

## CHAPTER 5: DEVELOPMENT TOOLS AND UTILITIES

### 1. SUPER GAMES

This section explains background loading, tape mapping and playability of super games and other programs that use OS\_7. Familiarity with OS\_7 is assumed. The information and examples in this section should help programmers who are accustomed to cartridge software adapt to tape-based software more easily.

#### 1.1 Background Loading

The background loading software (see Subsection 1.7) is designed to load overlays from data pack to RAM while the program is executing. Care must be taken that data being loaded during execution does not destroy data that is controlling execution. A good approach is to use two buffers. One buffer is loaded while the other is controlling program execution.

#### 1.2 Timing Considerations

Each background block read takes about one second assuming no retries and no repositioning. Retries take about 1.2 to 1.4 seconds and only happen if the checksum fails to compare on read. There are a maximum of three attempts to read a block on the tape, then the checksum failed code is sent. Repositioning takes as long as one second to find the current position on tape (approximately one second for every 80 inches of tape travel). Repositioning is automatically handled by the drive. For the NMI driven tape manager, additional overhead in transfer time averages 8 milliseconds ( $\frac{1}{2}$  60hz clock tick). Buffering data for transfer to VDP-RAM results in Z80 CPU usage assuming use of WRITE VRAM. The following table shows the Z80 CPU time used in VDP-RAM writes.

TABLE 4: Z-80 CPU TIME FOR VDP-RAM WRITES

Number of bytes to transfer	Milliseconds
1	0.077
10	0.175
100	1.16
1000	11.25
2000	22.4
4000	44.8
8000	89.6