

```

@;
@;
@;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 2200h WHEN TPMXX.COM IS LOADED
@;
@;
@;HORIZON IO
@;
@USER:
0233' @          JMP      UNIT      ;INITIALIZE
0234' C3 022D' @          JMP      JIN       ;CONSOLE INPUT
0235' C3 024A' @          JMP      UREAD    ;READER INPUT
0236' C3 0209' @          JMP      UOUT     ;CONSOLE OUTPUT
0237' C3 0205' @          JMP      UPUNCH   ;PUNCH OUTPUT
0238' C3 020E' @          JMP      ULIST    ;LIST OUTPUT
0239' C3 0200' @          JMP      USTAT    ;CONSOLE STATUS
0240' C3 02F3' @%IIO:    JMP      IOCHK    ;I/O CHECK
0241' C3 02FE' @%AIOS:   JMP      IOSET    ;I/O SET
0242' C3 0234' @          JMP      RETURN   ;MEMORY LIMIT CHECK
0243' @ZAPTRP: @          JMP      RETURN   ;BREAKPOINT
0244' @%DATE: @          JMP      DATE      ;USER DATE
0245' C3 0302' @          JMP      TIME     ;USER TIME
0246' @%TIME: @          JMP      TIME     ;USER TIME
0247' C3 0305' @          JMP      TIME     ;USER TIME
0248' @%STDAT: @          JMP      STDAT    ;USER SET DATE
0249' C3 030F' @          JMP      STDAT    ;USER SET DATE
0250' @%STTIM: @          JMP      STTIM    ;USER SET TIME
0251' C3 0313' @          JMP      STTIM    ;USER SET TIME

```

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

```
@;
@;*****
@;
@;***** D O N C T C H A N G E T H E *****
@;
@;***** L O C A T I O N S O R O R D E R *****
@;
@;***** O F T H E A B O V E J U M P *****
@;
@;***** V E C T O R S *****
@;
@;*****
```

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

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

```
@UNIT:
```

```
@ XRA A
@ STA IOBYTE ; ZERC I/O BYTE
@ OUT 6
@ MVI A,0CEH
@ OUT 3
@ OUT 5
@ MVI A,37H
@ OUT 3
@ OUT 5
@ IN 2
@ IN 4
@ MVI A,30h
@ OUT 6
@ JMP 0 ; DONE RETURN TO SYSTEM
```

```
@; CONSOLE INPUT
```

```
@URFAD:
```

```
@ LDA IOBYTE
@ RAR
@ RAP
@ JMPR CIN
```

```
@UIN:
```

```
@ LDA IOBYTE
```

```
@CIN:
```

```
@ ANI 2
@ CPI 2
@ JRZ CIN2
@ CPI 1
@ JRZ CIN1
```

```
@CIN0:
```

```
@ IN 3
@ ANI 2
@ JPZ CIN0
```

```
0003
022D'
022D' AF
022E' 32 0003
0231' D326
0233' 3ECE
0235' D303
0237' D325
0239' 3E37
023B' D303
023D' D325
023F' DB02
0241' DB04
0243' 3E30
0245' D306
0247' C3 0000
```

```
024A'
024A' 3A 0003
024D' 1F
024E' 1F
024F' 1803
0251'
0251' 3A 0003
0254'
0254' E602
0256' FE02
0258' 281A
025A' FE01
025C' 2803
025E'
025E' DB03
0260' E602
0262' 28FA
```

CDL'S Z80 Macro Assembler E12011-0311
 PL-NSDD -2100 - 04/19/80 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'   @UPUNCH:
0285'   3A 0003         @           LDA          IOBYTE
0288'   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'   2314           @           JRZ          COUT2
02A6'   @CCUT0:
02A6'   DB03           @           IN           3

```

CDL'S Z80 Macro Assembler E12011-0311
PL-NSDD -0130 - 04/19/80 05:46:46
PIOS - TPM PIOS FOR NORTH * STAR DOUBLE DENSITY
USER PATCH AREA

```

02A8 E601 @ ANI 1
02AA 28FA @ JRZ COUT0
02AC 79 @ MOV A,C
02AD D302 @ OUT 2
02AF C9 @ RET
@;
02B0 @;
02B0 DB05 @ @COUT1:
02B2 E601 @ IN 5
02B4 28FA @ ANI 1
02B6 79 @ JRZ COUT1
02B7 D304 @ MOV A,C
02B9 C9 @ OUT 4
@ RET
@;
02BA @;
02BA DB06 @ @COUT2:
02BC E601 @ IN 6
02BE 28FA @ ANI 1
02C0 79 @ JRZ CCOUT2
02C1 D300 @ MOV A,C
02C3 3E20 @ OUT 0
02C5 D306 @ MVI A,20H
02C7 79 @ OUT 6
02C8 C9 @ MOV A,C
@ RET
@;
@;CONSOLE STATUS
@;
02C9 @;GUSTAT:
02C9 3A 0003 @ LDA IOBYTE
02CC E602 @ ANI 2
02CE FE02 @ CPI 2
02D0 2814 @ JRZ USTAT2
02D2 FE01 @ CPI 1
02D4 2908 @ JRZ USTAT1
02D6 DB03 @ IN 3
02D8 E602 @ ANI 2
02DA C8 @ RZ
02DB 3EFF @ MVI A,0FFH
02DD C9 @ RET
02DE @;GUSTAT1:
02DE DB05 @ IN 5
02E0 E602 @ ANI 2
02E2 C8 @ RZ
02E3 3EFF @ MVI A,0FFH
02E5 C9 @ RET
02E6 @;GUSTAT2:
02E6 DB06 @ IN 6
02E8 E602 @ ANI 2
02EA C8 @ RZ
02EB 3EFF @ MVI A,0FFH
02ED C9 @ RET
@;
@;
@;SET I/O BYTE

```

```
02EE' 79 @;
02EE' 32 0003 @; @IOSET:
02EF' C9 @ MOV A,C ;GET I/O BYTE INTO ACC
02F2' @ STA IOBYTE ;STORE IT
@;
@;
@; @RETURN I/O BYTE IN ACCUM.
@;
02F3' 3A 0003 @; @IOCHK:
02F3' C9 @ LDA IOBYTE ;GET I/O BYTE
02F6' @ RET
02F7' @ .BLKB 256-(-USER)
@;
@; 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.
@;
@;
0300' 21 004B @DATE: LXI H,DATE1V ;DATE
0303' 1903 @ JMPR DODTTM ;
0305' 21 0048 @TIME: LXI H,TIME1V ;TIME
0308' 46 @DCDTM: MOV B,M ;
0309' 23 @ INX H ;
030A' 4E @ MOV C,M ;
030B' 23 @ INX H ;
030C' 56 @ MOV D,M ;
030D' C9 @ RET ;
030E' 11 004B @STDAT: LXI D,DATE1V ;DATE
0311' 1903 @ JMPR DOSDT ;
0313' 11 0048 @STTIM: LXI D,TIME1V ;TIME
0316' 60 @DOSDT: MOV H,B ;FROM
0317' 69 @ MOV L,C ;
0318' 01 0003 @ LXI B,3 ;
031B' EDB0 @ LDIR ;MCVE
031D' C9 @ 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'		SCTBL:			
03B8'	00010203		.BYTE	00,01,02,03	
03BC'	14151617		.BYTE	20,21,22,23	
03C0'	04050607		.BYTE	04,05,06,07	
03C4'	18191A1B		.BYTE	24,25,26,27	
03C8'	08090A0B		.BYTE	08,09,10,11	
03CC'	1C1D1E1F		.BYTE	28,29,30,31	
03D0'	0C0D0E0F		.BYTE	12,13,14,15	
03D4'	20212223		.BYTE	32,33,34,35	
03D8'	10111213		.BYTE	16,17,18,19	
03DC'	24252627		.BYTE	36,37,38,39	