

```

@;
@;
@;DISK ERROR CODES
@;
0002 @CRC      ==      02h      ;CRC ERROR
0043 @WPROT    ==      40h      ;WRITE PROTECT
0021 @RAF      ==      21h      ;RECORD NOT FOUND
@;
@;
@;
@;THIS IS THE USER PATCH AREA
@;
@;THIS CODE MUST NOT EXCEED 256 BYTES IN LENGTH
@;AND IS LOCATED ON TRACK 1 SECTOR 6 YOU MAY USE
@;THE RD 16 <MEMORY ADDRESS> 1;TO GET IT FROM THE
@;DISK AND WR 16 <MEMORY ADDRESS> 1 TO RESTORE IT
@;ONCE YOU HAVE MODIFIED IT BUT THE SECOND HALF OF
@;THIS 512 BYTE SECTOR MUST REMAIN UNCHANGED
@;
@;
@;
@;YOU MAY ALSO MODIFY THE CODE CREATED BY NSRELOC
@;USING A MONITOR OR DEBUGER THIS USER AREA
@;STARTS AT 2203h WHEN TPMXX.COM IS LOADED
@;
@;
@;HORIZON IO
@;
@USER:
0223' @          JMP      UNIT      ;INITIALIZE
0224' C3 022D' @          JMP      JIN       ;CONSOLE INPUT
0225' C3 024A' @          JMP      UREAD    ;HEADER INPUT
0226' C3 0209' @          JMP      JOUT     ;CONSOLE OUTPUT
0227' C3 0203' @          JMP      JPUNCH   ;PUNCH OUTPUT
0228' C3 020E' @          JMP      ULIST   ;LIST OUTPUT
0229' C3 0209' @          JMP      USTAT   ;CONSOLE STATUS
0230' C3 02F3' @%IIOG:  JMP      IOCHK    ;I/O CHECK
0231' C3 02FE' @%AIOS:  JMP      IOSET    ;I/O SET
0232' C3 0234' @          JMP      RETURN  ;MEMORY LIMIT CHECK
0233' @ZAPTRP: @          JMP      RETURN  ;BREAKPOINT
0234' @%DATE: @          JMP      DATE     ;USER DATE
0235' C3 0302' @          JMP      TIME    ;USER TIME
0236' C3 0305' @          JMP      TIME    ;USER TIME
0237' @%STDATE: @          JMP      STDAT   ;USER SET DATE
0238' C3 030F' @          JMP      STDAT   ;USER SET DATE
0239' @%STTIM: @          JMP      STTIM   ;USER SET TIME
0240' C3 0313' @          JMP      STTIM   ;USER SET TIME
  
```

CDL'S Z80 Macro Assembler E12011-0311  
PL-NSDD -0100 - 04/19/60 05:46:46  
PIOS - TPM PIOS FOR NORTH \* STAR DOUBLE DENSITY  
USER PATCH AREA

```
@;
@;*****
@;
@;***** DO NOT CHANGE THE *****
@;
@;***** LOCATIONS OR ORDER *****
@;
@;***** OF THE ABOVE JUMP *****
@;
@;***** VECTORS *****
@;
@;*****
```

```
@; I/O EQUATES
```

```
@IOBYTE == 03H ; I/O BYTE
```

```
@UNIT:
```

```
0003
022D' AF @ XRA A
022E' 32 0003 @ STA IOBYTE ; ZERC I/O BYTE
0231' D306 @ OUT 6
0233' 3E0E @ MVI A,0CEH
0235' D303 @ OUT 3
0237' D305 @ OUT 5
0239' 3E37 @ MVI A,37H
023B' D303 @ OUT 3
023D' D305 @ OUT 5
023F' DB02 @ IN 2
0241' DB04 @ IN 4
0243' 3E30 @ MVI A,30h
0245' D306 @ OUT 6
0247' C3 0000 @ JMP 0 ; DONE RETURN TO SYSTEM
```

```
@; CONSOLE INPUT
```

```
@URFAD:
```

```
024A' 3A 0003 @ LDA IOBYTE
024D' 1F @ RAR
024E' 1F @ RAR
024F' 1803 @ JMPR CIN
```

```
@UIN:
```

```
0251' 3A 0003 @ LDA IOBYTE
```

```
@CIN:
```

```
0254' E602 @ ANI 2
0256' FE02 @ CPI 2
0258' 281A @ JRZ CIN2
025A' FE01 @ CPI 1
025C' 280B @ JRZ CIN1
```

```
@CIN0:
```

```
025E' DB03 @ IN 3
0260' E602 @ ANI 2
0262' 28FA @ JPZ CIN0
```

CDL's Z80 Macro Assembler E12011-0311  
 PL-NSDD -2130 - 04/19/83 05:46:46  
 PIOS - TPM PIOS FOR NORTH \* STAR DOUBLE DENSITY  
 USER PATCH AREA

```

0264'   DB02           @      IN      2
0266'   E67F         @      ANI     7FH
0263'   C9           @      RET
          @;
0269'   @CIN1:
0269'   DB05           @      IN      5
026B'   E602         @      ANI     2
026D'   28FA         @      JRZ     CIN1
026F'   DB04           @      IN      4
0271'   E67F         @      ANI     7FH
0273'   C9           @      RET
          @;
0274'   @CIN2:
0274'   DB06           @      IN      6
0276'   E602         @      ANI     2
0278'   23FA         @      JRZ     CIN2
027A'   DB00           @      IN      0
027C'   F5           @      PUSH   PSW
027D'   3E30         @      MVI     A,30h
027F'   D306         @      OUT     6
0281'   F1           @      POP     PSW
0282'   E67F         @      ANI     7FH
0284'   @RETURN:
0284'   C9           @      RET
          @;
          @;
          @;CONSOLE OUTPUT
          @;
0285'   @PUNCH:
0285'   3A 0003       @      LDA     IOBYTE
0289'   1F           @      RAR
0289'   1F           @      RAR
028A'   1F           @      RAR
028B'   1F           @      RAR
028C'   180E         @      JMPR   COUT
028E'   @ULIST:
028E'   3A 0003       @      LDA     IOBYTE
0291'   1F           @      RAR
0292'   1F           @      RAR
0293'   1F           @      RAR
0294'   1F           @      RAR
0295'   1F           @      RAR
0296'   1F           @      RAR
0297'   1803         @      JMPR   COUT
0299'   @UOUT:
0299'   3A 0003       @      LDA     IOBYTE
029C'   @COUT:
029C'   E502         @      ANI     2
029E'   FE01         @      CPI     1
02A0'   280E         @      JRZ     COUT1
02A2'   FE02         @      CPI     2
02A4'   2814         @      JRZ     COUT2
02A6'   @CCUT0:
02A6'   DB03         @      IN      3

```

CDL'S Z80 Macro Assembler E12011-0311  
PL-NSDD -0100 - 04/19/80 05:46:46  
PIOS - TPM PIOS FOR NORTH \* STAR DOUBLE DENSITY  
USER PATCH AREA

```

02A8 E601 0 ANI 1
02AA 28FA 0 JRZ COUT0
02AC 79 0 MOV A,C
02AD D302 0 OUT 2
02AF C9 0 RET
0;
02B0 @COUT1:
02B0 DB05 0 IN 5
02B2 E601 0 ANI 1
02B4 28FA 0 JRZ COUT1
02B6 79 0 MOV A,C
02B7 D304 0 OUT 4
02B9 C9 0 RET
0;
02BA @COUT2:
02BA DB06 0 IN 6
02BC E601 0 ANI 1
02BE 28FA 0 JRZ CCOUT2
02C0 79 0 MOV A,C
02C1 D300 0 OUT 0
02C3 3E20 0 MVI A,20H
02C5 D306 0 OUT 6
02C7 79 0 MOV A,C
02C8 C9 0 RET
0;
0;CONSOLE STATUS
0;
02C9 @USTAT:
02C9 3A 0003 0 LDA IOBYTE
02CC E602 0 ANI 2
02CE FE02 0 CPI 2
02D0 2814 0 JRZ USTAT2
02D2 FE01 0 CPI 1
02D4 2908 0 JRZ USTAT1
02D6 DB03 0 IN 3
02D8 E602 0 ANI 2
02DA C9 0 RZ
02DB 3EFF 0 MVI A,0FFH
02DD C9 0 RET
02DE @USTAT1:
02DE DB05 0 IN 5
02E0 E602 0 ANI 2
02E2 C9 0 RZ
02E3 3EFF 0 MVI A,0FFH
02E5 C9 0 RET
02E6 @USTAT2:
02E6 DB06 0 IN 6
02E8 E602 0 ANI 2
02EA C9 0 RZ
02EB 3EFF 0 MVI A,0FFH
02ED C9 0 RET
0;
0;
0;SET I/O BYTE

```

```

02EE'      79      @IOSET:
02EF'      32 0003 @      MOV      A,C      ;GET I/O BYTE INTO ACC
02F2'      C9      @      STA      IOBYTE ;STORE IT
02F3'      C9      @      RET
02F3'      3A 0003 @IOCHK:
02F6'      C9      @      LDA      IOBYTE ;GET I/O BYTE
02F7'      C9      @      RET
02F7'      C9      @      .BLKB  256-(-USER)
@;
@;
@;RETURN I/O BYTE IN ACCUM.
@;
@;
@;YOU MAY REPLACE THESE SEGMENTS WITH YOUR OWN DRIVERS
@;IF YOU HAVE A REAL TIME CLOCK.
@;OR IF SPACE IS A PROBLEM JUMP TO A ROM CLOCK DRIVER.
@;
@;
@DATE:  LXI      H,DATE1V      ;DATE
@        JMPR     DODTTM      ;
@TIME:  LXI      H,TIME1V     ;TIME
@DCDTM: MOV      B,M          ;
@        INX      H           ;
@        MOV      C,M         ;
@        INX      H           ;
@        MOV      D,M         ;
@        RET
@STDAT: LXI      D,DATE1V     ;DATE
@        JMPR     DOSDT      ;
@STTIM: LXI      D,TIME1V     ;TIME
@DOSDT: MOV      H,B         ;FROM
@        MOV      L,C         ;
@        LXI      B,3         ;
@        LDIR     ;MCVE
@        RET
@;
@;
@;
@;

```

```

;
;
0396' 0023 DT.SIN: .WORD 35 ; TRACKS
0399' 14 .BYTE 20 ; SECTORS
0399' 08 .BYTE 8 ; SECTORS/BLOCK
039A' 0003 .WORD 3 ; DIRECTORY TRACK
039C' 0040 .WORD 64 ; DIRECTORY ENTRIES
039E' 0050 .WORD (20*(35-3))/8 ; BLOCKS
03A0' 000B .WORD ((20*(35-3))/8+1+7)/8 ; ALLOCATION
03A2' 03 .BYTE 3 ; LOG2(BLOCK SIZE)
03A3' 01 .BYTE 1 ; KB/BLOCK
03A4' 02 .BYTE 2 ; MAX ERRORS
03A5' 14 .BYTE 20 ; TRACK 0 SECTORS
03A6' 00 .BYTE 00000000B ; FLAGS (NO TRANSLATE)
03A7' 0023 DT.DBL: .WORD 35 ; TRACKS
03A9' 28 .BYTE 40 ; SECTORS
03AA' 08 .BYTE 8 ; SECTORS/BLOCK
03AB' 0002 .WORD 2 ; DIRECTORY TRACK
03AD' 0040 .WORD 64 ; DIRECTORY ENTRIES
03AF' 00A5 .WORD (40*(35-2))/8 ; BLOCKS
03B1' 0015 .WORD ((40*(35-2))/8+1+7)/8 ; ALLOCATION
03B3' 03 .BYTE 3 ; LOG2(BLOCK SIZE)
03B4' 01 .BYTE 1 ; KB/BLOCK
03B5' 02 .BYTE 2 ; MAX ERRORS
03B6' 28 .BYTE 40 ; TRACK 0 SECTORS
03B7' 01 .BYTE 00000001B ; FLAGS (NO TRANSLATE)
03B8' SCTL: .BYTE 00,01,02,03
03B8' 00010203 .BYTE 20,21,22,23
03BC' 14151617 .BYTE 04,05,06,07
03C0' 04050607 .BYTE 24,25,26,27
03C4' 18191A1B .BYTE 08,09,10,11
03C8' 08090A0B .BYTE 28,29,30,31
03CC' 1C1D1E1F .BYTE 12,13,14,15
03D0' 0C0D0E0F .BYTE 32,33,34,35
03D4' 20212223 .BYTE 16,17,18,19
03D8' 10111213 .BYTE 36,37,38,39
03DC' 24252627 .BYTE

```