



By Tim Van Milligan

Note: This article appeared in Apogee Components' email newsletter. You can subscribe to it at the Apogee web site: www.apogeerockets.com

I was recently requested by a reader of this e-zine to write a how-to article about loading new engine files into RockSim. So that is where the inspiration for this issue comes from. If you have a suggestion for an article, please email it to me at: tvm@apogeerockets.com

For those of you who don't own a copy of RockSim, I apologize for presenting information that may not be of use to you. The free demo version of the program is fixed, and can't be modified to accept new motors.

First, why is it necessary to input new motors into the program? Simple; new motors are constantly becoming available to modelers, and they'll want to try them out in RockSim first before putting good models at risk. A case in point is the new Cesaroni from Black Sky. These are brand new, and already there is interest among modelers for the data.

There are two ways to put new motors into RockSim. The first is to download the files directly from the internet (look at the web site: www.thrustcurve.org), and the second way is to input the data manually into RockSim using the engine editor (called "EngEdit") program that comes bundled with RockSim. Downloading from the internet is the preferred way for most modelers, as most people feel more confident that the data files created by others is somehow more correct.

The files that RockSim uses are in the standard rasp.eng format. This is a text format that has been around for at least 10

Loading New Motor Files into RockSim

Commonly asked questions on adding motors to the RockSim Database

years. It is easy to decipher with a text editor program too. If you want additional information about the format, please read the help manual for the EngEdit program.

If you choose to download files from the web site <http://www.thrustcurve.org>, be sure to select the RockSim format. But the most important thing you must do is to put the downloaded file into the "DATA" folder of RockSim.

Other places to download motor files are from:

<http://public.surf.free.com/urbanek/rockets/RockSimFiles.htm>

<http://www.users.nac.net/jdcluster/download.htm>

After the files are placed into the "DATA" folder, the next step is to run the engine compiler program (called "CompEng"). The compiler does two things. First, it merges all your motor data files into one big file, and second, it creates a mass depletion curve for each of the motors. Also, it stores the file in a place where RockSim knows to look for it.

When running the engine compiler, it is important to compile all your motors, not just the new ones. If you don't, only the new motors will show up when you go to load a motor into a rocket. The old ones will have disappeared. But you can always go back and recompile your engine database again to get them back.

The final step is to restart RockSim. This will load the new compiled engine data file into the program. If the program was running, instead of quitting and restarting the program, you can go into the "File" pull-down menu, and select "RELOAD ENGINE DATA."

That's it! You should now be up and running with your new motor files.

If you choose to enter the data manually, you'll be using the EngEdit program in a step prior to compiling the new motor files.

This program is pretty basic to use, but it does come with its own help manual. You'll find that manual in the same folder as the EngEdit program.

Ok, this all sounds pretty simple. So what could possibly go wrong?

First, you may be trying to put in a motor diameter that isn't recognized by RockSim. I found out this week that the Hypertek L460 motor as listed on www.thrustcurve.org has a oddball diameter of 110mm. How do you get RockSim to recognize that size?

There is a file in your hard drive called "RockSim.ini" You may need to use windows explorer to find it.

Open it using a text editor program. Then scroll down through the list to find the following entry:

```
ShoulderClearance= 0.508000  
EngineSizes=105,130,240,290,320,380,540,750,980
```

Change the Engine Size entry to:

```
EngineSizes=105,130,240,290,320,  
380,540,750,980,1100
```

The units are 1/10mm -- just in case you want to add another motor size too; like the 6mm Quest MicroMaxx motors.

Save the file, and then restart RockSim. You'll now have support for 1100mm motors.

Another problem that often occurs is when you have two motors in the database with the same designation. For example, you can buy a Estes C6, Quest C6, and Apogee Components' C6 motor. They can't be all named "C6" or it will confuse the RockSim program. So what you need to do is to change the title of the motor. For example: ESTC6, QUESTC6, and APOC6. The name does not affect the RockSim program at all, so don't worry about using

odd names. RockSim calculates the performance of the rocket based on the thrust curve and the weight of the propellant.

Another problem that often occurs is that users open the rasp.eng files in a text editor program, and forget to save the file as "TXT" when done. If you do this, the compiler program will give you an error message. If you can't open the file in EngEdit, that might be the case too. Just go back into the text editor, and resave the file as text. If you use the extension .eng, that helps you to recognize the file as a motor thrust curve.

For those people that like to enter the data manually into EngEdit, a potential problem that arises is that they forget to use NEWTONS on the thrust curve. The data sheets that come with Aerotech motors are listed in pounds, and this unit conversion

process is often overlooked.

A similar problem is entering the mass of the propellant in grams, instead of Kilograms. This usually shows up later when the motor won't lift the rocket from the pad.

The 75mm motors from Ellis Mountain and all the hybrid motors are unique in the aspect that they do not have delays. So if you download the files from www.thrustcurve.org, and go directly to the engine compiler; you may not pick up on this.

Usually the first indication that something is wrong is when the user loads the engine into a rocket design, and the only delays available are 0 and "ALL." The new user to RockSim (that doesn't read the users manual in the help file) doesn't realize that "ALL" in the engine delay selector means to calculate and indicate on the

graphs where each of the other delays listed take place. Since the only "other" delay above "ALL" is zero; RockSim stops immediately at motor burnout, because it assumes the motor is a booster. There is no coast phase.

This is easily corrected in RockSim. The program will allow you to enter a delay directly into the text box when loading a motor. For your big rockets, I always tell users to enter something big, like 30 seconds. Afterwards, you can use the flight summary to find out the correct delay time to use.

The biggest problem that I see by far is that users forget to place or save the engine files into the "DATA" folder. If you don't do this, the compiler program won't find the new motor. It only looks in the "DATA" folder for motor files.