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APOGEE PEAK OF FLIGHT NEWSLETTER

Feature Article

First Launch

An Experience With an Organized Club

INSIDE:

- Meet Our New Editor
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- Web Sites to Visit

APOGEE COMPONENTS
1130 Elkton Drive, Suite A
Colorado Springs, Colorado 80907 USA
www.ApogeeRockets.com e-mail: orders@ApogeeRockets.com
phone: 719-535-9335 fax: 719-534-9050

CHECK YOUR MEMORY BANKS

How many of you remember your first organized rocket launch? I'm sure that there are many stories out there. I would like to tell my story to you. Mine just happened to be a high power launch. It was June of 2001 and my wife was going to be gone all day. Rather than be tied to the house with our four kids, Daddy decided to take all the kids ranging from 9 down to 2 years old to the Tripoli Colorado club's launch in Hartsel, CO. I researched the site and my wife set us up with a great lunch to take along and toys galore to entertain the kids when they tired of watching rockets go off.

We set out early that morning as we live one hour away from the launch site. What a gorgeous drive it was as we meandered up and down the rolling hills of Southern Colorado. Everything was greening-up, the trees' colors were coming back, and the air was fresh and clear. In the back of my mind, I was thinking I couldn't wait to see the air thick with the smoke from rockets. I didn't tell the kids that, though. As we descended down from the mountains into the valley where Hartsel lies, we could see puffs of smoke way off in the distance. They didn't look all that big.

WE'VE ARRIVED!

We turned onto the frontage road and just as we rounded the last corner by the launch site, one of the larger rockets took off into the sky as it ripped upward atop a large flame, trailed by a huge column of thick, white smoke! Well, the kids started wondering what was happening, since I had hit the brakes and now the top half of their dad's body was hanging out of the window just hoping to catch a glimpse of the missile as it headed skyward. All I could see at that point was a large column of smoke as the rocket headed out of site. The kids started getting really excited now, figuring that if their dad was acting like that, there must be something pretty cool happening. I pulled through the gate and trucked across the wide-open expanse of the ranch to the launch site.

INSPECTION TIME

Many, many vehicles were lined up at the range looking as if you were in a tightly packed campground. There were lots of tents, tables, rocketeers and, like us, spectators who just wanted to get a chance to see what was happening there. We found an empty spot where we could set up camp, so to speak, and after getting the kids settled with snack after the long trek to the site, I pulled out my camera and camcorder to so that I could capture some of the sites and sounds of the launch. The kids were wide-eyed with amazement as one rocket after another took off from its perch on a billow of smoke and fire. They went running into the van as an 'I'-motor gave a loud roar off the pad. They stood in awe as an 'M'-powered monster took its place into the thin air above Hartsel. The altitude there is 8800' MSL so we made sure to bring all the necessities, such as water, sunblock, etc. We had a chance to go around to the different rocketeers' tables and tents to observe their projects. Large and small, we took in the whole experience of getting to see what we had been missing up close.

About noon, we decided to break out our lunch which consisted of peanut butter and jelly sandwiches. Not

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long after that, the club broke out their barbecue and started cooking up a whole batch of hamburgers. At first I assumed that they were for the club members only, but one of the officers said that they were for all in attendance! He said that they don't always do that but sometimes like to give everybody a little bit of extra special treatment. Everybody was so nice and helpful!

Ultimate endeavour with M1130 prior to launch.

CONCLUSION

That's just one more thing I love about this hobby; there are so many friendly folks that just want to help you succeed at what you are doing. There isn't the attitude of one person wanting to be better than another; just different levels of accomplishment. If you have never been out to a launch, I would highly encourage you to do so. It doesn't have to be a high power launch that just happened to be the one I chose. Smaller low or mid-power flights are just as neat and can be even more interesting in their own right. There are a lot of interesting designs out there along with different types of contests and the like. It will motivate you, inspire you, and move you to try to build something yourself! Anything you build with your own two hands will give you a sense of accomplishment that is unmatched in my book. Good luck to you and remember to keep the pointy end up!

GOT A GOOD STORY?

In particular, do you have a story of personal experience with one of our Dynastar line of rocket kits? If so, we would love to hear from you! Please e-mail any stories you have to johnm@apogeerockets.com. Sharing your experiences is a great way to get others excited about this wonderful hobby.

If you have a letter, comment, or suggestion for our newsletter, please send it to johnm@apogeerockets.com

QUESTION AND ANSWER CORNER

One question that I often hear is, "I messed up and epoxied something together that I didn't mean to and need to know if there is an easy way to unglue the joint."

ANSWER: There is a technique where you can take a can of compressed air that is sold in computer stores, turn it upside-down and spray the area you want to undo. Spray the area until it gets a white-frost build-up. If you can, try to spray the back side, too. After you have done that, gently rock the piece back and forth. Usually it will pop off with little damage. The important point is to remember to keep spraying until the joints are frozen.

NOTE: DO NOT SPRAY ON YOUR PERSON. YOU WILL FREEZE THAT PART OF YOUR BODY.

If you have a rocketry related question, please e-mail me at johnm@apogeerockets.com

TIP OF THE FIN

I would like to start a small section in each newsletter that gives rocketeers a little tip about some aspect of rocketry that they might find useful in practical rocketry situations.

This issue's Tip of the Fin is about cleaning launch rods.

Try cleaning your launch rods after each flight with a baby wipe. Especially if you have just had a Blackjack flight. That stuff is very dirty and sticky. You will find that not only will the baby wipes clean the rod but they will also lubricate it for your next flight!

New Staff Member, John Manfredo

by John Manfredo

I would like to take this opportunity to introduce myself. My name is John Manfredo. I recently joined Tim and his staff at Apogee Components. My background is totally amateur compared to Tim's background with NASA. I do share Tim's enthusiasm and passion for rocketry, though. If you were to ask anyone who knows me to describe me in one word they would undoubtedly say "rocketry".

BEGINNINGS

This obsession . . . I mean interest, started as a kid with a Citation Patriot kit. I remember how I thought that kit was so huge! One of the funny yet interesting stories I have is from when I was about 13 years old or so. Two of my friends and I got together. We lived down the street from a little pond and we thought it would be interesting to design a missile silo that we could submerge and make a rocket take off from underwater. We rounded up a couple of coffee cans and a board for a base, then sealed them so that they were watertight. We insulated the launch controller wires as well and then we stuck a pin in the top of the nose cone and put cellophane over the top of the silo. My friends got out their dads' fishing waders and made their way out into the water while I stood on the shore with an 8 mm movie camera ready to go. They sunk the silo with rocks down in the water and we started the countdown. I tried to capture the rocket on film but as you can imagine, it went so fast that there is only the blur of the camera moving skyward! It was pretty comical, but I have to say, it did work!

CH, CH, CH, CH, CHANGES . . .

Well, as life goes, I lost the interest in rocketry for quite a while. Later, after graduating from college, getting married and having kids, my in-laws gave me a Vashon X-13 Rocket Plane for Christmas 1998. It was still in the original package but missing a few parts (She had gotten it from a garage sale). Well, I live about 15 minutes away from Estes, so I just figured I would walk into that place and get whatever I needed to replace in this kit from the 1970's. For someone just getting back into rocketry, I had no idea about anything. They, of course, looked at me funny and told me that nothing for the kit was being produced anymore. So, I decided to purchase a couple of starter kits from them to introduce my kids to the hobby that I had remembered. In the meantime, I went down to the local library to find what I could on rocketry. A few things came up including Tim's first edition of 'Model Rocketry Design and Construction.' I decided to check this out and see what he had to say. What a revelation I had! I had no idea that you could build your own rockets from scratch! This is when I discovered the treasure that is the Apogee web site. I downloaded the demo version of Rocksim 4.0, took Tim's book, and got to work designing and building my first rocket right down to the very heavy parachute. It was designed to fly on a D12-3 and from the minute I flew it I knew there was no turning back. It was also about this time that I discovered the Rocketry Online web site. Through the links to other web sites I discovered that there was so much more out there than the world of small rockets that I was accustomed to! Not to say that small rockets aren't fun too, but I just had no idea that there was so much out there. Since then, I joined NAR and then Tripoli and a couple of years ago I got my Level 1 high power certification. I still enjoy building and flying any size rocket from small to large. At left, you can see my black and silver Vashon X-13 Rocket Plane on the left and my first scratch-built red and black rocket in the middle, aptly named 'Red Thunder'.

What is it about rocketry that gets me so excited? I heard a great answer to that question that has stuck with me . . ." For those who understand, no explanation is necessary; for those who do not, no explanation is possible".

New Spacecraft and New Models

By Francis Graham

On January 30-February 2, 2005, the "First Space Exploration Conference" was held at the Disney Contemporary Resort in Orlando. Although not the "first" space exploration conference, the name was chosen by the sponsors, Lockheed-Martin Corporation and the AIAA, to emphasize that a new paradigm for space exploration was in the offing by NASA; one that focused on a return to the Moon and a manned expedition to Mars, and one that left behind the aging Shuttle Fleet about 2010 and the ISS in about 2016, and de-emphasized exploration of the comets and outer planets.

Central to NASA's new approach is the Crew Exploration Vehicle (CEV), used to return to the Moon. The CEV superficially resembles the Apollo CM and could be combined in a number of configurations including with landers, various boosters, and mix-and-match configurations. This modular versatility will greatly reduce the cost and development of space missions, part of NASA's new "spiral approach" of developing upon prior developments to create "systems of systems".

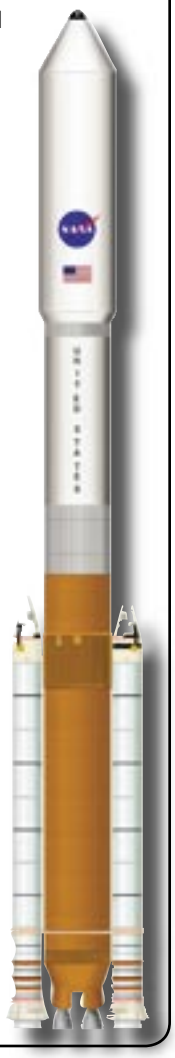
This is logical. According to J.R. Hale, (Hale, J.R. 1968 Renaissance Exploration W.W. Norton: New York) the most successful craft in the Age of Maritime Exploration were the most versatile and adaptable and in modern space exploration, only the Russian Soyuz fit that bill having been used as a military satellite, Earth-orbit spacecraft, Moon probe, manned moon craft (but not launched as such) space station ferry and cargo ship.

The CEV and its approach may well be the thing when testing begins in 2011 and will be as versatile, its designers hope, as the Soyuz or more so. The next question would be what boosters would loft it and there was no lack of proposals such as the Boeing Delta IV and the Lockheed-Martin Atlas V and other Atlas series. However, the most inexpensive proposals came from ATK-Thiokol and built upon Shuttle-derived propulsion technologies.

These Shuttle-derived rockets appear to be the ones that NASA is presently leaning toward adopting. They include an unmanned cargo rocket which uses the shuttle main tank, engines, and solid fuel strap-ons as the "Side-Mount Heavy Lift Launch Vehicle," a human-rated CEV launcher using a single, solid fuel strap-on as a booster and a liquid second stage, called the "Human-Rated CEV Launcher." Also, there is an Ultra-heavy Launch Vehicle using shuttle motors, a large tank and solid strap-ons.

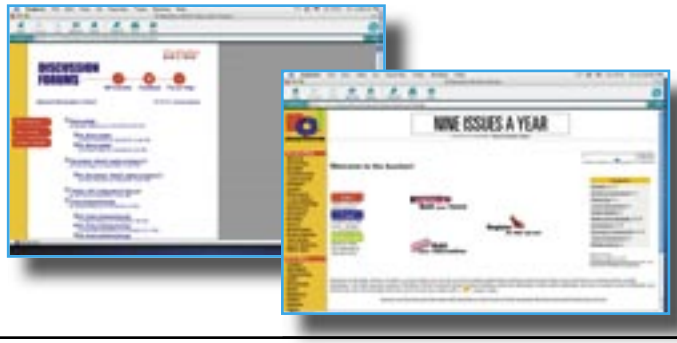
These designs are shown in the illustrations. While dimension lines are absent, modelers will recognize them as the hardware that now graces the Space Shuttle and they can be scaled accordingly. The initial CEV booster in this design is the solid-strap-on booster reconfigured as a stand-alone booster. The shuttle tank and boosters grace the Side-Mount Heavy Launch Vehicle and the Ultra-Heavy Launch Vehicle has extended SRBs.

You might be the first in your NAR section to build scale models of these likely future spacecraft, perhaps the first to have a scale model of the design fly at all since most designs are now extensively computer simulated prior to construction. Good luck!



WEB SITES WORTH VISITING

Since I've already mentioned how I started learning more about rocketry from visiting different web sites, I thought that having a short column about web sites that are worth a second look would be appropriate and helpful. The first web site worth visiting would be www.rocketryonline.com. This web site has about everything you can imagine. The forums are a great feature where you can get in and pose questions to other rocketeers who have a wide array of knowledge. The forums are broken up into many different topic areas including 'general', 'how-to', 'design' and 'propulsion' just to name a few. It has a plethora of information in its menus. 'Info Central' is especially helpful in that it features how-tos on construction, finishing, electronics, ground support ,and regulation just to name a few. There is an auction section, which allows rocketeers to have an E-bay type area where the auctions are rocket specific. They are divided up into sections where they can auction off motors, casings, kits, recovery components and the like. Another feature, which I discovered way back at the beginning of my rebirth into rocketry, is the 'Individuals' menu. This allows you to browse and link directly to other rocketeers personal web sites to see what they are up to as far as projects, techniques pictures, etc. There is a news section where you may see what the latest buzz is in rocketry. The most recent three or four stories are always located on the home page of Rocketry Online. There is also a 'conferencing' area that allows rocketeers to chat with one another on whatever topic suits them. Take a look around in this web site and see the wealth of information that you can find!



ROCKSIM v8

Software For Those That Want To Take Control Of The Design Process

RockSim allows you to design any size rocket, and then simulate its flight to see how high and fast it will fly. You can also use it to find the best motor combinations for your existing kits, and to teach about the physics of flight. It prints out parts lists, drawings, and patterns, allowing you to quickly construct your designs. It has many CAD-like features: like 2D and 3D views, so you can see what your rocket will look like when you build it. Download the FREE trial version today. Visit:

www.ApogeeRockets.com/RockSim.asp

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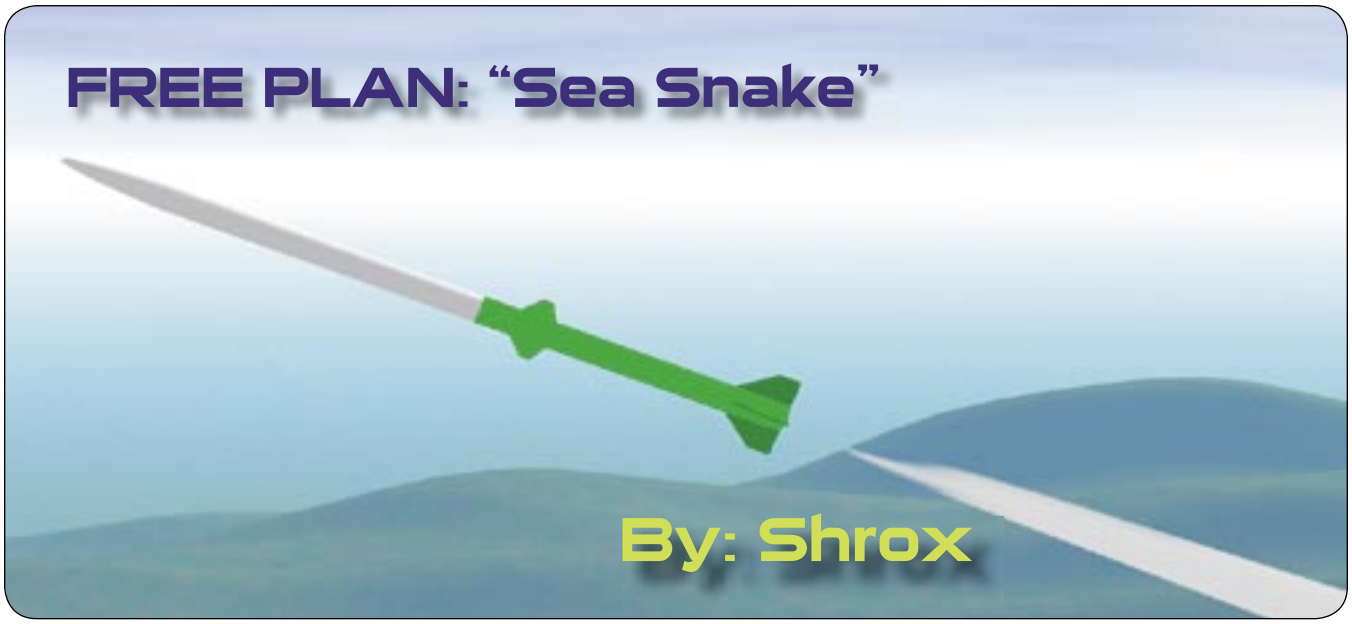
FREE PLAN: "Sea Snake"



Download the FREE RockSim Plans and Decal Artwork!

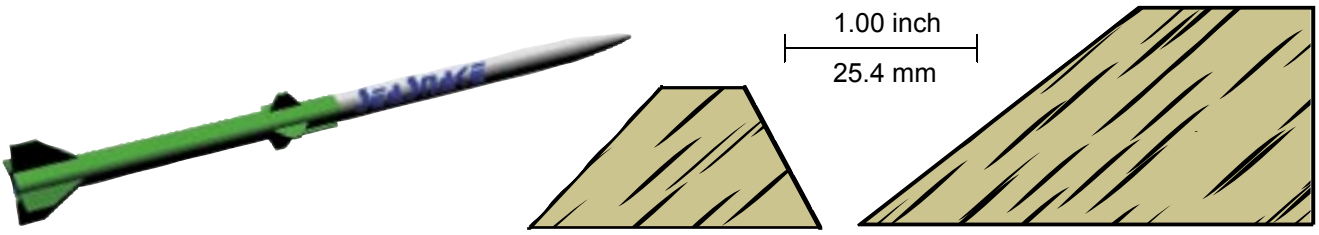
When you download the file, you'll get a RockSim design (requires v7 or newer), and the color decal artwork that you can print out to apply to your completed rocket.

www.ApogeeRockets.com/shrox/sea-snake.html

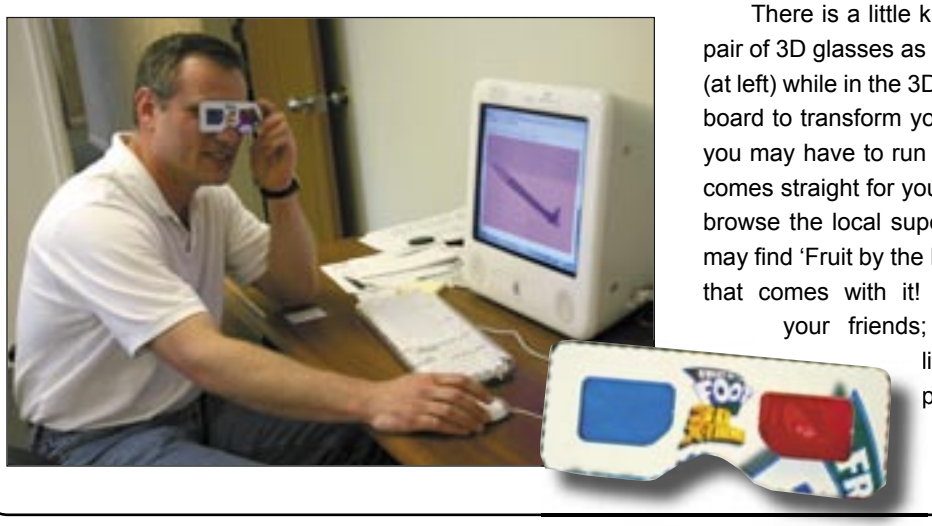
SUSTAINER PARTS

- (1) Nose cone Apogee-19114 - PNC 29A
- (1) Forward body tube Apogee- 10110 - 29mm, 13"
- (1) Tube coupler Apogee- 13008 - AC-29A
- (1) Parachute- 18"
- (1) Shock cord- Material: 100lb Kevlar (Apogee 29505), 60"
- (1) Aft body tube Apogee- 10110 - 29mm, 13"
- (4) Aft Fins- Material: Balsa, 1/8"
- (4) Forward fins- Material: Balsa 1/8"
- (1) Launch lug- Apogee - 13051
- (1) Engine mount tube Apogee- 10085 - 18 mm, 4" **
- (1) Forward centering ring Apogee- 13034 - CR 18-29
- (1) Aft centering ring Apogee- 13034 - CR 18-29
- (1) Engine hook
- (1) Engine block Apogee- 13029 - CR 13-18 ring

***expected altitude on Quest C6-5 is 382 feet.*



A Little Known Fact . . .



There is a little known feature to Rocksim v. 8. Using a pair of 3D glasses as shown by Tim Van Milligan, 'Mr. Rocket' (at left) while in the 3D mode, punch the number 3 on the keyboard to transform your model into a 3D wonder! So lifelike you may have to run away from the computer as you rocket comes straight for you! If you can't find a pair of 3D glasses, browse the local supermarket near the fruit rollups and you may find 'Fruit by the Foot', which has a pair of 3D spectacles that comes with it! Amaze your friends; be the life of the party!

SMARTSim

New Version 1.1.0 ***(Windows Version Only)***
Works with RockSim v.8!

Bargain Price
$20

Makes RockSim More Effiecient:
It saves you the time of running numerous simulations to find the optimum scenereo for your rocket. For example, are you trying to find the C_d based on actual flight altitude? You can use ***SMARTSim*** for this type of grunt work. But it doesn't simply chug through hundreds of simulations to find the answer—it's SMART. It can zero in on the result in just a few simulations.

Here Are Just A few Of The Many Things You Can Use *SMARTSim* for:

Fixed Cd - Max Altitude. Finds the fixed sustained drag coefficient to produce a user-specified maximum altitude in a simulation. This is commonly referred to as "altitude backtracking." This was the example used above.

Fixed Cd - Time To Apogee. Finds the fixed sustainer drag coefficient to produce a user-specified time to apogee in a simulation. This is commonly referred to as "time backtracking."

Mass - Max Altitude. Finds the total sustainer mass to produce a user-specified maximum altitude in a simulation. Useful for optimum mass studies.

Mass - Velocity at Deployment. This scenario gives some idea of how to alter mass to achieve a low velocity deployment. Useful for maximum liftoff mass studies and gentle parachute deployments.

Launch Angle - Max Altitude. Finds the launch rod angle to produce a user-specified maximum altitude. Useful for optimization studies with wind in the simulation.

Launch Angle - Range. Finds the launch rod angle to produce zero range at landing for "On the pad recovery." Useful with wind in the simulation or for ballistic trajectories with non-zero range.

Parachute Cd - Range. Finds the parachute drag coefficient to produce zero range at landing for "On the pad recovery." Usually only useful with wind and non-zero launch angles in the simulation.

For more information, visit: www.ApogeeRockets.com/smartsim.asp