STARDUST

March-April 2000

R is for Rocket Open Meet

by Alex DeMarco

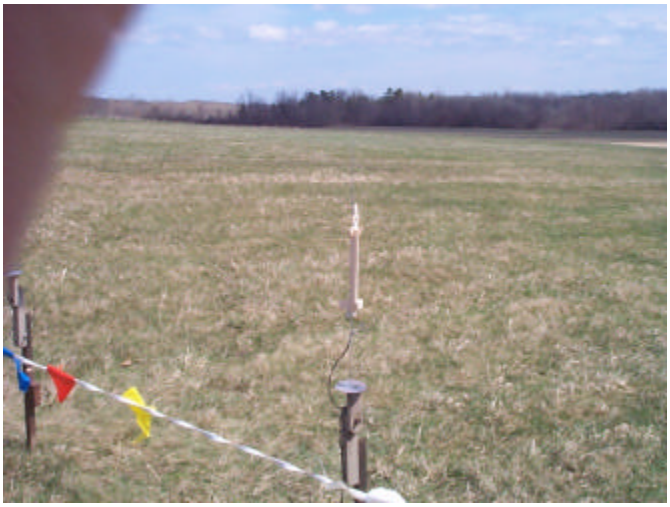
ASTRE kicked off the 2000 flying season with a bang (pun intended)! However, while heading towards Johnstown Saturday morning I was a little concerned. I had stopped at Thruway exit 25 to wait for Mark Hutchinson and noted the flag flapping in the wind. Upon arriving at the field I was quite surprised at how calm it was. The first thing that came to mind, "Oh man, I wanna launch my RC SR-71!"

The previous weekend's snowstorm definitely left its mark on the field. The path we take out to the field was pretty muddy, and impassible by car. Luckily I remembered what Jeff Vincent said, and brought my boots. Once we got out to where we were going to setup the pads it wasn't bad at all. Jeff pulled in shortly after us and we started lugging our equipment out to the field. Chuck Weiss arrived bringing the bulk of the range equipment.

(Continued on page 3)

Ben Patrone sets up a sport model.

Doug Hallenbeck and son prep an Estes Python.



Mark Hutchinson's Apogee Heliroc on the pad.

In This Issue...

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Editor's Thermal

Plan Ahead

As you can see, we're off to a *flying start* to the new season (is that the model rocket season or the bad pun season, Jeff?).

We had our first launch under soggy, but otherwise very pleasant conditions. At times it was even a bit *too* warm (believe it or not) at our first launch. Our worst fear, winds predicted at 10 to 20 mph, turned out to be more like 5 to 15 mph, giving us ample opportunity to make our flights. Everyone had their highs and their lows (there he goes again), as you would expect in a typical day of rocket fun.

We're experimenting some more with the production of the newsletter. If all goes well (cross your fingers), you'll be wowed by the color photos on the cover and this page. If not, just imagine how good it will look on the next issue.

Aside from our own events, we're making plans to attend some major events coming to our area. The National Sport Launch will touch down in Geneseo, NY over the Memorial Day weekend, offering a chance to see rockets and rocketeers from around the country. Contest aficionados can get their kicks at RAMTEC at Allentown College in PA over Father's Day weekend. This is the biggest meet in the northeast, a great chance for a weekend of "contest rocketry immersion therapy" (versus the full week treatment available at NARAM). Make your plans now, as they aren't that far away on the calendar.

— Jeff Vincent

ASTRE Building Sessions

The ASTRE building sessions have come to a close with the B/G building session in March. Astute viewers may spot the tell-tale balsa dust on the camera lens, a sure sign of hard-core balsa bustin'. We held three competition building sessions this winter: streamer duration, helicopter duration, and boost/glider duration. We have no more sessions planned at this point, but we did talk with John Sicker about a possible HPR/Level One building session sometime in the future. Stay tuned...

(Continued from page 1)

Once the range was setup, I didn't waste any time. Since I needed a spent engine casing to test balance my RC SR-71, I loaded up a modified Launch Pad designs Flail. I'll need to add some nose weight to it next time since its flight characteristics were not all that great, it headed off the rod in one direction then turned about 180 degrees in the other direction. Anyways, I got the casing I needed, balanced the SR-71 and was ready to try it. The lift off was dramatic, at burn out I pulled back on the stick and was in control! Please note that when flying the RC SR-71 do not move the stick completely to the left or right, as the aircraft will begin a death spiral! Luckily I straightened it out in time to make a decent landing. The SR-71 flew three times with no noticeable damage.

On to the competition. Participants included: Mark Hutchinson, Eric Shadow, Ed Eades, Jeff Vincent, and myself. This is where my memory gets a little fuzzy. Of the day's events, C Eggloft Duration (ELD) was not our finest moment. I sent egg number 3 to an early grave, it shot up, went pop, and that was it. Eric and Jeff would have had some great scores (close to three minutes each) but unfortunately neither one was able to return their entries. They flew away into the Johnstown abyss! Eric was gone for so long in search of his ELD that he was strapped for time and unable to fully fly the other events. Jeff's kits put in a good performance, except for his DQ'd B/G. I have to say that I was pleased with my QCR Streamer (SD) and Boost/ Glider (B/G) kits, both performed well, given my lack of competition kit construction experience. Ed Eades commented on how our winter building sessions have helped him in competition. Ed flew in every competition except ELD. Mark Hutchinson put up his Apogee Heliroc, and his QCR B/G featuring a "steam bent" wing. His B/G looked promising, too bad it got stuck in a tree.

As for the *B-A-N-G*, Mark decided to launch his Estes Exoskell on an Aerotech D21. It never left the pad as the engine exploded, shattering the tail end of the rocket. Mark has the whole thing on video. By the time you read this, it should be available on our website, under the ASTRE Launch Videos link.

ASTRE's newest members were on hand as well. Doug Hallenbeck along with sons Timothy and Aaron sent up several models including Estes Big Bertha, AMRAAM AIM-120, and Python and LOC Legacy and Onyx. Later on Ben Patrone and his son Kyle arrived in time to send up a couple offerings to the rocket gods. A good time was had by all.

A big "Thank You" to all who helped getting the range set up and to Jeff, Ed and Mark for doing the bulk of RSO work.

R is for Rocket Open Meet Results

C Div. Results	**Name**	**1/2A SD**	**1/2A HD**	**1/2A B/G**	**C ELD**
	DeMarco, Alex	53 / 28	27 / ROT	27 / 115	SEP
	Eades, Ed	44 / 21	ROT / 15	55 / 26	-
	Hutchinson, Mark	-	ROT / 26	48	-
	Schadow, Eric	UNS	23	-	NR
	Vincent, Jeff	68 / 65	20 / 28	31 / DQ	NR

C Div. Points	**Name**	**1/2A SD**	**1/2A HD**	**1/2A B/G**	**C ELD**	**Total**
	DeMarco, Alex	96	228	340	0	664
	Eades, Ed	64	38	204	0	306
	Hutchinson, Mark	0	152	136	0	288
	Schadow, Eric	0	76	0	0	76
	Vincent, Jeff	160	380	68	0	608

Section Points ASTRE ..... 1578 Independents 364

Building Rockets for Safety

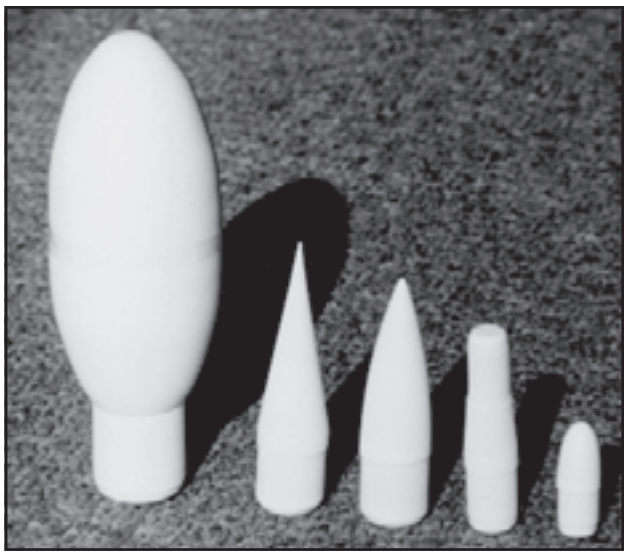
If Your Rockets Are Built To Survive A Ballistic Crash, It May Be Time To Rethink Your Design Philosophy For Safety.

By Tim Van Milligan

Over the past five or six years, I've noticed a disturbing trend among rocket builders. It seems to be popular to build rockets to survive ballistic crashes. While this sounds like something great, the result of these types of ruggedly built rockets is that they forsake safety.

What does this mean? One important thing that contributed to the excellent safety record established during the 1960's and 70's was that models were designed out of lightweight materials. More importantly, they were made out of "frangible" materials. That is, they could crumple in on themselves if they were to strike an object.

This ability to be frangible is important. Think of an automobile for an example. Since the 1950's, all cars have been built with a "crumple zone" at the front and rear of the vehicle. This crumple zone is designed to absorb the impact energy of a crash. It transfers the energy by deforming the materials; keeping it away from the occupants inside the car, nor the object which the car strikes.



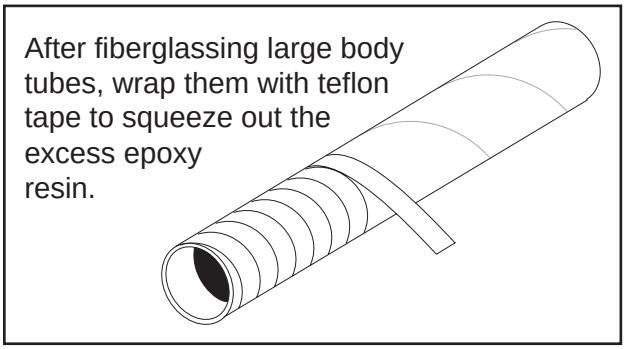
Lightweight vacuum formed cones are good to use when designing for safety.

Our rockets are missing this important crumple zone. There is no way to dissipate the energy of a crash. The sturdily built rocket survives, but whatever it hits — like a building, car, or "person" — receives all the damage. I worry that someone is going to get really hurt by one of these indestructible rockets.

It this concerns you too, what should you do?

First, stay away from thick-walled tubes; and those made from exotic materials like high-impact strength plastics and phenolics. What are good are thin-walled tubes made out of paper. Also, the safer nose cones are the light-weight balsa varieties, or thin-walled vacuum form plastic ones. Nose cones that have a blunt nose shape are also safer than ones with a pointy shape.

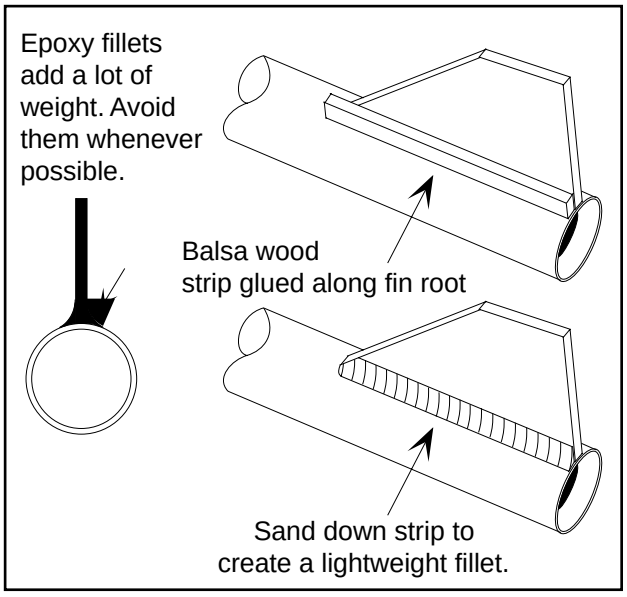
For bigger rockets, I still like the thin-wall paper tubes, which can be strengthened just enough fiberglass to give sufficient rigidity. Use epoxy sparingly. Epoxy doesn't add strength; only weight. I highly recommend the vacuum bagging technique to squeeze out excess epoxy resin from fiberglass cloths.



If you don't have that, excess epoxy can be squeezed out by using Teflon tape (like used on water pipe threads). Just wrap the tube tightly with the tape, and the epoxy is squeezed out between the wraps. When it hardens, it will leave ridges. But these are easily sanded down.

Similarly, watch that your fin fillets remain low mass. Epoxy fillets really add a lot of weight. Try another technique instead. Balsa strips can be glued along the root edge of the fins, and sanded down like a normal fillet *(see the illustration on the next page)*.

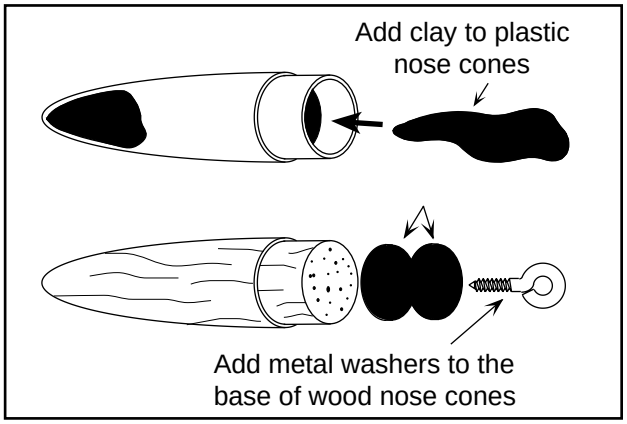
Remember, keep the mass of the rocket as low as



possible. A lightweight rocket doesn't have the damage potential of a heavy one.

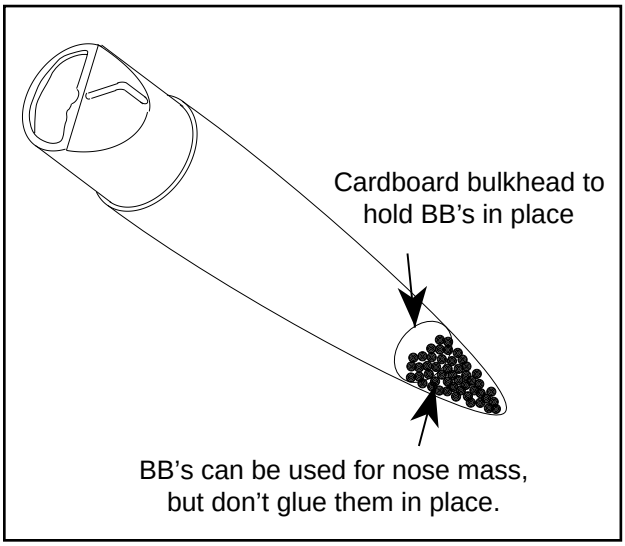
If you must add weight to the rocket (such as getting it up to its optimum mass), try to put it in the payload of the rocket. If there is no payload, use clay or sand in the nose cone. If you have to use metal, try to use washers attached to the base of the shoulder. That allows the forward part of the nose to deform to use up the energy of a crash.

To move the CG forward, use BB's in the nose,



but don't epoxy them in place. Instead, use a cardboard disk behind them as a bulkhead to prevent them from shifting aft. As a last option, use lead shot BB's (not the most environmentally friendly) for maximum CG shift.

In reality, building lightweight frangible rockets will mean that the model will take some pretty seri-



ous damage if it should crash. To avoid this, you'll need to relearn the basic flying skills. They are: choosing the correct motor for your rocket, selecting the proper recovery device, aiming the rocket to match the given wind and recovery area constraints — and most important of all — whether or not to fly the rocket at all on that day (or range). As I've said hundreds of times before, I recommend a software simulation program like RockSim. It will aid you in learning proper launch skills. It is a much inexpensive way, compared to crashing rockets, to learn launch skills.

In conclusion, remember model rocketry mimics real-world aeronautics. In that sense, by building heavy and indestructible rockets, we are getting away from the principles that modelers should be using to guide our endeavors. Please, build lightweight and frangible rockets.

Frangible Rocketry Debate

Sometimes it seems like you just can't open your mouth without offending someone. Tim put out a well-reasoned and well-measured article on making rocketry safer, but managed to step on some toes in the process. While I doubt he wanted to start a controversy, it does give us a chance to hear some other views and evaluate our own on this aspect of rocket safety. Here are some of the 30-some messages (edited to fit) posted to rec.model.rockets in the wake of Tim's original article.

From: William E. Maness <wmaness@impulseaero.com>
Subject: Is frangibility the real issue...
Date: 31 Mar 2000 00:00:00 GMT

Recently Tim Van Milligan of Apogee Components sent an article to the editors of club newsletters. The title was "Building Rockets for Safety: If Your Rockets Are Built to Survive a Ballistic Crash, It May Be Time to Rethink Your Design for Safety." Safety is – and should be – the number one concern of anyone who participates in rocketry, but we take issue with his assertion that flying ultralight rockets is the only way to fly safely.

Tim writes: *"One important thing that contributed to the excellent safety record established during the 1960's and 70's was that models were designed out of lightweight materials."*

We're all familiar with the first point of the NAR Safety Code: "My model rocket will be made of lightweight materials such as paper, wood, rubber, and plastic suitable for the power used and the performance of my model rocket. I will not use any metal for the nose cone, body, or fins of a model rocket." We're also all aware that the Safety Code goes from there to discuss the *other* guidelines which also must be followed to better ensure the safety of participants and observers.

Tim wants his readers to believe that there is a problem in rocketry today: people can be hurt if they are hit by *"ruggedly-built rockets."* But he does not prove that the problem he is trying to solve actually exists. *Are* people being hurt by these rockets? He doesn't provide any evidence that they are; he only warns that they could be. Frangibility is the overriding safety concern only if rockets frequently fall out of the sky and hit people. They don't.

He certainly doesn't include any statistics to back up his claim that lightweight materials have been the primary factor in rocketry's excellent safety record. We would argue that the reason has at least as much to do with factors such as safe zones around launch pads, angling the launch rods away from spectators, and not launching when winds are too high. Certainly the safety record of high power indicates that there has to be significance to other factors besides weight and durability.

There are some disturbing conclusions that must be reached if Tim's argument is taken to its logical extension. He wants everyone to launch only lightweight, frangible rockets. This would mean that no one should launch electronic payloads – because certainly a battery or altimeter is not frangible and it adds significantly to the weight of the rocket. No one should put a camera in their rocket. No high-performance mid-power rockets would be flown, because he thinks we should all *"stay away from thick-walled tubes; and those made from exotic materials like high-impact strength plastics and phenolic."* High power should be a thing of the past. Everyone would need to go to Estes – or Apogee – and buy only rockets which fly on A, B, or C motors. And these rockets are still capable of causing harm to people or property if they are launched irresponsibly.

If Tim is seriously concerned about safety in the hobby, we applaud his concern – but not his conclusions.

But frankly, we're not convinced that safety is his primary concern. He has not addressed the complexity of the issue, only the portion that has the most direct impact on the bottom line of Apogee Components.

We at Rocket Vision take this article personally. It's hard not to when the opening paragraph states: *"It seems to be popular to build rockets to survive ballistic crashes. While this sounds like something great, the result of these types of ruggedly-built rockets is that they forsake safety."* As the manufacturers of the Rugged-Rocket line, which are made from phenolic and are advertised in part on their virtual indestructibility, we can't help but suspect that he may be expressing something besides concern for the hobby. Especially since he is aware that we're planning to move into the low power market, building kits for this power class with the same high-quality, durable components we use for the Mach-Buster and our other Rugged-Rockets. It is hypocritical to submit for publication an "article" with such clear commercial bias.

When Aerotech introduced reloadable motors it scared their competition. Vulcan, backed by Estes, circulated a video which purported to show that reload kits were unsafe, raising doubts in regulatory agencies and hobbyists about the safety of these revolutionary new motors. Today, reloadable motors are accepted as an

important option in rocketry. Tim Van Milligan can't prove that a phenolic rocket poses a significant safety threat. But he can – and does – raise doubts and make insinuations. It sounds terribly familiar.

If these insinuations are taken seriously, it could harm our business. It could also be detrimental to the hobby as a whole. Whatever your personal flying preferences, do you really want the hobby limited to lightweight, low power rockets? Do you want individuals stirring up fears that could lead to even more regulatory attention?

Fly smart. Choose the right rocket and right motor for the field, for the weather, for your skill level, and keep spectators at an appropriate distance. We don't have to forsake twenty years of material science to fly safely.

I appreciate your comments.

From: petealway@aol.com (PeteAlway)
Subject: Re: Is frangibility the real issue?
Date: 01 Apr 2000 00:00:00 GMT

I would tend to agree with Tim on this issue. I wouldn't use the word "ultra-light" to describe a model I'd be comfortable flying, but I would call them traditional weight models. A couple or so ounces per square inch of frontal area, and half the weight cushioned from the nose by a paper tube. Something that wouldn't penetrate my skull.

wmaness@impulseaero.com wrote:
...Frangibility is the overriding safety concern only if rockets frequently fall out of the sky and hit people. They don't.

They fall out of the sky near people. Ask Donald Qualls about how close a heavy, non-frangible lawn dart came to hitting a spectator. If nobody's been killed yet, is it safe?

We at Rocket Vision take this article personally...

I suspect it was personal in the sense that your representatives at NARCON repeatedly bragged about how deep one of your models penetrated a particular type of soil, was brushed off, and found undamaged except for paint scrapes. Some of us see this as a red flag. Perhaps the fact that my jaw didn't drop and I didn't yell "Holy $#!+! These things are deadly!" was just my reticent midwestern way. The idea of non-metallic rockets is not that the late G. Harry Stine held some moral objection to the promiscuity of the electrons in a metal--rather it came from a concern that it was foolish to fly hard, dense spikes in the air over anything but an evacuated missile range. Model rockets as heavy and strong as metal violate the spirit of the safety code.

As the manufacturers of the Rugged-Rocket line... we cant help but suspect that he may be expressing something besides concern for the hobby.

I would suggest that Mr. Van Milligan's opinions on the virtues of traditional weight models inspired his business. I doubt his business interests inspired his views on the virtues of building light.

Maybe it is just not safe to fly supersonic projectiles in residential neighborhoods.

Whatever your personal flying preferences, do you really want the hobby limited to lightweight, low power rockets?

That's what model rocketry is.

Do you want individuals stirring up fears that could lead to even more regulatory attention?

If someone has something to say to improve safety, let him speak, and listen to him.

Ask yourself, "would I mind being hit on the head unexpectedly with a Mach Buster under a streamer in average condition?"

From: Dave Urbanek <urbanek@budweiser.com>
Subject: Re: Is Frangibility the real issue?
Date: 05 Apr 2000 00:00:00 GMT

First off, I cannot believe Tim is indicting Rocket-Vision for it's phenolic tube. If so, it's the ultimate act of hypocrisy because in the Apogee Catalog you can see a picture of a man STANDING on a rocket body tube made of solid wood. This is certainly NOT frangible and certainly less frangible then Rocket-Vision's tubing. How about the solid hardwood nose cones Apogee sells? Certainly less frangible than the plastic nose cones sold by Rocket-Vision.

I honestly think that Tim was trying to reverse a trend. I see it over and over, people get ribbed because they build frangible rockets and people are impressed only by 'bullet-proof' rockets. The former is NOT sub-standard and the latter is NOT better. I plan on publishing this article in our club's newsletter. I'm not doing this because I want people to stop this, or stop that, but to bring out

another point. It's all about risk, and comparative risk. I want people to think!

When two objects collide in an inelastic collision, the each body in the collision has to absorb some of the kinetic energy. If one of the bodies is stationary, then the only kinetic energy comes from the body in motion...

The worst case for a rocket is a streamlined ballistic trajectory. Now I don't have my physics book in front of me, but IIRC mass and velocity get multiplied to get an energy reading. A Mach-Buster might weigh 0.16 lb and might come in ballistic at 440 fps. This gives a kinetic energy number (whatever the units are) or 70.4 lb*f/s. This is equivalent to a 2.2 lb object falling from about 16 feet. Certainly ouch. Let's say the rocket is so frangible it only imparts 1/2 of it's energy. This is like a 1.1 lb object from 16 feet. Has the ouch significantly changed?

Now, lets look at a big rocket. A rocket that weighs 6 lbs and comes in flat at 300 fps carries 25 times the energy of the Mach-Buster. That's like 50 lbs dropped from 16'! That's a lot of energy. Cut that in half by making the rocket frangible, and you significantly reduce the damage (25 lbs from 16').

Most of the risk can be handled by proper range procedures.
1> rope off the range and enforce the range rules.
2> keep the crowd of spectators and their cars at a safe distance.
3> inspect the rockets before flying them.
4> make sure the dimensions of your flying field can handle what you're flying.
5> make sure people's attention is towards the action.

Making rockets more frangible will, indeed, reduce the risk further still. However, there is no way to eliminate all risk. Even the most frangible of rockets, even an innocuous Apogee Centrix, will put someone's eye out if it hit them there. When you fly rockets, you assume some measure of risk and you put at risk, every person that the rocket could conceivably reach. One must be armed with knowledge to be able to assess the risk. If you EVER think there is NO risk, then you are a fool.

At the heart of every model rocket, is a non-frangible rocket motor. This cannot be avoided. Because of the wall thickness and narrow cross section, an Apogee motor will impart more pounds per square inch than an Estes motor. Because of the rigidity, a phenolic motor will impart even more energy. A metal case, more still. Risk is ALWAYS involved. You must assess how much you are willing to assume and how much you are forcing those around you to take.

If you build a very frangible rocket, it will do very little damage if it hit someone. If you are experimenting with a new design, this would be a very good idea.

If you build enough 10 oz fiberglass on your 10 lb rocket to the point you can use it as a pile driver, then this is a high risk rocket. You MUST take pains to make sure that nothing happens.

I've seen a big rocket (a full size Astrobee D model) come in ballistic. I certainly wouldn't want that to hit my car. If it were my rocket, I would have taken great pains to make sure it didn't hit anything it wasn't supposed to, and guess what, that's what the flyer did.

What makes me mad is when an idiot, with no idea what he or she is doing, builds a super-strong, non-frangible, unstable rocket, pops a big motor in it and then laughs when it flips and flops around. It's only funny while no one gets hurt. If someone does get seriously hurt, kiss your flying field good-bye.

My whole point of publishing this article is to say two things:
1> THINK before you fly.
2> A bullet-proof rocket isn't automatically superior; a frangible rocket isn't automatically inferior.

From: tvm@apogeerockets.com (Tim Van Milligan)
Subject: Re: Is Frangibility the real issue?
Date: 07 Apr 2000 00:00:00 GMT

Dave Urbanek <urbanek@budweiser.com> wrote:
First off, I cannot believe Tim is indicting Rocket-Vision for it's phenolic tube...

Most people have not physically seen the RocketWood tubes. That is too bad. The first reaction to picking them up is realizing how lightweight they are. It often shocks people! How can a tube this strong be so light weight? They are much lighter than paper tubes.

The key thing is that it illustrates the point that "weight" does not equate to "strength." I've been harping on this issue and taking a lot of heat for it since the first edition of my book *Model Rocket Design and Construction* came out in 1995. It is not the material that the rocket is made of, but how the material is used that creates strength.

My point: "You can use lightweight materials to make sufficiently strong rockets."

Because of the strength of these tubes, it is not necessary

to fiberglass them, nor provide any other reinforcing of them. In my mind, since they are very lightweight, and are sufficiently strong, it makes them a great choice for rocket airframes for larger rockets. But I would hesitate to recommend them for smaller rockets, unless the mission of the rocket needed the extra strength. One scenario would be for hypersonic models.

How about the solid hardwood nose cones Apogee sells? Certainly less frangible than the plastic nose cones sold by Rocket-Vision.

To be honest, that is the one thing that I'd like to see changed in the Retro Rocket Works kits. But I've talked to the manufacturer, and he is limited in this regard. The nose cones have to have a certain "visual appeal" value. Plus there are cost issues that he has to overcome. These are things he is still working on.

I honestly think that Tim was trying to reverse a trend...

It is an uphill battle to reverse the trend. It is made more complicated by the silly requirements of Level I, II, and III High Power Certification. If I recall correctly, the rocket must not have any damage after launch and landing. I can see the value of not having any damage from launch. But I don't see the value in having no damage from landing. This only makes people over-build the bigger rockets.

One important criteria that is often overlooked is "flying skills." This was talked about in the article. I would like to see modelers pay more attention to this; because it helps relieve some of the pressure of overbuilding models. I have less concern with an overbuilt-model in the hands of a "skillful" flyer.

What concerns me is that since modelers are spending so much money on a few HPR rockets (compared to spending the same amount of money on lots of smaller rockets); that they aren't gaining the necessary flying skills. We all need to fly more rockets to gain experience. The more experience we have, the safer we become.

NAR Insurance News

Good news, the NAR insurance problem has been resolved! Thanks to the efforts of the NAR leadership, they were able to obtain insurance for NAR individual members, sections, and site owners with no lapse in coverage. ASTRE will conduct its launches as originally planned.

The insurance now covers all NAR members (versus the optional insurance of the past). There is no additional charge to current members (although the NAR would not refuse any donations to cover this large and unexpected cost), but new members and renewals will have to pay a higher membership fee ($47 for seniors, $25 for juniors and leaders). While the mandatory cost is a disadvantage, it is cheaper than the optional insurance of the past and removes some past complications (no more rustling up five insured members to recharter each spring and the insurance now runs concurrent with your membership period).

Check the NAR web page (www.nar.org) for more information or updates.

Wadding Scraps

compiled by Alex DeMarco

* Competition Hobbies on Route 9 in Latham has Estes/ NCR DarkStar motors for $14.99 each.

* Valueland (www.valueland.com) is back online. They were down for a couple weeks while their server moved to New York, but don't worry, their products still ship from Georgia, so NO TAX!

* Apogee (www.apogeerockets.com) has Edmonds RGX Rocket Gliders back in stock. Its a neat glider that you can throw it together in a couple of hours.

* A lot of companies are coming out with new kits for the summer flying season. If you are a visitor to Rocketry Online (www.rocketryonline.com) you know what I mean. Rocket Vision (www.rocketvision.com) has three new kits coming out soon: scale models of the Roton and the Pegasus, and a new kit called the Chariot. Shadow Composites (www.shadowaero.com) has a new scale model of the Sprint Anti-Ballistic Missile available as well. It's nice to see other companies coming up with new ideas and kits.

Get Organized!

(or how to prepare for meets)

One of the lessons learned from model rocketry is that a complex process can be broken down into a chain of simple but essential actions. Overlook an important step, and your outcome may be less than desirable (or, in plain English - "oooops!"). Adhering to a checklist applies to a NASA spacecraft launch, it applies to building or launching a model rocket, and it applies to preparing for a model rocket contest.

Preparing for a meet involves a lot of details. One thing that I've found very helpful is creating a "meet sheet" like that shown here. The sheet has the name and date of the meet, and the events and weighting factors (WF) listed in order of descending WF (ie: the highest point event is at the top). For each event there is space to fill in the models you plan to use, motors you'll use, recovery systems available, and launcher needed. The bottom of the page has an overall list of required motors.

I usually make up this sheet several weeks before a meet. Done in advance, it can serve as a wish list of models and recovery devices to be built and motors to be procured. Just the act of writing down and laying out your plans for the contest can help you to think about and clarify your strategy for the meet. As the big day approaches, you can note your progress (or panic over the lack of same).

Once you get to the night before the meet (and its too late to build any more models) you can use the sheet to pre-prep models. I like to do as much prepping as I can the night before the meet (friction-fitting motors, inserting wadding, installing igniters, about everything except packing the recovery device).

Then you can use the sheet as a packing list to make sure you don't leave anything behind. You can always borrow motors or supplies on the range, but you're out of luck if you forgot your contest models!

I always bring my list to the meet, but I usually don't need to refer to it. After all, it's served its primary purpose by getting my thoughts organized in advance. Some people like to note their flight performances on a sheet like this, for future reference.

As you may have noted, while you can only make two flights in most events, I have many models listed for some events. You'll find (as we did in C Eggloft last meet) that having the highest performing model is not always the best strategy. It is often beneficial to have models of different performance levels so you can adapt your performance to the weather and field conditions (particularly important when flying on an unfamiliar field). Having these models available and knowing how they'll perform in advance is part of the experienced contest rocketeer's craft.

So draw up a "meet sheet" before your next contest and get organized!

4/15/2000 R is for Rocket Open

Event	WF	Models	Motors	Recovery	Launcher
1/2A HD	19	* old 13mm Rotaroc VV Apogee HeliRoc? 10mm micro RaseRoc? 13mm Taz	1/2A3-2T 1/2A2-2/4?	—	rod
1/2A B/G	17	* QCR Never Loop VV Estes Dragonfly	1/2A3-2T 1/2A2-2	sm, str.	rod
C EL Dur	16	* 18mm EL (two)	C6-5	24" HD 36" lite	rod
1/2A SD	8	* QCR SD * RAMTEC 13mm A SD Superlight 13mm (3" or PD) ** 10mm light - 4x40" gold ✓ 10mm heavy	1/2A3-4T 1/2A2-4	4x40" +	tower?

4 1/2A2-2
2 -4
5 1/2A3-2T
3 -4T
3 C6-5

table
chair
battery (& charger)
(walkie talkies & batteries)
flight cards & CB-I-Ps
* eggs

ASTRE Calendar

ASTRE Contacts :

Alex DeMarco	462-8557	demarcao@sysadm.suny.edu
Jeff Vincent	439-2055	jvincent@wizvax.net
Chuck Weiss	883-8312	cbweiss@telenet.net

How to get to Jeff's house...

Your destination is 39 Cherry Avenue in Delmar. Take Rt. 85 south/west (accessible from I-90, State Offices, Rt. 20, or Krumkill Rd.). After Rt. 85 changes from divided highway to two-way, you'll see the following landmarks (note, this is a complete list of the traffic lights you'll see):

- traffic light at Blessing Road, continue straight
- traffic light at New Scotland Road, take right to stay on Rt. 85
- traffic light at Rt. 140, take a left, follow to the end (1 mile)
- traffic light at Kenwood Avenue, go straight on to Cherry Ave.
- my house is 0.2 miles in from Kenwood Ave. It is the third house in a set of three similar houses on the right side of the street. There should be parking for 2-3 cars in the driveway, or, directly opposite my house (left side of Cherry Ave.) is Oak Street, and I believe there should be no trouble parking along the road there.

For the past couple years, we have held meetings in member's homes. The meetings are usually informal bull sessions where club business is discussed first, followed by either general "what's new," or a predetermined topic or activity. This schedule can change, and it is advisable to contact Jeff Vincent to find out about any last-minute changes.

Note: ASTRE events appear in **bold type**.

May 6 - **S is for Space** Open Meet - Johnstown, NY. Events: 1/4A PD MR, 1/2A SD MR, 1/2A B/G, Sport Scale. Contact: Jeff Vincent.

May 12 (Friday) - **ASTRE Meeting** - at Jeff Vincent's house, 39 Cherry Ave., Delmar, 6:00 pm.

May 27-29 - National Sport Launch 2000 - Geneseo, NY. The NAR's NSL comes back to upstate NY - a waivered model rocket through high-power launch on Geneseo's 600 acre field. For more information, see NAR publications or www.nar.org

June 3 - **ASTRE Local Meet** - Johnstown, NY. Date tentative. Events: TBA. Contact: Jeff Vincent.

June 17-18 - RAMTEC-8 Regional meet - Center Valley, PA. Events: 1/4A PD, A B/G, 1/2A HD, C ELDur, Sport Scale. Contact: Glenn Feveryear, 717-456-5570.

July 29 - August 4 - NARAM-42 NAR Annual Meet - Canon City, CO. Contact: Ken Mizoi, 303-368-5209 or www.naram2000.org

For more NAR Northeast Region meet info, see:
http://www.wizvax.net/jvincent/nercb.html

ASTRE Membership Application

Name _____

Address _____

City _____

State _____ Zip Code _____

Phone _____ Date of birth _____

NAR number _____ Tripoli number _____

Send to: ASTRE
c/o: Eric Schadow
123 Rotterdam St.
Schenectady, NY 12306

Membership Dues (check one):

[ ] Junior member - $5.00 (under 18)

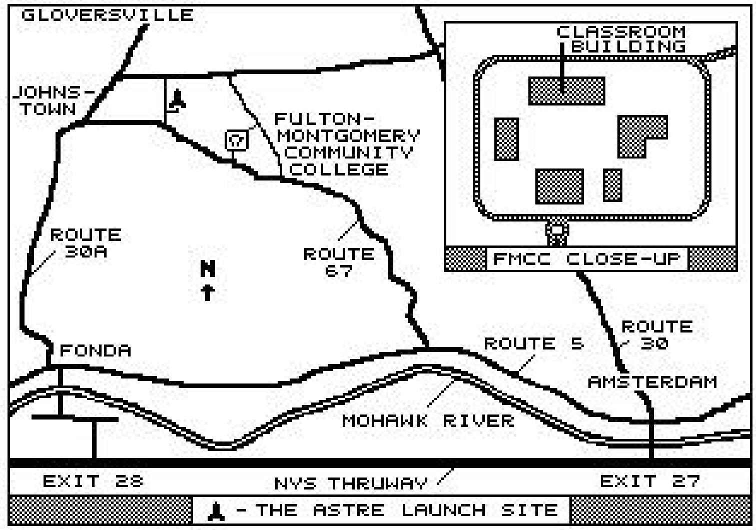
[ ] Senior member - $10.00 (over 18)

[ ] Family membership - $15.00
Number of newsletters: _____

Please make checks payable to "ASTRE".

How To Get To The Flying Field

- From the east, take the Amsterdam exit (#27) off the Thruway
- Take a right and follow Route 30 North for one mile.
- Take a left at the second light after the bridge onto Route 5 West.
- Follow Route 5 for three miles. Take a right onto Route 67.
- Follow Route 67 for 5.5 miles. Shortly after passing FMCC, take a right onto the small road by Ed's RC shop. After one half mile you will see a white fence on your right. Follow the driveway and park in the parking lot and walk to the range.



Jeff Vincent
Box 523
Slingerlands, NY 12159

ASTRE's Next Launch - May 6 - S is for Space Open Meet

ASTRE's Next Meeting - May 12 - Friday evening, 6pm at Jeff Vincent's house

In This Issue - Our first launch of the year and "frangible rocketry"