SECTION X

DEFINED REFERENCE LOCATIONS

10.1 OS ROM

In the OS ROM area, it is IMPORTANT to know that the application programs should only use the OS entry points listed in the OS_SYMBOLS file. Accessing to the OS otherwise is illegal and may cause program malfunction when hardware configuration changes or OS routines relocated due to update. The jump table starts from location JUMP_TABLE through the end of OS ROM. It contains all the subroutine entry points released to the user.

At the beginning of the cartridge, there are eight programmable restarts at addresses 0008H, 0010H, 0018H, 0020H, 0028H and 0030H. Each of the restarts jump to a location in Cartridge ROM where a vector can be provided to access an OS entry point. The Z80A-CPU hardware also designates location 0038H to service maskable interrupt

(MI) and location 0066H to service non-maskable interrupt (NMI). Jump instructions are provided for these two reference locations for the user to implement interrupt vectors in Cartridge ROM. Starting at location 0069H is the OS ROM data area which contains the AMERICA byte, ASCII table address and numeric table address. Figure 10-1 is the OS ROM map showing all the reference locations mentioned above. Appendix E lists all entry points of the Jump Table.

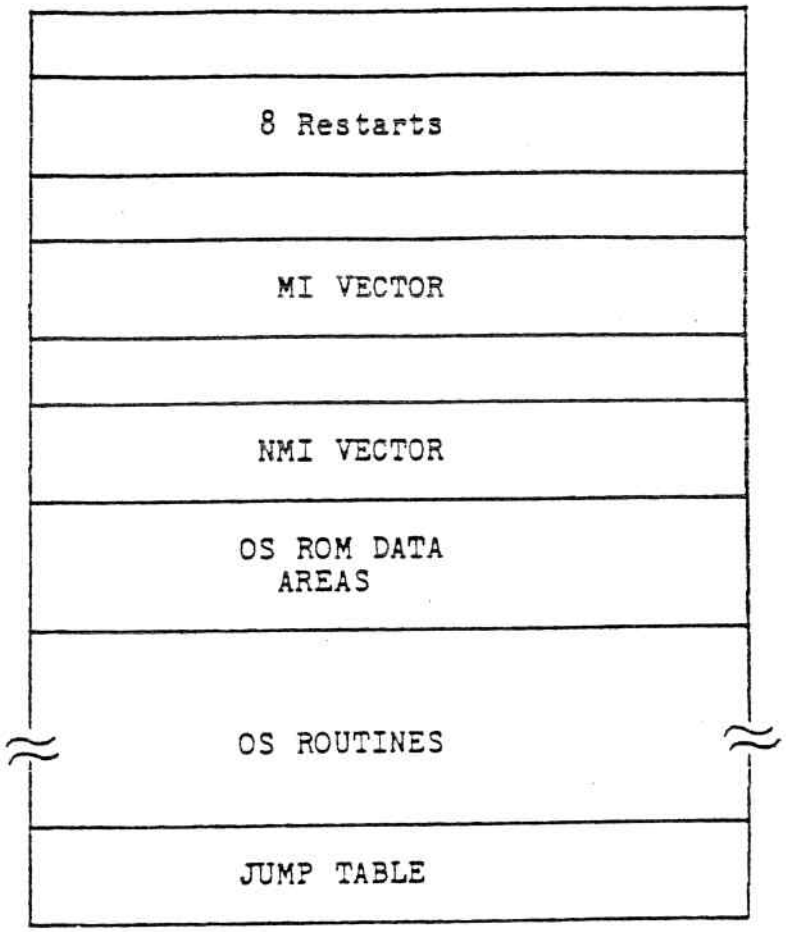

Figure 10-1

OS ROM MAP

10.1.1 Europe/America Byte:

The European TV uses PAL system (625-line format) which requires interrupt at the end of each active-display scan every 1/50 second, as opposed to every 1/60 second for the US model (NTSC, 525-line format).

ColecoVision cartridges must be interchangeable between both systems, the Europe/America byte at AMERICA in OS ROM, has been established to detect which version of the unit is in use. If a real-time display (such as a clock) must be implemented, the program will have to access the Europe/America byte to determine the current line frequency. For America-based units, this location will contain 60 (3CH) and for European-based units, it will contain 50 (32H).

10.1.2 Restart Vectors

Figure 10-2 shows the eight programmable restarts their addresses and corresonding locations in Cartridge ROM.

OS ADDRESS	JUMP TO CART. ROM ADDR.
0008H	800CH
0010H	800FH
0018H	8012H
0020H	8015H
0028H	8018H
0030H	801BH

Figure 10-2

OS RESTARTS

For each of the restart locations above, there should be a vector in Cartridge ROM provided by the user. To use a restart, the user must place a jump instruction to the address of the routine which he or she wishes to access through the Cartridge ROM vector; for example, JP WRITE_ VRAM at 800CH. These routines are usually the ones most frequently used in order to save application program space.

10.1.3 Graphics Tables

There are two graphics tables in the OS available to the user. The pointers for the ASCII table and Number table are defined in the locations of ASCII-TABLE and NUMBER_TABLE.

The ASCII table contains pattern generators for all 26 upper and psuedo-lower (half-size upper) case letters plus eleven special characters in 5x7 dot matrix form. The number table contains pattern generators for the numbers from 0 to 9 plus seven special characters.

10.2 Cartridge ROM

At the beginning of Cartridge ROM, locations are reserved for testing cartridge presence (Section 8-3), plus a number of pointers which point to tables, buffers and start of the game. On top of the pointers there are

spaces allocated for restart (Ref. Figure 10-2) and interrupt vectors. There are up to 60 bytes available to the user starting at location GAME_NAME, to name the cartridge, their format has been described in the title screen in section 8.2. Figure 10-3 shows the cartridge ROM map.

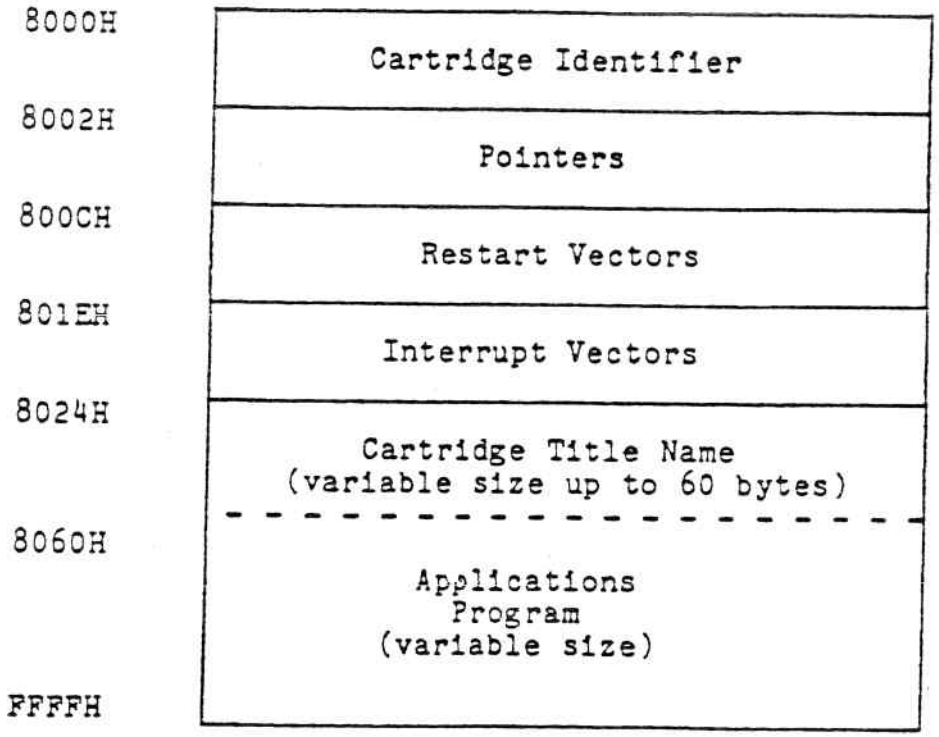

Figure 10-3

CARTRIDGE ROM MAP

10.3 CRAM Areas

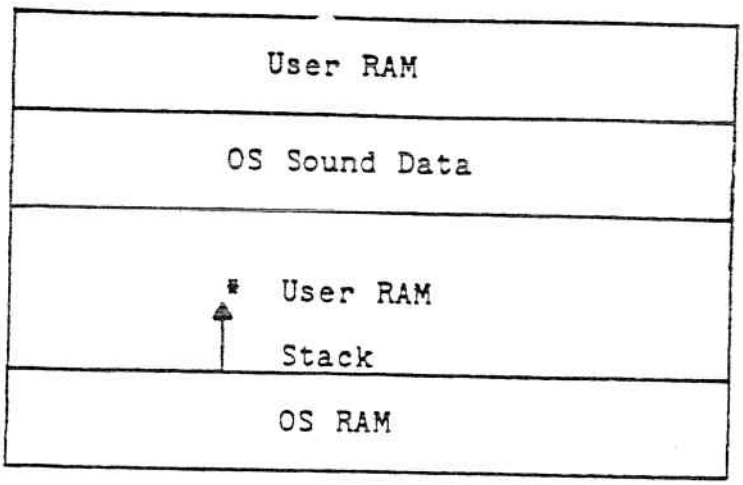

Figure 10-4

CRAM MAP

Figure 10-4 is the CRAM Map. Eleven bytes are reserved for OS sound data starting at 7020H; seventy-one bytes at the high end of memory are used by various OS routines. The top of the stack is sitting at address 73B9H which grows in the decrementing direction. Between stack and user buffer there are 942 bytes available for the application program. However, care should be exercised in both size and boundary when using CRAM as scratch pad.

Table 10-1 lists all reserved CRAM areas for user reference.

Table 10-1
DETAILED CRAM REFERENCE LOCATIONS

	7000H	(Start of user RAM)
PTR_TO_LST_OF_SND_ADDRS	7020H	(OS Sound Data Area)
+1	7021H	
PTR_TO_S_ON_0	7022H	
+1	7023H	
PTR_TO_S_ON_1	7024H	
+1	7025H	
PTR_TO_S_ON_2	7026H	
+1	7027H	
PTR_TO_S_ON_3	7028H	
+1	7029H	
SAVE_CTRL	702AH	
	702BH	(Resume user RAM)
STACK	73B9H	(Top of Stack)
PARAM_AREA	73BAH	(Parameter passing area for
+1	73BBH	Pascal calls to OS routines)
+2	73BCH	
+3	73BDH	

1	+4	73BEH
2	+5	73BFH
3	+6	73C0H
4	+7	73C1H
5	+8	73C2H
6	VDP_MODE_WORD	73C3H
7	+1	73C4H
8	VDP_STATUS BYTE	73C5H
9	DEFER_WRITES	73C6H
10	MUX_SPRITES	73C7H
11	RAND_NUM	73C8H
12	+1	73C9H
13	QUEUE_SIZE	73CAH
14	QUEUE_HEAD	73CBH
15	QUEUE_TAIL	73CCH
16	HEAD_ADDRESS	73CDH
17	+1	73CEH
18	TAIL_ADDRESS	73CFH
19	+1	73D0H
20	BUFFER	73D1H
21	+1	73D2H
22	TIMER_TABLE_BAS	73D3H
23		
24		
25		
26		

1	+1	73D4H
2	NEXT_TIMER_DATA	73D5H
3	+1	73D6H
4	DBNCE_BUFF	73D7H (FIRE_OLD - Player 0)
5	+1	73D8H (FIRE_STATE - Player 0)
6	+2	73D9H(JOY_OLD - Player 0)
7	+3	73DAH (JOY_STATE - Player 0)
8	+4	73DBH(SPIN_OLD - Player 0)
9	+5	73DCH(SPIN_STATE - Player 0)
10	+6	73DDH(ARM_OLD - Player 0)
11	+7	73DEH(ARM_STATE - Player 0)
12	+8	73DFH(KBD_OLD - Player 0)
13	+9	73E0H(KBD_STATE - Player 0)
14	+10	73E1H(FIRE_OLD - Player 1)
15	+11	73E2H(FIRE_STATE - Player 1)
16	+12	73E3H(JOY_OLD - Player 1)
17	+13	73E4H(JOY_STATE - Player 1)
18	+14	73E5H(SPIN_OLD - Player 1)
19	+15	73E6H(SPIN_STATE - Player 1)
20	+16	73E7H(ARM_OLD - Player 1)
21	+17	73E8H(ARM_STATE- Player 1)
22	+18	73E9H(KBD_OLD - Player 1)
23		
24		
25		
26		

1	+19	73EAH	(KBD_STATE - Player 1)
2	SPIN_SW0_CT	73EBH	
3	SPIN_SW1_CT	73ECH	
4	STROBE_FLG	73EDH	
5	S0_C0	73EEH	
6	S0_C1	73EFH	
7	S1_C0	73F0H	
8	S1_C1	73F1H	
9	VRAM_ADDR_TABLE	73F2H	
10	SPRITENAMETBL	73F2H	
11	+1	73F3H	
12	SPRITEGENTBL	73F4H	
13	+1	73F5H	
14	PATTRNNAMETBL	73F6H	
15	+1	73F7H	
16	PATTRNGENTBL	73F8H	
17	+1	73F9H	
18	COLORTABLE	73FAH	
19	+1	73FBH	
20	SAVE_TEMP	73FCH	
21	+1	73FDH	
22	SAVED_COUNT	73FEH	
23	+1	73FFH	
24			
25			
26			