID
00005  0006  0190                      DATA      400 → char count?
00006                          *
00007                          *
00008                          SIO     EQU       1
00009                          HIO     EQU       0
00010                          DSKAD   EQU       /3E
00011                          *
00012                          *       IPLD IS A SELF RELOCATABLE PROGRAM, RUNNING IN INHIBIT MODE
00013                          *       AND USED TO LOAD THE SUPERVISOR FROM THE DISK
00014                          *       IT IS LOADED BY A BOOTSTRAP LOADER AND GETS THE CONTROL AFTER
00015                          *       LOADING (FROM PTR, IT READS THE CHECKSUM AND STOPS THE READER)
00016                          *
00017                          ******  INPUT PARAMETERS:
00018                          *               LOCATION /3E IS INITIALIZED AS FOLLOWS:
00019                          *                 BIT 8=1 IF IPLD WAS LOADED FROM PTR, IN THIS CASE, LOC
00020                          *                         2 AND 4 CONTAIN CIO START AND INR INST FOR
00021                          *                         THE INPUT DEVICE
00022                          *               BIT 8=0 IF IPLD WAS LOADED FROM ANY DEVICE CONNECTED
00023                          *                         THRU A MULTIPLEX SUBCHANNEL (OR SIMPLEX)
00024                          *               BITS 11 TO 15 (5 BITS ONLY) CONTAIN THE DISK UNIT ADDR
00025                          *                         FROM WHICH THE MONITOR IS LOADED
00026                          *
00027                          ******  USED REGISTERS :
00028                          *       A1 CHECKSUM FROM PTR
00029                          *          ACCUMULATOR
00030                          *          TEMPORARY
00031                          *       A2 ACCUMULATOR
00032                          *          BOU LINES FOR PTR
00033                          *          TEMPORARY
00034                          *       A3 CURRENT LOAD ADDR , INITIALIZED TO ZERO
00035                          *       A4 INR INSTRUCTION
00036                          *       A4 NUMBER OF SECTORS TO BE READ
00037                          *
00038                          *       A5 BOU LINES FOR DISK COMMANDS
00039                          *          CONTAINS STATUS OF THE CURRENT OPERATION
00040                          *          DURING THE MOVE, IT CONTAINS THE CURRENT LOCATION OF DSK BUFF
00041                          *
00042                          *       A6 CURRENT SECTOR TO BE READ (LOGICAL NUMBER , INTERLACED)
00043                          *       A7 BASE OF PROGRAM, USED AS BASE REGISTER
00044                          *
00045                          *       A8 DISK ADDR
00046                          *       A8 CONTROLLER ADDR
00047                          *
00048                          *       A9 PHYSICAL SECTOR NUMBER  in bits 9 thru 13
```

LDKL A3,/2D2A
ADKL A3,/FEDE
A3 = Adr of line 84

written on sect 3

/= 182 for PTR bootstr
/= 12 for disk bootstr

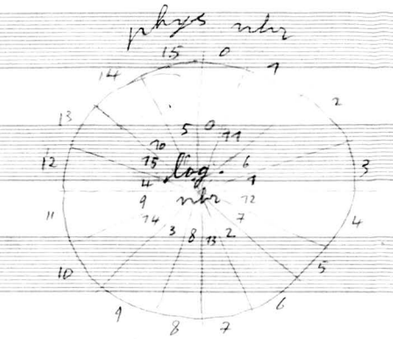
```
00049                *
00050                *       A10 NOT USED
00051                *
00052                *
00053                *       A11 BEGINNING ADDR OF BUFFER +4 = 1ST CODE WORDS
00054                *
00055                *       A12 START ADDRESS OF THE LOADED PROGRAM
00056                *
00057                *       A13 NOT USED
00058                *
00059                *       A14 STACK
00060                *
00061                *       A15 NOT USED
00062                *
00063                *
00064                *
00065                *
00066                *
00067                *
00068                *
00069                *
00070                *
00071                *
00072                *
00073                *
00074                *
00075                *
00076                *
00077                *
00078                *
```

```
                0000  8F20
                0000  000F
                0004  0000
                0006  0700
                                AB.L    PREMARK
                                DATA    0          → identifier of physical intr 3, cpl 0
                                DATA    400        → = Adr of this instruction.
00079                           EJECT
00080                   *
00081           IPLD    EQU     *          1ST INST TO BE EXECUTED,STARTED BY BOOTSTR
00082                   *
00083           BASE    EQU     *          A14=A7=BASE
00084   0008    868C            LDR     A14,A3     A14=STACK POINTER =   * =BASE
00085   000A    871A            LDR     A7,A14     SET BASE ADDR OF FLAGS,A7  USED AS INDEX
00086   000C    20BF            INH                AGAIN,MAY BE USEFUL WITH MLX OR SIMPLEX
00087   000E    8540            LD      A5,DSKAD   GET LOCATION /3E
        0010    003E
00088   0012    3D48            SLL     A5,8       CHECK IF IPLD WAS LOADED FROM IO BUS
00089   0014    5600    F=46    RF(6)   MLX        POSITIVE OR NULL,MULTIPLEX
00090                   *                          IPLD LOADED FROM IO BUS,READ NEXT TWO CHAR
00091                   *                          AND CHECK THE SUM
00092   0016    8440            LD      A4,4 =/4A20  INR INST
        0018    0004
00093   001A    A420            ANK,L   A4,/3F     DEVICE ADDR
        001C    003F
00094   001E    945D            ADS     A4,INR-BASE,A7
        0020    0000    F
00095   0022    945D            ADS     A4,INR1-BASE,A7
        0024    0000    F
00096                   →INR    EQU     *
00097   0026    4A00            INR     A2,0,0     INSTRUCTION TO BE MODIFIED
00098   0028    5C04            RB(4)   INR        TRY AGAIN IF NOT ACCEPTED
00099   002A    E508            ECR     A5,A2
00100                   →INR1   EQU     *
00101   002C    4A00            INR     A2,0,0
00102   002E    5C04            RB(4)   INR1
00103   0030    9214            ADR     A2,A5      A2 CONTAINS THE LAST WORD = CHECKSUM
00104   0032    B108            XRR     A1,A2
00105   0034    5000    F       RF(0)   CKOK       CHECKSUM OK
00106   0036    207F            HLT                NOT OK
00107                   *
00108           CKOK    EQU     *
00109                   *                          INR+/C0=SST
00110   0038    945D            ADS     A4,SST-BASE,A7
        003A    0000    F
00111                   *
00112                   *                          INR-780=HALTIO
00113   003C    945D            ADS     A4,HLTIO-BASE,A7
        003E    0000    F
00114           HLTIO   EQU     *
00115   0040    4280            CIO     A2,HIO,0   HALT IO
00116                   →SST    EQU     *
00117   0042    4AC0            SST     A2,0       SST
00118   0044    5C04            RB(4)   SST        TRY AGAIN
00119                   *
00120           MLX     EQU     *          IPL WAS LOADED FROM A MULTIPLEX OR SIMPLEX
00121                   *                  SUBCHANNEL
```

```
0046  8540                  LD      A5,DSKAD        DEVICE ADDR IN A5 REGISTER
0048  003E
004A  253F                  ANK     A5,/3F
004C  8094                  LDR     A8,A5           SAVE DEVICE IN A8 REGISTER
                  *
                  *                                 INITIALIZE DISK COMMANDS
004E  90DD                  ADS     A8,SEEKZ0-BASE,A7
0050  0000   F
0052  90DD                  ADS     A8,DKSST0-BASE,A7
0054  0000   F
0056  90DD                  ADS     A8,SEEKCD-BASE,A7
0058  0000   F
005A  90DD                  ADS     A8,READCD-BASE,A7
005C  0000   F
                  *
                  *
                  *                                 INITIALIZE MLX DBLE WORDS
005E  839C                  LDR     A11,A7
0060  93A0                  ADK.L   A11,414         A11=BEGINNING ADDR OF BUFF+4
0062  019E
0064  93DD                  ADS     A11,MXCC2-BASE,A7
0066  0000   F
0068  3D4C                  SLL     A5,12           CONTROLLER ADDR
006A  3D6A                  SRL     A5,10
006C  5400   F              RF(4)   MLX10
006E  207F                  HLT                     CONTROLLER ADDR=0
                  *
                  MLX10     EQU     *               SET ADDR OF MLX DBLEWORD
0070  955D                  ADS     A5,MXAD-BASE,A7
0072  0000   F
                  *                                 INITIALIZE A3 AND A6
                  *
0074  0612                  LDK     A6,/12          1ST SECTOR TO BE READ
0076  0300                  LDK     A3,0            1ST LOCATION TO BE LOADED
                  *                                 EXECUTE SEEK TO ZERO COMMAND
0078  1700   F              ADK     A7,SEEKZ-BASE
007A  F69D                  CFR     A14,A7          A7=ADDR OF SEEK TO ZERO
                  *
007C  8240                  LD      A2,DSKAD        CHECK IF LOAD BOOT
007E  003E
0080  3A68                  SRL     A2,8
0082  1AFF                  SUK     A2,/FF
0084  5000                  RF(0)   LDBOOT          YES,LOAD BOOT
                  *
                  NEXTSC    EQU     *               READ NEXT SECTOR(LOGICAL # IN A6)
0086  8218                  LDR     A2,A6           LOAD A2 WITH THE SECTOR NUMBER
0088  3A4B                  SLL     A2,11           SHIFT LEFT 11,SECTOR # MODULO 32
008A  1200                  ADK     A2,0            A2=0,SEEK
008C  5400   F              RF(4)   READ00          NO SEEK
                  *                                 CALL SEERCY ,MOVE ONE CYLINDER
```

```
00163  008E  9720          ADK,L   A7,SEEKCY-BASE
       0090  0000  F                 ↳ = 1708
00164  0092  F69D          CFR     A14,A7
00165                *
00166                READ00  EQU     *           READ ONE SECTOR
00167                *
00168  0094  3841          DLL     1           A1 CONTAINS HEAD NUMBER ← bit 15
00169  0096  8188          LDR     A9,A2       A9=SECTOR # FROM 0 TO 15 in bits 0 thru 3
00170  0098  3A41          SLL     A2,1
00171  009A  9206          ADR     A2,A9       PHYSICAL SECTOR NUMBER FROM 0 TO 15
00172  009C  3861          DRL     1           PHYSICAL SECTOR NUMBER FROM 0 TO 31
00173  009E  3A69          SRL     A2,9
00174  00A0  8188          LDR     A9,A2
00175                *
00176                READ01  EQU     *           ISSUE A READ COMMAND
00177  00A2  B95C          ML      2,MXCC-BASE,A7
       00A4  0000  F                 ↳ 1778
00178  00A6  B97D          MS*     2,MXAD-BASE,A7
       00A8  0000  F                 ↳ 1776
00179                *                           MULTIPLEX DBLEWORD LOADED,NOW LOAD BOU
00180                *                           LINES AND READ ONE SECTOR
00181                *
00182  00AA  8506          LDR     A5,A9       BOU LINES
00183                READCD  EQU     *           READ COMMAND TO BE INITIALIZED
00184  00AC  45C0          CIO     A5,SIO,0
00185  00AE  5C04          RB(4)   READCD      LOOP UNTIL ACCEPTED
00186                *                           THEN WAIT UNTIL COMPLETION
00187  00B0  1700  F       ADK     A7,DKSST-BASE
00188  00B2  F69D          CFR     A14,A7      SST
00189                *                           STATUS IN A5 REGISTER
00190  00B4  1500          ADK     A5,0        STATUS =0 ?
00191  00B6  5C16          RB(4)   READ01      TRY TO READ AGAIN
00192                *                           CHECK REMAINING LENGTH IN MULTIPLEX WORD
00193  00B8  B17C          LD*     A1,MXAD-BASE,A7
       00BA  0000  F                 ↳ = 1776
00194  00BC  A120          ANK,L   A1,/FFF     CHECK IF LENGTH = 0 ?
       00BE  0FFF
00195  00C0  5000  F       RF(0)   READ03      OK
00196  00C2  207F          HLT                 NO,NOT EQUAL TO ZERO
00197  00C4  5F24          RB(7)   READ01      TRY AGAIN
00198                *
00199                READ03  EQU     *           A SECTOR IS READ
00200                *
00201  00C6  850E          LDR     A5,A11      INITIALIZE  A5 = BEGINNING ADDR +4
00202  00C8  02BC          LDK     A2,188      188 CODE WORDS
00203                *                           A3=LOAD ADDR, ALREADY SET
00204                *
00205  00CA  1E12          SUK     A6,/12      IS IT THE 1ST SECTOR ?
00206  00CC  5400  F       RF(4)   READ04      NO
00207                *                           YES,1ST SECTOR ,INITIALIZE A12 AND A4 REG
```

sector nbr [16|8|4|2|1]
track nbr = head nbr



$phn^2 = (log\ n^2 \times 3) \bmod 16$

$log\ n^2 = (ph\ n^2 \times 11) \bmod 16$

first word of sector to be transferred starts at buff + 4 (each of buffer) → char

```
00208  00CE  84B4            LDR*    A12,A5      SAVE START ADDR IN A12 REGISTER
00209  00D0  1502            ADK     A5,2
00210  00D2  8434            LDR*    A4,A5       NUMBER OF SECTORS IN A4
00211                READ004 EQU     *
00212  00D4  1613            ADK     A6,/13      RESTORE A6 REGISTER AND INCREMENT 1
00213  00D6  850E            LDR     A5,A11      1ST WORD TO BE MOVE ONTO A3
00214                MOVE    EQU     *
00215  00D8  8134            LDR*    A1,A5       MOVE 188 WORDS FROM (A5) TO (A3)
00216  00DA  812D            STR     A1,A3
00217  00DC  1502            ADK     A5,2        UPDATE POINTERS
00218  00DE  1302            ADK     A3,2
00219  00E0  1A01            SUK     A2,1        COUNT DONE ?
00220  00E2  590C            RB(1)   MOVE        NOT YET
00221                *
00222                *
00223                *                           MOVE COMPLETED.
00224                *
00225  00E4  1C01            SUK     A4,1        ALL THE SECTORS ARE LOADED ?
00226  00E6  5962            RB(1)   NEXTSC      NEXT SECTOR.
00227                *
00228                *                           PROGRAM IS LOADED
00229                *                           SEEK TO CYLINDER ZERO
00230  00E8  1700  F         ADK     A7,SEEK7-BASE
00231  00EA  F69D            CFR     A14,A7
00232                *
00233                *
00234                *
00235  00EC  2840            ENB
00236  00EE  8F12            ABR(7)  A12         START THE LOADED PROG
00237                *
00238                *
00239                *
```

1st sector:

+0	ident
+2	char count
+4	Start addr
+6	Sector count

→ initial value = 10000

data systems

```
                                   EJECT
                           *                                  A7=SEEKZ
                           SEEKZ   EQU       *                SEEK TO ZERO SUBROUTINE
      00F0   0503                  LDK       A5,3             BOU FOR SEEK TO ZERO
      00F2   45C0          SEEKZO  CIO       A5,SIO,0         INSTRUCTION TO BE MODIFIED
      00F4   5C04                  RB(4)     SEEKZO           COMMAND NOT ACCEPTED
      00F6   1700   F              ADK       A7,DKSST-SEEKZ
      00F8   F69D                  CFR       A14,A7           SST ON DISK
      00FA   F03A                  RTN       A14              RETURN
                           *                       =/FC
                           *
                           *                                  SST SUBROUTINE
                           DKSST   EQU       *                A7=DKSST
      00FC   1FF4                  SUK       A7,DKSST-BASE
                           DKSST0  EQU       *
      00FE   4DC0                  SST       A5,0
      0100   5C04                  RB(4)     DKSST0           WAIT LOOP UNTIL COMMAND ACCEPTED
      0102   A520                  ANK,L     A5,/001F         STATUS IN A5 REGISTER
      0104   001F
      0106   F03A                  RTN       A14
                           *
                           *
                           *
                           *
                           SEEKCY  EQU       *                SEEK ONE CYLINDER
                           *                                  A7=SEEKCY
                           *
      0108   050E                  LDK       A5,/E
                           SEEKCD  EQU       *
      010A   45C0                  CIO       A5,SIO,0         SEEK COMMAND
      010C   5C04                  RB(4)     SEEKCD
                           *
      010E   9720                  ADK,L     A7,DKSST-SEEKCY
      0110   FFF4
      0112   F69D                  CFR       A14,A7           SST
      0114   F03A                  RTN       A14
                           *
                           *
                           *
                           *
      0116   0080          MXAD    DATA      /80              1ST LOCATION FOR MULTIPLEX
                           MXCC    EQU       *     woordinput?
      0118   4E66                  DATA      /4E66
      011A   0194          MXCC2   DATA      404              PROG LENGTH+BUFF LENGTH=820 CHARACTERS
                                             205 woorden
```

```
00282                                  EJECT
00283                          *
00284                          *
00285                          *
00286                          *
00287                          *
00288                          *
00289                          *
00290                          LDBOOT  EQU     *
00291   011C  0120                     LDK     A1,32
00292   011E  0280                     LDK     A2,/80          LOAD ADDR
00293   0120  9720                     ADK,L   A7,BOOT-BASE
        0122  0000  F
00294                          LDBT1   EQU     *
00295   0124  833C                     LDR*    A3,A7
00296   0126  8329                     STR     A3,A2           MOVE BOOT
00297   0128  1702                     ADK     A7,2
00298   012A  1202                     ADK     A2,2
00299   012C  1901                     SUK     A1,1
00300   012E  590C                     RB(1)   LDBT1
00301   0130  0F80                     AB      /80
00302                          **
00303                          **
```

```
                00304                                EJECT
                00305                BOOT    EQU     *
                00306                *
                00307                *       BOOTSTRAP 8*8 PTR
                00308                *       USE PROCEDURE :
                00309                *               CLEAR,
                00310                *               START
                00311                *
                00312                DA      EQU     /20
                00313                S       EQU     1           STO
                00314                *
  00  00315 0132 20BF                         INH
  2   00316 0134 43E0                         CIO     A3,S,DA
                00317                LEADER  EQU     *
  4   00318 0136 4A20                         INR     A2,0,DA
  6   00319 0138 5C04                         RB(4)   LEADER
  8   00320 013A 227F                         ANK     A2,/7F
  A   00321 013C 5808                         RB(0)   LEADER      LEADER CHAR : IGNORETT
  C   00322 013E 0100                         LDK     A1,0        SET A1 TO ZERO
  E   00323 0140 0402                         LDK     A4,2        # OF CHAR PRECEEDING THE CODE WORDS
                00324                INWORD  EQU     *
 10   00325 0142 0602                         LDK     A6,2        # OF CHAR IN A WORD
                00326                INCHAR  EQU     *
 12   00327 0144 E508                         ECR     A5,A2       SAVE THE 1ST CHAR OF THE CURRENT WORD
                00328                INRBT   EQU     *
 14   00329 0146 4A20                         INR     A2,0,DA
 16   00330 0148 5C04                         RB(4)   INRBT
 18   00331 014A 1E01                         SUK     A6,1
 1A   00332 014C 590A                         RB(1)   INCHAR      1ST CHAR OF THE WORD
 1C   00333 014E 9508                         ADR     A5,A2       2ND CHAR OF THE WORD
 1E   00334 0150 1C01                         SUK     A4,1
 20   00335 0152 5000  F                      RF(0)   ADDR        2ND WORD OF THE IPL= ADDR
 22   00336 0154 5200  F                      RF(2)   CODE        CODE WORD
 24   00337 0156 8714                         LDR     A7,A5       1ST WORD OF THE IPL=LENGTH
 26   00338 0158 5F18                         RB      INWORD
                00339                ADDR    EQU     *           2ND WORD OF IPL
 28   00340 015A 8314                         LDR     A3,A5       LOADING ADDR
 2A   00341 015C 1502                         ADK     A5,2
 2C   00342 015E 8094                         LDR     A8,A5       SAVE START ADDR
 2E   00343 0160 5F20                         RB      INWORD
                00344                CODE    EQU     *
 30   00345 0162 B114                         XRR     A1,A5       CHECK SUM
 32   00346 0164 1302                         ADK     A3,2
 34   00347 0166 852D                         STR     A5,A3
 36   00348 0168 1F01                         SUK     A7,1
 38   00349 016A 5C2A                         RB(4)   INWORD
 3A   00350 016C 8F02                         ABR     A8
 3C   00351 016E 0000                         DATA    /0
 3E   00352 0170 0082                         DATA    /82
                00353 0172 2020                  DATA    '  '
```

```
                    0174  2020
                    0176  2020
                    0178  2020
                    017A  2020
00354               017C  2020          DATA    '          '
                    017E  2020
                    0180  2020
                    0182  2020
                    0184  2020
00355               0186  2020          DATA    '          '
                    0188  2020
                    018A  2020
                    018C  2020
                    018E  2020
00356               0190  2020          DATA    '          '
                    0192  2020
                    0194  2020
                    0196  2020
                    0198  2020
00357               019A  2020  BUF     DATA    '    '
                    019C  2020
00358               019E  494E  MESS0   DATA    'INITIALISATION OF PREMRK'
                    01A0  4954
                    01A2  4941
                    01A4  4C49
                    01A6  5341
                    01A8  5449
                    01AA  4F4E
                    01AC  204F
                    01AE  4620
                    01B0  5052
                    01B2  454D
                    01B4  524B
00359               01B6  2028            DATA    ' (01)'
                    01B8  3031
                    01BA  2920
00360               01BC  0D0A            DATA    X'0D0A'
00361               01BE  4E42  MESS2     DATA    'NBR. OF CYLINDERS = '
                    01C0  522E
                    01C2  204F
                    01C4  4620
                    01C6  4359
                    01C8  4C49
                    01CA  4E44
                    01CC  4552
                    01CE  5320
                    01D0  3D20
00362               01D2  0000  CYLMAX  DATA    0
00363               01D4  4E42  MESS3   DATA    'NBR. OF TRACKS = '
                    01D6  522E
```

IPLDD written on sect 3

```
                01D8  204F
                01DA  4620
                01DC  5452
                01DE  4143
                01E0  4B53
                01E2  203D
                01E4  2020
00364           01E6  0000      TRKMAX    DATA      0
00365           01E8  4E42      MESS4     DATA      'NBR. OF SECTORS/TRACK = '
                01EA  522E
                01EC  204F
                01EE  4620
                01F0  5345
                01F2  4354
                01F4  4F52
                01F6  532F
                01F8  5452
                01FA  4143
                01FC  4B20
                01FE  3D20
00366           0200  0000      SECMAX    DATA      0
00367           0202  4449      MESS10    DATA      'DISK UNIT PHYSICAL ADDRESS = '
                0204  5348
                0206  2055
                0208  4E49
                020A  5420
                020C  5048
                020E  5953
                0210  4943
                0212  414C
                0214  2041
                0216  4444
                0218  5245
                021A  5353
                021C  2030
                021F  2020
00368           0220  0000      DUPAD     DATA      0
00369           0222  2D57      MESS15    DATA      '-WRITING THE IDENTIFIERS'
                0224  5249
                0226  5449
                0228  4E47
                022A  2054
                022C  4845
                022E  2049
                0230  4445
                0232  4E54
                0234  4946
                0236  4945
                0238  5253
00370           023A  0D0A              DATA      X'0D0A'
```

```
00371  023C  2D43      MESS17   DATA    '-CHECKING THE IDENTIFIERS'
       023E  4845
       0240  4348
       0242  494F
       0244  4720
       0246  5448
       0248  4520
       024A  4944
       024C  454E
       024E  5449
       0250  4649
       0252  4552
       0254  5320
00372  0256  0D0A              DATA    X'0D0A'
00373  0258  2D45      MESS19   DATA    '-END OF CHECK'
       025A  4E44
       025C  204F
       025E  4620
       0260  4348
       0262  4543
       0264  4B20
00374  0266  0D0A              DATA    X'0D0A'
00375  0268  2D44      MESS25   DATA    '-DEVICE ADDRESS UNKNOWN'
       026A  4556
       026C  4943
       026E  4520
       0270  4144
       0272  4452
       0274  4553
       0276  5320
       0278  554E
       027A  4B4E
       027C  4F57
       027E  4E20
00376  0280  0D0A              DATA    X'0D0A'
00377  0282  2D49      MESS26   DATA    '-I/O ERROR                '
       0284  2F4F
       0286  2045
       0288  5252
       028A  4F52
       028C  2020
       028E  2020
       0290  2020
       0292  2020
       0294  2020
       0296  2020
00378  0298  0D0A              DATA    X'0D0A'
00379  029A  2D4E      MESS22   DATA    '-NBR. OF BAD TRACKS = '
       029C  4252
       029E  2E20
```

```
                02A0   4F46
                02A2   2042
                02A4   4144
                02A6   2054
                02A8   5241
                02AA   4348
                02AC   5320
                02AE   3D20
00380           02B0   2020        MESS23  DATA    '     '
                02B2   2020
00381           02B4   0D0A                DATA    X'0D0A'
00382           02B6   5255        MESS30  DATA    'RUN AGAIN ? : '
                02B8   4E20
                02BA   4147
                02BC   4149
                02BE   4E20
                02C0   3F20
                02C2   3A20
00383           02C4   2020        REP     DATA    '  '
00384           02C6   454E        MESS20  DATA    'END OF PREMRK'
                02C8   4420
                02CA   4F46
                02CC   2050
                02CE   5245
                02D0   4D52
                02D2   4B20
00385           02D4   0D0A                DATA    X'0D0A'
00386                          BUFDSK  EQU     *                       * * * *
00387           02D6   0000    IDENT   DATA    0                       *
00388           02D8   0190            DATA    400
00389           02DA   2020            DATA    '  '                    *
                02DC   2020
00390           02DE   4C41    MESS12  DATA    'LABEL = '              *
                02E0   4245
                02E2   4C20
                02E4   3D20
00391           02E6   2020    LABEL   DATA    '       '               *
                02E8   2020
                02EA   2020
                02EC   2020
00392           02EE   2020            DATA    '       '               *
                02F0   2020
                02F2   2020
                02F4   2020
                02F6   2020
00393           02F8   4441    MESS13  DATA    'DATE = '               *
                02FA   5445
                02FC   203D
                02FE   2020
00394           0300   2020    DATE    DATA    '       '               *
```

written on set

```
                0302  2020
                0304  2020
00395           0306  2020              DATA    '          '          *
                0308  2020
                030A  2020
                030C  2020
                030E  2020
00396           0310  5041    MESS14    DATA    'PACK NBR = '         *    BUFFER DISK TO OUTPUT
                0312  434B
                0314  204E
                0316  4252
                0318  2030
                031A  2020
00397           031C  2020    PACNBR    DATA    '  '                  *
                031E  2020
00398           0320  2020              DATA    '          '          *
                0322  2020
                0324  2020
                0326  2020
                0328  2020
00399           032A  0066    BILENG    DATA    102                   *
00400           032C          BITAB     RES     51                    *
00401           0392  0000    NBRSEC    DATA    0                     *    physical sect nr
00402           0394  2020              DATA    '          '          *
                0396  2020
                0398  2020
                039A  2020
                039C  2020
00403           039E  2020    ENDTAB    DATA    '          '          *
                03A0  2020
                03A2  2020
                03A4  2020
                03A6  2020
00404           03A8  2020              DATA    '          '          *
                03AA  2020
                03AC  2020
                03AE  2020
                03B0  2020
00405           03B2  2020              DATA    '          '          *
                03B4  2020
                03B6  2020
                03B8  2020
                03BA  2020
00406           03BC  2020              DATA    '          '          *
                03BE  2020
                03C0  2020
                03C2  2020
                03C4  2020
00407           03C6  2020              DATA    '          '          *
                03C8  2020
```

```
                03CA  2020
                03CC  2020
                03CE  2020
00408           03D0  2020          DATA    '       '       *
                03D2  2020
                03D4  2020
                03D6  2020
                03D8  2020
00409           03DA  2020          DATA    '       '       *
                03DC  2020
                03DE  2020
                03E0  2020
                03E2  2020
00410           03E4  2020          DATA    '       '       *
                03E6  2020
                03E8  2020
                03EA  2020
                03EC  2020
00411           03EE  2020          DATA    '       '       *
                03F0  2020
                03F2  2020
                03F4  2020
                03F6  2020
00412           03F8  2020          DATA    '       '       *
                03FA  2020
                03FC  2020
                03FE  2020
                0400  2020
00413           0402  2020          DATA    '       '       *
                0404  2020
                0406  2020
                0408  2020
                040A  2020
00414           040C  2020          DATA    '       '       *
                040E  2020
                0410  2020
                0412  2020
                0414  2020
00415           0416  2020          DATA    '       '       *
                0418  2020
                041A  2020
                041C  2020
                041E  2020
00416           0420  2020  ENDBUF  DATA    '       '       * * * *
                0422  2020
                0424  2020
                0426  2020
                0428  2020
                042A  2020
00417           042C  2020          DATA    '       '
```

```
                 042E  2020
                 0430  2020
                 0432  2020
                 0434  2020
00418            0436  2020          DATA     '          '
                 0438  2020
                 043A  2020
                 043C  2020
                 043E  2020
00419            0440  2020          DATA     '          '
                 0442  2020
                 0444  2020
                 0446  2020
                 0448  2020
00420            044A  2020          DATA     '          '
                 044C  2020
                 044E  2020
                 0450  2020
                 0452  2020
00421            0454  2020          DATA     '          '
                 0456  2020
                 0458  2020
                 045A  2020
                 045C  2020
00422            045E  2020          DATA     '          '
                 0460  2020
                 0462  2020
                 0464  2020
                 0466  2020
00423            0468  2020          DATA     '          '
                 046A  2020
                 046C  2020
                 046E  2020
                 0470  2020
00424            0472  0000  SEC2    DATA     0
00425            0474  0012          DATA     /12
00426            0476  4341          DATA     'CATALOG '
                 0478  5441
                 047A  4C4F
                 047C  4720
00427            047E  0000          DATA     0
00428            0480  0000          DATA     0
00429            0482  0000          DATA     0
00430            0484  0000          DATA     0
00431            0486  FFFF          DATA     X'FFFF'
00432            0488  2020          DATA     '          '
                 048A  2020
                 048C  2020
                 048E  2020
                 0490  2020
```

written on sect 0

written on sect 6

8-words entry

password

← pointer

← reserved

← identification

← end of catalogue indication

```
                 0492  2020
                 0494  2020
                 0496  2020
                 0498  2020
                 049A  2020
                 049C  2020
                 049E  2020
                 04A0  2020
                 04A2  2020
                 04A4  2020
00433            04A6  2020          DATA      '                '
                 04A8  2020
                 04AA  2020
                 04AC  2020
                 04AE  2020
                 04B0  2020
                 04B2  2020
                 04B4  2020
                 04B6  2020
                 04B8  2020
                 04BA  2020
                 04BC  2020
                 04BE  2020
                 04C0  2020
                 04C2  2020
00434            04C4  2020          DATA      '                '
                 04C6  2020
                 04C8  2020
                 04CA  2020
                 04CC  2020
                 04CE  2020
                 04D0  2020
                 04D2  2020
                 04D4  2020
                 04D6  2020
                 04D8  2020
                 04DA  2020
                 04DC  2020
                 04DE  2020
                 04E0  2020
00435            04E2  2020          DATA      '                '
                 04E4  2020
                 04E6  2020
                 04E8  2020
                 04EA  2020
                 04EC  2020
                 04EE  2020
                 04F0  2020
                 04F2  2020
                 04F4  2020
```

```
                04F6  2020
                04F8  2020
                04FA  2020
                04FC  2020
                04FE  2020
00436           0500  2020          DATA      '                '
                0502  2020
                0504  2020
                0506  2020
                0508  2020
                050A  2020
                050C  2020
                050E  2020
                0510  2020
                0512  2020
                0514  2020
                0516  2020
                0518  2020
                051A  2020
                051C  2020
00437           051E  2020          DATA      '                '
                0520  2020
                0522  2020
                0524  2020
                0526  2020
                0528  2020
                052A  2020
                052C  2020
                052E  2020
                0530  2020
                0532  2020
                0534  2020
                0536  2020
                0538  2020
                053A  2020
00438           053C  2020          DATA      '                '
                053E  2020
                0540  2020
                0542  2020
                0544  2020
                0546  2020
                0548  2020
                054A  2020
                054C  2020
                054E  2020
                0550  2020
                0552  2020
                0554  2020
                0556  2020
                0558  2020
```

```
00439  055A  2020          DATA      '                '
       055C  2020
       055E  2020
       0560  2020
       0562  2020
       0564  2020
       0566  2020
       0568  2020
       056A  2020
       056C  2020
       056E  2020
       0570  2020
       0572  2020
       0574  2020
       0576  2020
00440  0578  2020          DATA      '                '
       057A  2020
       057C  2020
       057E  2020
       0580  2020
       0582  2020
       0584  2020
       0586  2020
       0588  2020
       058A  2020
       058C  2020
       058E  2020
       0590  2020
       0592  2020
       0594  2020
00441  0596  2020          DATA      '                '
       0598  2020
       059A  2020
       059C  2020
       059E  2020
       05A0  2020
       05A2  2020
       05A4  2020
       05A6  2020
       05A8  2020
       05AA  2020
       05AC  2020
       05AE  2020
       05B0  2020
       05B2  2020
00442  05B4  2020          DATA      '                '
       05B6  2020
       05B8  2020
       05BA  2020
       05BC  2020
```

```
                05BE  2020
                05C0  2020
                05C2  2020
                05C4  2020
                05C6  2020
                05C8  2020
                05CA  2020
                05CC  2020
                05CE  2020
                05D0  2020
00443           05D2  2020          DATA    '                       '
                05D4  2020
                05D6  2020
                05D8  2020
                05DA  2020
                05DC  2020
                05DE  2020
                05E0  2020
                05E2  2020
                05E4  2020
                05E6  2020
                05E8  2020
                05EA  2020
                05EC  2020
                05EE  2020
00444           05F0  2020          DATA    '                       '
                05F2  2020
                05F4  2020
                05F6  2020
                05F8  2020
                05FA  2020
                05FC  2020
                05FE  2020
                0600  2020
                0602  2020
                0604  2020
written         0606  2020
on sect 6       0608  2020
                060A  2020
                060C  2020
00445           060E                MXONE   RES     1           ADDRESS OF FIRST WORD OF THE MULTIPLEX
00446           0610  0000          NBRCYL  DATA    0
00447           0612  0000          NBRTRK  DATA    0
00448           0614  0000          NBRGRN  DATA    0
00449           0616  0000          NBDTRK  DATA    0
00450           0618                BUFRD   RES     205 <- read buffer
00451           07B2  019A          LENGTH  DATA    410
00452           07B4                W:SAV1  RES     20
00453                               DSK     EQU     0
00454                               *
```

```
00455                                   EJECT
00456                          *            INITIALISATION OF PREMRK
00457                          *
00458                          PREMRK   EQU      *
00459  07DC  8720                      LDK,L    A7,MESS0      WRITTING
       07DE  019E  R
00460  07E0  8620                      LDK,L    A6,32
       07E2  0020
00461  07E4  20BF                      INH
00462  07E6  86A0                      LDK,L    A14,W:SAV1+10
       07E8  07BE  R
00463  07EA  F6A1                      CF       A14,ASROUT   'INITTALISATION OF PREMRK'
       07EC  0000  F=700E
00464  07EE  85A0                      LDK,L    A13,0
       07F0  0000
00465  07F2  8720            MES2      LDK,L    A7,MESS2
       07F4  01BE  R
00466  07F6  8620                      LDK,L    A6,20
       07F8  0014
00467  07FA  F6A1                      CF       A14,ASROUT   'NBR. OF CYLINDERS'
       07FC  0000  F=700E
00468  07FE  8120                      LDK,L    A1,/2020
       0800  2020
00469  0802  8141                      ST       A1,BUF
       0804  019A  R
00470  0806  8141                      ST       A1,BUF+2
       0808  019C  R
00471  080A  8720                      LDK,L    A7,BUF
       080C  019A  R
00472  080E  0604                      LDK      A6,4
00473  0810  F6A1                      CF       A14,ASRTN
       0812  0000  F=7034
00474  0814  8140                      LD       A1,BUF
       0816  019A  R
00475  0818  8240                      LD       A2,BUF+2
       081A  019C  R
00476  081C  8420                      LDK,L    A4,RET
       081E  0000  F
00477  0820  8F20                      AB,L     I:DEBI
       0822  0000  F=F64
00478  0824  5F34            RET       RB(7)    MES2
00479  0826  8141                      ST       A1,CYLMAX
       0828  01D2  R
00480  082A  8720            MES3      LDK,L    A7,MESS3
       082C  01D4  R
00481  082E  8620                      LDK,L    A6,17
       0830  0011
00482  0832  F6A1                      CF       A14,ASROUT   'NBR. OF TRACKS '
       0834  0000  F=700E
00483  0836  8120                      LDK,L    A1,/2020
```

MLK 2
DATA /2020
DATA /2020
→ MSR 2, A7

MLL 2, BUF

```
                 0838  2020
00484            083A  8141                    ST        A1,BUF
                 083C  019A  R
00485            083E  8141                    ST        A1,BUF+2
                 0840  019C  R
00486            0842  8720                    LDK,L     A7,BUF
                 0844  019A  R
00487            0846  8620                    LDK,L     A6,4
                 0848  0004
00488            084A  F6A1                    CF        A14,ASRIN
                 084C  0000  F
00489            084E  8140                    LD        A1,BUF
                 0850  019A  R
00490            0852  8240                    LD        A2,BUF+2
                 0854  019C  R
00491            0856  8420                    LDK,L     A4,RET2
                 0858  0000  F
00492            085A  8F20                    AB,L      I:DEBI
                 085C  0000  F
00493            085E  5F36          RET2      RB(7)     MES3
00494            0860  8141                    ST        A1,TRKMAX
                 0862  01E6  R
00495            0864  8720          MES4      LDK,L     A7,MESS4
                 0866  01E8  R
00496            0868  8620                    LDK,L     A6,24
                 086A  0018
00497            086C  F6A1                    CF        A14,ASROUT  'NBR. OF SECTORS/TRACK'
                 086E  0000  F
00498            0870  8120                    LDK,L     A1,/2020
                 0872  2020
00499            0874  8141                    ST        A1,BUF
                 0876  019A  R
00500            0878  8141                    ST        A1,BUF+2
                 087A  019C  R
00501            087C  8720                    LDK,L     A7,BUF
                 087E  019A  R
00502            0880  8620                    LDK,L     A6,4
                 0882  0004
00503            0884  F6A1                    CF        A14,ASRTN
                 0886  0000  F
00504            0888  8140                    LD        A1,BUF
                 088A  019A  R
00505            088C  8240                    LD        A2,BUF+2
                 088E  019C  R
00506            0890  8420                    LDK,L     A4,RET3
                 0892  0000  F
00507            0894  8F20                    AB,L      I:DEBI
                 0896  0000  F = FG4
00508            0898  5F36          RET3      RB(7)     MES4
00509            089A  8141                    ST        A1,SECMAX
```

```
                  089C  0200  R
00510             089E  8720        MES10   LDK,L   A7,MESS10
                  08A0  0202  R
00511             08A2  8620              LDK,L   A6,29
                  08A4  001D
00512             08A6  F6A1              CF      A14,ASROUT  'DISK UNIT PHYSICAL ADDRESS'
                  08A8  0000  F = 700E
00513             08AA  8120              LDK,L   A1,/2020
                  08AC  2020
00514             08AE  8141              ST      A1,BUF
                  08B0  019A  R
00515             08B2  8141              ST      A1,BUF+2
                  08B4  019C  R
00516             08B6  8720              LDK,L   A7,BUF
                  08B8  019A  R
00517             08BA  8620              LDK,L   A6,2
                  08BC  0002
00518             08BE  F6A1              CF      A14,ASRIN
                  08C0  0000  F
00519             08C2  8120              LDK,L   A1,/3030
                  08C4  3030
00520             08C6  8240              LD      A2,BUF
                  08C8  019A  R
00521             08CA  8420              LDK,L   A4,RET4
                  08CC  0000  F
00522             08CE  8F20              AB,L    I:HXBI
                  08D0  0000  F = F08
00523             08D2  5F36        RET4  RB(7)   MES10
00524             08D4  8141              ST      A1,DUPAD
                  08D6  0220  R
00525             08D8  9141              ADS     A1,SEEK
                  08DA  0000  F = E00
00526             08DC  9141              ADS     A1,CI05
                  08DE  0000  F=DE2
00527             08E0  9141              ADS     A1,CI02
                  08E2  0000  F = DE8
00528             08E4  9141              ADS     A1,SEEK0
                  08E6  0000  F=0DDA
00529             08E8  9141              ADS     A1,CI04
                  08EA  0000  F = DC8
00530             08EC  9141              ADS     A1,CI03
                  08EE  0000  F = CF8
00531             08F0  9141              ADS     A1,VAL
                  08F2  0000  F = D0E
00532             08F4  9141              ADS     A1,CI033
                  08F6  0000  F = D24
00533             08F8  9141              ADS     A1,SSTVAL
                  08FA  0000  F = A40
00534             08FC  9141              ADS     A1,SST1
                  08FE  0000  F = BFC
```

```
00535  0900  9141          ADS     A1,CIOSEK
       0902  0000  F = EOA
00536  0904  9141          ADS     A1,CIO6
       0906  0000  F = E70
00537  0908  9141          ADS     A1,WRTE
       090A  0000  F = E36
00538  090C  9141          ADS     A1,CIO7
       090E  0000  F = E5E
00539  0910  9141          ADS     A1,READ
       0912  0000  F = E66
00540  0914  9141          ADS     A1,CIO8
       0916  0000  F = E90
00541  0918  9141          ADS     A1,CIO9
       091A  0000  F = CAE
00542  091C  9141          ADS     A1,CIO10
       091E  0000  F = AB8
00543  0920  9141          ADS     A1,IOER
       0922  0000  F = EA6
00544  0924  8720          LDK,L   A7,MESS12     **************
       0926  02DE  R
00545  0928  8620          LDK,L   A6,8                        *
       092A  0008
00546  092C  F6A1          CF      A14,ASROUT  'LABEL'         *
       092E  0000  F
00547  0930  8720          LDK,L   A7,LABEL                    *
       0932  02E6  R
00548  0934  8620          LDK,L   A6,8                        *
       0936  0008
00549  0938  F6A1          CF      A14,ASRIN                   *
       093A  0000  F
00550  093C  8720          LDK,L   A7,MESS13                   *
       093E  02F8  R
00551  0940  8620          LDK,L   A6,7                        * INITIALISATION OF
       0942  0007
00552  0944  F6A1          CF      A14,ASROUT  'DATE'          * THE VOLUME LABEL → set 0, track 0, cyl 0
       0946  0000  F
00553  0948  8720          LDK,L   A7,DATE                     *
       094A  0300  R
00554  094C  8620          LDK,L   A6,8                        *
       094E  0008
00555  0950  F6A1          CF      A14,ASRIN                   *
       0952  0000  F
00556  0954  8720          LDK,L   A7,MESS14                   *
       0956  0310  R
00557  0958  8620          LDK,L   A6,11                       *
       095A  000B
00558  095C  F6A1          CF      A14,ASROUT  'PACK NBR.'     *
       095E  0000  F
00559  0960  8720          LDK,L   A7,PACNBR                   *
       0962  031C  R
```

```
00560  0964  8620          LDK,L   A6,3                    *
       0966  0003
00561  0968  F6A1          CF      A14,ASRTN    ***************
       096A  0000  F = 7034
00562                       *
00563  096C  8140          LD      A1,DUPAD     ***
       096E  0220  R
00564  0970  210F          ANK     A1,/F         COMPUTING OF THE
00565  0972  3942          SLL     A1,2
00566  0974  9120          ADK,L   A1,128 =180   MULTIPLEX ADDRESS
       0976  0080
00567  0978  8141          ST      A1,MXONE     ***
       097A  06BE  R
00568  097C  85C1          ST      A13,W:SAV1
       097E  07B4  R
00569  0980  85C1          ST      A13,W:SAV1+2
       0982  07B6  R
00570  0984  83A0          LDK,L   A11,0
       0986  0000
00571  0988  83C1          ST      A11,NBRCYL
       098A  0610  R
00572  098C  83C1          ST      A11,NBRTRK
       098E  0612  R
00573  0990  83C1          ST      A11,NBRSEC
       0992  0392  R
00574  0994  83C1          ST      A11,NBRGRN
       0996  0614  R
00575  0998  83C1          ST      A11,NBDTRK
       099A  0616  R
00576  099C  8720          LDK,L   A7,MESS15 → WRITING THE IDENTIFIERS
       099E  0222  R
00577  09A0  8620          LDK,L   A6,26
       09A2  001A
00578  09A4  F5A1          CF      A14,ASROUT
       09A6  0000  F = 700E
00579  09A8  0501          LDK     A5,1          ****
00580  09AA  8420          LDK,L   A4,/4981  → TST \A7,/01
       09AC  4981
00581  09AE  8441          ST      A4,TST
       09B0  0000  F = 9C2
00582  09B2  8420          LDK,L   A4,/4181  → CIO \A7,0,/01
       09B4  4181
00583  09B6  8441          ST      A4,CIOHLT
       09B8  0000  F = 9C8
00584  09BA  8420          LDK,L   A4,/49C1  → SST \A7,/01
       09BC  49C1
00585  09BE  8441          ST      A4,SST2
       09C0  0000  F = 9CE
00586  09C2  4980      TST TST     A1,0          THIS
00587  09C4  2101          ANK     A1,1
```

```
00588  09C6  5000   F =9D2          RF(0)     IMCIO      SEQUENCE
00589  09C8  4180        CIOHLT    CIO       A1,0,0
00590  09CA  5300   F =9D2          RF(3)     IMCIO      RESETS
00591  09CC  5C06                   RB(4)     CIOHLT
00592  09CE  49C0        SST2      SST       A1,0       INTERUPT LINES
00593  09D0  5C04                    RB(4),   *-2
00594  09D2  9041        IMCIO     IM        TST
       09D4  09C2   R
00595  09D6  9041                   IM        CIOHLT
       09D8  09C8   R
00596  09DA  9041                   IM        SST2
       09DC  09CE   R
00597  09DE  1501                   ADK       A5,1
00598  09E0  ED20                   CWK       A5,/3F
       09E2  003F
00599  09E4  5C24                   RB(4)     TST        ****
00600  09E6  F6A1                   CF        A14,SEEK0
       09E8  0000   F=DDA
00601
00602  09EA  80C0        TSTRED     LD        A8,NBRCYL
       09EC  0610   R
00603  09EE  E8C0                   CW        A8,CYLMAX
       09F0  01D2   R
00604  09F2  8820                   AB,L(0)   CHECK      END OF WRITTING
       09F4  0000   F = B7A
00605  09F6  80C0        TSTTRK     LD        A8,NBRTRK
       09F8  0612   R
00606  09FA  E8C0                   CW        A8,TRKMAX
       09FC  01E6   R
00607  09FE  5400   F = A7A          RF(4)     TSTSEC
00608  0A00  80A0                   LDK,L     A8,0
       0A02  0000
00609  0A04  80C1                   ST        A8,NBRTRK
       0A06  0612   R
00610  0A08  80C1                   ST        A8,NBRSEC
       0A0A  0392   R
00611  0A0C  F6A1                   CF        A14,SEEK   → move one cylinder
       0A0E  0000   F = E00
00612  0A10  9041                   IM        NBRCYL     FOR A NEW CYLINDER
       0A12  0610   R
00613  0A14  9041                   IM        IDENT
       0A16  02D6   R
00614  0A18  5F30                   RB(7)     TSTRED
00615  0A1A  80C0        TSTSEC     LD        A8,NBRSEC
       0A1C  0392   R
00616  0A1E  E8C0                   CW        A8,SECMAX
       0A20  0200   R
00617  0A22  5000   F = A34          RF(0)     IMTRK1
00618  0A24  8102                   LDR       A1,A8
00619  0A26  3961                   SRL       A1,1
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00620  0A28  E940          CW      A1,SECMAX
       0A2A  0200  R
00621  0A2C  5400  F=A38   RF(4)    INIA12
00622  0A2E  9041          IM      NBRTRK
       0A30  0612  R
00623  0A32  5F4A          RB(7)   TSTRED
00624                TMTRK1 EQU     *
00625  0A34  9041          IM      NBRTRK      FOR A NEW TRACK
       0A36  0612  R
00626  0A38  84A0    INIA12 LDK.L   A12,5
       0A3A  0005
00627  0A3C  F6A1    WRITE  CF      A14,WRTE    CALL WRITE SUBROUTINE
       0A3E  0000  F=E36
00628  0A40  49C0    SSTVAL SST     A1,DSK
00629  0A42  5C04           RB(4)   SSTVAL
00630  0A44  A120           ANK.L   A1,/1F
       0A46  001F
00631  0A48  5400  F=A6C    RF(4)   REWRTE      FOR A NEW TRY
00632  0A4A  9041           IM      NBRSEC
       0A4C  0392  R
00633  0A4E  8140           LD      A1,NBRSEC
       0A50  0392  R
00634  0A52  E920           CWK     A1,8        WRITING IS
       0A54  0008
00635  0A56  5000  F=AE4    RF(0)   BITALG
00636  0A58  E920           CWK     A1,16
       0A5A  0010
00637  0A5C  5000  F=AE4    RF(0)   BITALG      PERFORMED CORRECTLY
00638  0A5E  E920           CWK     A1,24
       0A60  0018
00639  0A62  5000  F=AE4    RF(0)   BITALG
00640  0A64  E920           CWK     A1,32
       0A66  0020
00641  0A68  5000  F=AE4    RF(0)   BITALG
00642  0A6A  5F82           RB(7)   TSTRED --> =/9EA
00643  0A6C  9CA0    REWRTE SUK.L   A12,1       TEST 5 TRIES
       0A6E  0001
00644  0A70  5C36           RB(4)   WRITE
00645  0A72  8140           LD      A1,NBRSEC
       0A74  0392  R
00646  0A76  E920           CWK     A1,24
       0A78  0018
00647  0A7A  5100  F=A8E    RF(1)   IMNOT
00648  0A7C  E920           CWK     A1,16
       0A7E  0010
00649  0A80  5100  F=A88    RF(1)   IMYES
00650  0A82  E920           CWK     A1,8
       0A84  0008
00651  0A86  5100  F=A8E    RF(1)   IMNOT
00652  0A88  9041    IMYES  IM      NBRGRN
```

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                0A8A  0614  R
00653           0A8C  5700  F= A98          RF(7)     LDKA12
00654           0A8E  B940        TMNOT     ML        2,W:SAV1
                0A90  07B4  R
00655           0A92  3961                  SRL       A1,1
00656           0A94  B941                  MS        2,W:SAV1
                0A96  07B4  R
00657           0A98  84A0        LDKA12    LDK,L     A12,16
                0A9A  0010
00658           0A9C  ECC0                  CW        A12,NBRSEC  THIS SEQUENCE
                0A9E  0392  R
00659           0AA0  5200  F               RF(2)     RAZ         POINT NBRSEC ON THE
00660           0AA2  84C1                  ST        A12,NBRSEC  BEGINING OF THE BAD TRACK
                0AA4  0392  R
00661           0AA6  5700  F               RF(7)     IDPOST
00662           0AA8  85C1        RAZ       ST        A13,NBRSEC <- NBRSEC > TO
                0AAA  0392  R
00663           0AAC  8120        IDPOST    LDK,L     A1,/8000
                0AAE  8000
00664           0AB0  A941                  ORS       A1,IDENT    BAD TRACK BIT IN THE IDENT.
                0AB2  02D6  R
00665           0AB4  F6A1        WRIT1     CF        A14,WRTE
                0AB6  0000  F
00666           0AB8  49C0        CIO10     SST       A1,DSK
00667           0ABA  5C04                  RB(4)     *-2
00668           0ABC  9041                  IM        NBRSEC
                0ABE  0392  R
00669           0AC0  9CA0                  SUK,L     A12,1
                0AC2  0001
00670           0AC4  5C12                  RB(4)     WRIT1
00671           0AC6  B940        BITAL2    ML        2,W:SAV1
                0AC8  07B4  R
00672           0ACA  3961                  SRL       A1,1
00673           0ACC  3842                  DLL       2           2 BAD GRN'. IN THE BITAB
00674           0ACE  B941                  MS        2,W:SAV1
                0AD0  07B4  R
00675           0AD2  8120                  LDK,L     A1,/7FFF
                0AD4  7FFF
00676           0AD6  A141                  ANS       A1,IDENT
                0AD8  02D6  R
00677           0ADA  9041                  IM        NBDTRK      CPTR'. OF BAD TRACKS
                0ADC  0616  R
00678           0ADE  B940                  ML        2,W:SAV1
                0AE0  07B4  R
00679           0AE2  5700  F = AEA         RF(7)     TSTA3
00680           0AE4  B940        BITALG    ML        2,W:SAV1
                0AE6  07B4  R
00681           0AE8  1101                  ADK       A1,1
00682           0AEA  8340        TSTA3     LD        A3,NBRGRN
                0AEC  0614  R
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00683  0AEE  EB20          CWK     A3,15
       0AF0  000F
00684  0AF2  5000  F       RF(0)   NEWTAB
00685  0AF4  3841          DLL     1
00686  0AF6  B941          MS      2,W:SAV1
       0AF8  0784  R
00687  0AFA  9041          TM      NBRGRN
       0AFC  0614  R
00688  0AFE  8F20          AB,L(7) TSTRED
       0B00  09EA  R
00689  0B02  814F    NEWTAB ST      A1,BITAB,A11
       0B04  032C  R
00690  0B06  93A0           ADK,L  A11,2
       0B08  0002
00691  0B0A  85C1          ST      A13,NBRGRN
       0B0C  0614  R
00692  0B0E  85C1          ST      A13,W:SAV1
       0B10  0784  R
00693  0B12  85C1          ST      A13,W:SAV1+2
       0B14  0786  R
00694  0B16  8F20          AB,L(7) TSTRED
       0B18  09EA  R
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00695                                  EJECT
00696                          CHECK   EQU     *
00697  0B1A  8140                      LD      A1,W:SAV1
       0B1C  0784  R
00698  0B1E  3943                      SLL     A1,3
00699  0B20  814F                      ST      A1,BITAB,A11
       0B22  032C  R
00700  0B24  8620                      LDK,L   A6,28
       0B26  001C
00701  0B28  F6A1                      CF      A14,ASROUT  'CHECKING THE IDENTIFIERS'
       0B2A  0000  F = 100E
00702  0B2C  F6A1                      CF      A14,SEEKØ
       0B2E  0000  F = DDA
00703  0B30  85C1                      ST      A13,NBRCYL
       0B32  0610  R
00704  0B34  85C1                      ST      A13,NBRTRK
       0B36  0612  R
00705  0B38  85C1                      ST      A13,NBRSEC
       0B3A  0392  R
00706  0B3C  85C1                      ST      A13,NBRGRN
       0B3E  0614  R
00707  0B40  85C1                      ST      A13,IDENT
       0B42  02D6  R
00708  0B44  83A0                      LDK,L   A11,Ø
       0B46  0000
00709  0B48  83C1                      ST      A11,W:SAV1
       0B4A  0784  R
00710                          LDBITA  EQU     *
00711  0B4C  814E                      LD      A1,BITAB,A11
       0B4E  032C  R
00712  0B50  8141                      ST      A1,W:SAV1+2
       0B52  0786  R
00713  0B54  8140              TSTCYL  LD      A1,NBRCYL
       0B56  0610  R
00714  0B58  E940                      CW      A1,CYLMAX
       0B5A  01D2  R
00715  0B5C  8820                      AB,L(Ø) ENDCHK      FOR END OF CHECK
       0B5E  0000  F = CDO
00716  0B60  8140                      LD      A1,NBRTRK
       0B62  0612  R
00717  0B64  E940                      CW      A1,TRKMAX
       0B66  01E6  R
00718  0B68  5400  F = B80             RF(4)   SEC
00719  0B6A  85C1                      ST      A13,NBRTRK
       0B6C  0612  R
00720  0B6E  85C1                      ST      A13,NBRSEC
       0B70  0392  R
00721  0B72  F6A1                      CF      A14,SEEK
       0B74  0000  F
00722  0B76  9041                      IM      NBRCYL      FOR ANEW CYLINDER
```

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                0B78  0610  R
00723           0B7A  9041              IM        IDENT
                0B7C  0206  R
00724           0B7E  5F2C              RB(7)     TSTCYL
00725           0B80  8140        SEC   LD        A1,NBRSEC
                0B82  0392  R
00726           0B84  E940              CW        A1,SECMAX
                0B86  0200  R
00727           0B88  5000  F=B98       RF(0)     IMYRK2
00728           0B8A  3961              SRL       A1,1
00729           0B8C  E940              CW        A1,SECMAX
                0B8E  0200  R
00730           0B90  5400  F           RF(4)     TESTBI
00731           0B92  9041        IMTRK3  IM        NBRTRK      FOR A NEW TRACK
                0B94  0612  R
00732           0B96  5F44              RB(7)     TSTCYL
00733                             IMYRK2  EQU       *
00734           0B98  9041              IM        NBRTRK
                0B9A  0612  R
00735                             TESTBI  EQU       *
00736           0B9C  8340              LD        A3,NBRSEC
                0B9E  0392  R
00737           0BA0  2307              ANK       A3,7
00738           0BA2  5400  F=BF4       RF(4)     A12EG5
00739           0BA4  8140              LD        A1,W:SAV1
                0BA6  07B4  R
00740           0BA8  8240              LD        A2,W:SAV1+2
                0BAA  07B6  R
00741           0BAC  3841              DLL       1
00742           0BAE  B941              MS        2,W:SAV1
                0BB0  07B4  R
00743           0BB2  2101              ANK       A1,1
00744           0BB4  5400  F=BF4       RF(4)     A12EG5
00745           0BB6  9041              IM        NBRGRN
                0BB8  0614  R
00746           0BBA  8140              LD        A1,NBRGRN
                0BBC  0614  R
00747           0BBE  E920              CWK       A1,15
                0BC0  000F
00748           0BC2  5400  F=BEC       RF(4)     LDA3
00749           0BC4  85C1              ST        A13,NBRGRN
                0BC6  0614  R
00750           0BC8  8140              LD        A1,W:SAV1
                0BCA  07B4  R
00751           0BCC  814F              ST        A1,BITAB,A11
                0BCE  032C  R
00752           0BD0  93A0              ADK,L     A11,2
                0BD2  0002
00753           0BD4  85C1              ST        A13,W:SAV1
                0BD6  07B4  R
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00754  0BD8  824E          LD      A2,BITAB,A11
       0BDA  032C  R
00755  0BDC  8241          ST      A2,W:SAV1+2
       0BDE  07B6  R
00756  0BE0  8340    LDA3  LD      A3,NBRSEC
       0BE2  0392  R
00757  0BE4  1310          ADK     A3,16
00758  0BE6  2310          ANK     A3,16
00759  0BE8  8341          ST      A3,NBRSEC
       0BEA  0392  R
00760  0BEC  EB20          CWK     A3,16
       0BEE  0010
00761  0BF0  5C60          RB(4)   IMTRK3
00762  0BF2  5F5C          RB(7)   IMYRK2
00763  0BF4  84A0    A12EG5 LDK,L  A12,5
       0BF6  0005
00764  0BF8  F6A1    READ1 CF      A14,READ
       0BFA  0000  F=E66
00765  0BFC  49C0    SST1  SST     A1,DSK
00766  0BFE  5C04          RB(4)   SST1
00767  0C00  A120          ANK,L   A1,/1F
       0C02  001F
00768  0C04  5400  F       RF(4)   REREAD
00769  0C06  8140          LD      A1,BUFRD
       0C08  0618  R
00770  0C0A  E940          CW      A1,NBRCYL   CHECKING THE IDENT.
       0C0C  0610  R
00771  0C0E  5400  F=C5C     RF(4)   REREAD
00772  0C10  9041    INCSEC IM      NBRSEC
       0C12  0392  R
00773  0C14  8140          LD      A1,NBRSEC
       0C16  0392  R
00774  0C18  E920          CWK     A1,8
       0C1A  0008
00775  0C1C  5000  F=C32     RF(0)   BITAL3      *
00776  0C1E  E920          CWK     A1,16
       0C20  0010
00777  0C22  5000  F=C32     RF(0)   BITAL3      * TEST END OF GRANULE
00778  0C24  E920          CWK     A1,24
       0C26  0018
00779  0C28  5000  F=C32     RF(0)   BITAL3
00780  0C2A  E920          CWK     A1,32
       0C2C  0020
00781  0C2E  5000  F         RF(0)   BITAL3
00782  0C30  5FDE          RB(7)   TSTCYL
00783                 BITAL3 EQU    *
00784  0C32  8140          LD      A1,NBRGRN
       0C34  0614  R
00785  0C36  E920          CWK     A1,15
       0C38  000F
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00786  0C3A  5400  F=C54          RF(4)    INCNGR
00787  0C3C  8140                 LD       A1,W:SAV1
       0C3E  0784  R
00788  0C40  814F                 ST       A1,BITAB,A11
       0C42  032C  R
00789  0C44  93A0                  ADK.L    A11,2
       0C46  0002
00790  0C48  85C1                 ST       A13,NBRGRN
       0C4A  0614  R
00791  0C4C  85C1                 ST       A13,W:SAV1
       0C4E  0784  R
00792  0C50  8F20                 AB,L(7)  LOBITA
       0C52  0B4C  R
00793  0C54  9041       INCNGR    IM       NBRGRN
       0C56  0614  R
00794  0C58  8F20                 AB,L(7)  TSTCYL
       0C5A  0B54  R
00795  0C5C  9CA0       REREAD    SUK,L    A12,1
       0C5E  0001
00796  0C60  5C6A                 RB(4)    READ1        FOR A NEW TRY
00797  0C62  84A0                 LDK,L    A12,16
       0C64  0010
00798  0C66  8140                 LD       A1,NBRSEC
       0C68  0392  R
00799  0C6A  E920                 CWK      A1,24
       0C6C  0018
00800  0C6E  5100  F=C7E          RF(1)    IM
00801  0C70  E920                 CWK      A1,16
       0C72  0010
00802  0C74  5100  F=C8C          RF(1)    CW16
00803  0C76  E920                 CWK      A1,8
       0C78  0008
00804  0C7A  5100  F              RF(1)    IM
00805  0C7C  5700  F              RF(7)    CW16
00806  0C7E  9041       IM        IM       NBRGRN
       0C80  0614  R
00807  0C82  B940                 ML       2,W:SAV1
       0C84  0784  R
00808  0C86  3841                 DLL      1
00809  0C88  8941                 MS       2,W:SAV1
       0C8A  0784  R
00810  0C8C  8140       CW16      LD       A1,NBRSEC
       0C8E  0392  R
00811  0C90  E920                 CWK      A1,16
       0C92  0010
00812  0C94  5600  F=C9E          RF(6)    ZER1A
00813  0C96  0110                 LDK      A1,16
00814  0C98  8141                 ST       A1,NBRSEC    BEGINING OF TRACK 1
       0C9A  0392  R
00815  0C9C  5700  F=CA2          RF(7)    ID
```

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00816  0C9E  85C1      ZER1A   ST      A13,NBRSEC  BEGINING OF TRACK 0
       0CA0  0392  R
00817  0CA2  8120      TD      LDK,L   A1,/8000
       0CA4  8000
00818  0CA6  A941              ORS     A1,IDENT
       0CA8  02D6  R
00819  0CAA  F6A1      WRT2    CF      A14,WRTE    FOR A BAD TRACK
       0CAC  0000  F
00820  0CAE  49C0      CI09    SST     A1,DSK
00821  0CB0  5C04              RB(4)   *+2
00822  0CB2  9041              IM      NBRSEC
       0CB4  0392  R
00823  0CB6  9CA0              SUK,L   A12,1
       0CB8  0001
00824  0CBA  5C12              RB(4)   WRT2
00825  0CBC  B940      BITAL4  ML      2,W:SAV1
       0CBE  07B4  R
00826  0CC0  A120              ANK,L   A1,/FFFC    DELETE 2 GRANULES
       0CC2  FFFC
00827  0CC4  B941              MS      2,W:SAV1    IN THE BITAB
       0CC6  07B4  R
00828  0CC8  9041              IM      NBDTRK
       0CCA  0616  R
00829  0CCC  8F20              AB,L(7) BITAL3
       0CCE  0C32  R
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00830                                  EJECT
00831  0CD0  8720        ENDCHK       LDK,L     A7,MESS19 --> END OF CHECK
       0CD2  0258  R
00832  0CD4  8620                     LDK,L     A6,16
       0CD6  0010
00833  0CD8  F6A1                     CF        A14,ASROUT
       0CDA  0000  F=700E
00834  0CDC  F6A1                     CF        A14,SEEK0
       0CDE  0000  F=DDA
00835  0CE0  85C1                     ST        A13,NBRTRK
       0CE2  0612  R
00836  0CE4  85C1                     ST        A13,NBRSEC --> sect n°0
       0CE6  0392  R
00837  0CE8  85C1                     ST        A13,IDENT
       0CEA  02D6  R
00838  0CEC  8120                     LDK,L     A1,/7FFF
       0CEE  7FFF
00839  0CF0  A141                     AN,S      A1,BITAB
       0CF2  032C  R
00840  0CF4  F6A1        WRT3         CF        A14,WRTE     INITIALISATION OF GRAN. ZERO
       0CF6  0000  F=E36
00841  0CF8  49C0        CIO3         SST       A1,DSK
00842  0CFA  5C04                     RB(4)     CIO3 --> = log. sect n°1
00843  0CFC  0603                     LDK       A6,3         ***
00844  0CFE  8641                     ST        A6,NBRSEC
       0D00  0392  R
00845  0D02  8620                     LDK,L     A6,IPLDD
       0D04  0004  R
00846  0D06  8641                     ST        A6,LDBDSK+2 WRITING IPL
       0D08  0000  F=E4A
00847  0D0A  F6A1                     CF        A14,WRTE
       0D0C  0000  F=E36
00848  0D0E  49C0        VAL          SST       A1,DSK
00849  0D10  5C04                     RB(4)     *-2          ***
00850  0D12  0606                     LDK       A6,6 --> = log sect n°2
00851  0D14  8641                     ST        A6,NBRSEC
       0D16  0392  R
00852  0D18  8620                     LDK,L     A6,SEC2
       0D1A  0472  R
00853  0D1C  8641                     ST        A6,LDBDSK+2  WRITING SEC2
       0D1E  0000  F
00854  0D20  F6A1                     CF        A14,WRTE
       0D22  0000  F=E36
00855  0D24  49C0        CIO33        SST       A1,DSK
00856  0D26  5C04                     RB(4)     CIO33
00857  0D28  8620                     LDK,L     A6,BUFDSK
       0D2A  02D6  R
00858  0D2C  8641                     ST        A6,LDBDSK+2
       0D2E  0000  F
00859  0D30  8340                     LD        A3,NBDTRK
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        0D32  0616  R
00860   0D34  F6A1           CF      A14,I:BIDE
        0D36  0000  F=FCO
00861   0D38  B941           MS      2,MESS23
        0D3A  02B0  R
00862   0D3C  8720           LDK.L   A7,MESS22
        0D3E  029A  R
00863   0D40  8620           LDK.L   A6,28
        0D42  001C
00864   0D44  F6A1           CF      A14,ASROUT  NBR. OF BAD TAACKS
        0D46  0000  F=700E
00865              ANS       EQU     *
00866   0D48  8120           LDK.L   A1,/FFC0
        0D4A  FFC0
00867   0D4C  A141           ANS     A1,SEEK
        0D4E  0000  F
00868   0D50  A141           ANS     A1,CIO5
        0D52  0000  F
00869   0D54  A141           ANS     A1,CIO2
        0D56  0000  F
00870   0D58  A141           ANS     A1,SEEK0
        0D5A  0000  F
00871   0D5C  A141           ANS     A1,CIO4
        0D5E  0000  F
00872   0D60  A141           ANS     A1,CIO3
        0D62  0CFB  R
00873   0D64  A141           ANS     A1,VAL
        0D66  0D0E  R
00874   0D68  A141           ANS     A1,CIO33
        0D6A  0D24  R
00875   0D6C  A141           ANS     A1,SSTVAL
        0D6E  0A40  R
00876   0D70  A141           ANS     A1,SST1
        0D72  0BFC  R
00877   0D74  A141           ANS     A1,CIOSEK
        0D76  0000  F
00878   0D78  A141           ANS     A1,CIO6
        0D7A  0000  F
00879   0D7C  A141           ANS     A1,WRTE
        0D7E  0000  F
00880   0D80  A141           ANS     A1,CIO7
        0D82  0000  F
00881   0D84  A141           ANS     A1,READ
        0D86  0000  F
00882   0D88  A141           ANS     A1,CIO8
        0D8A  0000  F
00883   0D8C  A141           ANS     A1,CIO9
        0D8E  0CAE  R
00884   0D90  A141           ANS     A1,CIO10
        0D92  0AB8  R
```

```
00885  0D94  A141      ANS     A1,IOER
       0D96  0000  F
00886                  MES30   EQU     *
00887  0D98  8720      LDK,L   A7,MESS30 --> RUN AGAIN ?;
       0D9A  02B6  R
00888  0D9C  8620      LDK,L   A6,14
       0D9E  000E
00889  0DA0  F6A1      CF      A14,ASROUT
       0DA2  0000  F
00890  0DA4  8720      LDK,L   A7,REP --> 'bb'
       0DA6  02C4  R
00891  0DA8  8620      LDK,L   A6,2
       0DAA  0002
00892  0DAC  F6A1      CF      A14,ASRIN
       0DAE  0000  F
00893  0DB0  8120      LDK,L   A1,/4E4F    'NO'
       0DB2  4E4F
00894  0DB4  E940      CW      A1,REP
       0DB6  02C4  R
00895  0DB8  5000  F   RF(0)   CIO4
00896  0DBA  8120      LDK,L   A1,/4F4B    'OK'
       0DBC  4F4B
00897  0DBE  E940      CW      A1,REP
       0DC0  02C4  R
00898  0DC2  5C2C      RB(4)   MES30
00899  0DC4  8F20      ABL(7)  PREMRK
       0DC6  07DC  R
00900  0DC8  4180      CIO4    CIO     A1,0,DSK    STOP ANY TRANSFERT
00901  0DCA  5300  F   RF(3)   UKNODA
00902  0DCC  8720      LDK,L   A7,MESS20 ---+
       0DCE  02C6  R                        |
00903  0DD0  8620      LDK,L   A6,16        |
       0DD2  0010                           |
00904  0DD4  F6A1      CF      A14,ASROUT  END OF PREMRK <--+
       0DD6  0000  F
00905  0DD8  207F      HLT
```

```
00906                                  EJECT
00907  0DDA  4980        SEEK0         TST     A1,DSK
00908  0DDC  2101                      ANK     A1,1
00909  0DDE  5C06                      RB(4)   SEEK0
00910  0DE0  0103                      LDK     A1,3          C.U. READY
00911  0DE2  41C0        CIO5          CIO     A1,1,DSK
00912  0DE4  5300  F                   RF(3)   UKNODA → E98
00913  0DE6  5906                      RB(1)   CIO5
00914  0DE8  49C0        CIO2          SST     A1,DSK
00915  0DEA  5C04                      RB(4)    *-2
00916  0DEC  8204                      LDR     A2,A1
00917  0DEE  221F                      ANK     A2,/1F
00918  0DF0  8C20                      AB,L(4) IOER → non zero status
       0DF2  0000  F=EA6
00919  0DF4  A120                      ANK,L   A1,/0600 → select "on cyl" and "Seek Err" bits
       0DF6  0600
00920  0DF8  E920                      CWK     A1,/0400 → test if "on cyl"=1 and "ack en"=0
       0DFA  0400
00921  0DFC  5C24                      RB(4)   SEEK0  no     FOR ANEW TRY
00922  0DFE  F03A                      RTN     A14  yes
```

```
00923                                  EJECT
00924  0E00  4980        SEEK          TST       A1,DSK
00925  0E02  2101                      ANK       A1,1
00926  0E04  5C06                      RB(4)     SEEK
00927  0E06  8120                      LDK,L     A1,/E  ---> move forward one cylinder
       0E08  000F
00928  0E0A  41C0        CIOSEK        CIO       A1,1,DSK
00929  0E0C  5300  F=E98               RF(3)     UKNODA
00930  0E0E  5906                      RB(1)     CIOSEK
00931  0E10  49C0        CIO6          SST       A1,DSK
00932  0E12  5C04                      RB(4)      *-2
00933  0E14  8204                      LDR       A2,A1
00934  0E16  221F                      ANK       A2,/1F
00935  0E18  8C20                      AB,L(4)   IOER
       0E1A  0000  F=EA6
00936  0E1C  A120                      ANK,L     A1,/0600 <- select "on cyl" and "seek error" bits
       0E1E  0600
00937  0E20  E920                      CWK       A1,/0400 <- test if "on cyl" = 1 and "set error" = 0
       0E22  0400
00938  0E24  5400  F                   RF(4)     BADSEK   no
00939  0E26  F03A                      RTN       A14      yes
00940  0E28  F6A1        BADSEK        CF        A14,SEEK0
       0E2A  0DDA  R
00941  0E2C  8140                      LD        A1,NBRCYL
       0E2E  0610  R
00942  0E30  3943                      SLL       A1,3
00943  0E32  1106                      ADK       A1,6
00944  0E34  5F2C                      RB(7)     CIOSEK
```

```
00945                                  EJECT
00946  0E36  4980        WRTE          TST     A1,DSK
00947  0E38  2101                      ANK     A1,1
00948  0E3A  5C06                      RB(4)   WRTE
00949  0E3C  8140                      LD      A1,LENGTH    FIRST MULTIPLEX WORD
       0E3E  0782  R
00950  0E40  F904                      CIR     A1,A1
00951  0E42  1101                      ADK     A1,1
00952  0E44  A120                      ANK,L   A1,/FFF
       0E46  0FFF
00953  0E48  8220        LDBDSK        LDK,L   A2,BUFDSK
       0E4A  0206  R
00954  0E4C  9240                      AD      A2,LENGTH    SECOND MULTIPLEX WORD
       0E4E  0782  R
00955  0F50  1A02                      SUK     A2,2
00956  0E52  B961                      MS*     2,MXONE
       0E54  060E  R
00957  0E56  8140                      LD      A1,NBRSEC
       0E58  0392  R
00958  0E5A  3942                      SLL     A1,2
00959  0E5C  1101                      ADK     A1,1
00960  0E5E  41C0        CIO7          CIO     A1,1,DSK
00961  0E60  5300  F                   RF(3)   UKNODA
00962  0E62  5906                      RB(1)   CIO7
00963  0E64  F03A                      RTN     A14          RETURN OK
```

```
00964                                  EJECT
00965  0E66  4980        READ          TST       A1,DSK
00966  0E68  2101                     ANK       A1,1
00967  0E6A  5C06                     RB(4)     READ
00968  0E6C  8140                     LD        A1,LENGTH =470
       0E6E  07B2  R
00969  0E70  F904                     CIR       A1,A1
00970  0E72  1101                     ADK       A1,1
00971  0E74  A120                     ANK.L     A1,/FFF
       0E76  0FFF
00972  0E78  A920                     ORK.L     A1,/4000 ⟶ CIFO = 0100
       0E7A  4000
00973  0E7C  8220                     LDK.L     A2,BUFRD
       0E7E  0618  R
00974  0E80  9240                     AD        A2,LENGTH
       0E82  07B2  R
00975  0E84  1A02                     SUK       A2,2
00976  0E86  B961                     MS*       2,MXONE       INIT. OF MULTIPLEX
       0E88  060E  R
00977  0E8A  8140                     LD        A1,NBRSEC
       0E8C  0392  R
00978  0E8E  3942                     SLL       A1,2
00979  0E90  41C0        CIO8         CIO       A1,1,DSK
00980  0E92  5300  F=E98              RF(3)     UKNODA
00981  0E94  5906                     RB(1)     CIO8
00982  0E96  F03A                     RTN       A14
```

```
00983                                  EJECT
00984  0E98  8720        UKNODA        LDK,L   A7,MESS25 → DEVICE ADDRESS UNKNOWN
       0E9A  0268  R
00985  0E9C  8620                      LDK,L   A6,26
       0E9E  001A
00986  0EA0  F6A1                      CF      A14,ASROUT
       0EA2  0000  F
00987  0EA4  207F                      HLT
00988                        TOER      EQU     *       → contains hardw. status
00989  0EA6  8141                      ST      A1,BUF → *-* dyn modif? ← ADS   A7 = disk, trace addr. (102)
                                                                                ↓
                                                                               A7,BUF  changes to ST A7,BUF,A8
       0EA8  019A  R
00990  0EAA  813A                      LDR*    A1,A14  ? → LD A7,4,A14 ? oflw? → ADRL A14,4 bcs calling Addr+2 in A7
00991  0EAC  F6A1                      CF      A14,I:BITHX
       0EAE  0000  F = ECE
00992  0EB0  B941                      MS      2,MESS26+12 CALLING ADDRESS + 2
       0EB2  028E  R
00993  0EB4  8140                      LD      A1,BUF  → status
       0EB6  019A  R
00994  0EB8  F6A1                      CF      A14,I:BITHX
       0EBA  0000  F
00995  0EBC  B941                      MS      2,MESS26+18
       0EBE  0294  R
00996  0EC0  8720                      LDK,L   A7,MESS26
       0EC2  0282  R
00997  0EC4  8620                      LDK,L   A6,22
       0EC6  0016
00998  0EC8  F6A1                      CF      A14,ASROUT
       0ECA  0000  F
00999  0ECC  207F                      HLT
```

```
01000                                  EJECT
01001                          *       THIS MODULE CONVERT BINARY VALUE IN
01002                          *       HEXADECIMAL ASCII CHARACTERS
01003                          *                              INPUT  : A1
01004                          *                              OUTPUT : A1,A2
01005                          *
01006  0ECE  BAD7        I:BIHX  MS     5,W:SAV1+10,A13
       0ED0  07BE  R
01007  0ED2  0404              LDK     A4,4
01008  0ED4  8204              LDR     A2,A1
01009  0ED6  0500        ZER5  LDK     A5,0
01010  0ED8  0100        ZER1  LDK     A1,0
01011  0EDA  3844              DLL     4                      A1 = CURRENT CHARACTER
01012  0EDC  E920              CWK     A1,/A
       0EDE  000A
01013  0EE0  5200  F           RF(2)   TRENT1                 A1 < A
01014  0EE2  1107              ADK     A1,7
01015  0EE4  1130        TRENT1 ADK    A1,/30
01016  0EE6  9114              ADR     A1,A5
01017  0EE8  1C01              SUK     A4,1                   A4 = CPTR OF CHARACTERS
01018  0EEA  5000  F           RF(0)   RTN
01019  0EEC  EC20              CWK     A4,2
       0EEE  0002
01020  0EF0  5000  F           RF(0)   STOC1
01021  0EF2  3948              SLL     A1,8
01022  0EF4  8504              LDR     A5,A1
01023  0EF6  5F20              RB(7)   ZER1                   RUN BACK FOR CARRYING A NEW CH,
01024  0EF8  8157        STOC1 ST      A1,W:SAV1+10,A13       N:SAV1+10 = 2 FIRST ASCII CHAR.
       0EFA  07BE  R
01025  0EFC  5F28              RB(7)   ZER5
01026  0EFE  8157        RTN   ST      A1,W:SAV1+12,A13       ***
       0F00  07C0  R
01027  0F02  BAD6              ML      5,W:SAV1+10,A13        RETURN SEQUENCE
       0F04  07BE  R
01028  0F06  F03A              RTN     A14                    ***                    B
```

```
01029                                  EJECT
01030                          *       THIS MODULE ASSUME CONVERSION FROM
01031                          *       HEXADECIMAL TO BINARY VALUE
01032                          *
01033                          *            INPUT   A1,A2  = 4 HEXADECIMAL CHARACTERS
01034                          *            OUTPUT  A1     = BINARY VALUE
01035                          *                 CALLING  SEQUENCE :  LDK,L    A4,RETURN
01036                          *                                      ABR      C:HXBI,A12  → ABL  I:HXBI
01037                          *                                 RETURN+ 0  IF ERROR
01038                          *                                 RETURN+ 2  IF OK
01039                          *
01040  0F08  BA07        I:HXBI  MS      5,W:SAV1+10,A13
       0F0A  07BE  R
01041  0F0C  0500                LDK     A5,0
01042  0F0E  0204                LDK     A2,4
01043  0F10  8320                LDK,L    A3,W:SAV1+10
       0F12  07BE  R
01044  0F14  9316                ADR     A3,A13  → adr 1st char
01045  0F16  0100        ELIM0   LDK      A1,0                  ***
01046  0F18  E14C                LC       A1,0,A3
       0F1A  0000
01047  0F1C  E920                CWK     A1,/20                THIS SEQUENCE
       0F1E  0020
01048  0F20  5400  F              RF(4)    TSTHX                 ELIMINATE
01049  0F22  1301                ADK      A3,1                  ALL THE NON SIGNIFICANT
01050  0F24  1A01                SUK     A2,1                  BLANCK CHARACTERS
01051  0F26  5000  F             RF(0)    ERCOM
01052  0F28  5F14                RB(7)    ELIM0                 ***
01053  0F2A  0100        ZERA1   LDK      A1,0
01054  0F2C  E14C                LC      A1,0,A3                A1 = CHARACTER TO CONVERT
       0F2E  0000
01055  0F30  8420        TSTHX   LDK,L    A4,RETHX
       0F32  0000  F
01056  0F34  8F20                AB,L     TSTNUM
       0F36  0000  F
01057  0F38  5700  F     RETHX     RF(7)    ERCOM
01058  0F3A  E920                CWK     A1,/40
       0F3C  0040
01059  0F3E  5200  F              RF(2)    TRENT
01060  0F40  1907                SUK      A1,7
01061  0F42  1930        TRENT   SUK      A1,/30                A1 = BINARY VALUE OF THE CHAR.
01062  0F44  9114                ADR      A1,A5                 A1 = CURRENT BINARY VALUE
01063  0F46  1301                ADK      A3,1
01064  0F48  1A01                SUK     A2,1
01065  0F4A  5000  F              RF(0)    COMBAC                END OF DECODING
01066  0F4C  3944                SLL      A1,4
01067  0F4E  8504                LDR      A5,A1
01068  0F50  5F28                RB(7)    ZERA1
01069  0F52  8157        COMBAC  ST       A1,W:SAV1+10,A13
       0F54  07BE  R
```

```
01070  0F56  BAD6          ML      5,W:SAV1+10,A13
       0F58  078E  R
01071  0F5A  1402          ADK     A4,2
01072  0F5C  8F10          ABR     A4              RETURN A1 = PARAM. BINARY VALUE
01073  0F5E  BAD6  ERCOM   ML      5,W:SAV1+10,A13
       0F60  078E  R
01074  0F62  8F10          ABR     A4              ERROR RETURN
```

```
01075                                  EJECT
01076                          *       THIS MODULE ASSUME THE CONVERSION OF
01077                          *       DECIMAL ASCII VALUE TO BINARY VALUE
01078                          *
01079                          *                 INPUT  : A1,A2
01080                          *                 OUTPUT : A1
01081                          *                                  A4+0
01082                          *                 RETURN + 0 IF ERROR
01083                          *                 RETURN + 2 IF OK
01084  0F64  BAD7       I:DEBI MS      5,W:SAV1+10,A13                  A4+2
       0F66  078E   R
01085  0F68  0500             LDK     A5,0
01086  0F6A  0204             LDK     A2,4
01087  0F6C  8320             LDK,L   A3,W:SAV1+10
       0F6E  078E   R
01088  0F70  9316             ADR     A3,A13  --> A3 = addr 1st char
01089  0F72  0100      LD0A1  LDK     A1,0                             ***
01090  0F74  E14C             LC      A1,0,A3
       0F76  0000
01091  0F78  E920             CWK     A1,/20                   THIS  SEQUENCE
       0F7A  0020
01092  0F7C  5400   F         RF(4)   SUIT                     ELIMINATE -> leading
01093  0F7E  1301             ADK     A3,1                     THE BLANK CHARACTERS
01094  0F80  1A01             SUK     A2,1                     NOT SIGNIFICANT
01095  0F82  5000   F         RF(0)   ERDEC
01096  0F84  5F14             RB(7)   LD0A1                    ***
01097  0F86  E920      SUIT   CWK     A1,/30                   ***
       0F88  0030
01098  0F8A  5200   F         RF(2)   ERDEC                    THIS SEQUENCE CONTROL
01099  0F8C  E920             CWK     A1,/39                   IF THE CHARACTER IS DECIMAL
       0F8E  0039
01100  0F90  5100   F         RF(1)   ERDEC                    ***
01101  0F92  1930             SUK     A1,/30                   A1 = CHARACTER BINARY VALUE
01102  0F94  9114             ADR     A1,A5                    A1 = CURRENT BINARY VALUE
01103  0F96  1A01             SUK     A2,1                     ***
01104  0F98  5000   F         RF(0)   ENDEC                    TEST OF END OF DECODING
01105  0F9A  8504             LDR     A5,A1                    ***
01106  0F9C  3943             SLL     A1,3                     THIS SEQUENCE
01107  0F9E  9114             ADR     A1,A5                    ASSUME THE
01108  0FA0  9114             ADR     A1,A5                    MULTIPLICATION BY 10
01109  0FA2  8504             LDR     A5,A1                    ***
01110  0FA4  0100             LDK     A1,0
01111  0FA6  1301             ADK     A3,1
01112  0FA8  E14C             LC      A1,0,A3
       0FAA  0000
01113  0FAC  5F28             RB(7)   SUIT                     FOR  A NEW CHARACTER
01114  0FAE  BAD6      ERDEC  ML      5,W:SAV1+10,A13
       0FB0  07BE   R
01115  0FB2  8F10             ABR     A4                       ERROR RETURN
01116  0FB4  8157      ENDEC  ST      A1,W:SAV1+10,A13
```

```
         0FB6  07BE  R
01117    0FB8  BAD6          ML      5,W:SAV1+10,A13
         0FBA  07BE  R
01118    0FBC  1402          ADK     A4,2
01119    0FBE  8F10          ABR     A4                  RETURN TF OK
```

```
01120                                  EJECT
01121                    *             THIS MODULE PERFORM CONVERSION
01122                    *             OF BINARY WORD INTO FOUR DECIMAL
01123                    *             ASCII CHARACTERS
01124                    *                          INPUT  : A3
01125                    *                          OUTPUT : A1,A2
01126                    *
01127  0FC0  0230        T:BIDE  LDK     A2,/30
01128  0FC2  9B20        MIL     SUK,L   A3,1000          ***
       0FC4  03E8
01129  0FC6  5200  F             RF(2)   CENT            THIS SEQUENCE COMPUTE
01130  0FC8  1201              ADK     A2,1             THE THOUSAND DIGIT
01131  0FCA  5F0A              RB(7)   MIL             ***
01132  0FCC  3848        CENT    DLL     8               ***
01133  0FCE  1230              ADK     A2,/30
01134  0FD0  9320              ADK,L   A3,1000          THIS SEQUENCE COMPUTE
       0FD2  03E8
01135  0FD4  1864        CENT1   SUK     A3,100
01136  0FD6  5200  F             RF(2)   DIX             THE HUNDED DIGIT
01137  0FD8  1201              ADK     A2,1
01138  0FDA  5F08              RB(7)   CENT1           ***
01139  0FDC  3848        DIX     DLL     8               ***
01140  0FDE  1230              ADK     A2,/30
01141  0FE0  1364              ADK     A3,100           THIS SEQUENCE COMPUTE
01142  0FE2  180A        DIX1    SUK     A3,10
01143  0FE4  5200  F             RF(2)   UNIT            THE TENTH DIGIT
01144  0FE6  1201              ADK     A2,1
01145  0FE8  5F08              RB(7)   DIX1            ***
01146  0FEA  3848        UNIT    DLL     8               ***
01147  0FEC  133A              ADK     A3,/3A           UNIT DIGIT COMPUTINE
01148  0FEE  920C              ADR     A2,A3            AND RETURN
01149  0FF0  F03A              RTN     A14              ***
```

```
01150                                  EJECT
01151                    *             THIS MODULE VERIFIES IF THE CHARACTER GIVEN
01152                    *             IN A1 REGISTER IS A NUMERIC CHARACTER
01153                    *
01154                    *                          CALLING SEQUENCE :     LDK,L   A4,RETN
01155                    *                                                 AB,L    TSTNUM
01156                    *                                           RETN  AB,L    NOTNUM
01157                    *                                                 AB,L    NUMCAR
01158                    *
01159  0FF2  E920        TSTNUM  CWK     A1,/30
       0FF4  0030
01160  0FF6  5200  F             RF(2)   RETB                      < 0
01161  0FF8  E920                CWK     A1,/3A
       0FFA  003A
01162  0FFC  5200  F             RF(2)   RETA                      0 < A1 < 9
01163  0FFE  E920                CWK     A1,/41
       1000  0041
01164  1002  5200  F             RF(2)   RETB                      = @
01165  1004  E920                CWK     A1,/47
       1006  0047
01166  1008  5600  F             RF(6)   RETB                      A < A1 < F
01167  100A  1402        RETA    ADK     A4,2
01168  100C  8F10        RETB    ABR     A4
```

```
01169                                   EJECT
01170                           *
01171                           *               THIS SEQUENCE PERFORMS OUTPUTS ON THE ASR
01172                           *
01173                           *               INPUT       A6 = REQUESTED LENGTH
01174                           *                           A7 = BUFFER ADDRESS
01175                           *
01176                           *               CALLING SEQUENCE      CF   A14,ASROUT
01177                           *
01178                           ASR     EQU     15
01179                           ST      EQU     1
01180                           H       EQU     0
01181                           *
01182                           *
01183                           ASROUT  EQU     *
01184   100E    0100                    LDK     A1,0
01185   1010    41D0                    CIO     A1,ST,ASR
01186   1012    5C04                    RB(4)   *-2
01187   1014    8120                    LDK,L   A1,/0020
        1016    0020
01188   1018    1F01                    SUK     A7,1
01189   101A    5700    F               RF(7)   OUTCAR
01190   101C    0100            CONTIN  LDK     A1,0
01191   101E    E13C                    LCR     A1,A7
01192   1020    4110            OUTCAR  OTR     A1,0,ASR
01193   1022    5C04                    RB(4)   OUTCAR
01194   1024    1701                    ADK     A7,1
01195   1026    1E01                    SUK     A6,1
01196   1028    5E0E                    RB(6)   CONTIN
01197   102A    4190                    CIO     A1,H,ASR
01198   102C    5C04                    RB(4)   *-2
01199   102E    49D0            ENDO    SST     A1,ASR
01200   1030    5C04                    RB(4)   *-2
01201   1032    F03A                    RTN     A14             RETURN
01202
```

```
01203                                  EJECT
01204                  *               THIS MODULE PERFORMS INPUT FROM ASR
01205                  *
01206                  *               INPUT       A6 = REQUESTED LENGTH
01207                  *                           A7 = BUFFER ADDRESS
01208                  *
01209                  *               CALLING SEQUENCE  CF A14,ASRTN
01210                  ASRIN   EQU     *
01211  1034  0101                      LDK     A1,1
01212  1036  41D0                      CIO     A1,ST,ASR
01213  1038  5C04                      RB(4)   *-2
01214  103A  4910      NEWLEC          INR     A1,0,ASR
01215  103C  5C04                      RB(4)   NEWLEC
01216  103E  217F                      ANK     A1,/7F
01217  1040  E920                      CWK     A1,/0A      LF
       1042  000A
01218  1044  580C                      RB(0)   NEWLEC
01219  1046  E920                      CWK     A1,/0D      CR
       1048  000D
01220  104A  5000  F                   RF(0)   ENDI
01221  104C  E920                      CWK     A1,/5E
       104E  005E
01222  1050  5400  F                   RF(4)   SUKVAL
01223  1052  4190                      CIO     A1,H,ASR
01224  1054  5C04                      RB(4)   *-2
01225  1056  49D0                      SST     A1,ASR
01226  1058  5C04                      RB(4)   *-2
01227  105A  8F20                      AB,L    ANS
       105C  0D48  R
01228                  SUKVAL  EQU     *
01229  105E  1E01                      SUK     A6,1
01230  1060  5A28                      RB(2)   NEWLEC
01231  1062  E13D                      SCR     A1,A7
01232  1064  1701                      ADK     A7,1
01233  1066  5F2E                      RB(7)   NEWLEC
01234  1068  4190      ENDI            CIO     A1,H,ASR    HALT
01235  106A  5C04                      RB(4)   *-2
01236  106C  49D0                      SST     A1,ASR
01237  106E  5C04                      RB(4)   *-2
01238  1070  F03A                      RTN     A14         RETURN
01239                                  END     PREMRK
```

SYMBOL TABLE

PREMRK	07DC	R	IPLDD	0004	R	SIO	0001	A	HIO	0000	A
DSKAD	003E	A	IPLD	0008	R	BASE	0008	R	MLX	0046	R
INR	0026	R	INR1	002C	R	CKOK	0038	R	SST	0042	R
HLTIO	0040	R	SEEKZ0	00F2	R	DKSST0	00FE	R	SEEKCD	010A	R
READCD	00AC	R	MXCC2	011A	R	MLX10	0070	R	MXAD	0116	R
SEEKZ	00F0	R	LDBOOT	011C	R	NEXTSC	0086	R	READ00	0094	R
SEEKCY	0108	R	READ01	00A2	R	MXCC	0118	R	DKSST	00FC	R
READ03	00C6	R	READ04	00D4	R	MOVE	00D8	R	BOOT	0132	R
LDBT1	0124	R	DA	0020	A	S	0001	A	LEADER	0136	R
INWORD	0142	R	INCHAR	0144	R	INRBT	0146	R	ADDR	015A	R
CODE	0162	R	BUF	019A	R	MESS0	019E	R	MESS2	01BE	R
CYLMAX	01D2	R	MESS3	01D4	R	TRKMAX	01E6	R	MESS4	01E8	R
SECMAX	0200	R	MESS10	0202	R	DUPAD	0220	R	MESS15	0222	R
MESS17	023C	R	MESS19	0258	R	MESS25	0268	R	MESS26	0282	R
MESS22	029A	R	MESS23	02B0	R	MESS30	02B6	R	REP	02C4	R
MESS20	02C6	R	BUFDSK	02D6	R	IDENT	02D6	R	MESS12	02DE	R
LABEL	02E6	R	MESS13	02F8	R	DATE	0300	R	MESS14	0310	R
PACNBR	031C	R	BILENG	032A	R	BITAB	032C	R	NBRSEC	0392	R
ENDTAB	039E	R	ENDBUF	0420	R	SEC2	0472	R	MXONE	060E	R
NBRCYL	0610	R	NBRTRK	0612	R	NBRGRN	0614	R	NBDTRK	0616	R
BUFRD	0618	R	LENGTH	07B2	R	W:SAV1	07B4	R	DSK	0000	A
ASROUT	100E	R	MES2	07F2	R	ASRIN	1034	R	RET	0824	R
I:DEBI	0F64	R	MES3	082A	R	RET2	085E	R	MES4	0864	R
RET3	0898	R	MES10	089E	R	RET4	08D2	R	I:HXBI	0F08	R
SEEK	0E00	R	CIO5	0DE2	R	CIO2	0DE8	R	SEEK0	0DDA	R
CIO4	0DC8	R	CIO3	0CF8	R	VAL	0D0E	R	CIO33	0D24	R
SSTVAL	0A40	R	SST1	0BFC	R	CIOSEK	0E0A	R	CIO6	0E10	R
WRTE	0E36	R	CIO7	0E5E	R	READ	0E66	R	CIO8	0E90	R
CIO9	0CAE	R	CIO10	0AB8	R	IOER	0EA6	R	TST	09C2	R
CIOHLT	09C8	R	SST2	09CE	R	IMCIO	09D2	R	TSTRED	09EA	R
CHECK	0B1A	R	TSTTRK	09F6	R	TSTSEC	0A1A	R	IMTRK1	0A34	R
INIA12	0A38	R	WRITE	0A3C	R	REWRTE	0A6C	R	BITALG	0AE4	R
IMNOT	0A8E	R	IMYES	0A88	R	LOKA12	0A98	R	RAZ	0AA8	R
IDPOST	0AAC	R	WRIT1	0AB4	R	BITAL2	0AC6	R	TSTA3	0AFA	R
NEWTAB	0B02	R	LDBITA	0B4C	R	TSTCYL	0B54	R	ENDCHK	0CD0	R
SEC	0B80	R	IMYRK2	0B98	R	TESTBI	0B9C	R	IMTRK3	0B92	R
A12EG5	0BF4	R	LDA3	0BE0	R	READ1	0BF8	R	REREAD	0C5C	R
INCSEC	0C10	R	BITAL3	0C32	R	INCNGR	0C54	R	IM	0C7E	R
CW16	0C8C	R	ZER1A	0C9E	R	ID	0CA2	R	WRT2	0CAA	R
BITAL4	0CBC	R	WRT3	0CF4	R	LDBDSK	0E48	R	I:BIDE	0FC0	R
ANS	0D48	R	MES30	0D98	R	UKNODA	0E98	R	BADSEK	0E28	R
I:BIHX	0ECE	R	ZER5	0ED6	R	ZER1	0ED8	R	TRENT1	0FE4	R
RTN	0EFE	R	STOC1	0FF8	R	ELIM0	0F16	R	TSTHX	0F30	R
ERCOM	0F5E	R	ZERA1	0F2A	R	RETHX	0F38	R	TSTNUM	0FF2	R
TRENT	0F42	R	COMBAC	0F52	R	LD0A1	0F72	R	SUTT	0F86	R
ERDEC	0FAE	R	ENDEC	0FB4	R	MIL	0FC2	R	CENT	0FCC	R
CENT1	0FD4	R	DIX	0FDC	R	DIX1	0FE2	R	UNIT	0FEA	R
RETB	100C	R	RETA	100A	R	ASR	0010	A	ST	0001	A

```
H       0000  A   OUTCAR  1020  R   CONTIN  101C  R   ENDO    102F  R
NEWLEC  103A  R   ENDI    1068  R   SUKVAL  105E  R

          ASS.ERR.     00000
```