```
 1 ;***************************************************
 2 ;
 3 ;       XMON/CD - CARTRIDGE AND DISKETTE BASED MONITOR
 4 ;
 5 ;       PART NUMBERS:
 6 ;
 7 ;       960459 - PROM MONITOR (6)
 8 ;       960478 - SOURCE/LIST DISKETTE
 9 ;
10 ;
11 ;       THIS REVISION: LEVEL 1
12 ;
13 ;
14 ;***************************************************
15 ;
16 ;       AUTHORS             BM/PF
17 ;
18 ;       FUNCTIONS:          S-COMMAND
19 ;                              MEMORY INSPECT/SUBSTITUTE
20 ;                           X-COMMAND
21 ;                              REGISTER INSPECT/SUBSTITUTE
22 ;                           G-COMMAND
23 ;                              START EXECUTION WITH OR WITH
24 ;                              BREAKPOINTS
25 ;                           D-COMMAND
26 ;                              DISPLAY PART OF MEMORY
27 ;                           F-COMMAND
28 ;                              FILL MEMORY PART WITH FIXED
29 ;                           L-COMMAND
30 ;                              LOAD BINARY FILE FROM DISKET
31 ;                           R-COMMAND
32 ;                              LOAD RAM-PART OF RESIDENT MO
33 ;                           A-COMMAND
34 ;                              FILL SCREEN WITH ALL POSSIBL
35 ;                           T-COMMAND
36 ;                              ACT AS A TELETYPE: KEYBOARD
37 ;                              IS OUTPUT ON PORT E4.
38 ;                              INCOMING DATA ON E4 IS DISPL
```



```
39 ;
40 ;       USER CALLABLE       SEE JUMP TABLE FROM
41 ;       ROUTINES:           LOCATION 40H
42 ;
43 ;
44 ;       EQUIVALENCES
45 ;
46 ;
47 ;       SYSTEM ERROR CODES
48 ;
```

```
0013                    49 SEC13   EQU     13H
0005                    50 SEC05   EQU     5
0007                    51 SEC07   EQU     7
0009                    52 SEC09   EQU     9
000A                    53 SEC0A   EQU     0AH
000B                    54 SEC0B   EQU     0BH
000C                    55 SEC0C   EQU     0CH
000D                    56 SEC0D   EQU     0DH
000E                    57 SEC0E   EQU     0EH
002B                    58 SEC2B   EQU     2BH
0034                    59 SEC34   EQU     34H
0035                    60 SEC35   EQU     35H
0036                    61 SEC36   EQU     36H
0037                    62 SEC37   EQU     37H
0038                    63 SEC38   EQU     38H
0039                    64 SEC39   EQU     39H
0040                    65 SEC40   EQU     40H
0048                    66 SEC48   EQU     48H
0050                    67 SEC50   EQU     50H
0051                    68 SEC51   EQU     51H
0053                    69 SEC53   EQU     53H
0054                    70 SEC54   EQU     54H
0055                    71 SEC55   EQU     55H
0059                    72 SEC59   EQU     59H
005A                    73 SEC5A   EQU     5AH
005B                    74 SEC5B   EQU     5BH
                        75 ;
                        76 ;       *** SYSTEM AREAS ***
```



```
                        77 ;
                        78 ;       TIMING BLOCK
                        79 ;
27B0                    80 TIMCTL  EQU     027B0H
27B0                    81 INTAD   EQU     TIMCTL
27B[illegible]          82 MSEC    EQU     TIMCTL+12
27BD                    83 BINCL   EQU     TIMCTL+13
27BF                    84 DTIMER  EQU     TIMCTL+15
                        85 ;
                        86 ;       DISKETTE CONTROL
                        87 ;
2760                    88 DISKCTL EQU     02760H
2760                    89 DSTAT   EQU     DISKCTL
2761                    90 DPROG   EQU     DISKCTL+1
2762                    91 DUNIT   EQU     DISKCTL+2
2763                    92 DCONT   EQU     DISKCTL+3
2765                    93 DBUF    EQU     DISKCTL+5
2767                    94 DTRK    EQU     DISKCTL+7
2768                    95 DSECT   EQU     DISKCTL+8
2769                    96 DFUNC   EQU     DISKCTL+9
276A                    97 DCONV   EQU     DISKCTL+10
276B                    98 DLG     EQU     DISKCTL+11
276C                    99 DRCNT   EQU     DISKCTL+12
276D                   100 DRETRY  EQU     DISKCTL+13
                       101 ;
                       102 ;       WORK AREA
```

```
                    103 ;
2730                104 WORK1    EQU     02730H
2730                105 UNIT     EQU     WORK1
2731                106 TRK      EQU     WORK1+1
2733                107 NAME     EQU     WORK1+3
2735                108 DCNT     EQU     WORK1+5
2735                109 SEC      EQU     DCNT
2736                110 BADR     EQU     WORK1+6
273D                111 MSGSWITCH        EQU         WORK1+13
                    112 ;
                    113 ;        BUFFER FOR SECTOR HEADER
                    114 ;
```



```
2770                115 DIDBUF   EQU     02770H
2778                116 BCOUNT   EQU     DIDBUF+8
27[illegible]       117 COUNT    EQU     BCOUNT
27[illegible]       118 EBCDIC   EQU     DIDBUF+12
277E                119 ASCII    EQU     DIDBUF+14
277A                120 XMINT    EQU     DIDBUF+10
                    121 ;
                    122 ;        CARTRIDGE CONTROL BLOCK
                    123 ;
2740                124 CARCTL   EQU     02740H
2740                125 CSTAT    EQU     CARCTL
2741                126 CPROG    EQU     CARCTL+1
2742                127 CUNIT    EQU     CARCTL+2
2743                128 CCONT    EQU     CARCTL+3
2745                129 CBUF     EQU     CARCTL+5
2747                130 CTRK     EQU     CARCTL+7
2748                131 CUSAGE   EQU     CARCTL+8
274C                132 CRCNT    EQU     CARCTL+12
274D                133 CRETRY   EQU     CARCTL+13
274F                134 CFUNC    EQU     CARCTL+15
2750                135 CBLKLG   EQU     CARCTL+16
275[illegible]      136 CTIMER   EQU     CARCTL+18
275[illegible]      137 CSCNT    EQU     CARCTL+19
                    138 ;
                    139 ; USER INTERRUPT ROUTINES
                    140 ;
27A0                141 INT0     EQU     027A0H
27A2                142 INT1     EQU     INT0+2
27A4                143 INT2     EQU     INT1+2
27A6                144 INT3     EQU     INT2+2
27A8                145 INT4     EQU     INT3+2
27AA                146 INT5     EQU     INT4+2
27AC                147 INT6     EQU     INT5+2
27AE                148 INT7     EQU     INT6+2
                    149 ;
                    150 ;        KEYBOARD BUFFER
                    151 ;
2780                152 KEYBUF   EQU     02780H
```

```
001F                    153 KBMAX   EQU     31
                        154 ;
                        155 ;       USER CONTROL BLOCK
                        156 ;
2720                    157 USER    EQU     02720H
2720                    158 PSTART  EQU     USER
2720                    159 ADR     EQU     PSTART
272B                    160 PRCNT   EQU     USER+0BH
                        161 ;
                        162 ;       SYSTEM AREA
                        163 ;
2600                    164 SYSPTR  EQU     02600H
                        165 ;
                        166 ;       SYSTEM BUFFERS
                        167 ;
2680                    168 BUF1    EQU     SYSPTR+80H
2600                    169 BUF2    EQU     SYSPTR
                        170 ;
                        171 ;       RECEIVE BUFFER (FROM HOST)
                        172 ;
25E0                    173 RCVBUF  EQU     025E0H
                        174 ;
                        175 ;       SEND BUFFER (TO HOST)
                        176 ;
25C0                    177 XMTBUF  EQU     025C0H
                        178 ;
                        179 ;       USER STACK START
                        180 ;
25BE                    181 USTACK  EQU     025BEH
                        182 ;
                        183 ;       JUMP TABLE ADDRESS - TOS
                        184 ;
FD00                    185 JMPTAB  EQU     0FD00H
                        186 ;
                        187 ;       MONITOR EQUIVALENCES
                        188 ;
                        189 ;       DEVICE NUMBERS (I/O PORTS)
                        190 ;
```



```
0021                    191 CBYTH   EQU     21H
0022                    192 CBYTL   EQU     22H
0023                    193 CADDHI  EQU     23H
0024                    194 CADDLO  EQU     24H
0025                    195 CNCSRE  EQU     25H
0027                    196 CCOM    EQU     27H
0027                    197 CSENST  EQU     27H
0030                    198 DRIVA   EQU     30H
0031                    199 RELTA   EQU     31H
0032                    200 SECTA   EQU     32H
```

```
0033                    201 ADDHI   EQU     33H
0034                    202 ADDLO   EQU     34H
0037                    203 OUTCOM  EQU     37H
0037                    204 SENST   EQU     37H
00E5                    205 RAMCTL  EQU     0E5H        ; RAM WITH CONTROL
00E7                    206 INTCO   EQU     0E7H        ; UART COMMANDS
00E4                    207 UARTD   EQU     0E4H        ; UART DATA
00F7                    208 UARTS   EQU     0F7H        ; UART STATUS
00E6                    209 KEYS    EQU     0E6H        ; KEYBOARD DATA
00E6                    210 RAMWC   EQU     0E6H        ; RAM WITHOUT CONTROL
00F6                    211 DISST   EQU     0F6H        ; DISPLAY STATUS WORD
00E7                    212 INTST   EQU     0E7H        ; INTERFACE STATUS
0014                    213 RETRIES EQU     20
0014                    214 CRTRY   EQU     20
                        215 ;
                        216 ;       CARTRIDGE COMMANDS
                        217 ;
0010                    218 CRWND   EQU     10H
0020                    219 CUNLD   EQU     20H
0030                    220 CEDIT   EQU     30H
0040                    221 CREAD   EQU     40H
0050                    222 CBACK   EQU     50H
0060                    223 CILLEGAL        EQU         60H
0080                    224 CSCHF   EQU     80H
0090                    225 CSCHR   EQU     90H
00C0                    226 CWRITE  EQU     0C0H
00D0                    227 CWTMRK  EQU     0D0H
00E0                    228 CERASE  EQU     0E0H
```

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```
                        229 ;
                        230 ;       DISKETTE COMMANDS
                        231 ;
00E6                    232 RDID    EQU     0E6H
00E3                    233 SEEKT   EQU     0E3H
00F2                    234 WTDEL   EQU     0F2H
00F1                    235 WRTDA   EQU     0F1H
00E0                    236 REDAT   EQU     0E0H
00EC                    237 RECAL   EQU     0ECH
                        238 ;
                        239 ; SPECIAL CHARACTERS
                        240 ;
000D                    241 CR      EQU     0DH
000A                    242 LF      EQU     0AH
000B                    243 DOWN    EQU     0BH
0018                    244 HT      EQU     18H
0020                    245 SPACE   EQU     20H
002C                    246 COMMA   EQU     ','
002E                    247 DOT     EQU     '.'
001D                    248 HOME    EQU     1DH
0019                    249 ERASE   EQU     19H
002D                    250 DASH    EQU     '-'
00C7                    251 RSTO    EQU     0C7H
003D                    252 EQUAL   EQU     '='
                        253 ;
                        254 ; VARIABLE MEMORY
```

```
                        255 ;
27DF                    256             ORG     27DFH
                        257 ; STACK USED BY MONITOR: 27D5 - 27E4
27DF    00              258             DB      0               ; FLAGS
27E0    00              259             DB      0               ; INTERRUPT MASK
27E1    00              260             DB      0               ; E
27E2    00              261             DB      0               ; D
27E3    00              262             DB      0               ; C
27E4    00              263             DB      0               ; B
27E5    00              264 STACK:      DB      0               ; A
27E6    00              265 SAVHL:      DB      0               ; L
27E7    00              266             DB      0               ; H
```



```
27E8    0000            267 SAVSP:      DW      0               ; STACK POINTER
27EA    0000            268 GOADR:      DW      0               ; EI + JMP
27EC    0000            269 SAVPC:      DW      0               ; START ADDRESS
27EE    0000            270 BP1AD:      DW      0               ; BREAKPOINT 1 ADDRESS
27F0    00              271 BP1VA:      DB      0               ; BREAKPOINT 1 VALUE
27F1    0000            272 BP2AD:      DW      0               ; BREAKPOINT 2 ADDRESS
27F3    00              273 BP2VA:      DB      0               ; BREAKPOINT 2 VALUE
27F4    0000            274 GADR:       DW      0
27F6                    275 FNAME:      DS      9               ; FILENAME FOR LOAD
27FF    00              276 FUNIT:      DB      0
                        277 ;
                        278 ;           INTERRUPTS
                        279 ;
0000                    280             ORG     0               ; INTERRUPT 0 - RESTART/POWER/B
0000    F3              281             DI
0001    22E627          282             SHLD    SAVHL           ; SAVE USER'S HL
0004    E1              283             POP     H               ; GET USER'S PROG-COUNTER
0005    C3C203          284             JMP     MST
0008                    285             ORG     8
0008    E5              286             PUSH    H               ; INTERRUPT 1 - CLOCK
0009    F5              287             PUSH    PSW
000A    3ABF27          288             LDA     DTIMLR
000D    C34901          289             JMP     TIMER
0010                    290             ORG     10H             ; INTERRUPT 2 - SYNC INTERFACE
0010    E5              291             PUSH    H
0011    2AA427          292             LHLD    INT2
0014    C3A402          293             JMP     INT
0018                    294             ORG     18H             ; INTERRUPT 3 - MASTER DISPLAY
0018    E5              295             PUSH    H
0019    F5              296             PUSH    PSW
001A    D5              297             PUSH    D
001B    DBF6            298             IN      DISST           ; READ INTERRUPT STATUS
001D    C31403          299             JMP     INT3A
0020                    300             ORG     20H             ; INTERRUPT 4 - CLUSTER INTERFA
0020    E5              301             PUSH    H
0021    2AA827          302             LHLD    INT4
0024    C3A402          303             JMP     INT
0028                    304             ORG     28H             ; INTERRUPT 5 - CLUSTER INTF II
```

```
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0028    E5          305         PUSH    H
0029    2AAA27      306         LHLD    INT5
002C    C3A402      307         JMP     INT
0030                308         ORG     30H         ; INTERRUPT 6 - DISKETTE
0030    F3          309         DI
0031    E5          310         PUSH    H
0032    D5          311         PUSH    D
0033    C5          312         PUSH    B
0034    F5          313         PUSH    PSW
0035    C39F01      314         JMP     INTR1
0038                315         ORG     38H         ; INTERRUPT 7 - CASSETTE
0038    E5          316         PUSH    H
0039    D5          317         PUSH    D
003A    C5          318         PUSH    B
003B    F5          319         PUSH    PSW
003C    C3F101      320         JMP     CINT1
                    321 ;
0040                322         ORG     40H
                    323 ;
                    324 ;       JUMP TABLE FOR MONITOR FUNCTIONS
                    325 ;
0040    C32E01      326         JMP     TTI         ;READ ONE KEYBOARD CHAR A-BYTE
0043    C3B707      327         JMP     TTO         ;WRITE ONE CHARACTER TO SCREEN
0046    C3C807      328         JMP     TTONC       ;WRITE ONE CHARACTER, NO CONTRO
0049    C3EE00      329         JMP     CURSOR      ; POSITION CURSOR H-LINE L-CHAR
004C    C35A04      330         JMP     MON
004F    C37D07      331         JMP     ERROR       ; DISPLAY ERROR MSG A-ERRCODE
0052    C3DA00      332         JMP     PRINT       ; PRINT CHARACTER
0055    C35B02      333         JMP     DTST        ; TEST IF DISKETTE FINISHED
0058    C3B608      334         JMP     DCAL        ;CALIBRATE DISKETTE A-UNIT
005B    C37809      335         JMP     DSRD        ;READ SECTOR
                    336                             ;A-UNIT B-TRK C-SECTOR HL-BUFFE
005E    C38009      337         JMP     DSWR        ;WRITE SECTOR
                    338                             ;A-UNIT B-TRK C-SECTOR HL-BUFFE
0061    C38809      339         JMP     DSDL        ;DELETE SECTOR
                    340                             ;A-UNIT B-TRK C-SECTOR HL-BUFFE
0064    C36809      341         JMP     DSRDA       ;READ SECTOR AND CONVERT
                    342                             ;A-UNIT B-TRK C-SECTOR HL-BUFFE

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0067    C37009      343         JMP     DSWRA       ;WRITE SECTOR AND CONVERT
                    344                             ;A-UNIT B-TRK C-SECTOR HL-BUFFE
006A    C30F01      345         JMP     INDISP      ; READ CHARACTER FROM DISPLAY,
006D    C34D02      346         JMP     DSWT        ;WAIT FOR COMPLETION (A-STATUS)
                    347                              ;*** THE FOLLOWING SEVEN ROUTI
                    348                              ;*** PARAMETERS AS THE CORRESP
                    349                              ;*** ONES ABOVE AND RETURNS ST
0070    C36408      350         JMP     DCALW       ;CALIBRATE AND WAIT
0073    C36A08      351         JMP     DSRDW       ;READ AND WAIT
0076    C37008      352         JMP     DSWRW       ;WRITE AND WAIT
```

```
0079    C37608          353             JMP     DSDLW       ;DELETE AND WAIT
007C    C37C08          354             JMP     DSRAW       ;READ, CONVERT AND WAIT
007F    C38208          355             JMP     DSWAW       ;WRITE CONVERTED AND WAIT
0082    C3B102          356             JMP     RCVI        ; READ FROM HOST
0085    C30000          357             JMP     LOCDIR      ; LOCATE DIRECTORY ENTRY ON AN
****ERROR****: 11
                        358                                     ; INTEL-FORMATTED DISKETTE
                        359                                     ; A - UNIT HL - ADDRESS OF N
                        360                                     ; (9 CHARACTERS, DOT REMOVED
0088    C39B0B          361             JMP     LOAD        ;LOAD PROGRAM
008B    C3EA0C          362             JMP     LINK        ;LOAD PROGRAM AND ENTER
008E    C3AF13          363             JMP     CTST        ; TEST CARTRIDGE STATUS
0091    C3EF0F          364             JMP     CCAL        ; REWIND CARTRIDGE (CALIBRATE)
0094    C33811          365             JMP     CBRD        ; READ BLOCK FROM CARTRIDGE
0097    C32C12          366             JMP     CBWR        ; WRITE BLOCK TO CARTRIDGE
009A    C39A13          367             JMP     CBBS        ; BACKSPACE BLOCK ON CARTRIDGE
009D    C3CF12          368             JMP     CBTM        ; WRITE TAPE MARK CARTRIDGE
00A0    C38113          369             JMP     CBSF        ; SEARCH FORWARD CARTRIDGE
00A3    C39213          370             JMP     CBSB        ; SEARCH BACKWARD CARTRIDGE
00A6    C3D20F          371             JMP     CUN         ; REWIND AND UNLOAD CARTRIDGE
00A9    C3A80F          372             JMP     CRW         ; REWIND CARTRIDGE
00AC    C3A213          373             JMP     CWT         ; WAIT FOR COMPLETION OF OPERAT
00AF    C3AE0F          374             JMP     CBRDW       ; READ AND WAIT
00B2    C3B40F          375             JMP     CBWRW       ; WRITE AND WAIT
00B5    C3BA0F          376             JMP     CBBSW       ; BACKSPACE AND WAIT
00B8    C3C00F          377             JMP     CBTMW       ; WRITE TAPE MARK AND WAIT
00BB    C3C60F          378             JMP     CBSFW       ; SEARCH FORWARD AND WAIT
00BE    C3CC0F          379             JMP     CBSBW       ; SEARCH BACKWARD AND WAIT
```

```
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00C1    C30000          380             JMP     CLOCD       ; LOCATE DIRECTORY ENTRY CARTRI
****ERROR****: 11
00C4    C3BF14          381             JMP     CLOAD       ; LOAD PROGRAM FROM CARTRIDGE
00C7    C3AD15          382             JMP     CLINK       ; LOAD PROG AND START EXEC
00CA    C3E202          383             JMP     XMIO        ; SEND TO HOST
00CD    C3BF13          384             JMP     RD32        ; READ A 32 BYTE CARTRIDGE BLOC
00D0    C39014          385             JMP     VERIFY      ; CHECK BLOCK TYPE
00D3    C3D600          386             JMP     HXLOAD      ; LOAD HEX PROGRAM (XMON/S AND
                        387 HXLOAD:
00D6    3E38            388             MVI     A,SEC38     ; ROUTINE NOT AVAILABLE
00D8    37              389             STC
00D9    C9              390             RET
                        391 ;
                        392 ;           PRINTER ROUTINE
                        393 ;
                        394 PRINT:
00DA    F5              395             PUSH    PSW
                        396 PRNT1:
00DB    DBF5            397             IN      0F5H        ; TTY STATUS
00DD    E680            398             ANI     80H
00DF    CADB00          399             JZ      PRNT1
                        400 PRNT2:
00E2    DBF5            401             IN      0F5H
00E4    E601            402             ANI     1
00E6    CAE200          403             JZ      PRNT2
00E9    F1              404             POP     PSW
```

```
00EA    D3F4        405         OUT     0F4H
00EC    A7          406         ANA     A
00ED    C9          407         RET
                    408 ;
                    409 ;       POSITION CURSOR
                    410 ;
                    411 CURSOR:
00EE    F5          412         PUSH    PSW
00EF    CDE407      413         CALL    COMC
00F2    1D          414         DB      HOME
00F3    7C          415         MOV     A,H
00F4    FE19        416         CPI     25
```



```
00F6    F20C01      417         JP      CURS1
00F9    CDE407      418         CALL    COMC
00F    10           419         DB      10H         ; CURSOR LOAD
00Fb    7C          420         MOV     A,H
00FE    CDB707      421         CALL    TTO         ; LINE NO.
0101    7D          422         MOV     A,L
0102    FE50        423         CPI     80
0104    FA0901      424         JM      CURS2
0107    3E4F        425         MVI     A,79
                    426 CURS2:
0109    CDB707      427         CALL    TTO
                    428 CURS1:
010C    F1          429         POP     PSW
010D    A7          430         ANA     A
010E    C9          431         RET
                    432 ;
                    433 ;       READ FROM DISPLAY
                    434 ;
                    435 INDISP:
010F    F3          436         DI
                    437 DISP:
011     DBE5        438         IN      0E5H        ; RAM
011    00           439         NOP
0113    F5          440         PUSH    PSW
0114    DBF6        441         IN      0F6H        ; STATUS
0116    E610        442         ANI     10H
0118    CA1F01      443         JZ      DISPX
011     F1          444         POP     PSW
011C    C31001      445         JMP     DISP
                    446 DISPX:
011F    F1          447         POP     PSW
0120    FB          448         EI
0121    A7          449         ANA     A
0122    C9          450         RET
                    451 ;
                    452 ;       UTILITY TO MOVE DOWN CHARS IN BUFFERS
                    453 ;
                    454 ;       H - BUFFER ADDRESS
```

```
                        455 ;
                        456 MVDOWN:
0123    7E              457         MOV     A,M
                        458 MVD2:
0124    23              459         INX     H
0125    23              460         INX     H
0126    56              461         MOV     D,M
0127    2B              462         DCX     H
0128    72              463         MOV     M,D
0129    3D              464         DCR     A
012A    C22401          465         JNZ     MVD2
012D    C9              466         RET
                        467 ;
                        468 ;       KEYBOARD INPUT ROUTINE
                        469 ;
                        470 TTI:
012E    FB              471 GCH:    EI
012F    3A8027          472         LDA     KEYBUF      ; CHARACTER COUNT
0132    B7              473         ORA     A
0133    CA2E01          474         JZ      TTI         ; LOOP UNTIL CHARACTER ARRIVES
0136    F3              475         DI
0137    E5              476         PUSH    H
0138    D5              477         PUSH    D
0139    210000          478         LXI     H,KEYBU+1 ; FIRST CHARACTER
****ERROR****: 11
013C    7E              479         MOV     A,M
013D    2B              480         DCX     H
013E    F5              481         PUSH    PSW
013F    35              482         DCR     M
0140    C42301          483         CNZ     MVDOWN
                        484 TTI1:
0143    F1              485         POP     PSW
0144    D1              486         POP     D
0145    E1              487         POP     H
0146    A7              488         ANA     A
0147    FB              489         EI
0148    C9              490         RET
                        491 ;
```



```
                        492 ;       TIMER INTERRUPT HANDLING
                        493 ;
                        494 TIMER:
0149    A7              495         ANA     A
014A    CA5901          496         JZ      TIM3
014D    3D              497         DCR     A
014E    32BF27          498         STA     DTIMER
0151    C25901          499         JNZ     TIM3
0154    3E05            500         MVI     A,SEC05
0156    326127          501         STA     DPROG
```

```
                        502 TIM3:
0159    218C27          503         LXI     H,MSEC
015C    35              504         DCR     M
015D    C27D01          505         JNZ     EXCLK
0160    3632            506         MVI     M,50
0162    2B              507         DCX     H
0163    35              508         DCR     M
0164    C27D01          509         JNZ     EXCLK
0167    23              510         INX     H
0168    3634            511         MVI     M,52        ; CLOCK CORRECTION
016A    2B              512         DCX     H
016B    363C            513         MVI     M,60
016D    2B              514         DCX     H
016E    35              515         DCR     M
016F    C27D01          516         JNZ     EXCLK
0172    363C            517         MVI     M,60
0174    2B              518         DCX     H
0175    35              519         DCR     M
0176    C27D01          520         JNZ     EXCLK
0179    3618            521         MVI     M,24
017B    2B              522         DCX     H
017C    34              523         INR     M
                        524 EXCLK:
017D    2A0000          525         LHLD    BINCLK
***ERROR****: 11
0180    2D              526         DCR     L
0181    C29801          527         JNZ     TIM1
0184    24              528         INR     H
```

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0185    25              529         DCR     H
0186    C29701          530         JNZ     TIM2
0189    2AB027          531         LHLD    INTAD
018C    7C              532         MOV     A,H
018D    B5              533         ORA     L
018E    CA9401          534         JZ      TIM4
0191    F1              535         POP     PSW
0192    E3              536         XTHL
0193    C9              537         RET
                        538 TIM4:
0194    21FF00          539         LXI     H,0FFH
                        540 TIM2:
0197    25              541         DCR     H
                        542 TIM1:
0198    220000          543         SHLD    BINCLK
****ERROR****: 11
019B    F1              544         POP     PSW
019C    E1              545         POP     H
019D    FB              546         EI
019E    C9              547         RET
                        548 ;
                        549 ;       DISKETTE INTERRUPT HANDLING
                        550 ;
                        551 INTR1:
019F    DB37            552         IN      SENST       ;STATUS
01A1    326027          553         STA     DSTAT
```

```
01A4   E67F           ANI    7FH
01A6   CAC101         JZ     INTR2
01A9   3A6027         LDA    DSTAT
01AC   E630           ANI    30H
01AE   C2CA01         JNZ    REST
01B1   3A6C27         LDA    DRCNT
01B4   3D             DCR    A
01B5   326C27         STA    DRCNT
01B8   CACA01         JZ     REST
01BB   2A6D27         LHLD   DRETRY
01BE   C3C401         JMP    INTR4
              INTR2:
```

SIEMENS 610 ASSEMBLER V2.2

```
01C1   2A6327         LHLD   DCONT
              INTR4:
01C    7C             MOV    A,H
01C5   B5             ORA    L
01C6   CACA01         JZ     REST
01C9   E9             PCHL                ;ENTER NEXT PART
              REST:
01CA   210000         LXI    H,0
01CD   226327         SHLD   DCONT
01D0   3A6027         LDA    DSTAT
01D3   E67F           ANI    7FH
01D5   CADB01         JZ     REST1
01D8   0F             RRC
01D9   E63F           ANI    3FH
              REST1:
01DB   326127         STA    DPROG
01DE   2AAC27         LHLD   INT6
              CONT1:
01E1   7C             MOV    A,H
01E2   B5             ORA    L
01E3   CAEB01         JZ     CONT
01E    F1             POP    PSW
01E7   C1             POP    B
01E8   D1             POP    D
01E9   E3             XTHL
01EA   C9             RET                 ; CALL INTERRUPT ROUTINE
              CONT:
01EB   F1             POP    PSW
01EC   C1             POP    B
01ED   D1             POP    D
01EE   E1             POP    H
01EF   FB             EI
01F0   C9             RET
              ;
              ;       CARTRIDGE INTERRUPT HANDLING
              ;
              CINT1:
01F1   DB27           IN     CSENST
```

```
SIEMENS 610 ASSEMBLER V2.2

01F3   324027          604           STA     CSTAT
01F6   E606            605           ANI     6
01F8   FE04            606           CPI     4
01FA   C20E02          607           JNZ     CINT2
01FD   3E40            608           MVI     A,SEC40    ; END OF TAPE ERROR
                       609 CINT7:
01FF   324127          610           STA     CPROG
0202   210000          611           LXI     H,0
0205   224327          612           SHLD    CCONT
0208   2AAE27          613           LHLD    INT7
020B   C3E101          614           JMP     CONT1
                       615 CINT2:
020E   3A4027          616           LDA     CSTAT
0211   E608            617           ANI     8
0213   CA3F02          618           JZ      CINT3      ; NOT READY
0216   3A4027          619           LDA     CSTAT
0219   0F              620           RRC
021A   0F              621           RRC
021    0F              622           RRC
021    0F              623           RRC
021D   E60F            624           ANI     0FH
021F   CA4402          625           JZ      CINT4      ; NO ERROR
0222   FE06            626           CPI     6
0224   CA3A02          627           JZ      CINT5      ; BLANK TAPE ERROR
0227   214C27          628           LXI     H,CRCNT
022A   35              629           DCR     M
022B   CA3A02          630           JZ      CINT5
                       631 CINT8:
022E   2A4D27          632           LHLD    CRETRY
0231   F5              633           PUSH    PSW
0232   7C              634           MOV     A,H
0233   B5              635           ORA     L
0234   CA3902          636           JZ      CINT6      ; NO RETRY ADDRESS
0237   F1              637           POP     PSW
0238   E9              638           PCHL               ; GO MAN, GO
                       639 CINT6:
0239   F1              640           POP     PSW
                       641 CINT5:

SIEMENS 610 ASSEMBLER V2.2

023A   F640            642           ORI     40H
023C   C3FF01          643           JMP     CINT7
                       644 CINT3:
023F   3E14            645           MVI     A,14H      ; 40H+14H=54H - NOT READY
0241   C32E02          646           JMP     CINT8
                       647 CINT4:
0244   2A4327          648           LHLD    CCONT      ; NEXT PART
0247   7C              649           MOV     A,H
0248   B5              650           ORA     L
0249   CAFF01          651           JZ      CINT7      ; STATUS =OK
```

```
024C    E9              652             PCHL                    ; GO NEXT
                        653 ;
                        654 DSWT:
024D    FB              655             EI
024E    3A6127          656             LDA     DPROG
0251    FEFF            657             CPI     0FFH
0253    CA4D02          658             JZ      DSWT
0256    FE00            659             CPI     0
0258    C8              660             RZ
                        661 DTST3:
0259    37              662             STC
025A    C9              663             RET
                        664 DTST:
025B    3A6127          665             LDA     DPROG           ; TEST IF DISKETTE FINISHED
                        666 DTST2:
025E    FEFF            667             CPI     0FFH
0260    C25902          668             JNZ     DTST3
0263    AF              669             XRA     A
0264    C9              670             RET
                        671 ;
                        672 ;           PART OF BOOTSTRAP (POWER UP)
                        673 ;
                        674 ;
                        675 ;           INITIALIZE SYSTEM DEDICATED AREA
                        676 ;
                        677 BOOT:
0265    21BF27          678             LXI     H,TIMCTL+0FH
0268    97              679             SUB     A
```

Warten auf Diskettenbedienung, ohne Param. Disk Status, von INTRS gesetzt.

will fertig.

o.k., Fehlerfrei fertig

```
SIEMENS 610 ASSEMBLER V2.2

                        680 BOOT1:
0269    77              681             MOV     M,A
026A    2D              682             DCR     L
026B    C26902          683             JNZ     BOOT1
026E    77              684             MOV     M,A
027     32C025          685             STA     XMIBUF
027     32E025          686             STA     RCVBUF
0275    21BC27          687             LXI     H,MSEC
0278    3632            688             MVI     M,50
027A    2D              689             DCR     L
027B    363C            690             MVI     M,60
027D    2D              691             DCR     L
027E    363C            692             MVI     M,60
0280    2D              693             DCR     L
0281    3618            694             MVI     M,24
0283    218080          695             LXI     H,8080H
0286    22A027          696             SHLD    INTO
0289    DBF7            697             IN      UARTS
028B    E604            698             ANI     4               ; IS SEND INTERRUPT ENABLED
028D    CA9402          699             JZ      BOOTX
0290    3E08            700             MVI     A,8             ; DISABLE IT
0292    D3E7            701             OUT     INTCO
                        702 BOOTX:
0294    CDE407          703             CALL    COMC
0297    16              704             DB      16H
0298    3AA50F          705             LDA     BRNCH
```

```
029B    FEC3            706             CPI     0C3H
029D    C25A04          707             JNZ     MON
02A0    FB              708             EI
02A1    C3A50F          709             JMP     BRNCH
                        710 ;
02A4    F5              711 INT:        PUSH    PSW         ; INTERRUPTS FROM VARIOUS DEVIC
02A5    7D              712             MOV     A,L         ; PASSING THRU IF HANDLER
02A6    B4              713             ORA     H           ; ROUTINE PRESENT
02A7    CAAD02          714             JZ      INTEX
02AA    F1              715 INTB:       POP     PSW         ; GO TO HANDLER
02AB    E3              716             XTHL
02AC    C9              717             RET
```

SIEMENS 610 ASSEMBLER V2.2

```
                        718 ;
02AD    F1              719 INTEX:      POP     PSW         ; NO HANDLER PRESENT
02AE    E1              720             POP     H           ; IGNORE INTERRUPT
02AF    FB              721             EI
02B0    C9              722             RET
                        723 ;
                        724 ;           UTILITY TO READ FROM RECEIVER BUFFER
                        725 ;
                        726 RCVI:
02B1    FB              727             EI
02B2    3AE025          728             LDA     RCVBUF
02B5    B7              729             ORA     A
02B6    CAB102          730             JZ      RCVI
02B9    F3              731             DI
02BA    E5              732             PUSH    H
02BB    D5              733             PUSH    D
02BC    21E125          734             LXI     H,RCVBUF+1
02BF    7E              735             MOV     A,M
02C0    2B              736             DCX     H
02C1    F5              737             PUSH    PSW
02C2    35              738             DCR     M
02C3    C42301          739             CNZ     MVDOWN
02C6    C34301          740             JMP     TTI1
                        741 ;
                        742 ;           UTILITY TO STORE IN RECEIVER BUFR
                        743 ;           NORMALLY USED ONLY FROM INTERRUPT CODE
                        744 ;
                        745 RCVO:
02C9    E5              746             PUSH    H
02CA    D5              747             PUSH    D
02CB    21E025          748             LXI     H,RCVBUF
02CE    57              749             MOV     D,A
02CF    7E              750             MOV     A,M
02D0    FE1F            751             CPI     KBMAX
02D2    D2DF02          752             JNC     RCVO1       ; BUFFER FULL
02D5    3C              753             INR     A
02D6    32E025          754             STA     RCVBUF
02D9    5F              755             MOV     E,A
```

```
02DA    7A          756          MOV    A,D
02DB    1600        757          MVI    D,0
02DD    19          758          DAD    D          ; ADDRESS TO STORE
02DE    77          759          MOV    M,A
                    760 RCV01:
02DF    D1          761          POP    D
02E0    E1          762          POP    H
02E1    C9          763          RET
                    764 ;
                    765 ;        UTILITY TO STORE IN XMIT BUFR
                    766 ;        (MUST NOT BE CALLED FROM INTERRUPT CODE)
                    767 ;
                    768 XMIO:
02E2    F3          769          DI
02E3    E5          770          PUSH   H
02E4    D5          771          PUSH   D
02E5    E67F        772          ANI    7FH
02E7    21C025      773          LXI    H,XMIBUF
02EA    57          774          MOV    D,A
02EB    7E          775          MOV    A,M
02EC    DBF7        776          IN     UARTS
02EE    E604        777          ANI    4
02F0    C2F702      778          JNZ    XMIO2
02F3    3E08        779          MVI    A,8
02F5    D3E7        780          OUT    INTC0      ; ENABLE XMIT INTERRUPT
                    781 XMIO2:
02F7    7E          782          MOV    A,M
02F8    FE1F        783          CPI    KBMAX
02FA    D20903      784          JNC    XMIO3      ; BUFR FULL
02FD    3C          785          INR    A
02FE    77          786          MOV    M,A
02FF    5F          787          MOV    E,A
0300    7A          788          MOV    A,D
0301    1600        789          MVI    D,0
0303    19          790          DAD    D
0304    77          791          MOV    M,A
                    792 XMIO1:
0305    D1          793          POP    D
```



```
0306    E1          794          POP    H
0307    FB          795          EI
0308    C9          796          RET
                    797 XMIO3:
0309    FB          798          EI
030A    7E          799          MOV    A,M
030B    FE1F        800          CPI    KBMAX
030D    CA0903      801          JZ     XMIO3
0310    F3          802          DI
0311    C3F702      803          JMP    XMIO2
```

```
                        804 ;
                        805 ; MASTER DISPLAY INTERRUPT
                        806 ;
0314    E618            807 INT3A:  ANI     18H         ; CHECK FOR RAM BUSY
0316    CA3B03          808         JZ      INT3B
0319    210600          809         LXI     H,6         ; RAM BUSY, REDUCE PC
031C    39              810         DAD     SP          ; ON STACK TO REPEAT OPERATION
031D    5E              811         MOV     E,M
031E    23              812         INX     H
031F    56              813         MOV     D,M
0320    1B              814         DCX     D
0321    1A              815         LDAX    D
0322    FEE5            816         CPI     RAMCTL
0324    CA2C03          817         JZ      SPUR1
0327    FEE6            818         CPI     RAMWC
0329    C25A03          819         JNZ     INT3C
                        820 SPUR1:
032C    1B              821         DCX     D
032D    1A              822         LDAX    D
032E    FED3            823         CPI     0D3H
0330    CA3803          824         JZ      INT3F
0333    FEDB            825         CPI     0DBH
0335    C25A03          826         JNZ     INT3C
                        827 INT3F:
033?    72              828         MOV     M,D
033?    2B              829         DCX     H
033A    73              830         MOV     M,E
                        831 ;
```

SIEMENS 610 ASSEMBLER V2.2

```
033B    DBF6            832 INT3B:  IN      DISST       ; READ INTERRUPT STATUS
033D    E604            833         ANI     04H
033F    CA5A03          834         JZ      INT3C
0342    DBE6            835         IN      KEYS        ; KEYBOARD DATA IN
0344    E67F            836         ANI     7FH
034?    210000          837         LXI     H,KEYBU     ; STORE IF ENOUGH ROOM
****ERROR****: 11
0349    57              838         MOV     D,A
034A    7E              839         MOV     A,M
034B    FE1F            840         CPI     KBMAX
034D    D25A03          841         JNC     INT3C
0350    3C              842         INR     A
0351    320000          843         STA     KEYBU
****ERROR****: 11
0354    5F              844         MOV     E,A
0355    7A              845         MOV     A,D
0356    1600            846         MVI     D,0
0358    19              847         DAD     D
0359    77              848         MOV     M,A
                        849 ;
035A    DBF6            850 INT3C:  IN      DISST       ; READ INTERRUPT STATUS
035C    E63F            851         ANI     3FH
035E    CAB103          852         JZ      INT3Q
0361    E61C            853         ANI     1CH         ; ANY RAM/KB INTERRUPTS ?
0363    C21403          854         JNZ     INT3A
0366    2A7A27          855         LHLD    XMINT
```

```
0369     7C                   MOV     A,H
036A     B5                   ORA     L
036B     CA7303               JZ      INT3G
036E     115A03               LXI     D,INT3C
0371     D5                   PUSH    D
0372     E9                   PCHL
                     INT3G:
0373     DBF6                 IN      DISST
0375     E602                 ANI     2
0377     CA8D03               JZ      INT3P
037A     2600                 MVI     H,0
037C     DBF7                 IN      UARTS
```

SIEMENS 610 ASSEMBLER V2.2

```
037E     E638                 ANI     38H
0380     CA8503               JZ      INT3H
038      2680                 MVI     H,80H
                     INT3H:
0385     DBE4                 IN      UARTD
0387     E67F                 ANI     7FH
0389     B4                   ORA     H
038A     CDC902               CALL    RCVO
                     INT3P:
038D     DBF6                 IN      DISST
038F     E601                 ANI     1
0391     CA5A03               JZ      INT3C
0394     21C025               LXI     H,XMIBUF
0397     7E                   MOV     A,M
0398     A7                   ANA     A
0399     CAAA03               JZ      INT3T
039C     35                   DCR     M
039D     23                   INX     H
039E     7E                   MOV     A,M
039F     2B                   DCX     H
03A0     F5                   PUSH    PSW
03       C42301               CNZ     MVDOWN
03A4     F1                   POP     PSW
03A5     D3E4                 OUT     UARTD
03A7     C35A03               JMP     INT3C
                     INT3T:
03AA     3E08                 MVI     A,8        ; DISABLE INTERRUPT
03AC     D3E7                 OUT     INTCO
03AE     C35A03               JMP     INT3C
                     INT3Q:
03B1     2AA627               LHLD    INT3       ; UART INTERRUPT, CHECK
03B4     7C                   MOV     A,H        ; IF HANDLER LOADED
03B5     B5                   ORA     L
03B6     CABD03               JZ      INT3E
03B9     D1          INT3D:   POP     D          ; JUMP TO USER HANDLER
03BA     C3AA02               JMP     INTB
03BD     D1          INT3E:   POP     D          ; NO STATUS BITS - RETURN
03BE     F1                   POP     PSW
```

```
03BF    E1          906          POP     H
03C0    FB          907          EI
03C1    C9          908          RET
                    909 ;
                    910 ; INTERRUPT 0 - POWER UP/BREAKPOINT/RESTART
                    911 ;
03C2    22EC27      912 MST:     SHLD    SAVPC       ; SAVE USER'S PROGRAM COUNTER +
03C5    32E527      913          STA     STACK       ; SAVE USER'S A
03C8    F5          914          PUSH    PSW         ; SAVE FLAGS
03C9    210000      915          LXI     H,0
03CC    39          916          DAD     SP
03CD    23          917          INX     H           ; ADJUST FOR PUSHED PSW
03CE    23          918          INX     H
03CF    22E827      919          SHLD    SAVSP       ; SAVE USER'S STACK POINTER
03D2    F1          920          POP     PSW         ; RESTORE FLAGS
03D3    31E527      921          LXI     SP,STACK    ; INIT MONITOR'S STACK
03D6    C5          922          PUSH    B
03D7    D5          923          PUSH    D
03D[    F5          924          PUSH    PSW         ; SAVE USER'S STATUS
                    925 ;
                    926 ; CHECK FOR POWER UP
                    927 ;
03D9    2AA027      928          LHLD    INT0
03DC    7C          929          MOV     A,H
03DD    85          930          ADD     L
03DE    C2E403      931          JNZ     MON1
03E1    DA1804      932          JC      MON3
03E4    3EC3        933 MON1:    MVI     A,0C3H      ; FILL JUMP TABLE
03E6    017A07      934          LXI     B,ERR30     ; WITH JUMPS TO ERR30
03E9    1615        935          MVI     D,21
03EB    2100FD      936          LXI     H,JMPTAB
                    937 MON2A:
03EE    77          938          MOV     M,A
03EF    23          939          INX     H
03F0    71          940          MOV     M,C
03F1    23          941          INX     H
03F2    70          942          MOV     M,B
03F[    23          943          INX     H
```



```
03F4    15          944          DCR     D
03F5    C2EE03      945          JNZ     MON2A
03F8    23          946          INX     H           ; ADJUST TO 40H
03F9    1637        947          MVI     D,55        ; SECOND PART
                    948 MON2B:
03FB    77          949          MOV     M,A
03FC    23          950          INX     H
03FD    71          951          MOV     M,C
03FE    23          952          INX     H
03FF    70          953          MOV     M,B
```

```
0400    23              954             INX     H
0401    15              955             DCR     D
0402    C2FB03          956             JNZ     MON2B
                        957 MON2C:
0405    3600            958             MVI     M,0         ; CLEAR POINTER AREA
0407    2C              959             INR     L
0408    C20504          960             JNZ     MON2C
040B    CDE407          961             CALL    COMC        ; ERASE PAGE
040E    19              962             DB      ERASE
040F    21BE25          963             LXI     H,USTACK
0412    22E827          964             SHLD    SAVSP
0415    C36502          965             JMP     BOOT
                        966 ;
                        967 ; NOT POWER UP. RESTORE BREAKPOINTS
                        968 ; AND DISPLAY PC
                        969 ;
0418    0601            970 MON3:   MVI     B,1         ; SWITCH, BREAKPOINTS
041A    2AEE27          971             LHLD    BP1AD       ; RESTORE BREAKPOINTS
041D    7E              972             MOV     A,M
041E    FEC7            973             CPI     RST0
0420    C22804          974             JNZ     MON4
0423    3AF027          975             LDA     BP1VA
0426    77              976             MOV     M,A
0427    05              977             DCR     B
042?    2AF127          978 MON4:   LHLD    BP2AD
042B    7E              979             MOV     A,M
042C    FEC7            980             CPI     RST0
042E    C23604          981             JNZ     MON7
```

```
SIEMENS 610 ASSEMBLER V2.2

0431    3AF327          982             LDA     BP2VA
0434    77              983             MOV     M,A
0435    05              984             DCR     B
0436    2AEC27          985 MON7:   LHLD    SAVPC
0439    05              986             DCR     B           ; ADJUST PC IF BREAKPOINT
043?    CA4104          987             JZ      MON6
043D    2B              988             DCX     H
043E    22EC27          989             SHLD    SAVPC
0441    CDD907          990 MON6:   CALL    CRLF        ; DISPLAY PC (BREAK ADDRESS)
0444    CDE407          991             CALL    COMC
0447    2A              992             DB      '*'
0448    7C              993             MOV     A,H
0449    CDEB07          994             CALL    BYTUT
044C    7D              995             MOV     A,L
044D    CDEB07          996             CALL    BYTUT
0450    97              997             SUB     A
0451    328027          998             STA     KEYBUF
0454    32E025          999             STA     RCVBUF
0457    32C025         1000             STA     XMTBUF
                       1001 ;
                       1002 ; MONITOR COMMAND INPUT
                       1003 ;
045A    CDD907         1004 MON:    CALL    CRLF
045D    FB             1005             EI
045E    CDE407         1006 MON5:   CALL    COMC
0461    2E             1007             DB      DOT
```

```
0462    CDAD07      1008          CALL    GC          ; GET CHARACTER
0465    F5          1009          PUSH    PSW
0466    97          1010          SUB     A
0467    326127      1011          STA     DPROG
046A    F1          1012          POP     PSW
046B    FE47        1013          CPI     'G'
046D    CAE604      1014          JZ      GO
0470    FE53        1015          CPI     'S'
0472    CA4D05      1016          JZ      SUBST
0475    FE58        1017          CPI     'X'
0477    CA7805      1018          JZ      XX
047A    FE44        1019          CPI     'D'
```

SIEMENS 610 ASSEMBLER V2.2

```
047C    CA2B06      1020          JZ      DISPL
047F    FE48        1021          CPI     'H'
0481    CAC704      1022          JZ      HELP
0484    FE46        1023          CPI     'F'
0486    CA5E06      1024          JZ      FILL
0489    FE41        1025          CPI     'A'
048B    CA9206      1026          JZ      ALL
048E    FE54        1027          CPI     'T'
0490    CAAB06      1028          JZ      TTY
0493    FE4C        1029          CPI     'L'
0495    CAF206      1030          JZ      LOADP
0498    FE52        1031          CPI     'R'
049A    CAC806      1032          JZ      LOADM
049D    FE1D        1033          CPI     HOME
049F    CAC004      1034          JZ      CHOME
04A2    FE19        1035          CPI     ERASE
04A4    CA5E04      1036          JZ      MON5
04A7    FE10        1037          CPI     10H         ; DIRECT CURSOR CONTROL
04A9    C2B504      1038          JNZ     MERR
04AC    CDAD07      1039          CALL    GC          ; LINE NO
04AF    CDAD07      1040          CALL    GC          ; POSITION NO
04B2    C35E04      1041          JMP     MON5
04B5    CDE407      1042 MERR:    CALL    COMC
04B8    2A          1043          DB      '*'
04B9    CDE407      1044          CALL    COMC
04BC    07          1045          DB      07H         ; ALARM
04BD    C35A04      1046          JMP     MON
                    1047 ;
04C0    CDE407      1048 CHOME:   CALL    COMC
04C3    19          1049          DB      ERASE       ; ERASE PAGE
04C4    C35E04      1050          JMP     MON5
                    1051 ;
                    1052 ;        HELP COMMAND
                    1053 ;
                    1054 HELP:
04C7    CDAD07      1055          CALL    GC
04CA    FE0D        1056          CPI     CR
04CC    C2B504      1057          JNZ     MERR
```

```
04CF    213B0D      1058          LXI     H,HELPTXT
04D2    7E          1059          MOV     A,M         ; IS HELP TEXT THERE
04D3    FE1D        1060          CPI     HOME
04D5    C2B504      1061          JNZ     MERR
                    1062 HELP1:
04D8    7E          1063          MOV     A,M
04D9    E680        1064          ANI     80H
04DB    C25E04      1065          JNZ     MON5
04DE    7E          1066          MOV     A,M
04DF    CDB707      1067          CALL    TTO
04E2    23          1068          INX     H
04E3    C3D804      1069          JMP     HELP1
                    1070 ;
                    1071 ; GO COMMAND
                    1072 ;
04E6    CD0C08      1073 GO:      CALL    HXINH       ; HEX TO HL
04E9    22F427      1074          SHLD    GADR
04EC    FE0D        1075          CPI     CR
04EE    CA2805      1076          JZ      GO2
04F1    FE20        1077          CPI     SPACE
04F3    C2B504      1078          JNZ     MERR
04F6    CDE407      1079          CALL    COMC
04F9    2D          1080          DB      DASH
04FA    CD0C08      1081          CALL    HXINH       ; GET FIRST BREAKPOINT
04FD    22FE27      1082          SHLD    BP1AD
0500    FE0D        1083          CPI     CR
0502    CA1F05      1084          JZ      GO1
0505    FE20        1085          CPI     SPACE
0507    C2B504      1086          JNZ     MERR
050A    CDE407      1087          CALL    COMC
050D    2D          1088          DB      DASH
050E    CD0C08      1089          CALL    HXINH       ; GET SECOND BRP
0511    FE0D        1090          CPI     CR
0513    C2B504      1091          JNZ     MERR
0516    22F127      1092          SHLD    BP2AD       ; SET BRP 2
0519    7E          1093          MOV     A,M
051A    32F327      1094          STA     BP2VA
051D    36C7        1095          MVI     M,RSTO
```



```
051F    2AFE27      1096 GO1:     LHLD    BP1AD       ; SET BRP 1
0522    7E          1097          MOV     A,M
0523    32F027      1098          STA     BP1VA
0526    36C7        1099          MVI     M,RSTO
0528    2AF427      1100 GO2:     LHLD    GADR        ; SET ADDRESS
052B    7C          1101          MOV     A,H
052C    B5          1102          ORA     L
052D    CA3305      1103          JZ      GO4         ; ZERO: USE PREVIOUS ADDRESS
0530    22EC27      1104 GO3:     SHLD    SAVPC
0533    21FBC3      1105 GO4:     LXI     H,0C3FBH    ; SET JMP INSTRUCTION
```

```
0536    22FA27      1106            SHLD    GOADR
0539    CDE407      1107            CALL    COMC
053C    0A          1108            DB      LF
053D    F1          1109            POP     PSW         ; REBUILD REGISTERS - STATUS
053E    D1          1110            POP     D
053F    C1          1111            POP     B
0540    3AE527      1112            LDA     STACK
0543    2AE827      1113            LHLD    SAVSP
0546    F9          1114            SPHL                ; STACK POINTER
0547    2AE627      1115            LHLD    SAVHL
054A    C3EA27      1116            JMP     GOADR       ; START
                    1117 ;
                    1118 ; S-COMMAND - SUBSTITUTE MEMORY
                    1119 ;
054D    CD0C08      1120 SUBST:     CALL    HXINH       ; READ HEX VALUE TO HL
0550    FE0D        1121            CPI     CR
0552    CA5A04      1122            JZ      MON
0555    FE20        1123            CPI     SPACE
0557    C2B504      1124            JNZ     MERR
055A    7E          1125 S2:        MOV     A,M
055B    CDEB07      1126            CALL    BYTUT
055E    CDE407      1127            CALL    COMC
0561    2D          1128            DB      DASH
0562    CD3E08      1129            CALL    HXINE       ; READ HEX-VALUE TO E
0565    DAB504      1130            JC      MERR
0568    C600        1131            ADI     0           ; A = TERMINATOR, BIT 7 INDICAT
056A    F26E05      1132            JP      S1          ; THAT CHARACTERS ARE RECEIVED
056D    73          1133            MOV     M,E
```

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```
056E    82          1134 S1:        ADD     D
056F    FE20        1135            CPI     20H
0571    C25A04      1136            JNZ     MON
0574    23          1137            INX     H
0575    C35A05      1138            JMP     S2
                    1139 ;
                    1140 ; X-COMMAND - REGISTER MANIPULATION
                    1141 ;
0578    CDAD07      1142 XX:        CALL    GC          ; GET REGISTER CODE
057B    FE53        1143            CPI     'S'         ; CHECK FOR DOUBLEWORD REGISTER
057D    CABE05      1144            JZ      XX3
0580    FE50        1145            CPI     'P'
0582    CAC405      1146            JZ      XX4
0585    FE58        1147            CPI     'X'
0587    CACD05      1148            JZ      XDALL       ; DISPLAY ALL REGISTERS
058A    211106      1149            LXI     H,RTAB1     ; CHECK SINGLE CHARACTERS
058D    0E0D        1150            MVI     C,13        ; MAC COUNTER
058F    BE          1151 XX1:       CMP     M
0590    CA9B05      1152            JZ      XX2
0593    23          1153            INX     H
0594    0D          1154            DCR     C
0595    C28F05      1155            JNZ     XX1
0598    C3B504      1156            JMP     MERR        ; INVALID REGISTER CODE
059B    CDE407      1157 XX2:       CALL    COMC
059E    20          1158            DB      SPACE
059F    0E0D        1159            MVI     C,13        ; CODE FOUND, PICK ADDRESS
```

```
05A1    0600        1160          MVI   B,0       ; IN TEMP. STORAGE
05A3    09          1161          DAD   B
05A4    6E          1162          MOV   L,M
05A5    2627        1163          MVI   H,27H     ; PICK REGISTER VALUE
05A7    7E          1164          MOV   A,M
05A8    CDEB07      1165          CALL  BYTUT     ; DISPLAY IT
05AB    CDE407      1166          CALL  COMC
05AE    2D          1167          DB    DASH
05AF    CD3E08      1168          CALL  NXINE
05B2    DAB504      1169          JC    MERR
05B5    B7          1170          ORA   A
05B6    F2BA05      1171          JP    XX6       ; NO DATA ENTERED
```

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```
05B9    73          1172          MOV   M,E
05BA    82          1173 XX6:     ADD   D         ; CHECK FOR VALID DELIMITER
05BB    C35A04      1174          JMP   MON
05BE    21E927      1175 XX3:     LXI   H,SAVSP+1 ; STACK POINTER
05C1    C3C705      1176          JMP   XX5
05C4    21ED27      1177 XX4:     LXI   H,SAVPC+1 ; PROGRAM COUNTER
05C7    CDA007      1178 XX5:     CALL  DOBLU
05CA    C35A04      1179          JMP   MON
05CD    CDD907      1180 XDALL:   CALL  CRLF      ; DISPLAY ALL
05D0    011106      1181          LXI   B,RTAB1
05D3    111E06      1182          LXI   D,RTAB1+13
05D6    0A          1183 XD1:     LDAX  B
05D7    FE54        1184          CPI   'T'
05D9    CAF605      1185          JZ    XD2
05DC    CDB707      1186          CALL  TTO
05DF    CDE407      1187          CALL  COMC
05E2    3D          1188          DB    EQUAL
05E3    1A          1189          LDAX  D
05E4    6F          1190          MOV   L,A
05E5    2627        1191          MVI   H,027H
05E7    7E          1192          MOV   A,M
05E8    C5          1193          PUSH  B
05E9    CDEB07      1194          CALL  BYTUT
05EC    C1          1195          POP   B
05ED    CDE407      1196          CALL  COMC
05F0    20          1197          DB    SPACE
05F1    13          1198          INX   D
05F2    03          1199          INX   B
05F3    C3D605      1200          JMP   XD1
05F6    CDE407      1201 XD2:     CALL  COMC
05F9    53          1202          DB    'S'
05FA    21E927      1203          LXI   H,SAVSP+1
05FD    CDA007      1204          CALL  DOBLU
0600    CDE407      1205          CALL  COMC
0603    20          1206          DB    SPACE
0604    CDE407      1207          CALL  COMC
0607    50          1208          DB    'P'
0608    21ED27      1209          LXI   H,SAVPC+1
```

```
060B     CDA007          1210            CALL    DOBLU
060E     C35A04          1211            JMP     MON
                         1212 ;
0611     41424344        1213 RTAB1:     DB      'ABCDEHLFITUQR'
061E     E5E4E3E2        1214            DB      0E5H,0E4H,0E3H,0E2H
0622     E1E7E6DF        1215            DB      0E1H,0E7H,0E6H,0DFH
0626     E0E9E8ED        1216            DB      0E0H,0E9H,0E8H,0EDH
062A     EC              1217            DB      0ECH
                         1218 ;
                         1219 ; D-COMMAND - DISPLAY MEMORY
                         1220 ;
062B     CD0C08          1221 DISPL:     CALL    HXINH       ; LOW ADDRESS
062E     FE2C            1222            CPI     COMMA
0630     C2B504          1223            JNZ     MERR
0633     7D              1224            MOV     A,L         ; ADJUST TO 10H
0634     E6F0            1225            ANI     0F0H
0636     5F              1226            MOV     E,A
0637     54              1227            MOV     D,H
063?     CD0C08          1228            CALL    HXINH       ; NUMBER OF WORDS
063?     FE0D            1229            CPI     CR
063D     C2B504          1230            JNZ     MERR
0640     CDD907          1231 DISP1:     CALL    CRLF
0643     CDFF07          1232            CALL    HXOUD       ; DISPLAY ADDRESS
0646     0610            1233            MVI     B,16        ; DISPLAY ONE LINE
0648     CDE407          1234 DISP2:     CALL    COMC
064B     20              1235            DB      SPACE
064C     1A              1236            LDAX    D
064D     CDEB07          1237            CALL    BYTUT       ; DISPLAY ONE BYTE
0650     13              1238            INX     D
0651     2B              1239            DCX     H
0652     05              1240            DCR     B
0653     C24806          1241            JNZ     DISP2
0656     97              1242            SUB     A
0657     84              1243            ADD     H
0658     F24006          1244            JP      DISP1       ; H STILL POSITIVE
065B     C35A04          1245            JMP     MON
                         1246 ;
                         1247 ; FILL MEMORY
```



```
                         1248 ;
)65E     CD0C08          1249 FILL:      CALL    HXINH       ; LOW ADDRESS
)661     FE2C            1250            CPI     COMMA
)663     C2B504          1251            JNZ     MERR
)666     7C              1252            MOV     A,H
)667     FEFF            1253            CPI     0FFH
)669     CAB504          1254            JZ      MERR
)66C     44              1255            MOV     B,H
)66D     4D              1256            MOV     C,L
)66E     CD0C08          1257            CALL    HXINH       ; HIGH ADDRESS
```

```
0671    FE2C        1258            CPI     COMMA
0673    C2B504      1259            JNZ     MERR
0676    CD3E08      1260            CALL    HXINE       ; GET DATA BYTE
0679    DAB504      1261            JC      MERR
067C    82          1262            ADD     D
067D    FE0D        1263            CPI     CR
067F    C2B504      1264            JNZ     MERR
0682    7B          1265 FILL1:     MOV     A,E
0683    02          1266            STAX    B           ; STORE
0684    7D          1267            MOV     A,L         ; CHECK IF FINAL
0685    B9          1268            CMP     C
0686    C28E06      1269            JNZ     FILL2
0689    7C          1270            MOV     A,H
068A    B8          1271            CMP     B
068B    CA5A04      1272            JZ      MON
                    1273 FILL2:
068E    03          1274            INX     B
068F    C38206      1275            JMP     FILL1
                    1276 ;
                    1277 ; FILL SCREEN WITH ALL CODES
                    1278 ;
0692    CDE407      1279 ALL:       CALL    COMC
0695    19          1280            DB      ERASE
0696    0600        1281            MVI     B,0
0698    21CF07      1282            LXI     H,1999
069B    78          1283 ALL1:      MOV     A,B
069C    E67F        1284            ANI     7FH
069E    CDC807      1285            CALL    TTONC
```

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```
06A1    04          1286            INR     B
06A2    2B          1287            DCX     H
06A3    7C          1288            MOV     A,H
06A4    B5          1289            ORA     L
06A5    C29B06      1290            JNZ     ALL1
06      C35A04      1291            JMP     MON
                    1292 ;
                    1293 ; TELETYPE FUNCTION: KEYBOARD TO UART
                    1294 ;                    UART TO SCREEN
                    1295 ;
                    1296 TTY:
06AB    3A8027      1297            LDA     KEYBUF      ; KEYBOARD CHAR COUNT
06AE    A7          1298            ANA     A
06AF    CAB806      1299            JZ      TTY1
06B2    CD2E01      1300            CALL    TTI         ; READ IT
06B5    CDE202      1301            CALL    XMIO        ; SEND IT
                    1302 TTY1:
06B8    3AE025      1303            LDA     RCVBUF      ; RECEIVED CHAR COUNT
06BB    A7          1304            ANA     A
06BC    CAAB06      1305            JZ      TTY
06BF    CDB102      1306            CALL    RCVI        ; DISPLAY IT
06C2    CDB707      1307            CALL    TTO
06C5    C3AB06      1308            JMP     TTY
                    1309 ;
                    1310 ; R-COMMAND - LOAD RAM-PART MONITOR
                    1311 ;
```

```
06C8    CD1C08      1312 LOADM:  CALL   TTYHX      ; GET UNIT
06CB    DAB504      1313         JC     MERR
06CE    FE08        1314         CPI    8
06D0    D2B504      1315         JNC    MERR
06D3    21E906      1316         LXI    H,MONNA
                    1317 LOAM1:
06D6    FE04        1318         CPI    4
06D8    F2E106      1319         JP     LOAM2
06DB    CDEA0C      1320         CALL   LINK
06DE    C37D07      1321         JMP    ERROR
                    1322 LOAM2:
06E1    D604        1323         SUI    4
```



```
06E3    CDAD15      1324         CALL   CLINK
06E6    C37D07      1325         JMP    ERROR
06E     53595354    1326 MONNA:  DB     'SYSTEM',0,0,0
                    1327 ;
                    1328 ; L-COMMAND    LOAD PROGRAM
                    1329 ;
06F2    21F627      1330 LOADP:  LXI    H,FNAME    ; CLEAR
06F5    0609        1331         MVI    B,9
06F7    3600        1332 LOAP4:  MVI    M,0
06F9    23          1333         INX    H
06FA    05          1334         DCR    B
06FB    C2F706      1335         JNZ    LOAP4
06FE    CDAD07      1336         CALL   GC         ; ENTER UNIT
0701    FE20        1337         CPI    SPACE
0703    CAF206      1338         JZ     LOADP
0706    FE3A        1339         CPI    ':'
0708    C23B07      1340         JNZ    LOAP1      ; NO UNIT, DEFAULT 0
070B    CDAD07      1341         CALL   GC
070E    0604        1342         MVI    B,4
0710    FE4D        1343         CPI    'M'
0712    CA1C07      1344         JZ     LOAP5
07      0600        1345         MVI    B,0
071     FE46        1346         CPI    'F'
0719    C2B504      1347         JNZ    MERR
                    1348 LOAP5:
071C    CDAD07      1349         CALL   GC         ; NUMBER
071F    D630        1350         SUI    '0'
0721    FAB504      1351         JM     MERR
0724    80          1352         ADD    B
0725    FE08        1353         CPI    8
0727    D2B504      1354         JNC    MERR
072A    32FF27      1355         STA    FUNIT
072D    CDAD07      1356         CALL   GC
0730    FE3A        1357         CPI    ':'
0732    C2B504      1358         JNZ    MERR
0735    CDAD07      1359         CALL   GC         ; FIRST CHAR. OF NAME
0738    C34007      1360         JMP    LOAP2
073B    21FF27      1361 LOAP1:  LXI    H,FUNIT    ; DEFAULT UNIT 0
```

```
073E    3600        1362          MVI     M,0
0740    0607        1363 LOAP2:   MVI     B,7
0742    21F627      1364          LXI     H,FNAME
0745    CD6C07      1365          CALL    CHARJ       ;CHARACTERS IN
0748    DAB504      1366          JC      MERR
074B    FE0D        1367          CPI     CR
074D    CA6007      1368          JZ      LOAP3
0750    0604        1369          MVI     B,4
0752    21FC27      1370          LXI     H,FNAME+6
0755    CD6907      1371          CALL    CHARI
0758    DAB504      1372          JC      MERR
075B    FE0D        1373          CPI     CR
075D    C2B504      1374          JNZ     MERR
0760    3AFF27      1375 LOAP3:   LDA     FUNIT
0763    21F627      1376          LXI     H,FNAME
0766    C3D606      1377          JMP     LOAM1
                    1378 ;
0769    CDAD07      1379 CHARI:   CALL    GC          ; CHARACTERS IN
                    1380 CHARJ:
076C    FE0D        1381          CPI     CR          ; HL: ADDRESS
076E    C8          1382          RZ
076F    FE2E        1383          CPI     DOT
0771    C8          1384          RZ
0772    77          1385          MOV     M,A
0773    23          1386          INX     H
0774    05          1387          DCR     B
0775    C26907      1388          JNZ     CHARI
0778    37          1389          STC
0779    C9          1390          RET
                    1391 ;
                    1392 ; ERROR 30, OCCURING IF MONITOR ROUTINES ARE CALLED
                    1393 ; BEFORE THE RAM PART OF MONITOR IS LOADED
                    1394 ;
077A    3E1E        1395 ERR30:   MVI     A,30
077C    37          1396          STC
                    1397 ;
                    1398 ; ERROR ROUTINE, A IS ERROR NUMBER
                    1399 ;
```

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```
077D    F5          1400 ERROR:   PUSH    PSW
077E    219707      1401          LXI     H,TXERR
0781    7E          1402 EROR1:   MOV     A,M
0782    A7          1403          ANA     A
0783    CA8D07      1404          JZ      EROR2
0786    CDB707      1405          CALL    TTO
0789    23          1406          INX     H
078A    C38107      1407          JMP     EROR1
078D    F1          1408 EROR2:   POP     PSW
078E    F5          1409          PUSH    PSW
```

```
078F    CDEB07          1410            CALL    BYTUT
0792    F1              1411            POP     PSW
0793    D0              1412            RNC
0794    C30000          1413            JMP     0           ; SIMULATE RESTART
0797    0D0A4552        1414 TXERR:     DB      0DH,0AH,'ERROR ',0
                        1415 ;
                        1416 ; SUBROUTINES
                        1417 ;
07A0    CDE407          1418 DOBLU:     CALL    COMC        ; DOUBLE BYTE HEX OUTPUT, ADDR
07A3    3D              1419            DB      EQUAL
07A4    7E              1420            MOV     A,M
07A5    CDEB07          1421            CALL    BYTUT
07A8    2B              1422            DCX     H
07A9    7E              1423            MOV     A,M
07AA    C3EB07          1424            JMP     BYTUT
                        1425 ;
07AD    CD2E01          1426 GC:        CALL    GCH         ; GET CHARACTER WITH ECHO
07B0    FE60            1427            CPI     60H         ; ADJUST TO CAPITALS
07B2    DAB707          1428            JC      TTO
07B5    E65F            1429            ANI     5FH
                        1430 ;
07B7    F5              1431 TTO:       PUSH    PSW         ; CHARACTER OUTPUT TO RAM
07B8    D3E5            1432            OUT     RAMCTL
****ERROR****: 07
07BA    00              1433            NOP
07BB    DBF6            1434            IN      DISST
07BD    E618            1435            ANI     018H
07BF    CAC607          1436            JZ      TTO1
```

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```
07C2    F1              1437            POP     PSW
07C3    C3B707          1438            JMP     TTO
07C6    F1              1439 TTO1:      POP     PSW
07C7    C9              1440            RET
                        1441 ;
07C8    F5              1442 TTONC:     PUSH    PSW         ; CHAR OUT, NO CONTROL
07CA    D3E6            1443            OUT     RAMWC
07CC    00              1444            NOP
07CD    DBF6            1445            IN      DISST
07CF    E618            1446            ANI     018H
07D1    CAD707          1447            JZ      TTON1
07D4    F1              1448            POP     PSW
07D5    C3C807          1449            JMP     TTONC
07D8    F1              1450 TTON1:     POP     PSW
07D9    C9              1451            RET
                        1452 ;
07DA    F5              1453 CRLF:      PUSH    PSW         ; NEW LINE
07DB    CDE407          1454            CALL    COMC
07DE    0D              1455            DB      CR
07DF    CDE407          1456            CALL    COMC
07E2    0A              1457            DB      LF
07E3    F1              1458            POP     PSW
07E4    C9              1459            RET
                        1460 ;
07E5    E3              1461 COMC:      XTHL                ; SINGLE CHAR OUTPUT
07E6    7E              1462            MOV     A,M
```

```
07E6    23          1463          INX     H
07E7    E3          1464          XTHL
07E8    C3B707      1465          JMP     TTO
                    1466 ;
07EB    F5          1467 BYTUT:   PUSH    PSW       ; BYTE OUTPUT AT TWO HEX
07EC    1F          1468          RAR
07ED    1F          1469          RAR
07EE    1F          1470          RAR
07EF    1F          1471          RAR
07F0    CDF407      1472          CALL    HXUT
07F3    F1          1473          POP     PSW
07F4    E60F        1474 HXUT:    ANI     0FH       ; FOUR RIGHT BITS OUT AS HEX
```

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```
07F6    C690        1475          ADI     90H
07F8    27          1476          DAA
07F     CE40        1477          ACI     40H
07FB    27          1478          DAA
07FC    C3B707      1479          JMP     TTO
                    1480 ;
07FF    7A          1481 HXOUD:   MOV     A,D       ; DE OUT AS 4 HEXA CHARS
0800    CDEB07      1482          CALL    BYTUT     ; FOLLOWED BY SPACE
0803    7B          1483          MOV     A,E
0804    CDEB07      1484          CALL    BYTUT
0807    CDE407      1485          CALL    COMC
080A    20          1486          DB      SPACE
080B    C9          1487          RET
                    1488 ;
                    1489 ; HEXA VALUE INPUT TO HL
                    1490 ;
080C    210000      1491 HXINH:   LXI     H,0
080F    CD1C08      1492 HXH1:    CALL    TTYHX
0812    D8          1493          RC
0813    29          1494          DAD     H
0814    29          1495          DAD     H
081     29          1496          DAD     H
081b    29          1497          DAD     H
0817    B5          1498          ORA     L
0818    6F          1499          MOV     L,A
0819    C30F08      1500          JMP     HXH1
                    1501 ;
                    1502 ; GET CHARACTER TO TTY
                    1503 ; IF VALID HEXA: RETRN HEXA VALUE IN A,
                    1504 ; IF NOT: RETURN CHARACTER IN A WITH CARRY SET
                    1505 ;
081C    C5          1506 TTYHX:   PUSH    B
081D    CDAD07      1507          CALL    GC
0820    CD2B08      1508          CALL    CONVR
0823    DA2808      1509          JC      TTYHY
0826    C1          1510          POP     B
0827    C9          1511          RET
0828    78          1512 TTYHY:   MOV     A,B
```

```
0829    C1          1513          POP     B
082A    C9          1514          RET
082B    47          1515 CONVR:   MOV     B,A
082C    D630        1516          SUI     30H
082E    D8          1517          RC                  ; 0 - 2F OUT
082F    C6E9        1518          ADI     0E9H
0831    D8          1519          RC                  ; 47-FF OUT
0832    C606        1520          ADI     6
0834    F23A08      1521          JP      CON1         ; A - F
0837    C607        1522          ADI     7
0839    D8          1523          RC                  ; 3A - 40 OUT
083A    C60A        1524 CON1:    ADI     10
083C    B7          1525          ORA     A           ; CLEAR CARRY
083D    C9          1526          RET
                    1527 ;
                    1528 ; GET HEXA VALUE TO E, A(0)=ZERO: NO HEXA DIGITS ENTEREI
                    1529 ;
083E    110000      1530 HXINE:   LXI     D,0
0841    C5          1531          PUSH    B
0842    CD1C08      1532 HXE2:    CALL    TTYHX
0845    DA5508      1533          JC      HXE1
0848    4F          1534          MOV     C,A
0849    7B          1535          MOV     A,E
084A    87          1536          ADD     A
084B    87          1537          ADD     A
084C    87          1538          ADD     A
084D    87          1539          ADD     A
084E    81          1540          ADD     C
084F    5F          1541          MOV     E,A
0850    1680        1542          MVI     D,80H
0852    C34208      1543          JMP     HXE2
                    1544 ;
0855    C1          1545 HXE1:    POP     B
0856    FE20        1546          CPI     SPACE
0858    CA6208      1547          JZ      HXE3
085B    FE0D        1548          CPI     CR
085D    CA6208      1549          JZ      HXE3
0860    37          1550          STC
```



```
0861    C9          1551          RET
0862    B2          1552 HXE3:    ORA     D
0863    C9          1553          RET
                    1554 ;
                    1555 ;        DISKETTE I/O AND WAIT
                    1556 ;
                    1557 DCALW:
0864    CDB608      1558          CALL    DCAL
0867    C34D02      1559          JMP     DSWT
                    1560 DSRDW:
```

```
086A   CD7809        1561            CALL    DSRD
086D   C34D02        1562            JMP     DSWT
                     1563 DSWRW:
0870   CD8009        1564            CALL    DSWR
0873   C34D02        1565            JMP     DSWT
                     1566 DSDLW:
0876   CD8809        1567            CALL    DSDL
0879   C34D02        1568            JMP     DSWT
                     1569 DSRAW:
087C   CD6809        1570            CALL    DSRDA
087F   C34D02        1571            JMP     DSWT
                     1572 DSWAW:
0882   CD7009        1573            CALL    DSWRA
0885   C34D02        1574            JMP     DSWT
                     1575 TSTTS:
0888   F5            1576            PUSH    PSW
0889   78            1577            MOV     A,B
088A   FE4D          1578            CPI     77
088C   F2A308        1579            JP      TSTT1
088F   79            1580            MOV     A,C
0890   FE00          1581            CPI     0
0892   CAAC08        1582            JZ      TSTT2
0895   FE1B          1583            CPI     27
0897   F2AC08        1584            JP      TSTT2
                     1585 TSTT4:
089A   7C            1586            MOV     A,H
089B   E6F0          1587            ANI     0F0H
089D   CAB108        1588            JZ      TSTT3
```



```
08A0   F1            1589            POP     PSW
08A1   A7            1590            ANA     A
08A2   C9            1591            RET
                     1592 TSTT1:
08A3   3E35          1593            MVI     A,SEC35
                     1594 TSTT5:
08A5   326127        1595            STA     DPROG
08A8   33            1596            INX     SP
08A9   33            1597            INX     SP
08AA   37            1598            STC
08AB   C9            1599            RET
                     1600 TSTT2:
08AC   3E36          1601            MVI     A,SEC36
08AE   C3A508        1602            JMP     TSTT5
                     1603 TSTT3:
08B1   3E37          1604            MVI     A,SEC37
08B3   C3A508        1605            JMP     TSTT5
                     1606 ;
                     1607 ;          DISKETTE CALIBRATE
                     1608 ;
                     1609 DCAL:
08B6   F5            1610            PUSH    PSW
08B7   CD4D02        1611            CALL    DSWT
08BA   F1            1612            POP     PSW
08BB   CDF408        1613            CALL    UNADJ
08BE   D8            1614            RC
```

```
08DF    326227      1615            STA     DUNIT
08C2    CD0209      1616            CALL    CKBUSY
08C5    D8          1617            RC
08C6    3A6227      1618            LDA     DUNIT
08C9    D330        1619            OUT     DRIVA
08CB    E5          1620            PUSH    H
08CC    210000      1621            LXI     H,0
08CF    226327      1622            SHLD    DCONT
08D2    226D27      1623            SHLD    DRETRY
08D5    3EFF        1624            MVI     A,0FFH
08D7    326127      1625            STA     DPROG
08DA    E1          1626            POP     H
```

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```
08DB    3EEC        1627            MVI     A,RECAL
08DD    D337        1628            OUT     OUTCOM
08E    97           1629            SUB     A
08E     326727      1630            STA     DTRK
08E3    C9          1631            RET
                    1632 UNADJ:
08E4    C5          1633            PUSH    B
08E5    47          1634            MOV     B,A
08E6    04          1635            INR     B
08E7    3E01        1636            MVI     A,1
                    1637 UNAD1:
08E9    05          1638            DCR     B
08EA    CAF208      1639            JZ      UNAD2
08ED    A7          1640            ANA     A
08EE    07          1641            RLC
08EF    C3E908      1642            JMP     UNAD1
                    1643 UNAD2:
08F2    E60F        1644            ANI     0FH
08F4    CAFA08      1645            JZ      UNAD3
08F7    A7          1646            ANA     A
08F8    C1          1647            POP     B
08F     C9          1648            RET
                    1649 UNAD3:
08FA    3E13        1650            MVI     A,SEC13
                    1651 UNAD4:
08FC    326127      1652            STA     DPROG
08FF    C1          1653            POP     B
0900    37          1654            STC
0901    C9          1655            RET
                    1656 CKBUSY:
0902    C5          1657            PUSH    B
0903    F5          1658            PUSH    PSW
0904    01FFFF      1659            LXI     B,0FFFFH
                    1660 CKB1:
0907    DB37        1661            IN      SENST   ; Status Disk
0909    E601        1662            ANI     1
090B    CA1C09      1663            JZ      CKB2
090E    0D          1664            DCR     C
```

Lese direkten Parameter
BC = TRK + SECT
A = LW

Bsp: A=1 B=1
A=1

B=0

A=2

A=2 | A > P ⇒ falsche Sample

Kurzbeschreibung:
Umrechnung der Laufnummer in A in Partitionierte Sample Beschreibung.
B:=A
While B≠0 do
B:=B-1
A Linksschift od
Unterschiedskontrolle

Parameter: A=Block

C = FFH

```
090F    C20709          1665            JNZ     CKB1
0912    05              1666            DCR     B
0913    C20709          1667            JNZ     CKB1
0916    F1              1668            POP     PSW
0917    3E07            1669            MVI     A,SEC07
0919    C3FC08          1670            JMP     UNAD4
                        1671 CKB2:
091C    F1              1672            POP     PSW
091D    C1              1673            POP     B
091E    A7              1674            ANA     A
091F    C9              1675            RET
                        1676 CONV:
0920    E5              1677            PUSH    H
0921    2A6527          1678            LHLD    DBUF
0924    3A6B27          1679            LDA     DLG
0927    118000          1680            LXI     D,128
092A    FE00            1681            CPI     0
092C    CA3A09          1682            JZ      UE81
092?    110001          1683            LXI     D,256
093?    FE01            1684            CPI     1
0934    CA3A09          1685            JZ      UE81
0937    110002          1686            LXI     D,512
                        1687 UE81:
093A    0600            1688            MVI     B,0
                        1689 UE82:
093C    4E              1690            MOV     C,M
093D    E3              1691            XTHL
093E    E5              1692            PUSH    H
093F    7C              1693            MOV     A,H
0940    B5              1694            ORA     L
0941    CA5209          1695            JZ      UE82A       ; NO
0944    09              1696            DAD     B
0945    4E              1697            MOV     C,M
0946    E1              1698            POP     H
0947    E3              1699            XTHL
0948    71              1700            MOV     M,C
0949    23              1701            INX     H
094?    1B              1702            DCX     D
```

wird erreicht, sobald 'Busy-Bit' nicht mehr gesetzt ist.


```
094B    7A              1703            MOV     A,D
094C    B3              1704            ORA     E
094D    C23C09          1705            JNZ     UE82
0950    E1              1706            POP     H
0951    C9              1707            RET
                        1708 UE82A:
0952    E1              1709            POP     H
0953    E1              1710            POP     H
0954    3E12            1711            MVI     A,12H       ; ERROR, NO TABLE
0956    37              1712            STC
```

```
0957    C9              1713            RET
                        1714 ;
                        1715 ;          DISKETTE BASIC ROUTINES
                        1716 ;
                        1717 SETUN:
0958    3A6227          1718            LDA     DUNIT
095B    D330            1719            OUT     DRIVA
095D    3A6627          1720            LDA     DBUF+1
0960    D333            1721            OUT     ADDHI
0962    3A6527          1722            LDA     DBUF
0965    D334            1723            OUT     ADDLO
0967    C9              1724            RET
                        1725 DSRDA:
0968    D5              1726            PUSH    D
0969    16E0            1727            MVI     D,REDAT
096B    1E01            1728            MVI     E,1
096D    C38D09          1729            JMP     UE
                        1730 DSWRA:
0970    D5              1731            PUSH    D
0971    16F1            1732            MVI     D,WRTDA
0973    1E01            1733            MVI     E,1
0975    C38D09          1734            JMP     UE
                        1735 DSRD:
0978    D5              1736            PUSH    D
097?    16E0            1737            MVI     D,REDAT
097?    1E00            1738            MVI     E,0
097D    C38D09          1739            JMP     UE
                        1740 DSWR:
```

Input
A=LW
B=TRK
C=SEKT
HL=Speicher

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```
0980    D5              1741            PUSH    D
0981    16F1            1742            MVI     D,WRTDA
0983    1E00            1743            MVI     E,0
0985    C38D09          1744            JMP     UE
                        1745 DSDL:
098?    D5              1746            PUSH    D
098?    16F2            1747            MVI     D,WTDEL
098B    1E00            1748            MVI     E,0
098D    F5              1749 UE:        PUSH    PSW
098E    CD4D02          1750            CALL    DSWT
0991    CD8808          1751            CALL    TSTTS
0994    D29B09          1752            JNC     UE0
0997    33              1753            INX     SP
0998    33              1754            INX     SP
0999    D1              1755            POP     D
099A    C9              1756            RET
                        1757 UE0:
099B    7A              1758            MOV     A,D
099C    326927          1759            STA     DFUNC
099F    7B              1760            MOV     A,E
09A0    326A27          1761            STA     DCONV
09A3    F1              1762            POP     PSW
09A4    D1              1763            POP     D
09A5    CDE408          1764            CALL    UNADJ
09A8    D8              1765            RC
09A9    F5              1766            PUSH    PSW
```

```
09AA  226527      1767            SHLD    DBUF
09AD  79          1768            MOV     A,C
09AE  326827      1769            STA     DSECT
09B1  F1          1770            POP     PSW
09B2  CD0209      1771            CALL    CKBUSY
09B5  D8          1772            RC
09B6  4F          1773            MOV     C,A
09B7  3A6227      1774            LDA     DUNIT
09BA  91          1775            SUB     C
09BB  CA890A      1776            JZ      UE2
09BE  79          1777            MOV     A,C
09BF  326227      1778            STA     DUNIT
```

<HL> = Schreibpuffer
<C> = Sektor
PSW = ~~Status~~ Diskette betriebsf.
NONCARRY = Disk not busy.
einer von Laufwerke
DUNIT = angewähltes Laufwerk?, dann UE2
ansonsten merken.

SIEMENS 610 ASSEMBLER V2.2

```
09C2  CDCC09      1779            CALL    SETUX
09C5  78          1780            MOV     A,B
09C6  326727      1781            STA     DTRK
09C9  C3C40A      1782            JMP     UE71
                  1783 SETUX:
09CC  3A6227      1784            LDA     DUNIT
09CF  D330        1785            OUT     DRIVA
09D1  217027      1786            LXI     H,DIDBUF
09D4  7C          1787            MOV     A,H
09D5  D333        1788            OUT     ADDHI
09D7  7D          1789            MOV     A,L
09D8  D334        1790            OUT     ADDLO
09DA  C9          1791            RET
                  1792 UE3:
09DB  217227      1793            LXI     H,DIDBUF+2
09DE  3A6227      1794            LDA     DUNIT
09E1  D330        1795            OUT     DRIVA
09E3  7E          1796            MOV     A,M
09E4  326B27      1797            STA     DLG
09E7  2B          1798            DCX     H
09E8  3A6727      1799            LDA     DTRK
09EB  4F          1800            MOV     C,A
09EC  7E          1801            MOV     A,M
09ED  91          1802            SUB     C
09EE  CA3B0A      1803            JZ      UE4
09F1  F2F709      1804            JP      UE32
09F4  EE7F        1805            XRI     07FH
09F6  3C          1806            INR     A
                  1807 UE32:
09F7  CD0209      1808            CALL    CKBUSY
09FA  DAF00A      1809            JC      UE9
09FD  D331        1810            OUT     RELTA
09FF  CD050A      1811            CALL    SEEKSUB
0A02  C3EB01      1812            JMP     CONT
                  1813 SEEKSUB:
0A05  21200A      1814            LXI     H,UE5
0A08  226327      1815            SHLD    DCONT
0A0B  210000      1816            LXI     H,0
                                  ; NO RETRY FOR SEEK ERROR
```

Laufwerk anwählen.
<B> = gewünschte Spur.
Laufwerk auf Port geben
DIDBUF auswerten für Diskop.
Vorraussetzung: Laufwerk gewählt. (DRIVA)
RELTA 4
Die Interruptroutine?

```
0A0E    226D27      1817            SHLD    DRETRY
0A11    3E14        1818            MVI     A,RETRIES
0A13    326C27      1819            STA     DRCNT
0A16    3EFF        1820            MVI     A,0FFH
0A18    326127      1821            STA     DPROG
0A1B    3EE3        1822            MVI     A,SEEKT
0A1D    D337        1823            OUT     OUTCOM
0A1F    C9          1824            RET
                    1825 UE5:
0A20    3E14        1826            MVI     A,RETRIES
0A22    326C27      1827            STA     DRCNT
                    1828 UE51:
0A25    21DB09      1829            LXI     H,UE3
0A28    226327      1830            SHLD    DCONT
                    1831 UE31:
0A2B    CD0209      1832            CALL    CKBUSY
0A2E    DAF00A      1833            JC      UE9
0A31    CDCC09      1834            CALL    SETUX
0A34    3EE6        1835            MVI     A,RDID
0A36    D337        1836            OUT     OUTCOM
0A38    C3EB01      1837            JMP     CONT
                    1838 UE4:
0A3B    3E14        1839            MVI     A,RETRIES
0A3D    326C27      1840            STA     DRCNT
                    1841 UE41:
0A40    CD0209      1842            CALL    CKBUSY
0A43    DAF00A      1843            JC      UE9
0A46    CD570A      1844            CALL    CONSUB
0A49    21400A      1845            LXI     H,UE41
0A4C    226D27      1846            SHLD    DRETRY
0A4F    3A6927      1847            LDA     DFUNC
0A52    D337        1848            OUT     OUTCOM
0A54    C3EB01      1849            JMP     CONT
                    1850 CONSUB:
0A57    CD5809      1851            CALL    SETUN
0A5A    3A6827      1852            LDA     DSECT
0A5D    D332        1853            OUT     SECTA
0A5F    210000      1854            LXI     H,0
```



```
0A62    3A6A27      1855            LDA     DCONV
0A65    FE00        1856            CPI     0
0A67    CA850A      1857            JZ      UE83
0A6A    3A6927      1858            LDA     DFUNC
0A6D    FEF1        1859            CPI     WRTDA
0A6F    C2820A      1860            JNZ     UE84
0A72    97          1861            SUB     A
0A73    326A27      1862            STA     DCONV
0A76    2A7C27      1863            LHLD    EBCDIC
0A79    CD2009      1864            CALL    CONV
```

```
0A7C    210000            LXI   H,0
0A7F    C3850A            JMP   UE83
                  UE84:
0A82    21FC0A            LXI   H,UF8
                  UE83:
0A85    226327            SHLD  DCONT
0A88    C9                RET               — wird angesprungen, wenn alte DUNIT = gewünschte Laufwerk ist.
                  UE2:
0A89    3A6727            LDA   DTRK        } alte Spur = gewünschte Spur?
0A8C    90                SUB   B           }    dann UE7
0A8D    CAB50A            JZ    UE7         }
0A90    F2960A            JP    UE21        neue Spur > alte Spur? => UE21
0A93    EE7F              XRI   07FH        invertiere letzten 7 Bits der Differenz
0A95    3C                INR   A           +1
                  UE21:
0A96    CD0209            CALL  CKBUSY
0A99    DAE10A            JC    UE73
0A9C    F5                PUSH  PSW         } Differenz |alte Spur − neue Spur|
0A9D    3A6227            LDA   DUNIT       } Laufwerk ansprechen
0AA0    D330              OUT   DRIVA
0AA2    F1                POP   PSW
0AA3    D331              OUT   RELTA       } relative Spurbewegung.
0AA5    78                MOV   A,B         } neue Spur.
0AA6    326727            STA   DTRK
0AA     CD0209            CALL  CKBUSY
0AAC    DAE10A            JC    UE73
0AAF    CD050A            CALL  SEEKSUB     }
0AB2    C3E00A            JMP   UE72
```



```
                  UE7:              alte Spur = neue Spur.
0AB5    CD0209            CALL  CKBUSY
0AB8    DAE10A            JC    UE73
0ABB    CD570A            CALL  CONSUB      DRNAd=DUNIT   ADRH/LO:=DBUF/+1
0ABE    3A6927            LDA   DFUNC
0AC     C3CC0A            JMP   UE7X
                  UE71:
0AC4    21DB09            LXI   H,UE3
0AC7    226327            SHLD  DCONT
0ACA    3EE6              MVI   A,RDID
                  UE7X:
0ACC    47                MOV   B,A         A=Udo.
0ACD    212B0A            LXI   H,UE31
0AD0    226D27            SHLD  DRETRY
0AD3    3E14              MVI   A,RETRIES
0AD5    326C27            STA   DRCNT
0AD8    3EFF              MVI   A,0FFH
0ADA    326127            STA   DPROG
0ADD    78                MOV   A,B         ← Lesen
0ADE    D337              OUT   OUTCOM        Schreib Kdo wird ausgeführt.
                  UE72:
0AE0    A7                ANA   A
                  UE73:
0AE1    3A6727            LDA   DTRK
0AE4    47                MOV   B,A
0AE5    3A6827            LDA   DSECT
```

```
0AE8    4F          1919          MOV   C,A
0AE9    2A6527      1920          LHLD  DBUF
0AEC    3A6227      1921          LDA   DUNIT
0AEF    C9          1922          RET
                    1923 UE9:
0AF0    210000      1924          LXI   H,0
0AF3    226327      1925          SHLD  DCONT
0AF6    226D27      1926          SHLD  DRETRY
0AF9    C3EB01      1927          JMP   CONT
                    1928 UE8:
0AFC    2A7E27      1929          LHLD  ASCII
0AFF    CD2009      1930          CALL  CONV
```

müßte aufgrufende Routine sein.

SIEMENS 610 ASSEMBLER V2.2

```
0B02    210000      1931          LXI   H,0
0B05    226327      1932          SHLD  DCONT
0B08    226D27      1933          SHLD  DRETRY
0B0B    C39F01      1934          JMP   INTR1
                    1935 LOCDIR:
0B0E    223327      1936          SHLD  NAME
0B11    323027      1937          STA   UNIT
0B14    CD6408      1938          CALL  DCALW
0B17    D8          1939          RC
0B18    010101      1940          LXI   B,0101H
                    1941 LOCD1:
0B1B    218026      1942          LXI   H,BUF1
0B1E    3A3027      1943          LDA   UNIT
0B21    CD6A08      1944          CALL  DSRDW
0B24    D8          1945          RC
0B25    218426      1946          LXI   H,BUF1+4
0B28    223127      1947          SHLD  TRK
0B2B    3E3E        1948          MVI   A,62
0B2D    323527      1949          STA   DCNT
                    1950 LOCD2:
0B30    2A3127      1951          LHLD  TRK
0B33    4E          1952          MOV   C,M
0B34    23          1953          INX   H
0B35    46          1954          MOV   B,M
0B36    23          1955          INX   H
0B37    223127      1956          SHLD  TRK
0B3A    78          1957          MOV   A,B
0B3B    B1          1958          ORA   C
0B3C    CA870B      1959          JZ    LOCD8
0B3F    210026      1960          LXI   H,BUF2
0B42    3A3027      1961          LDA   UNIT
0B45    CD6A08      1962          CALL  DSRDW
0B48    D8          1963          RC
0B49    0608        1964          MVI   B,8
0B4B    210026      1965          LXI   H,BUF2
                    1966 LOCD3:
0B4E    7E          1967          MOV   A,M
0B4F    FE00        1968          CPI   0
```

```
0B51    C28B0B          1969            JNZ     LOCD4
0B54    E5              1970            PUSH    H
0B55    EB              1971            XCHG
0B56    13              1972            INX     D
0B57    2A3327          1973            LHLD    NAME
0B5A    0E09            1974            MVI     C,9
                        1975 LOCD5:
0B5C    1A              1976            LDAX    D
0B5D    BE              1977            CMP     M
0B5E    C26A0B          1978            JNZ     LOCD6
0B61    23              1979            INX     H
0B62    13              1980            INX     D
0B63    0D              1981            DCR     C
0B64    C25C0B          1982            JNZ     LOCD5
0B67    E1              1983            POP     H
0B68    A7              1984            ANA     A
0B69    C9              1985            RET
                        1986 LOCD6:
0B6     E1              1987            POP     H
                        1988 LOCD7:
0B6B    111000          1989            LXI     D,16
0B6E    19              1990            DAD     D
0B6F    05              1991            DCR     B
0B70    C24E0B          1992            JNZ     LOCD3
0B73    3A3527          1993            LDA     DCNT
0B76    3D              1994            DCR     A
0B77    323527          1995            STA     DCNT
0B7A    C2300B          1996            JNZ     LOCD2
0B7D    2A8226          1997            LHLD    BUF1+2
0B80    44              1998            MOV     B,H
0B81    4D              1999            MOV     C,L
0B82    78              2000            MOV     A,B
0B83    B1              2001            ORA     C
0B84    C21B0B          2002            JNZ     LOCD1
                        2003 LOCD8:
0B87    37              2004            STC
0B88    3E09            2005            MVI     A,SEC09
0B8     C9              2006            RET
```

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```
                        2007 LOCD4:
0B8B    FEFF            2008            CPI     0FFH
0B8D    CA6B0B          2009            JZ      LOCD7
0B90    FE7F            2010            CPI     07FH
0B92    C2970B          2011            JNZ     LOCD9
0B95    A7              2012            ANA     A
0B96    C9              2013            RET
                        2014 LOCD9:
0B97    3E0C            2015            MVI     A,SEC0C
0B99    37              2016            STC
```

```
0B9A    C9              2017            RET
                        2018 ;
                        2019 ;          LOAD PROGRAM
                        2020 ;
                        2021 ;          A - UNIT
                        2022 ;          HL - ADDRESS OF NAME (9 CHARS)
                        2023 ;
                        2024 LOAD:
0B9B    FE04            2025            CPI     4
0B9D    F2BD14          2026            JP      CLOA1
0BA0    D5              2027            PUSH    D
0BA1    C5              2028            PUSH    B
0BA2    CD0000          2029            CALL    LOCDIR
****ERROR****: 11
0BA5    DAB10B          2030            JC      LOA12
0BA8    D8              2031            RC
0BA9    7E              2032            MOV     A,M
0BAA    A7              2033            ANA     A
0BAB    CAB40B          2034            JZ      LOA11
0BAE    3E0B            2035            MVI     A,SECOB
0BB0    37              2036            STC
                        2037 LOA12:
0BB1    C1              2038            POP     B
0BB2    D1              2039            POP     D
0BB3    C9              2040            RET
                        2041 LOA11:
0BB4    110E00          2042            LXI     D,14
0BB7    19              2043            DAD     D
```



```
0BB8    4E              2044            MOV     C,M
0BB9    23              2045            INX     H
0BBA    46              2046            MOV     B,M
0BBB    218026          2047            LXI     H,BUF1
0BBE    3A3027          2048            LDA     UNIT
0BC1    CD6A08          2049            CALL    DSRDW
0BC4    D2680C          2050            JNC     LOAD2
                        2051 LOAD4:
0BC7    C1              2052            POP     B
0BC8    D1              2053            POP     D
0BC9    37              2054            STC
0BCA    C9              2055            RET
                        2056 LNSUB:
0BCB    2A8226          2057            LHLD    BUF1+2
0BCE    7C              2058            MOV     A,H
0BCF    B5              2059            ORA     L
0BD0    CAF90B          2060            JZ      LN31
0BD3    44              2061            MOV     B,H
0BD4    4D              2062            MOV     C,L
0BD5    218026          2063            LXI     H,BUF1
0BD8    3A3027          2064            LDA     UNIT
0BDB    CD6A08          2065            CALL    DSRDW
0BDE    D8              2066            RC
0BDF    3E3F            2067            MVI     A,63
0BE1    323527          2068            STA     DCNT
0BE4    218426          2069            LXI     H,BUF1+4
```

```
0BE7    223127          2070            SHLD    TRK
0BEA    A7              2071            ANA     A
0BEB    C9              2072            RET
                        2073 LNTRK:
0BEC    2A3127          2074            LHLD    TRK
0BEF    4E              2075            MOV     C,M
0BF0    23              2076            INX     H
0BF1    46              2077            MOV     B,M
0BF2    23              2078            INX     H
0BF3    223127          2079            SHLD    TRK
0BF6    78              2080            MOV     A,B
0BF7    B1              2081            ORA     C
```



```
0BF8    C0              2082            RNZ
                        2083 LN31:
0BF     33              2084            INX     SP
0BFA    33              2085            INX     SP
                        2086 LN3:
0BFB    3E0D            2087             MVI    A,SECOD
0BFD    37              2088             STC
0BFE    C9              2089             RET
                        2090 LBLK:
0BFF    2A2027          2091             LHLD   PSTART
0C02    3A3027          2092             LDA    UNIT
0C05    CD6A08          2093             CALL   DSRDW
0C08    D8              2094             RC
0C09    018000          2095             LXI    B,80H
0C0C    09              2096             DAD    B
0C0D    222027          2097             SHLD   PSTART
0C10    1D              2098             DCR    E
0C11    C21A0C          2099            JNZ     LBLK1
0C14    CDCB0B          2100             CALL   LNSUB
0C17    D8              2101             RC
0C18    3D              2102             DCR    A
0C'     5F              2103             MOV    E,A
                        2104 LBLK1:
0C1A    CDEC0B          2105             CALL   LNTRK
0C1D    C9              2106             RET
                        2107 LNEXT:
0C1E    3A3527          2108             LDA    DCNT
0C21    3D              2109             DCR    A
0C22    323527          2110             STA    DCNT
0C25    C22C0C          2111             JNZ    LN2
0C28    CDCB0B          2112            CALL    LNSUB
0C2B    D8              2113            RC
                        2114 LN2:
0C2C    CDEC0B          2115             CALL   LNTRK
0C2F    D8              2116            RC
                        2117 LN1:
0C30    2A7827          2118             LHLD   BCOUNT
0C33    7C              2119             MOV    A,H
```

```
0C34    FE00        2120            CPI   0
0C36    CA560C      2121            JZ    LN4
0C39    54          2122           MOV    D,H
0C3A    3A3527      2123           LDA    DCNT
0C3D    5F          2124           MOV    E,A
                    2125 LN7:
0C3E    CDFF0B      2126            CALL  LBLK
0C41    D8          2127            RC
0C42    CDFF0B      2128            CALL  LBLK
0C45    D8          2129            RC
0C46    15          2130           DCR    D
0C47    C23E0C      2131           JNZ    LN7
0C4A    97          2132           SUB    A
0C4B    327927      2133           STA    BCOUNT+1
0C4E    7B          2134           MOV    A,E
0C4F    323527      2135           STA    DCNT
0C52    2A2027      2136           LHLD   PSTART
0C55    EB          2137           XCHG
                    2138 LN4:
0C56    210026      2139            LXI   H,BUF2
                    2140 LN6:
0C59    3A3027      2141            LDA   UNIT
0C5C    CD6A08      2142            CALL  DSRDW
0C5F    D8          2143            RC
0C60    0680        2144            MVI   B,128
0C62    A7          2145            ANA   A
0C63    C9          2146            RET
                    2147 LOAD3:
0C64    E1          2148            POP   H
0C65    C3C70B      2149            JMP   LOAD4
                    2150 LOAD2:
0C68    210000      2151            LXI   H,0
0C6B    227827      2152            SHLD  BCOUNT
0C6E    218426      2153            LXI   H,BUF1+4
0C71    223127      2154            SHLD  TRK
0C74    3E3F        2155            MVI   A,63
0C76    323527      2156            STA   DCNT
0C7?    CD1E0C      2157            CALL  LNEXT
```



```
                    2158 LOAD7:
0C7C    DAC70B      2159            JC    LOAD4
0C7F    5E          2160           MOV    E,M
0C80    23          2161           INX    H
0C81    05          2162           DCR    B
0C82    CC1E0C      2163            CZ    LNEXT
0C85    DAC70B      2164            JC    LOAD4
0C88    56          2165           MOV    D,M
0C89    D5          2166           PUSH   D
0C8A    23          2167           INX    H
```

```
0C8B    05          2168            DCR   B
0C8C    CC1E0C      2169            CZ    LNEXT
0C8F    DA640C      2170            JC    LOAD3
0C92    5E          2171            MOV   E,M
0C93    23          2172            INX   H
0C94    05          2173            DCR   B
0C95    CC1E0C      2174            CZ    LNEXT
0C98    DA640C      2175            JC    LOAD3
0C9B    56          2176            MOV   D,M
0C9C    EB          2177            XCHG
0C9D    222027      2178            SHLD  PSTART
0CA0    E1          2179            POP   H
0CA1    227827      2180            SHLD  BCOUNT
0CA4    7C          2181            MOV   A,H
0CA5    B5          2182            ORA   L
0CA6    CAE30C      2183            JZ    LOAD8
0CA9    2A2027      2184            LHLD  PSTART
0CAC    EB          2185            XCHG
0CAD    23          2186            INX   H
                    2187 LOAD6:
0CAE    05          2188            DCR   B
0CAF    CC1E0C      2189            CZ    LNEXT
0CB2    DAC70B      2190            JC    LOAD4
0CB5    3A7827      2191          LDA   BCOUNT
0CB8    4F          2192          MOV   C,A
0CB9    3A7927      2193          LDA   BCOUNT+1
0CBC    B1          2194          ORA   C
0CBD    A7          2195          ANA   A
```

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```
0CBE    CADB0C      2196          JZ    LOAD5
0CC1    7E          2197           MOV   A,M
0CC2    12          2198           STAX  D
0CC3    23          2199           INX   H
0CC4    13          2200           INX   D
0CC5    EB          2201           XCHG
0CC6    222027      2202           SHLD  PSTART
0CC9    EB          2203           XCHG
0CCA    E5          2204           PUSH  H
0CCB    2A7827      2205           LHLD  BCOUNT
0CCE    2B          2206           DCX   H
0CCF    227827      2207           SHLD  BCOUNT
0CD2    7C          2208           MOV   A,H
0CD3    B5          2209           ORA   L
0CD4    CADB0C      2210           JZ    LOAD5
0CD7    E1          2211           POP   H
0CD8    C3AE0C      2212           JMP   LOAD6
                    2213 LOAD5:
0CDB    E1          2214           POP   H
0CDC    05          2215           DCR   B
0CDD    CC1E0C      2216           CZ    LNEXT
0CE0    C37C0C      2217           JMP   LOAD7
                    2218 LOAD8:
0CE3    C1          2219          POP   B
0CE4    D1          2220          POP   D
0CE5    A7          2221          ANA   A
```

```
0CE6    2A2027          2222            LHLD    PSTART
0CE9    C9              2223            RET
                        2224 LINK:
0CEA    CD9B0B          2225            CALL    LOAD
0CED    D8              2226            RC
0CEE    E9              2227            PCHL
                        2228 ;
                        2229 ;
                        2230 ;          AUTO LOAD ROUTINE (POWER UP)
                        2231 ;
                        2232 AUTOLOAD:
0CEF    97              2233            SUB     A
```

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```
                        2234 AUTO1:
0CF0    47              2235            MOV     B,A
0CF1    21E906          2236            LXI     H,MONNA
0CF4    CDEA0C          2237            CALL    LINK
0CF7    FE08            2238            CPI     8
0CF9    C25A04          2239            JNZ     MON
                        2240 AUTO4:
0CFC    78              2241            MOV     A,B
0CFD    3C              2242            INR     A
0CFE    FE04            2243            CPI     4
0D00    C2F00C          2244            JNZ     AUTO1
0D03    3A8027          2245            LDA     KEYBUF
0D06    A7              2246            ANA     A
0D07    C25A04          2247            JNZ     MON
0D0A    3ABB27          2248            LDA     MSEC-1
0D0D    FE32            2249            CPI     50
0D0F    C2EF0C          2250            JNZ     AUTOLOAD
0D12    3A3D27          2251            LDA     MSGSWITCH
0D15    A7              2252            ANA     A
0D16    C2280D          2253            JNZ     AUTO2
0D19    21310D          2254            LXI     H,TXLOAD
                        2255 AUTO3:
0D1C    7E              2256            MOV     A,M
0D1D    A7              2257            ANA     A
0D1E    CA280D          2258            JZ      AUTO2
0D21    CDB707          2259            CALL    TTO
0D24    23              2260            INX     H
0D25    C31C0D          2261            JMP     AUTO3
                        2262 AUTO2:
0D28    3E01            2263            MVI     A,1
0D2A    323D27          2264            STA     MSGSWITCH
0D2D    97              2265            SUB     A
0D2E    C3F00C          2266            JMP     AUTO1
0D31    57414954        2267 TXLOAD:    DB      'WAITING',CR,LF,0
                        2268 HELPTXT:
0D3B    1D19            2269            DB      HOME,ERASE
0D3D    100014          2270            DB      10H,0,20
0D40    2A2A2A20        2271            DB      '*** TANDBERG TDV-2114 MONITOR KERNEL 96
```

```
0D72    0D              2272            DB      CR
0D73    0A              2273            DB      LF
0D74    0A              2274            DB      LF
0D75    45584144        2275            DB      'EXAMPLES:                      '
0D93    41564149        2276            DB      'AVAILABLE COMMANDS:',CR
0DA7    0A              2277            DB      LF
0DA8    0A              2278            DB      LF
0DA9    41              2279            DB      'A'
0DAA    100326          2280            DB      10H,3,38
0DAD    41202D20        2281            DB      'A - FILL SCREEN WITH ALL POSSIBLE CODES
0DD4    0D0A            2282            DB      CR,LF
0DD6    0A              2283            DB      LF
0DD7    44737461        2284            DB      'D',73H,74H,61H,72H,74H
0DDD    2C6C656E        2285            DB      ',',6CH,65H,6EH,67H,74H
0DE3    68              2286            DB      68H
0DE4    100526          2287            DB      10H,5,38
0DE7    44202D20        2288            DB      'D - DISPLAY PART OF MEMORY',CR,LF
0E03    0A              2289            DB      LF
0E04    46737461        2290            DB      'F',73H,74H,61H,72H,74H
0E0A    2C73746F        2291            DB      ',',73H,74H,6FH,70H,','
0E10    68657863        2292            DB      68H,65H,78H,63H,68H,61H
0E16    72              2293            DB      72H
0E17    100726          2294            DB      10H,7,38
0E1A    46202D20        2295            DB      'F - FILL MEMORY PART WITH FIXED VALUE'
0E3F    0D0A            2296            DB      CR,LF
0E41    0A              2297            DB      LF
0E42    47737461        2298            DB      'G',73H,74H,61H,72H,74H
0E48    100926          2299            DB      10H,9,38
0E4B    47202D20        2300            DB      'G - START EXECUTION WITH OR WITHOUT'
0E6E    0D0A            2301            DB      CR,LF
0E70    47737461        2302            DB      'G',73H,74H,61H,72H,74H
0E76    2073746F        2303            DB      ' ',73H,74H,6FH,70H
0E7B    100A2A          2304            DB      10H,10,42
0E7E    42524541        2305            DB      'BREAKPOINTS',CR,LF
0E8B    47737461        2306            DB      'G',73H,74H,61H,72H,74H
0E91    2073746F        2307            DB      ' ',73H,74H,6FH,70H
0E96    31207374        2308            DB      '1 ',73H,74H,6FH,70H
0E[     32202020        2309            DB      '2                '
```



```
0EA9    0D0A            2310            DB      CR,LF
0EAB    4C6E616D        2311            DB      'L',6EH,61H,6DH,65H
0EB0    100C26          2312            DB      10H,12,38
0EB3    4C202D20        2313            DB      'L - LOAD BINARY FILE'
0EC7    0D0A            2314            DB      CR,LF
0EC9    4C3A4675        2315            DB      'L:F',75H,':',6EH,61H
0ED0    6D65            2316            DB      6DH,65H
0ED2    0D0A            2317            DB      CR,LF
0ED4    5275            2318            DB      'R',75H
0ED6    100E26          2319            DB      10H,14,38
```

```
0ED9    52202D20        2320            DB      'R - LOAD TOS21'
0EE7    0D0A            2321            DB      CR,LF
0EE9    0A              2322            DB      LF
0EEA    53737461        2323            DB      'S',73H,74H,61H,72H
0EEF    74              2324            DB      74H
0EF0    101026          2325            DB      10H,16,38
0EF3    53202D20        2326            DB      'S - MEMORY INSPECT/SUBSTITUTE'
0F10    0D0A            2327            DB      CR,LF
0F12    0A              2328            DB      LF
0F13    54              2329            DB      'T'
0F14    101226          2330            DB      10H,18,38
0F17    54202D20        2331            DB      'T - ACT AS TELETYPE'
0F2A    0D0A            2332            DB      CR,LF
0F2C    0A              2333            DB      LF
0F2D    58762076        2334            DB      'X',76H,' ',76H,'=ABCDEHLFTUQR'
0F3E    101426          2335            DB      10H,20,38
0F41    58202D20        2336            DB      'X - REGISTER INSPECT/SUBSTITUTE'
0F60    0D0A            2337            DB      CR,LF
0F62    0A              2338            DB      LF
0F63    2A2A2041        2339            DB      '** ALL ADDRESSES AND BYTE VALUES '
0F84    4D555354        2340            DB      'MUST BE GIVEN IN HEXADECIMAL **'
0FA3    1D              2341            DB      HOME
0FA4    FF              2342            DB      0FFH
                        2343 ;
                        2344 ;          START ADDRESS
                        2345 ;
0FA5    C3EF0C          2346 BRNCH:     JMP     AUTOLOAD
                        2347 CRW:
```



```
0FA8    CDEF0F          2348            CALL    CCAL
0FAB    C3A213          2349            JMP     CWT
                        2350 CBRDW:
0FAE    CD3811          2351            CALL    CBRD
0FB1    C3A213          2352            JMP     CWT
                        2353 CBWRW:
0FB4    CD2C12          2354            CALL    CBWR
0FB7    C3A213          2355            JMP     CWT
                        2356 CBBSW:
0FBA    CD9A13          2357            CALL    CBBS
0FBD    C3A213          2358            JMP     CWT
                        2359 CBTMW:
0FC0    CDCF12          2360            CALL    CBTM
0FC3    C3A213          2361            JMP     CWT
                        2362 CBSFW:
0FC6    CD8113          2363            CALL    CBSF
0FC9    C3A213          2364            JMP     CWT
                        2365 CBSBW:
0FCC    CD9213          2366            CALL    CBSB
0FCF    C3A213          2367            JMP     CWT
                        2368 ;
                        2369 ;          UNLOAD CARTRIDGE
                        2370 ;
                        2371 ;          A - UNIT
                        2372 ;
                        2373 CUN:
```

```
0FD2    F5          2374          PUSH   PSW
0FD3    CDA213      2375          CALL   CWT        ; WAIT UNTIL COMPLETED
0FD6    F1          2376          POP    PSW
0FD7    324227      2377          STA    CUNIT      ; UNIT NO
0FDA    FE04        2378          CPI    4
0FDC    F27C10      2379          JP     CCAL1      ; ILLEGAL
0FDF    E5          2380          PUSH   H
0FE0    210000      2381          LXI    H,0
0FE3    224327      2382          SHLD   CCONT
0FE6    224D27      2383          SHLD   CRETRY
0FE9    E1          2384          POP    H
0FEA    F620        2385          ORI    CUNLD
```



```
0FEC    C31D10      2386          JMP    CCAL7
                    2387 ;
                    2388 ;        CALIBRATE CARTRIDGE
                    2389 ;
                    2390 ;        A - UNIT
                    2391 ;
                    2392 CCAL:
0FEF    F5          2393          PUSH   PSW
0FF0    CDA213      2394          CALL   CWT        ; WAIT TILL PREVIOUS COMPLETED
0FF3    F1          2395          POP    PSW
0FF4    324227      2396          STA    CUNIT      ; UNIT NUMBER
0FF7    FE04        2397          CPI    4          ; CHECK IF LEGAL (0-3)
0FF9    F27C10      2398          JP     CCAL1      ; WELL, IT WASNT
0FFC    E5          2399          PUSH   H
0FFD    D5          2400          PUSH   D
0FFE    214827      2401          LXI    H,CUSAGE
1001    5F          2402          MOV    E,A
1002    1600        2403          MVI    D,0
1004    19          2404          DAD    D
1005    D1          2405          POP    D
1006    7E          2406          MOV    A,M
10[illegible]  FEFF  2407          CPI    0FFH
100[illegible]  CA3310  2408          JZ     CCAL8
100C    36FF        2409          MVI    M,0FFH     ; SET USAGE FLAG
100E    213B10      2410          LXI    H,CCAL2    ; CONTINUE ADDRESS
1011    224327      2411          SHLD   CCONT
1014    224D27      2412          SHLD   CRETRY     ; AND ALSO RETRY ADDRESS
1017    E1          2413          POP    H
1018    3A4227      2414          LDA    CUNIT
101B    F660        2415          ORI    CILLEGAL   ; SEND ILLEGAL COMMAND
                    2416 CCAL7:
101D    F5          2417          PUSH   PSW        ; TO TEST IF UNIT IS READY
101E    3E14        2418          MVI    A,CRTRY
1020    324C27      2419          STA    CRCNT
1023    3EFF        2420          MVI    A,0FFH     ; OPERATION IN PROGRESS FLAG
1025    324127      2421          STA    CPROG
1028    F1          2422          POP    PSW
1029    CDB513      2423          CALL   CBUSY      ; WAIT TILL CONTROLLER IS NOT B
```

```
102C    D327        2424            OUT     CCOM        ; EXECUTE COMMAND
                    2425 CCAL9:
102E    3A4227      2426            LDA     CUNIT       ; RESTORE A
1031    A7          2427            ANA     A           ; NO ERROR
1032    C9          2428            RET                 ; RETURN TO USER
                    2429 CCAL8:
1033    E1          2430            POP     H
1034    97          2431            SUB     A
1035    324127      2432            STA     CPROG
1038    C32E10      2433            JMP     CCAL9
                    2434 ;
                    2435 ;          CCAL PART 2 - RESPONSE TO READY TEST
                    2436 ;
                    2437 CCAL2:
103B    3A4027      2438            LDA     CSTAT       ; CONTROLLER STATUS WORD
103E    E608        2439            ANI     8           ; CHECK READY BIT
1040    CA8310      2440            JZ      CCAL3       ; NOT READY
1043    3E14        2441            MVI     A,CRTRY
104?    324C27      2442            STA     CRCNT
104o    216110      2443            LXI     H,CCAL4     ; SET RETRY ADDRESS
104D    224D27      2444            SHLD    CRETRY
104E    210000      2445            LXI     H,0         ; NO CONTINUATION
1051    224327      2446            SHLD    CCONT
1054    3A4227      2447            LDA     CUNIT
1057    F610        2448            ORI     CRWND       ; FORM REWIND COMMAND
1059    CDB513      2449            CALL    CBUSY       ; WAIT TILL CONTPOLLER READY
105C    D327        2450            OUT     CCOM        ; EXECUTE COMMAND
105E    C3EB01      2451            JMP     CONT        ; RETURN TO INTERRUPTED USER
                    2452 ;
                    2453 ;          CCAL PART 3 - RETRY AFTER REWIND COMMAND
                    2454 ;
                    2455 CCAL4:
1061    3A4027      2456            LDA     CSTAT       ; CONTROLLER STATUS
1064    E6F0        2457            ANI     0F0H        ; SELECT ERROR FLAG PART
1066    CA8310      2458            JZ      CCAL3       ; NO ERROR OCCURED - MUST BE N
1069    FEF0        2459            CPI     0F0H
106B    CA8310      2460            JZ      CCAL3
                    2461 CCAL6:
```



```
106E    3A4027      2462            LDA     CSTAT
1071    0F          2463            RRC                 ; SHIFT DOWN ERROR CODE
1072    0F          2464            RRC
1073    0F          2465            RRC
1074    0F          2466            RRC
1075    F60F        2467            ANI     0FH         ; CLEAR UPPER BITS FOR SAFETY
1077    F640        2468            ORI     40H
1079    C38510      2469            JMP     CCAL5
                    2470 CCAL1:
107C    3E50        2471            MVI     A,SEC50     ; * ERROR 50 * ILLEGAL UNIT NU
```

```
107E    324127          2472            STA     CPROG
1081    37              2473            STC
1082    C9              2474            RET
                        2475 CCAL3:
1083    3E54            2476            MVI     A,SEC54     ; * ERROR 54 * UNIT NOT READY
                        2477 CCAL5:
1085    324127          2478            STA     CPROG       ; SET COMPLETION STATUS
1088    210000          2479            LXI     H,0         ; CLEAR CONTINUATION AND RETRY
108B    224327          2480            SHLD    CCONT
108E    224D27          2481            SHLD    CRETRY
1091    C3EB01          2482            JMP     CONT        ; RETURN TO INTERRUPTED USER
                        2483 ;
                        2484 ;          CENTER - UTILITY USED BY READ AND WRITE CARTRID
                        2485 ;
                        2486 CENTER:
1094    F5              2487            PUSH    PSW
1095    CDA213          2488            CALL    CWT         ; WAIT UNTIL PREVIOUS OPERATIO
1098    F1              2489            POP     PSW
1099    324227          2490            STA     CUNIT       ; UNIT NUMBER
109C    FE04            2491            CPI     4           ; CHECK IF LEGAL (0-3)
109E    F2C410          2492            JP      CENT1       ; IT WASNT
10A1    224527          2493            SHLD    CBUF        ; BUFFER ADDRESS
10A4    EB              2494            XCHG
10A5    225027          2495            SHLD    CBLKLG      ; BLOCK LENGTH (WRITE ONLY)
10A7    EB              2496            XCHG
10A8    C5              2497            PUSH    B
10AA    5F              2498            MOV     E,A
10AB    7C              2499            MOV     A,H
```

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```
10AC    E6F0            2500            ANI     0F0H        ; CHECK BUFFER ADDRESS >1000H
10AE    CAC910          2501            JZ      CENT2       ; IT WASNT
10B1    3E14            2502            MVI     A,CRTRY     ; SET RETRY COUNT
10B3    324C27          2503            STA     CRCNT
10B6    78              2504            MOV     A,B         ; TRACK NUMBER
10B7    324727          2505            STA     CTRK
10BA    FE04            2506            CPI     4           ; CHECK IF LEGAL (0-3)
10BC    F2DD10          2507            JP      CENT3       ; IT WASNT
10BF    1600            2508            MVI     D,0
10C1    E1              2509            POP     H           ; GET RETURN ADDRESS
10C2    E3              2510            XTHL
10C3    E9              2511            PCHL                ;RETURN
                        2512 CENT1:
10C4    33              2513            INX     SP
10C5    33              2514            INX     SP
10C6    C37C10          2515            JMP     CCAL1
                        2516 CENT2:
10C9    3E55            2517            MVI     A,SEC55     ; *ERROR 55* BUFFER ADDRESS ERI
                        2518 CENT4:
10CB    C1              2519            POP     B
10CC    2A5027          2520            LHLD    CBLKLG      ; RESTORE D
10CF    EB              2521            XCHG
10D0    33              2522            INX     SP
10D1    33              2523            INX     SP
10D2    324127          2524            STA     CPROG       ; SET ERROR CODE
10D5    A7              2525            ANA     A
```

```
10D6    2A4527          2526            LHLD    CBUF        ; RESTORE REGISTERS
10D9    3A4227          2527            LDA     CUNIT
10DC    C9              2528            RET
                        2529 CENT3:
10DD    3E51            2530            MVI     A,SEC51     ; *ERROR 51* TRACK NUMBER ILLE
10DF    C3CB10          2531            JMP     CENT4
                        2532 ;
                        2533 ;          UTILITY USED BY TM AND SEARCH FUNCS
                        2534 ;
                        2535 CENTX:
10E2    F5              2536            PUSH    PSW
10E3    CDA213          2537            CALL    CWT         ; WAIT UNTIL PREV COMPLETED
```



```
10E6    F1              2538            POP     PSW
10E7    324227          2539            STA     CUNIT
10E     FE04            2540            CPI     4
10EC    F2C410          2541            JP      CENT1       ; ILLEGAL
10EF    224527          2542            SHLD    CBUF
10F2    EB              2543            XCHG
10F3    225027          2544            SHLD    CBLKLG
10F6    EB              2545            XCHG
10F7    C5              2546            PUSH    B
10F8    5F              2547            MOV     E,A
10F9    1600            2548            MVI     D,0
10FB    3E14            2549            MVI     A,CRTRY
10FD    324C27          2550            STA     CRCNT       ; RETRY COUNT
1100    78              2551            MOV     A,B
1101    324727          2552            STA     CTRK
1104    FE04            2553            CPI     4
1106    F2DD10          2554            JP      CENT3       ; ILLEGAL TRK NO
1109    E1              2555            POP     H
110A    E3              2556            XTHL
110B    E9              2557            PCHL                ; RETURN
                        2558 ;
                        2559 ;          CBRD - READ A CARTRIDGE BLOCK
                        2560 ;
                        2561 ;          A - UNIT
                        2562 ;          B - TRACK
                        2563 ;          HL - BUFFER ADDRESS
                        2564 ;
                        2565 CBRDO:
110C    2A4527          2566            LHLD    CBUF        ; BUFFER ADDRESS
110F    7C              2567            MOV     A,H
1110    CDB513          2568            CALL    CBUSY       ; WAIT UNTIL CONTROLLER READY
1113    D323            2569            OUT     CADDHI      ; SET HIGH ORDER PART OF ADDRE
1115    7D              2570            MOV     A,L
1116    D324            2571            OUT     CADDLO      ; SET LOW ORDER PART OF ADDRES
1118    3E01            2572            MVI     A,1
111A    D325            2573            OUT     CNCSRE      ; BLOCK COUNT = 1
111C    3EFF            2574            MVI     A,0FFH      ; IN PROGRESS FLAG
111E    324127          2575            STA     CPROG
```

```
1121    3A4727          2576            LDA     CTRK        ; FORM READ COMMAND
1124    07              2577            RLC
1125    07              2578            RLC
1126    E6FC            2579            ANI     0FCH
1128    214227          2580            LXI     H,CUNIT
112B    B6              2581            ORA     M
112C    F640            2582            ORI     CREAD
112E    210000          2583            LXI     H,0         ; SET CONTINUE ADDRESS NONE
1131    224327          2584            SHLD    CCONT
1134    F3              2585            DI
1135    D327            2586            OUT     CCOM        ; EXECUTE COMMAND
1137    C9              2587            RET
                        2588 ;
                        2589 ;          ***** CBRD ENTERED HERE *****
                        2590 ;
                        2591 CBRD:
1138    CD9410          2592            CALL    CENTER
113B    217811          2593            LXI     H,CBRD6
113E    224D27          2594            SHLD    CRETRY      ;SET RETRY ADDRESS
1141    214827          2595            LXI     H,CUSAGE    ; CHECK TRACK USAGE FLAGS
1144    19              2596            DAD     D
1145    BE              2597            CMP     M           ; SAME AS LAST TIME ON THIS UN
1146    CA5911          2598            JZ      CBRD1       ; YES
1149    7E              2599            MOV     A,M
114A    FEFF            2600            CPI     0FFH        ; JUST OPENED
114C    C26F11          2601            JNZ     CBRD2       ; NO - TRACK CHANGE ERROR
114F    3A4727          2602            LDA     CTRK
1152    77              2603            MOV     M,A         ; SET TRACK NO
1153    21C211          2604            LXI     H,CBRD8     ; ANOTHER RETRY ADDRESS REQUIR
1156    224D27          2605            SHLD    CRETRY
                        2606 CBRD1:
1159    CD0C11          2607            CALL    CBRD0
                        2608 CBRDF:
115C    3E14            2609            MVI     A,CRTRY
115E    324C27          2610            STA     CRCNT
1161    3A4227          2611            LDA     CUNIT
1164    A7              2612            ANA     A
                        2613 CBRDE:
```



```
1165    C1              2614            POP     B
1166    2A5027          2615            LHLD    CBLKLG
1169    EB              2616            XCHG
116A    2A4527          2617            LHLD    CBUF
116D    FB              2618            EI
116E    C9              2619            RET
                        2620 CBRD2:
116F    3E53            2621            MVI     A,SEC53     ; *ERROR 53* TRACK USAGE ERROR
1171    37              2622            STC
1172    324127          2623            STA     CPROG
```

```
1175    C36511      2624            JMP     CBRDE
                    2625 ;
                    2626 ;          RETRY IN NORMAL FASHION
                    2627 ;
                    2628 CBRD6:
1178    3A4027      2629            LDA     CSTAT       ; CONTROLLER STATUS
117B    E608        2630            ANI     8           ; READY FLAG
117D    CA8310      2631            JZ      CCAL3       ; NOT READY - ERROR IN THIS CA
1180    3A4027      2632            LDA     CSTAT
1183    E640        2633            ANI     40H
1185    C2B611      2634            JNZ     CBRDD       ; ERROR NON-VALID COMMAND
1188    3A4027      2635            LDA     CSTAT
118B    E680        2636            ANI     80H         ; TAPE MARK
118D    CA9811      2637            JZ      CBRDA       ; NO -RETRY OPERATION
1190    3A4027      2638            LDA     CSTAT
1193    E670        2639            ANI     70H         ; ERROR WITH TAPE MARK
1195    CA6E10      2640            JZ      CCAL6       ; RETURN TAPE MARK STATUS
                    2641 ;
                    2642 ;          TRY TO RECOVER
                    2643 ;
                    2644 CBRDA:
1198    21B611      2645            LXI     H,CBRDD
119B    224327      2646            SHLD    CCONT       ; SET CONTINUE ADDRESS
119E    210000      2647            LXI     H,0
11/     224D27      2648            SHLD    CRETRY      ; NO RETRY
11A4    3A4727      2649            LDA     CTRK        ; FORM BACKSPACE COMMAND
11A7    07          2650            RLC
11A8    07          2651            RLC
```



```
11A9    E6FC        2652            ANI     0FCH
11AB    214227      2653            LXI     H,CUNIT
11AE    B6          2654            ORA     M
11AF    F650        2655            ORI     CBACK
11B1    D327        2656            OUT     CCOM        ; EXECUTE COMMAND
11/     C3EB01      2657            JMP     CONT        ; RETURN TO INTERRUPTED USER
                    2658 ;
                    2659 ;          BACKSPACE OK - RETRY READ
                    2660 ;
                    2661 CBRDD:
11B6    219811      2662            LXI     H,CBRDA
11B9    224D27      2663            SHLD    CRETRY      ; SET RETRY ADDRESS
11BC    CD0C11      2664            CALL    CBRDO
11BF    C3EB01      2665            JMP     CONT
                    2666 ;
                    2667 ;          FIRST ENTRY WITH NOT READY
                    2668 ;
                    2669 CBRD8:
11C2    3A4027      2670            LDA     CSTAT
11C5    E608        2671            ANI     8
11C7    C45D13      2672            CNZ     CBTMA
11CA    3ABB27      2673            LDA     MSEC-1      ; SECONDS COUNTER
11CD    3C          2674            INR     A
11CE    FE3D        2675            CPI     61
11D0    C2D511      2676            JNZ     CBRD7
11D3    3E01        2677            MVI     A,1
```

```
                        2678 CBRD7:
11D5    325227          2679            STA     CTIMER      ; 60 SECONDS MAX
11D8    21E911          2680            LXI     H,CBRDB     ; RETRY ADDRESS
11DB    224D27          2681            SHLD    CRETRY
                        2682 CBRDC:
11DE    CD0C11          2683            CALL    CBRD0       ; EXECUTE READ
                        2684 CBRDG:
11E1    3E14            2685            MVI     A,CRTRY
11E3    324C27          2686            STA     CRCNT
11E6    C3E801          2687            JMP     CONT        ; CONTINUE INTERRUPTED USER
                        2688 ;
                        2689 ;          SECONDARY ENTRY WITH NOT READY
```

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```
                        2690 ;
                        2691 CBRDB:
11?     3E14            2692            MVI     A,CRTRY     ; RESET RETRY COUNT
11EB    324C27          2693            STA     CRCNT
11EE    3AB827          2694            LDA     MSEC-1      ; SECONDS TIMER
11F1    215227          2695            LXI     H,CTIMER    ; STOPTIME ADDRESS
11F4    BE              2696            CMP     M
11F5    C2DE11          2697            JNZ     CBRDC       ; TRY AGAIN
11F8    C38310          2698            JMP     CCAL3       ; TOO LONG - RETURN NOT READY
                        2699 ;
                        2700 ;          CBWR - WRITE CARTRIDGE BLOCK
                        2701 ;
                        2702 ;          A - UNIT
                        2703 ;          B - TRACK
                        2704 ;          DE - BLOCK LENGTH
                        2705 ;          HL - BUFFER ADDRESS
                        2706 ;
                        2707 CBWR0:
11FB    2A4527          2708            LHLD    CBUF        ; BUFFER ADDRESS
11FE    7C              2709            MOV     A,H
11FF    CDB513          2710            CALL    CBUSY       ; WAIT UNTIL CONTROLLER READY
12(     D323            2711            OUT     CADDHI      ; SET HIGH ORDER ADDRESS
1204    7D              2712            MOV     A,L
1205    D324            2713            OUT     CADDLO      ; SET LOW ORDER ADDRESS
1207    2A5027          2714            LHLD    CBLKLG      ; BLOCK LENGTH
120A    7C              2715            MOV     A,H
120B    D321            2716            OUT     CBYTH       ; HIGH ORDER LENGTH PART
120D    7D              2717            MOV     A,L
120E    D322            2718            OUT     CBYTL       ; LOW ORDER LENGTH PART
1210    3EFF            2719            MVI     A,0FFH
1212    324127          2720            STA     CPROG
1215    3A4727          2721            LDA     CTRK        ; FORM WRITE COMMAND
1218    07              2722            RLC
1219    07              2723            RLC
121A    E6FC            2724            ANI     0FCH
121C    214227          2725            LXI     H,CUNIT
121F    B6              2726            ORA     M
1220    F600            2727            ORI     CWRIT
```

```
****ERROR****: 07
1222    210000      2728          LXI     H,0
1225    224327      2729          SHLD    CCONT       ; SET CONTINUE ADDRESS ZERO
1228    F3          2730          DI
1229    D327        2731          OUT     CCOM        ; EXECUTE COMMAND
122B    C9          2732          RET
                    2733 ;
                    2734 ;        ***** CBWR STARTS HERE *****
                    2735 ;
                    2736 CBWR:
122C    CD9410      2737          CALL    CENTER
122F    217F12      2738          LXI     H,CBWR6     ; RETRY ADDRESS
1232    224D27      2739          SHLD    CRETRY
1235    214827      2740          LXI     H,CUSAGE    ; TRACK USAGE INFO
1238    19          2741          DAD     D
1239    BE          2742          CMP     M           ; SAME AS LAST
123A    CA4D12      2743          JZ      CBWR1       ; YES
123D    7E          2744          MOV     A,M
123E    FEFF        2745          CPI     0FFH        ; AT LOAD POINT
1240    C26F11      2746          JNZ     CBRD2
1243    3A4727      2747          LDA     CTRK
1246    77          2748          MOV     M,A
1247    215312      2749          LXI     H,CBWR2
124A    224D27      2750          SHLD    CRETRY      ; SET ANOTHER RETRY ADDRESS
                    2751 CBWR1:
124D    CDFB11      2752          CALL    CBWRO       ; INITIATE OPERATION
1250    C35C11      2753          JMP     CBRDF       ; RETURN TO USER
                    2754 CBWR2:
1253    3ABB27      2755          LDA     MSEC-1      ; SECONDS COUNTER
1256    3C          2756          INR     A
1257    FE3D        2757          CPI     61
1259    C25E12      2758          JNZ     CBWR3
125C    3E01        2759          MVI     A,1
                    2760 CBWR3:
125E    325227      2761          STA     CTIMER      ; SET LIMIT
1261    216D12      2762          LXI     H,CBWR4
1264    224D27      2763          SHLD    CRETRY      ;SET NEXT RETRY ADDRESS
                    2764 CBWR5:
```



```
1267    CDFB11      2765          CALL    CBWRO       ; TRY AGAIN
126A    C3EB01      2766          JMP     CONT        ; RETURN TO INTERRUPTED USER
                    2767 CBWR4:
126D    3F14        2768          MVI     A,CRTRY     ; RESET RETRY COUNT
126F    324C27      2769          STA     CRCNT
1272    3ABB27      2770          LDA     MSEC-1      ; SECONDS TIMER
1275    215227      2771          LXI     H,CTIMER
1278    BE          2772          CMP     M
1279    C26712      2773          JNZ     CBWR5
127C    C38310      2774          JMP     CCAL3       ; TIME IS OUT - NOT READY
```

```
                        2775 CBWR6:
127F    3A4027          2776            LDA     CSTAT       ; CONTROLLER STATUS
1282    E608            2777            ANI     8           ; NOT READY
1284    CA8310          2778            JZ      CCAL3       ; YES - ERROR
1287    210000          2779            LXI     H,0
128A    224D27          2780            SHLD    CRETRY
128D    21A812          2781            LXI     H,CBWR7
1290    224327          2782            SHLD    CCONT
1293    CDB513          2783            CALL    CBUSY
1296    3A4727          2784            LDA     CTRK
1299    07              2785            RLC
129A    07              2786            RLC
129B    E6FC            2787            ANI     0FCH
129D    214227          2788            LXI     H,CUNIT
12A0    B6              2789            ORA     M
12A1    F650            2790            ORI     CBACK
12A3    D327            2791            OUT     CCOM
12A5    C3EB01          2792            JMP     CONT
                        2793 CBWR7:
12A8    21C612          2794            LXI     H,CBWR8
12AB    224327          2795            SHLD    CCONT
12AE    CDB513          2796            CALL    CBUSY
12B1    97              2797            SUB     A
12B2    D325            2798            OUT     CNCSRE
12B4    3A4727          2799            LDA     CTRK
12B7    07              2800            RLC
12B8    07              2801            RLC
12B9    E6FC            2802            ANI     0FCH
```

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```
12BB    214227          2803            LXI     H,CUNIT
12BE    B6              2804            ORA     M
12BF    F6E0            2805            ORI     CERASE
12C1    D327            2806            OUT     CCOM
12C3    C3EB01          2807            JMP     CONT
                        2808 CBWR8:
12C6    217F12          2809            LXI     H,CBWR6
12C9    224D27          2810            SHLD    CRETRY
12CC    C36712          2811            JMP     CBWR5
                        2812 ;
                        2813 ;          CBTM - WRITE TAPE MARK
                        2814 ;
                        2815 CBTM:
12CF    CDE210          2816            CALL    CENTX
12D2    3ED0            2817            MVI     A,CWTMRK
12D4    324F27          2818 CBTM3:     STA     CFUNC
                        2819 CBTM2:
12D7    210000          2820            LXI     H,0
12DA    224D27          2821            SHLD    CRETRY
12DD    224327          2822            SHLD    CCONT
12E0    3A4727          2823            LDA     CTRK        ; TRACK NUMBER
12E3    214827          2824            LXI     H,CUSAGE    ; CHECK TRACK USAGE FLAG
12E6    19              2825            DAD     D
12E7    BE              2826            CMP     M
12E8    CAFB12          2827            JZ      CBTM1       ; SAME AS LAST
12EB    7E              2828            MOV     A,M
```

```
12EC    FEFF        2829            CPI     0FFH
12EE    C26F11      2830            JNZ     CBRD2       ; TRACK CHANGE ERROR
12F1    3A4727      2831            LDA     CTRK
12F4    77          2832            MOV     M,A         ; SET TRACK NO
12F5    211813      2833            LXI     H,CBTM4
12F8    224D27      2834            SHLD    CRETRY      ; NEW RETRY ADDRESS
                    2835 CBTM1:
12FB    CDB513      2836            CALL    CBUSY       ; WAIT UNTIL CONTROLLER READY
12FE    3EFF        2837            MVI     A,0FFH      ; IN PROGRESS FLAG
1300    324127      2838            STA     CPROG
1303    3A4727      2839            LDA     CTRK
1306    07          2840            RLC
```

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```
1307    07          2841            RLC
1308    E6FC        2842            ANI     0FCH
130A    214227      2843            LXI     H,CUNIT
130D    B6          2844            ORA     M
130E    214F27      2845            LXI     H,CFUNC
1311    B6          2846            ORA     M
1312    F3          2847            DI
1313    D327        2848            OUT     CCOM
1315    C35C11      2849            JMP     CBRDF
                    2850 ;
                    2851 ;          FIRST ENTRY WITH NOT READY
                    2852 ;
                    2853 CBTM4:
1318    3A4027      2854            LDA     CSTAT
131B    E608        2855            ANI     8
131D    C45D13      2856            CNZ     CBTMA
1320    3ABB27      2857            LDA     MSEC-1      ; SET TIMER
1323    3C          2858            INR     A
1324    FE3D        2859            CPI     61
1326    C22B13      2860            JNZ     CBTM5
1329    3E01        2861            MVI     A,1
                    2862 CBTM5:
132B    325227      2863            STA     CTIMER      ; 60 SEC MAX
132E    216713      2864            LXI     H,CBTM6     ; NEW RETRY ADDRESS
1331    224D27      2865            SHLD    CRETRY
                    2866 CBTM7:
1334    CDB513      2867            CALL    CBUSY       ; WAIT UNTIL CONTROLLER READY
1337    3A4F27      2868            LDA     CFUNC
133A    FE80        2869            CPI     CSCHF
133C    CA4413      2870            JZ      CBTM8
133F    FE90        2871            CPI     CSCHR
1341    C24913      2872            JNZ     CBTM9
                    2873 CBTM8:
1344    3A5327      2874            LDA     CSCNT
1347    D325        2875            OUT     CNCSRE
                    2876 CBTM9:
1349    3A4727      2877            LDA     CTRK
134C    07          2878            RLC
```

```
134D    07          2879            RLC
134E    E6FC        2880            ANI     0FCH
1350    214227      2881            LXI     H,CUNIT
1353    B6          2882            ORA     M
1354    214F27      2883            LXI     H,CFUNC
1357    B6          2884            ORA     M
1358    D327        2885            OUT     CCOM
135A    C3E111      2886            JMP     CBRDG
                    2887 CBTMA:
135D    3A4027      2888            LDA     CSTAT
1360    E640        2889            ANI     40H
1362    C0          2890            RNZ
1363    E1          2891            POP     H
1364    C36E10      2892            JMP     CCAL6
                    2893 ;
                    2894 ;          SECONDARY ENTRY WITH NOT READY
                    2895 ;
                    2896 CBTM6:
137     3A4027      2897            LDA     CSTAT
136A    E608        2898            ANI     8
136C    C45D13      2899            CNZ     CBTMA
136F    3E14        2900            MVI     A,CRTRY
1371    324C27      2901            STA     CRCNT       ; RESET RETRY COUNT
1374    3ABD27      2902            LDA     MSEC-1
1377    215227      2903            LXI     H,CTIMER
137A    BE          2904            CMP     M
137B    C23413      2905            JNZ     CBTM7       ; TRY AGAIN
137E    C38310      2906            JMP     CCAL3       ; TIMEOUT
                    2907 ;
                    2908 ;          CBSF - SEARCH FORWARD (C) TAPEMARKS
                    2909 ;
                    2910 CBSF:
1381    CDE210      2911            CALL    CENTX
1384    3E80        2912            MVI     A,CSCHF
                    2913 CBSF1:
1386    324F27      2914            STA     CFUNC
1389    79          2915            MOV     A,C
13      325327      2916            STA     CSCNT
```



```
138D    D325        2917            OUT     CNCSRE
138F    C3D712      2918            JMP     CBTM2
                    2919 ;
                    2920 ;          CBSB - SEARCH BACKWARDS (C) TAPEMARKS
                    2921 ;
                    2922 CBSB:
1392    CDE210      2923            CALL    CENTX
1395    3E90        2924            MVI     A,CSCHR
1397    C38613      2925            JMP     CBSF1
                    2926 ;
```

```
                        2927 ;          CBBS - BACKSPACE A BLOCK
                        2928 ;
                        2929 CBBS:
139A    CDE210          2930            CALL    CENTX
139D    3E50            2931            MVI     A,CBACK
139F    C3D412          2932            JMP     CBTM3
                        2933 ;
                        2934 ;          WAIT FOR COMPLETION
                        2935 ;
                        2936 CWT:
13A2    FB              2937            EI
13A3    3A4127          2938            LDA     CPROG
13A6    FEFF            2939            CPI     0FFH
13A8    CAA213          2940            JZ      CWT
13AB    A7              2941            ANA     A
13AC    C8              2942            RZ
13AD    37              2943            STC
13AE    C9              2944            RET
                        2945 ;
                        2946 ;          TEST FOR COMPLETION
                        2947 ;
                        2948 CTST:
13AF    3A4127          2949            LDA     CPROG
13B2    C35E02          2950            JMP     DTST2
                        2951 ;
                        2952 ;          TEST IF CONTROLLER BUSY (INTERNAL ROUTINE)
                        2953 ;
                        2954 CBUSY:
```

```
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13B5    F5              2955            PUSH    PSW
                        2956 CBUS1:
13B6    DB27            2957            IN      CSENST
13B8    E601            2958            ANI     1
13BA    C2B613          2959            JNZ     CBUS1
13BD    F1              2960            POP     PSW
13BE    C9              2961            RET
                        2962 ;
                        2963 ;          CLOCDIR - LOCATE A DIRECTORY ENTRY ON CARTRIDGE
                        2964 ;
                        2965 ;          HL - ADDRESS OF 9 CHARACTER NAME
                        2966 ;
                        2967 ;          A - UNIT NUMBER (0-3)
                        2968 ;
                        2969 ;          RETURNS WITH HL - ADDRESS OF DIRECTORY INFO (IN
                        2970 ;
                        2971 ;          ***** UTILITY: READ DIRECTORY BLOCKS *****
                        2972 ;
                        2973 RD32:
13BF    C5              2974            PUSH    B
13C0    210026          2975            LXI     H,BUF2
13C3    0622            2976            MVI     B,34
                        2977 RD321:
13C5    3677            2978            MVI     M,77H       ; SET AREA
13C7    23              2979            INX     H
13C8    05              2980            DCR     B
```

```
13C9    C2C513      2981            JNZ     RD321
13CC    3A3027      2982            LDA     UNIT
13CF    C1          2983            POP     B           ; TRACK
13D0    C5          2984            PUSH    B
13D1    210026      2985            LXI     H,BUF2
13D4    CDAE0F      2986            CALL    CBRDW       ; READ BLOCK
13D7    DAF813      2987            JC      RD323
13DA    211F26      2988            LXI     H,BUF2+31
13DD    7E          2989            MOV     A,M
13DE    23          2990            INX     H
13DF    FE77        2991            CPI     77H
13E1    CAF513      2992            JZ      RD322       ; UNDERRUN
```

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```
13E4    7E          2993            MOV     A,M
13E5    23          2994            INX     H
13E6    FE77        2995            CPI     77H         ; CHECK FOR OVERRUN
13E8    C2F513      2996            JNZ     RD322
13EB    BE          2997            CMP     M
13EC    C2F513      2998            JNZ     RD322
13EF    C1          2999            POP     B
13F0    210026      3000            LXI     H,BUF2
13F3    A7          3001            ANA     A
13F4    C9          3002            RET
                    3003 RD322:
13F5    3E39        3004            MVI     A,SEC39
13F7    37          3005            STC
                    3006 RD323:
13F8    C1          3007            POP     B
13F9    C9          3008            RET
                    3009 ;
                    3010 ;          ***** MAIN ROUTINE *****
                    3011 ;
                    3012 CLOCDIR:
13FA    223327      3013            SHLD    NAME
13FD    323027      3014            STA     UNIT
1400    CDEF0F      3015            CALL    CCAL        ; REWIND
1403    D8          3016            RC
1404    0600        3017            MVI     B,0         ; TRACK
1406    CDBF13      3018            CALL    RD32
1409    D8          3019            RC
140A    7E          3020            MOV     A,M
140B    FE88        3021            CPI     88H         ; CHECK FOR HEADER
140D    CA1414      3022            JZ      CLOC2
1410    3E34        3023            MVI     A,SEC34     ; INCORRECT HEADER
1412    37          3024            STC
1413    C9          3025            RET
                    3026 CLOC2:
1414    0600        3027            MVI     B,0         ; TRACK
1416    CDBF13      3028            CALL    RD32        ; READ BLOCK
1419    D8          3029            RC
141A    7F          3030            MOV     A,M
```

```
141B    FEFF        3031            CPI     0FFH
141D    CA1414      3032            JZ      CLOC2       ; DELETED - TAKE NEXT
1420    FE7F        3033            CPI     07FH
1422    CA4214      3034            JZ      CLOC3       ; LAST ENTRY
1425    A7          3035            ANA     A
1426    CA2D14      3036            JZ      CLOC4
1429    3E2B        3037            MVI     A,SEC2B     ; INCORRECT DIRECTORY ENTRY
142B    37          3038            STC
142C    C9          3039            RET
                    3040 CLOC4:
142D    D5          3041            PUSH    D
142E    110126      3042            LXI     D,BUF2+1
1431    2A3327      3043            LHLD    NAME
1434    0609        3044            MVI     B,9         ; CHECK NAME EQUAL
                    3045 CLOC5:
1436    1A          3046            LDAX    D
1437    BE          3047            CMP     M
1438    C24714      3048            JNZ     CLOC6       ; NOT EQUAL
143B    23          3049            INX     H
143C    13          3050            INX     D
143D    05          3051            DCR     B
143E    C23614      3052            JNZ     CLOC5
1441    D1          3053            POP     D
                    3054 CLOC3:
1442    210026      3055            LXI     H,BUF2
1445    A7          3056            ANA     A
1446    C9          3057            RET
                    3058 CLOC6:
1447    D1          3059            POP     D
1448    C31414      3060            JMP     CLOC2
                    3061 ;
                    3062 ;          CLOAD - LOAD PROGRAM
                    3063 ;
                    3064 ;          HL -ADDRESS OF 9 CHAR NAME
                    3065 ;
                    3066 ;          A - UNTI
                    3067 ;
                    3068 ;          RETURNS WITH HL - STARTING ADDRESS
```



```
                    3069 ;
                    3070 ;          ***** UTILITIES *****
                    3071 ;
                    3072 ;          NEXT - SUBROUTINE CALLED AT BEGINNING OF RECORD
                    3073 ;
                    3074 NEXT:
144B    D5          3075            PUSH    D           ; SAVE DE
                    3076 NEXT6:
144C    2A7827      3077            LHLD    COUNT
                    3078 NEXT3:
```

```
144F    7C          3079          MOV     A,H
1450    A7          3080          ANA     A
1451    C26914      3081          JNZ     NEXT1       ; DIRECT READ
1454    3A3127      3082          LDA     TRK
1457    47          3083          MOV     B,A
1458    3A3027      3084          LDA     UNIT
145B    210026      3085          LXI     H,BUF2
145E    CDAE0F      3086          CALL    CBRDW
1461    DA8D14      3087          JC      NEXT5
1464    0E80        3088          MVI     C,80H
1466    D1          3089          POP     D           ; RESTORE DE
1467    A7          3090          ANA     A
1468    C9          3091          RET
                    3092 NEXT1:
1469    3A3127      3093          LDA     TRK
146C    47          3094          MOV     B,A
146D    3A3027      3095          LDA     UNIT
1470    2A2027      3096          LHLD    ADR
1473    CDAE0F      3097          CALL    CBRDW
1476    DA8D14      3098          JC      NEXT5
1479    118000      3099          LXI     D,80H
147C    19          3100          DAD     D
147D    222027      3101          SHLD    ADR
1480    1180FF      3102          LXI     D,-80H
14      2A7827      3103          LHLD    COUNT
148a    19          3104          DAD     D
1487    227827      3105          SHLD    COUNT
148A    C34F14      3106          JMP     NEXT3
```



```
                    3107 NEXT5:
148D    D1          3108          POP     D
148E    37          3109          STC
148F    C9          3110          RET                 ; ERROR RETURN
                    3111 ;
                    3112 ;        UTILITY TO VERIFY HEADER TYPE
                    3113 ;
                    3114 VERIFY:
1490    E5          3115          PUSH    H
1491    D5          3116          PUSH    D
1492    C5          3117          PUSH    B
1493    210026      3118          LXI     H,BUF2
1496    BE          3119          CMP     M
1497    C2B114      3120          JNZ     VFY1        ; NOT PROPER BLOCK TYPE
149A    23          3121          INX     H
149B    EB          3122          XCHG
149C    2A3327      3123          LHLD    NAME
149F    0E09        3124          MVI     C,9
                    3125 VFY3:
14A1    1A          3126          LDAX    D
14A2    BE          3127          CMP     M
14A3    C2B714      3128          JNZ     VFY2        ; INCORRECT NAME
14A6    23          3129          INX     H
14A7    13          3130          INX     D
14A8    0D          3131          DCR     C
14A9    C2A114      3132          JNZ     VFY3
```

```
14AC    A7              3133            ANA     A
                        3134 VFY4:
14AD    C1              3135            POP     B
14AE    D1              3136            POP     D
14AF    E1              3137            POP     H
14B0    C9              3138            RET
                        3139 VFY1:
14B1    3E59            3140            MVI     A,SEC59
14B3    37              3141            STC
14B4    C3AD14          3142            JMP     VFY4
                        3143 VFY2:
14B7    3E5A            3144            MVI     A,SEC5A
```



```
14B9    37              3145            STC
14BA    C3AD14          3146            JMP     VFY4
                        3147 ;          SPECIAL ENTRY POINT
                        3148 CLOA1:
14BD    D604            3149            SUI     4
                        3150 ;
                        3151 ;          LOAD ROUTINE STARTS HERE **************
                        3152 CLOAD:
14BF    E5              3153            PUSH    H
14C0    210000          3154            LXI     H,0
14C3    227827          3155            SHLD    COUNT
14C6    E1              3156            POP     H
14C7    D5              3157            PUSH    D
14C8    C5              3158            PUSH    B
14C9    CDFA13          3159            CALL    CLOCDIR     ; LOCATE DIRECTORY ENTRY
14CC    DAC70B          3160            JC      LOAD4
14CF    7E              3161            MOV     A,M
14D0    A7              3162            ANA     A
14D1    CAD914          3163            JZ      CLD1
14D4    3E0B            3164            MVI     A,SEC0B     ; PROGRAM NOT FOUND
14D6    C3C70B          3165            JMP     LOAD4
                        3166 CLD1:
14D9    3A3027          3167            LDA     UNIT
14DC    CDEF0F          3168            CALL    CCAL        ; START REWIND
14DF    DAC70B          3169            JC      LOAD4
14E2    110A00          3170            LXI     D,10
14E5    19              3171            DAD     D
14E6    7E              3172            MOV     A,M         ; TRACK NUMBER
14E7    323127          3173            STA     TRK
14EA    23              3174            INX     H
14EB    7E              3175            MOV     A,M         ; FILE NUMBER
14EC    323527          3176            STA     SEC
14EF    23              3177            INX     H
14F0    7E              3178            MOV     A,M
14F1    FE80            3179            CPI     80H
14F3    C29A15          3180            JNZ     CLDE1       ; INAPPROPRIATE BLOCK SIZE
14F6    23              3181            INX     H
14F7    7E              3182            MOV     A,M
```

```
14F8    A7          3183          ANA     A
14F9    C29A15      3184          JNZ     CLDE1
14FC    3A3527      3185          LDA     SEC
14FF    3D          3186          DCR     A
1500    CA1A15      3187          JZ      CLD5
1503    87          3188          ADD     A
1504    4F          3189          MOV     C,A       ; NUMBER OF FILE MARKS TO PASS
1505    3A3127      3190          LDA     TRK
1508    47          3191          MOV     B,A
1509    3A3027      3192          LDA     UNIT
150C    CDC60F      3193          CALL    CBSFW     ; START SEARCH AND WAIT
150F    D21A15      3194          JNC     CLD5
1512    FE48        3195          CPI     SEC48
1514    CA1A15      3196          JZ      CLD5
1517    C3C70B      3197          JMP     LOAD4
                    3198  CLD5:
151A    3A3127      3199          LDA     TRK
151D    47          3200          MOV     B,A
15      CDBF13      3201          CALL    RD32      ; READ HEADER
1521    DAC70B      3202          JC      LOAD4
1524    3E28        3203          MVI     A,'('
1526    CD9014      3204          CALL    VERIFY    ; CHECK HEADER
1529    DAC70B      3205          JC      LOAD4
152C    0E01        3206          MVI     C,1       ; COUNT
                    3207  CLD2:
152E    0D          3208          DCR     C
152F    CC4B14      3209          CZ      NEXT
1532    DAC70B      3210          JC      LOAD4
1535    5E          3211          MOV     E,M       ; FIRST HALF OF COUNT
1536    23          3212          INX     H
1537    0D          3213          DCR     C
1538    CC4B14      3214          CZ      NEXT
153B    DAC70B      3215          JC      LOAD4
153E    56          3216          MOV     D,M
153F    EB          3217          XCHG
1540    222027      3218          SHLD    ADR
1543    EB          3219          XCHG
15      23          3220          INX     H
```

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```
1545    0D          3221          DCR     C
1546    CC4B14      3222          CZ      NEXT
1549    DAC70B      3223          JC      LOAD4
154C    5E          3224          MOV     E,M
154D    23          3225          INX     H
154E    0D          3226          DCR     C
154F    CC4B14      3227          CZ      NEXT
1552    DAC70B      3228          JC      LOAD4
1555    56          3229          MOV     D,M
1556    EB          3230          XCHG
```

```
1557    E5          3231          PUSH   H          ; ADR
1558    2A2027      3232          LHLD   ADR
155B    E3          3233          XTHL   ; INTERCHANGE ADDRESS/COUNT
155C    222027      3234          SHLD   ADR
155F    E1          3235          POP    H          ; COUNT
1560    227827      3236          SHLD   COUNT
1563    7C          3237          MOV    A,H
1564    B5          3238          ORA    L
1565    CA8A15      3239          JZ     CLD3       ; EOF RECORD
                    3240 CLD4:
1568    EB          3241          XCHG
1569    23          3242          INX    H
156A    0D          3243          DCR    C
156B    CC4B14      3244          CZ     NEXT
156E    DAC70B      3245          JC     LOAD4
1571    7E          3246          MOV    A,M
1572    EB          3247          XCHG
1573    2A2027      3248          LHLD   ADR
1576    77          3249          MOV    M,A
1577    23          3250          INX    H
1578    222027      3251          SHLD   ADR
157B    2A7827      3252          LHLD   COUNT
157E    2B          3253          DCX    H
157F    7C          3254          MOV    A,H
15??    B5          3255          ORA    L
15??    CAA815      3256          JZ     CLD6
1584    227827      3257          SHLD   COUNT
1587    C36815      3258          JMP    CLD4
```

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```
                    3259 CLD3:
158A    3A3027      3260          LDA    UNIT
158D    CDEF0F      3261          CALL   CCAL
1590    DAC70B      3262          JC     LOAD4
1593    C1          3263          POP    B
15??    D1          3264          POP    D
15??    2A2027      3265          LHLD   ADR        ; EOF EXIT
1598    A7          3266          ANA    A
1599    C9          3267          RET
                    3268 CLDE1:
159A    3A3027      3269          LDA    UNIT
159D    CDEF0F      3270          CALL   CCAL
15A0    DAC70B      3271          JC     LOAD4
15A3    3E5B        3272          MVI    A,SEC5B    ; INAPPROPRIATE BLOCK SIZE
15A5    C3C70B      3273          JMP    LOAD4
                    3274 CLD6:
15A8    EB          3275          XCHG
15A9    23          3276          INX    H
15AA    C32E15      3277          JMP    CLD2
                    3278 ;
                    3279 ;        CLINK - LOAD AND ENTER PROGRAM FROM CARTRIDGE
                    3280 ;
                    3281 ;        PARAMETERS: AS LOAD
                    3282 ;
                    3283 CLINK:
15AD    CDBF14      3284          CALL   CLOAD
```

```
15B0    D8          3285        RC
15B1    E9          3286        PCHL
                    3287        END
```

0A ERROR MESSAGES

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0033	ADDHI	0034	ADDLO	2720	ADR	0692	ALL	069B	ALL1	2
0D28	AUTO2	0D1C	AUTO3	0CFC	AUTO4	0CEF	AUTOLO	2736	BADR	2
02	BOOT	0269	BOOT1	0294	BOOTX	27EE	BP1AD	27F0	BP1VA	2
0FA2	BRNCH	2680	BUF1	2600	BUF2	07EB	BYTUT	0023	CADDHI	0
0050	CBACK	139A	CBBS	0FBA	CBBSW	2750	CBLKLG	1138	CBRD	1
116F	CBRD2	1178	CBRD6	11D5	CBRD7	11C2	CBRD8	1198	CBRDA	1
11B6	CBRDD	1165	CBRDE	115C	CBRDF	11E1	CBRDG	0FAE	CBRDW	1
1381	CBSF	1386	CBSF1	0FC6	CBSFW	12CF	CBTM	12FB	CBTM1	1
1318	CBTM4	132B	CBTM5	1367	CBTM6	1334	CBTM7	1344	CBTM8	1
0FC0	CBTMW	2745	CBUF	13B6	CBUS1	13B5	CBUSY	122C	CBWR	1
1253	CBWR2	125E	CBWR3	126D	CBWR4	1267	CBWR5	127F	CBWR6	1
0FB4	CBWRW	0021	CBYTH	0022	CBYTL	0FEF	CCAL	107C	CCAL1	1
1061	CCAL4	1085	CCAL5	106E	CCAL6	101D	CCAL7	1033	CCAL8	1
2743	CCONT	0030	CEDIT	10C4	CENT1	10C9	CENT2	10DD	CENT3	1
10E2	CENTX	00E0	CERASE	274F	CFUNC	0769	CHARI	076C	CHARJ	0
01F1	CINT1	020E	CINT2	023F	CINT3	0244	CINT4	023A	CINT5	0
022E	CINT8	0907	CKB1	091C	CKB2	0902	CKBUSY	14D9	CLD1	1
1568	CLD4	151A	CLD5	15A8	CLD6	159A	CLDE1	15AD	CLINK	1
1414	CLOC2	1442	CLOC3	142D	CLOC4	1436	CLOC5	1447	CLOC6	1
07E4	COMC	002C	COMMA	083A	CON1	0A57	CONSUB	01FB	CONT	0
082B	CONVR	2778	COUNT	2741	CPROG	000D	CR	274C	CRCNT	0
07	CRLF	0014	CRTRY	0FA8	CRW	0010	CRWND	0080	CSCHF	0
0027	CSENST	2740	CSTAT	2752	CTIMER	2747	CTRK	13AF	CTST	0
0020	CUNLD	010C	CURS1	0109	CURS2	00EE	CURSOR	2748	CUSAGE	0
00D0	CWTMRK	002D	DASH	2765	DBUF	08B6	DCAL	0864	DCALW	2
276A	DCONV	2769	DFUNC	2770	DIDBUF	2760	DISKCT	0110	DISP	0
062B	DISPL	011F	DISPX	00F6	DISST	276B	DLG	07A0	DOBLU	0
2761	DPROG	276C	DRCNT	276D	DRETRY	0030	DRIVA	0988	DSDL	0
087C	DSRAW	0978	DSRD	0968	DSRDA	086A	DSRDW	2760	DSTAT	0
0970	DSWRA	0870	DSWRW	024D	DSWT	27BF	DTIMER	2767	DTRK	0
0259	DTST3	2762	DUNIT	277C	EBCDIC	003D	EQUAL	0019	ERASE	0
077A	ERR30	077D	ERROR	017D	EXCLK	065E	FILL	0682	FILL1	0
27FF	FUNIT	27F4	GADR	07AD	GC	012E	GCH	04E6	GO	0
0530	G03	0533	G04	27EA	GOADR	04C7	HELP	04D8	HELP1	0
0018	HT	0855	HXE1	0842	HXE2	0862	HXE3	080F	HXH1	0
00D6	HXLOAD	07FF	HXOUD	07F4	HXUT	010F	INDISP	02A4	INT	2
27A4	INT2	27A6	INT3	0314	INT3A	033B	INT3B	035A	INT3C	0
0338	INT3F	0373	INT3G	0385	INT3H	038D	INT3P	03B1	INT3Q	0

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27AA	INT5	27AC	INT6	27AE	INT7	27B0	INTAD	02AA	INTB	0
019F	INTR1	01C1	INTR2	01C4	INTR4	00E7	INTST	FD00	JMPTAB	0
00E6	KEYS	0BFF	LBLK	0C1A	LBLK1	000A	LF	0CEA	LINK	0
0BFB	LN3	0BF9	LN31	0C56	LN4	0C59	LN6	0C3E	LN7	0
0BEC	LNTRK	0BB4	LOA11	0BB1	LOA12	0B9B	LOAD	0C68	LOAD2	0
0CDB	LOAD5	0CAE	LOAD6	0C7C	LOAD7	0CE3	LOAD8	06C8	LOADM	0
06E1	LOAM2	073B	LOAP1	0740	LOAP2	0760	LOAP3	06F7	LOAP4	0
0B30	LOCD2	0B4E	LOCD3	0B8B	LOCD4	0B5C	LOCD5	0B6A	LOCD6	0
0B97	LOCD9	0B0E	LOCDI	04B5	MEPR	045A	MON	03E4	MON1	0
0405	MON2C	0418	MON3	0428	MON4	045E	MON5	0441	MON6	0
27BC	MSEC	273D	MSGSWI	03C2	MST	0124	MVD2	0123	MVDOWN	2
1469	NEXT1	144F	NEXT3	148D	NEXT5	144C	NEXT6	0037	OUTCOM	2
00DB	PRNT1	00E2	PRNT2	2720	PSTART	00E5	RAMCTL	00E6	RAMWC	0
02B1	RCVI	02C9	RCVO	13BF	RD32	13C5	RD321	13F5	RD322	1
00EC	RECAL	00E0	REDAT	0031	RELTA	01CA	REST	01DB	RFST1	0
0611	RTAB1	056E	S1	055A	S2	27E6	SAVHL	27EC	SAVPC	2
0005	SEC05	0007	SEC07	0009	SEC09	000A	SEC0A	000B	SEC0B	0
000E	SEC0E	0013	SEC13	002B	SEC2B	0034	SEC34	0035	SEC35	0
003?	SEC38	0039	SEC39	0040	SEC40	0048	SEC48	0050	SEC50	0
005-	SEC54	0055	SEC55	0059	SEC59	005A	SEC5A	005B	SEC5B	0
00E3	SEEKT	0037	SENST	0958	SETUN	09CC	SETUX	0020	SPACE	0
054D	SUBST	2600	SYSPTR	0198	TIM1	0197	TIM2	0159	TIM3	0
0149	TIMER	2731	TRK	08A3	TSTT1	08AC	TSTT2	08B1	TSTT3	0
0888	TSTTS	012E	TTI	0143	TTI1	07B7	TTO	07C6	TTO1	0
06AB	TTY	06B8	TTY1	081C	TTYHX	0828	TTYHY	0797	TXERR	0
00F7	UARTS	098D	UE	099B	UE0	0A89	UE2	0A96	UE21	0
09F7	UE32	0A3B	UE4	0A40	UE41	0A20	UE5	0A25	UE51	0
0AE0	UE72	0AE1	UE73	0ACC	UE7X	0AFC	UE8	093A	UE81	0
0A85	UE83	0A82	UE84	0AF0	UE9	08E9	UNAD1	08F2	UNAD2	0
08L4	UNADJ	2730	UNIT	2720	USER	25BE	USTACK	1490	VERIFY	1
14A1	VFY3	14AD	VFY4	2730	WORK1	00F1	WRTDA	00F2	WTDEL	0
05CD	XDALL	25C0	XMIBUF	277A	XMINT	02E2	XMIO	0305	XMIO1	0
0578	XX	058F	XX1	059B	XX2	05BE	XX3	05C4	XX4	0