Williams Multigame

EPROM Preparation Manual

(Start with this one!)

Version 1.1

Introduction:

This manual will guide you through the process of creating the ROM images necessary to program the 27C040 type and 27C256 type EPROMs included with your Williams Multigame kit.

You should only use ROMs that you are legally entitled to use. It is left as an exercise to the reader to determine the legal requirements for this in your location.

You have several options to create the ROMs. You can either read ROMs directly off of ROM boards you own, or (provided you have the original ROM boards and just want to save time) you can use backup images from the internet.

The included software will run on a Windows/DOS based PC. You will need to open a DOS window (usually done by choosing "MS-DOS Prompt" or "Accessories->Command Prompt" from the "Start" menu in Windows).

Commands that are to be typed in the DOS window are shown in "courier" font like this:

```
dir a:
```

When you see [enter] that means you press the "enter" key on your keyboard.

Making the EPROM Images:

Start with an open MS-DOS window (or a DOS based PC).

Insert the floppy-disk included with the kit into your "A:" drive (substitute the appropriate letter if your 3.5" floppy-disk drive is not "A:") and type the following:

```
A:   [enter]
```

The floppy disk drive should come on for a second. Now type:

```
wmg_go [enter]
```

This will create a new directory on your "C:" drive called "wmg_roms". When the command completes you will be in the "wmg_roms" directory. Type the following:

```
dir [enter]
```

You should now see something like the following:

```
Directory of C:\wmg_roms

STARTEST EXE        14,289  03-28-01  5:01p STARTEST.EXE
```

```
BUILDER   BAT          4,133  03-28-01  5:22p BUILDER.BAT
DEFNTEST  EXE         14,420  02-04-01  7:13p DEFNTEST.EXE
SPLATEST  EXE         14,369  02-04-01  6:56p SPLATEST.EXE
BUBLTEST  EXE         14,385  02-04-01  6:56p BUBLTEST.EXE
WMG_GO    BAT             56  03-28-01  4:43p WMG_GO.BAT
JOUSTEST  EXE         14,369  03-28-01  4:59p JOUSTEST.EXE
PATCHER1  EXE         36,352  02-04-01  6:05p patcher1.exe
ROBO_PAT  PAT          3,472  02-04-01  3:07p robo_pat.pat
ROBOTEST  EXE         14,417  02-04-01  2:18p ROBOTEST.EXE
DEFEND    PAT          9,021  08-19-00  7:31p defend.pat
BLANK     6K           6,144  08-19-00  7:24p blank.6k
BLANK     4K           4,096  08-19-00  7:09p blank.4k
SPLAT     PAT          3,673  02-22-96  7:09p splat.pat
MENU                 65,536  03-28-01  5:19p menu
         15 file(s)        218,732 bytes
```

Copy in the original game ROM images:

You will now need to copy the following files into the "wmg_roms" directory. You can either use Windows Explorer or DOS or whatever you're most comfortable with to copy the files.

Bubbles (also available in the "bubbles.zip" archive on the internet—61,424 bytes in ZIP format):
```
BUBBLES 10B      4,096
BUBBLES 11B      4,096
BUBBLES 12B      4,096
BUBBLES 1B       4,096
BUBBLES 2B       4,096
BUBBLES 3B       4,096
BUBBLES 4B       4,096
BUBBLES 5B       4,096
BUBBLES 6B       4,096
BUBBLES 7B       4,096
BUBBLES 8B       4,096
BUBBLES 9B       4,096
BUBBLES SND      4,096
```

Defender (also available in the "defender.zip" archive on the internet—22,812 bytes in ZIP format):
```
DEFEND  1        2,048
DEFEND  10       2,048
DEFEND  11       2,048
DEFEND  12       2,048
DEFEND  2        4,096
DEFEND  3        4,096
DEFEND  4        2,048
DEFEND  6        2,048
DEFEND  7        2,048
DEFEND  8        2,048
DEFEND  9        2,048
DEFEND  SND      2,048
```

Joust (also available in the "joust.zip" and "joustr.zip" archives on the internet—36,543 and 23,590 bytes respectively):
```
JOUST   SND      4,096
JOUST   WR1      4,096
JOUST   WR2      4,096
JOUST   WR3      4,096
JOUST   SR4      4,096
JOUST   WR5      4,096
```

```
JOUST   SR6      4,096
JOUST   SR7      4,096
JOUST   SR8      4,096
JOUST   SR9      4,096
JOUST   SRA      4,096
JOUST   SRB      4,096
JOUST   SRC      4,096
```

Robotron (also available in the "robotron.zip" archive on the internet—36,228 bytes in ZIP format):
```
ROBOTRON SB1     4,096
ROBOTRON SB2     4,096
ROBOTRON SB3     4,096
ROBOTRON SB4     4,096
ROBOTRON SB5     4,096
ROBOTRON SB6     4,096
ROBOTRON SB7     4,096
ROBOTRON SB8     4,096
ROBOTRON SB9     4,096
ROBOTRON SBA     4,096
ROBOTRON SBB     4,096
ROBOTRON SBC     4,096
ROBOTRON SND     4,096
```

Splat! (also available in the "splat.zip" archive on the internet—40,145 bytes in ZIP format):
```
SPLAT   01       4,096
SPLAT   02       4,096
SPLAT   03       4,096
SPLAT   04       4,096
SPLAT   05       4,096
SPLAT   06       4,096
SPLAT   07       4,096
SPLAT   08       4,096
SPLAT   09       4,096
SPLAT   10       4,096
SPLAT   11       4,096
SPLAT   12       4,096
SPLAT   SND      4,096
```

Stargate (also available in the "stargate.zip" archive on the internet—35,948 bytes in ZIP format):
```
01               4,096
02               4,096
03               4,096
04               4,096
05               4,096
06               4,096
07               4,096
08               4,096
09               4,096
10               4,096
11               4,096
12               4,096
SG      SND      2,048
```

Generating the Final EPROM Images:

Once the files are copied, return to your DOS window if you left it (make sure you're still in "C:\wmg_roms" directory). Now type:

```
builder  [enter]
```

You should see something like the following:

```
C:\wmg_roms>builder
Preparing Robotron…
Preparing Joust…
Preparing Bubbles…
Preparing Splat…
Preparing Stargate…
Preparing Defender…

 Volume in drive C is CLAY8G
 Volume Serial Number is 3726-10FC
 Directory of C:\wmg_roms

SND_32K  BIN      32,768  03-28-01  5:22p snd_32k.bin
ROM_512K BIN     524,288  03-28-01  5:22p rom_512K.bin
     2 file(s)       557,056 bytes
     0 dir(s)        184.08 MB free
All ROMs were generated OK.
```

The SND_32K.BIN file should be burned onto the 27C256 EPROM. It is a "raw" binary file and can be loaded with a binary-load feature of your EPROM programmer. ROM_512K.BIN should be programmed onto the 27C040 (or 27C4001) EPROM included with your kit. Cover the EPROM windows with a bit of black electrical tape or masking tape to protect the contents of the EPROM.

Install the ROMs on the Williams Multigame boards:
Once you've burned the ROMs, you need to install them on the CPU Expansion daughtercard and the Sound Expansion daughtercard. The orientation is marked on the daughtercards, but the following images show proper orientation as well.
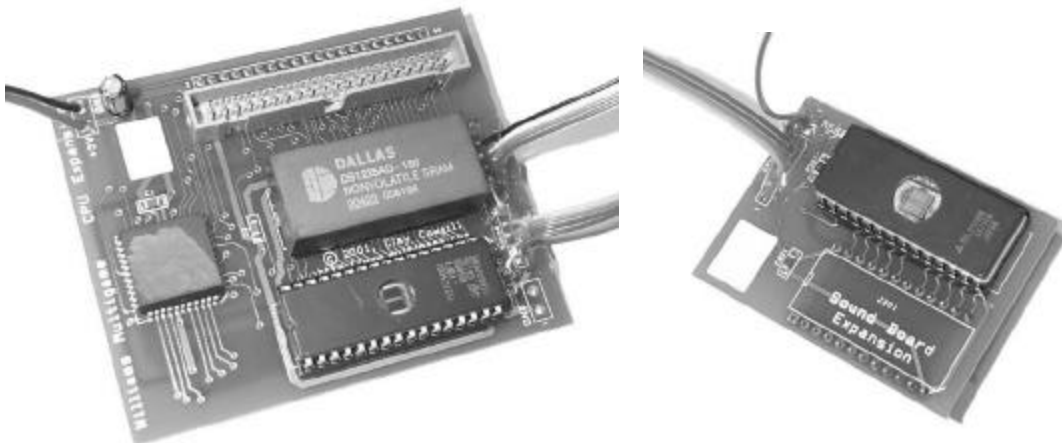
All done!
Proceed with the Hardware Installation manual now! If you are not legally entitled to use any of the games you put on the EPROMs you will need to disable them with the Williams Multigame menu system.