ISSUE 152 - NOVEMBER 18, 2005

APOGEE PEAK OF FLIGHT NEWSLETTER

Update: New Projects in the Works!

ALSO INSIDE:

- Rocksim Database Help
- Rocket Photography Web Site to Visit
- Fin Alignment Tip
- Kwangmyongsong Missile Data

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Apogee Components Update

by John Manfredo

What's up with us?

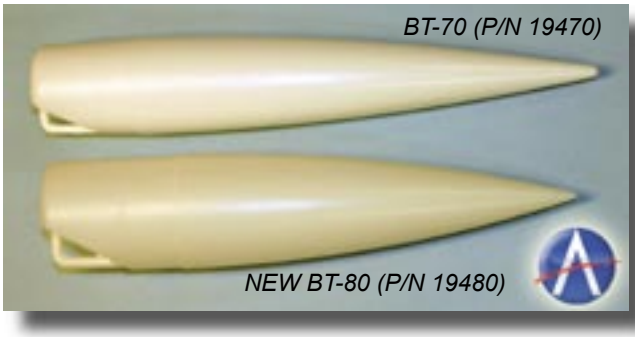
In the last issue I talked about what kind of tools are a rocketeer's friend and how it is the time of year to change gears in your rocketry endeavours. Well, that got me thinking about how there are many ways that we here at Apogee Components change gears during this time of year as well. So, I thought it might be nice to let our readers in on the different projects that we have in the works.

New items

Are you looking for an easy-to-build model for younger kids that has a plastic fin unit? The Quest SPORT™ is a perfect choice. Not only is it easy to assemble, it also is a terrific flyer. It effortlessly zooms to ultra high flights on inexpensive motors.
http://www.apogeerockets.com/Quest_Sport.asp

Kid-friendly kit that's easy to build

Besides adding kits made by other manufacturers, we are proud to be making the first of a few new additions to the Dynastar line of mid-power rockets. The fist is a large 2-Stage Rocket called the "Rip-Roar. Because it has two stages, the Rip-Roar kit is two times the fun of previous kits.
http://www.apogeerockets.com/Rip-Roar.asp



BT-70 on top and BT-80 on bottom

Another addition that we are thrilled with is our new BT-80 nose cone (shown in photo above) and matching BT-80 body tubes! As you can guess, we're working on

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About this Newsletter

You can subscribe "FREE" to receive this e-zine at the Apogee Components web site (www.ApogeeRockets.com), or by sending an e-mail to: ezine@apogeerockets.com with "SUBSCRIBE" as the subject line of the message.

a few Dynastar kits to use these new BT-80 tubes and nose cone. Keep an eye out for news on these as they develop!

Of course, now that we have those items we are also stocking BT-80 size couplers. These BT-80 couplers fit perfectly in order to join their respective tubes together.

24", 36", and 58" Chutes

Although not completely new to the DynaStar line-up, our ripstop nylon parachutes are still new to most modelers. What makes them different is that there is a fantastic pattern printed on the cloth. Who wants a single color parachute? Do you?
http://www.apogeerockets.com/parachutes.asp

Back in June of this year I was deligated the task of getting engine hooks for our kits. Four months later we are now offering to our customers these metal engine

Mini, Standard, and "E" Engine Hooks

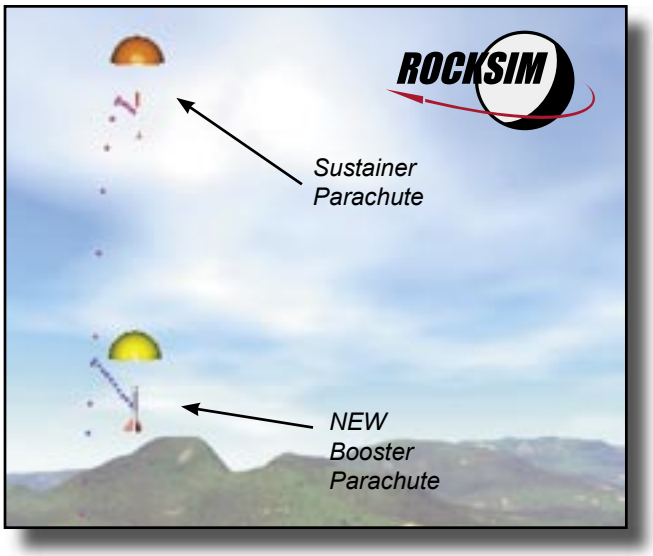
hooks. Made from high strength spring steel, these are durable and extremely stiff and rigid. Unlike cheaper hooks made from stainless steel, these won't kink when you bend them back to insert or remove the rocket engine from the model. They always spring back to shape.
http://www.apogeerockets.com/engine_hooks.asp

Have you ever needed material to make your own custom centering rings or bulkheads? Do you need a custom-sized ring to fit a spare tube you have? Or, do you want to save a ton of money over pre-cut rings? We now have high-density cardstock that can be easily cut to create any size rings you need. This is the same high-quality cardstock that we use to make all the Apogee flat rings. It's stiff, strong (can be used to make rings even for high thrust G motors), and looks great!
www.apogeerockets.com/body_tubes_and_rings.asp#Centering-rings

V8 (Build 12) out soon!

RockSim v8 Updates

We are very excited to announce the newest update to Rocksim v.8 is just about ready. This is being called the "Build 12" update. Besides fixing a few bugs that customers brought to our attention, we also added some new features too. There have been many modelers who have requested the ability to better represent



Booster Chutes!

delayed staging and parachute recovery for booster stages (see picture above). You can now do this , which is useful to see where your big booster stages are going to land.

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This new version of RockSim should be available at the beginning of December, so watch for updates.
http://www.apogeerockets.com/rocksim.asp

Not too long ago, Tim finished his long-awaited sequel to the popular "Building Skill Level 1 Model Rockets" which is aptly titled, "Building Skill Level 2 Model Rockets". Customers have so enjoyed the first video book, and they have found it so useful that they have requested information on building techniques for harder-to-assemble kits. Not only do they want to know how to correctly build complex models, but they also wanted to know how to take simple kits and make them look and fly better.
http://www.apogeerockets.com/skill_level_2_book.asp

Saturn V News

Many of you have called to find out what's happening with our immensely popular 1/70 version of the Saturn V. We are sorry for the inconvenience of this.

Saturn V on left

Amy is keeping a Saturn V wish list of all of you folks who want to know as soon as we know when we'll have it ready to be re-released. Contact Amy if you want to be added to that list at: orders @apogeerockets.com.

The problem is that the molds for the vaccuform wraps have warped, and we need to have new ones made. This is in the works and hopefully we will have this beautiful scale model available for shipping in 2006.

WEB SITES WORTH VISITING

The website worth visiting for this issue is that of Doug Gerrard's. You can find it at: http://www.rocketry-photography.com. Doug does rocket photography; it is his forté. He is not biased at all; he flys both still cameras and video cameras in his projects. He has been involved in rocketry since 1972 and is currently a member

of both TRA and NAR and is certified level 3 (L3).

Doug's L3 was not your run-of-the-mill rocket; it had 11 cameras on board in addition to the standard pressure that goes with a L3 project! His website has an impressive 17 different still camera rockets and 6 video camera rockets that offer many different details and pictures of each rocket. In addition, of course, there are many photographs from 7 of the still camera rockets. As of this writing there is only 1 video, which is from his upscale Cineroc rocket that you may see in the photo below.

In the picture above Doug is shown at a science fair that he was in when he was a senior in high school. He won first place at the Regional Science Fair in Kirksville, MO in the spring of 1980.

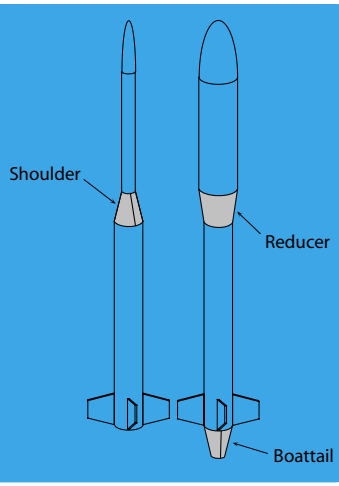
There are also pages that detail a dozen different cameras that he has used over the years. Doug's website is definitely worth perusing through.

I you want to try out camera rockets, the Estes Snapshot camera rocket is available through Apogee Components at: http://www.apogeerockets.com/estes_snapshot.asp

You also might try your hand at video images, with the Oracle rocket. www.ApogeeRcokets.com/Estes_Oracle_Video_Rocket.asp

DEFINING MOMENTS

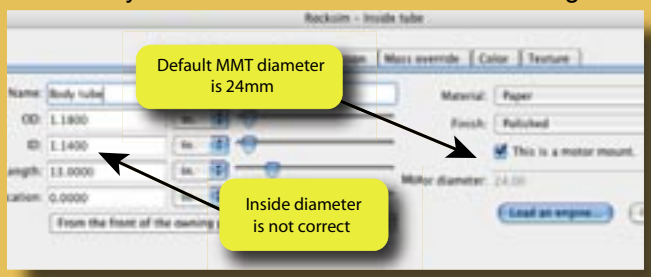
Transitions are components that are made to join together 2 body tubes of different diameters. They are given special names which correspond to their placement on the rocket. When the smaller tube is toward the front of the model the transition section is called a ***shoulder***. When the smaller tube is toward the rear, the transition is called a ***reducer***. If this takes place at the very rear of the rocket, then it is referred to as a ***boattail***. In addition, transition sections that are made from thin cardboard are called shrouds. These components are essential in a rocket that has a design such as the ones shown in order to keep the aerodynamic drag as low as possible. Transitions can be made from scratch or balsa nose cones by simply cutting them and inverting them when necessary. If making them from scratch is too much for you, please visit our website at: http://www.apogeerockets.com/nose_cones.asp. These designs can be a lot of fun to make and fly!



QUESTION AND ANSWER CORNER

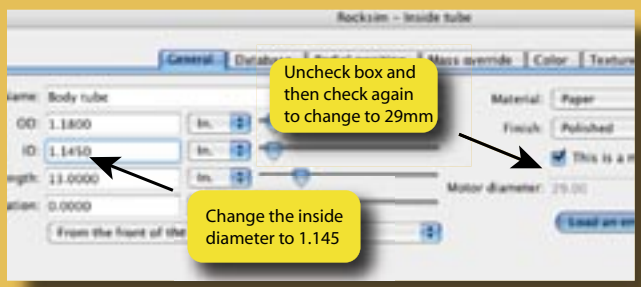
Quite a few Rocksim customers have contacted us regarding a slight bug that is in the current version of the software. This issue revolves around 29mm motor mount tubes. The reports say the inside diameter results in a "24mm" motor tube when the motor mount box is checked, instead of a "29mm" tube. There is an easy solution for this.

What you will need to do is do some altering of the



Default settings are not correct

default settings of the tube you are using, and then re-save them to the Rocksim database. Start by changing the inside diameter of the motor mount tube from 1.140" to 1.145". This will give the tube just a little more room in order to fit a larger motor into it. After you do this step you will probably notice that the "motor diameter" of this tube has not changed. No worries though, for all you have to do is uncheck the "This is a motor mount" box and then re-check the box again. After doing this, the

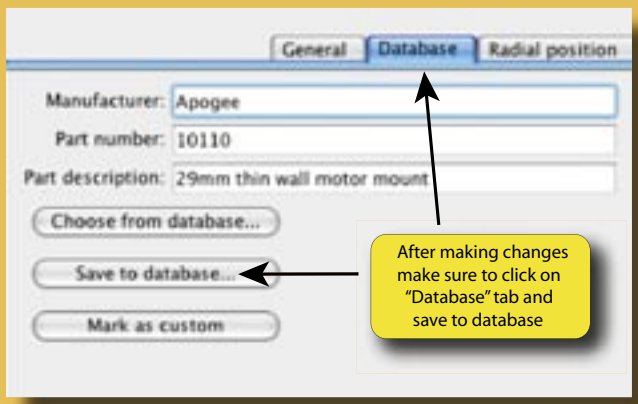


Changing the dimensions

motor diameter should now read "29mm."

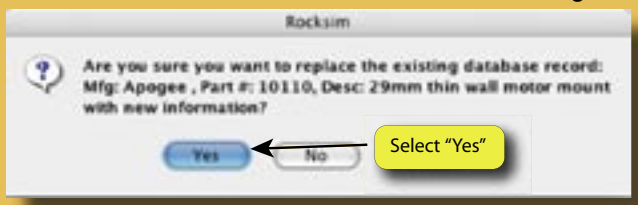
Pretty simple but we are not finished yet. You don't want to have to do this procedure every single time you go to put a 29mm motor tube into your newest design.

Your next task is to select the tab that says "Database" from the top of the motor mount tube box. What you are going to do is save the current dimensions for this 29mm tube in the Rocksim database. It will not only be saved in there but it will also be written right over the old dimensions for this part!



Saving new settings to database

Now go ahead and click on the "Save to database..." button. At this point, a box will pop up with a "warning" question, basically asking if you are sure that you want to overwrite the current component with new information. It's okay, you do really want to do this so just click the "Yes" button, it will be saved, and you will never have to alter another 29mm motor mount tube again!



Overwriting old part dimensions

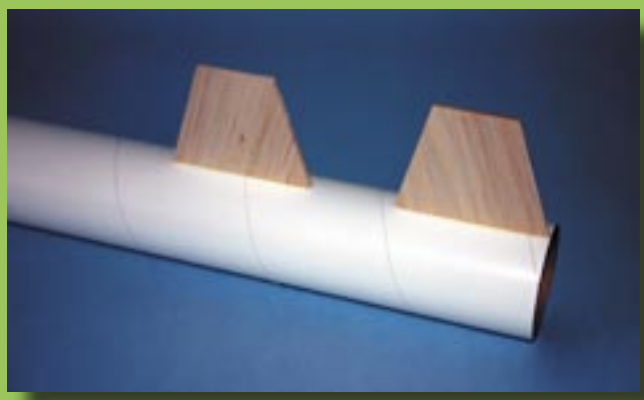
If you have something that you have been wondering about, please drop me a line by e-mail at: johnm@apogeerockets.com and I will do my best to find the answer to you question!

TIP OF THE FIN

My tip for this newsletter is for those of you who are going to purchase one of the new Dynastar Rip-Roar rocket kits and venture into the exciting type of rocket known as "multi-stage". It is important to have the fins lined up perfectly. How do you achieve this? I'm sure there are many ways, but this is the method I use. First, I glue on one of the fins; it doesn't matter forward or aft, you just need to make sure that the first fin is glued on straight and strong. Put a thin coat of wood glue on

First Fin in Position

the root edge of the fin and let it sit for a minute or two before placing it on the airframe. Next, go through the same steps as before applying the glue and placing the second fin in the position that is needed. Now, to line them up , take a small clamp (I use a small to medium



Second Fin Placement

Fin Alignment Clamp On

binder clamp) and 2 pieces of cardstock. Line them up on opposing sides of the fins and even with the tip edge. This is shown in the picture above. If you need some cardstock for this purpose please see our website at: http://www.apogeerockets.com/body_tubes_and_rings.asp#Centering-rings. Let the fins sit until they are completely dry before attempting to take the clamps off. As you can see in the picture below, the fins are lined up perfectly and will make your rocket not only look better but fly better, too! The weblink above is also the same one you can use to access our supply of body tubes, which are useful not only for body tubes but also for motor mount tubes and tube fins. If you have a tip you would like to share and we publish it, we will send you a special gift for your submission! Simply e-mail me at: johnm@apogeerockets.com.

Straight as an Arrow

"Kwangmyongsong" North Korea's Satellite Launch Vehicle

By Francis G. Graham

On August 31, 1998 the North Koreans, who call themselves the Democratic People's Republic of Korea, attempted to launch a satellite. This attempt of Asia's last Stalinist state failed when the spin motor of the third stage apparently exploded and de-orbited the satellite. Of course, the consensus among Western experts is that the DPRK, while they really did try to orbit a satellite, had as one of their main objectives a demonstration of their home-gown missile technology for sales and export to other countries including those the United States will not sell missiles to.

I decided to build a model of this missile. Since my own scale modeling skills are lacking, Joe Peklicz of Martin's Ferry, Ohio helped me in the actual construction. The research on the shape and dimensions of the satellite launcher, the Kwangmyongsong, were my doing. This launcher is based on the military missile the west calls the Taepo-Dong 1.

The 25 meter-long two-stage Taepo-Dong 1 is a true Intermediate Range Ballistic Missile, able to lob a VX warhead of 750 kg over 2,200 kilometers (about 1,350 miles). It was sold to Iran where it was renamed the Shabat 4. When the small satellite was added, the length was increased one meter and a satellite shroud was used.

The Kwangmyongsong uses kerosene-gasoline and nitric acid for fuel, and the second stage is essentially a Scud, which uses the same propellant.

The first stage is based on an earlier North Korean missile called the No-Dong with three Scud motors burning Kerosene/Gasoline fuel and Red Fuming Nitric Acid as an oxidizer. It has a diameter of 1.32 meters and a 15 meter length and a takeoff thrust of 306, 348 newtons (68,772 pounds). The second stage, a 10-meter long Scud basic body, has the standard 88 cm diameter. As a second stage it is throttled down to 55% thrust, delivering 56,500 newtons for about 171 seconds.

The third stage is the most vague of the pieces. It is the unit that apparently malfunctioned and was about 2 meters high in a 95 cm-diameter shroud with the satellite on top of it. The solid fuel motor apparently put the satellite in orbital velocity, but the spin-up motors exploded, de-orbiting it soon after it attained orbital velocity. The satellite was in orbit for about 25 seconds.

North Korea's Kwangmyongsong missile

The solid fuel is not known.

My model of the Kwangmyongsong is 2 feet long and scaled accordingly. The three-nozzle arrangement is removed in conversion from static scale display to flyable model.

I must confess, however, that I have never flown it as yet. I am fascinated by this single lone attempt at orbiting a satellite by one of the world's most secretive governments.

The six-party talks which recently concluded in Beijing produced a framework for peace on the Korean peninsula, and North Korea observed a moratorium in testing missiles of this size.

Francis Graham is a Physics professor at Kent State University and is one of the founding members of the Tripoli Rocketry Association in December 1964.