

LESSONS LEARNED

By Greg Elder, NAR #26588

I rejoined the world of model rocketry in 1992 after a 20 year hiatus. Back when I was a kid, I did not know about the NAR or competition flying. However, upon my rediscovery of rocketry in 1992, I joined the NAR and a local club (Superstition Spacemodeling Society in Phoenix, AZ). I soon learned about the NAR's Pink Book and the various types of contest events for rocketry. Competition flying seemed fun and also a great way to improve one's rocketry skills. So, I decided to try my hand at a few contests. What follows is my initial experience with competition rocketry and some lessons I learned.

The first contest I flew in was NAR-

WIN IV in Phoenix, Arizona. My initial experience in flying competition rockets turned out to be a disaster; but, I learned a lot. I entered four events: A SuperRoc Altitude, 1/2A Parachute Duration, A Streamer Duration, and B Boost Glide.

In the SuperRoc event, I took my eyes off of my rocket for just a second after the parachute deployed. Needless to say, I never saw the rocket again. I spent an hour looking for it in the hot Arizona sun with no success. And, since I didn't have the length of the rocket measured before its flight, I didn't have a qualified flight to record. I also did not have a back-up rocket for this event, so I couldn't make a second flight in that event.

Boost glide wasn't much better as my glider shredded its wings on launch (no gliding without wings). I also did not have a back-up boost glider.

Next, in Streamer Duration the streamer got tangled with the shock cord on my first flight. In the second flight, the shock cord broke, resulting in separation.

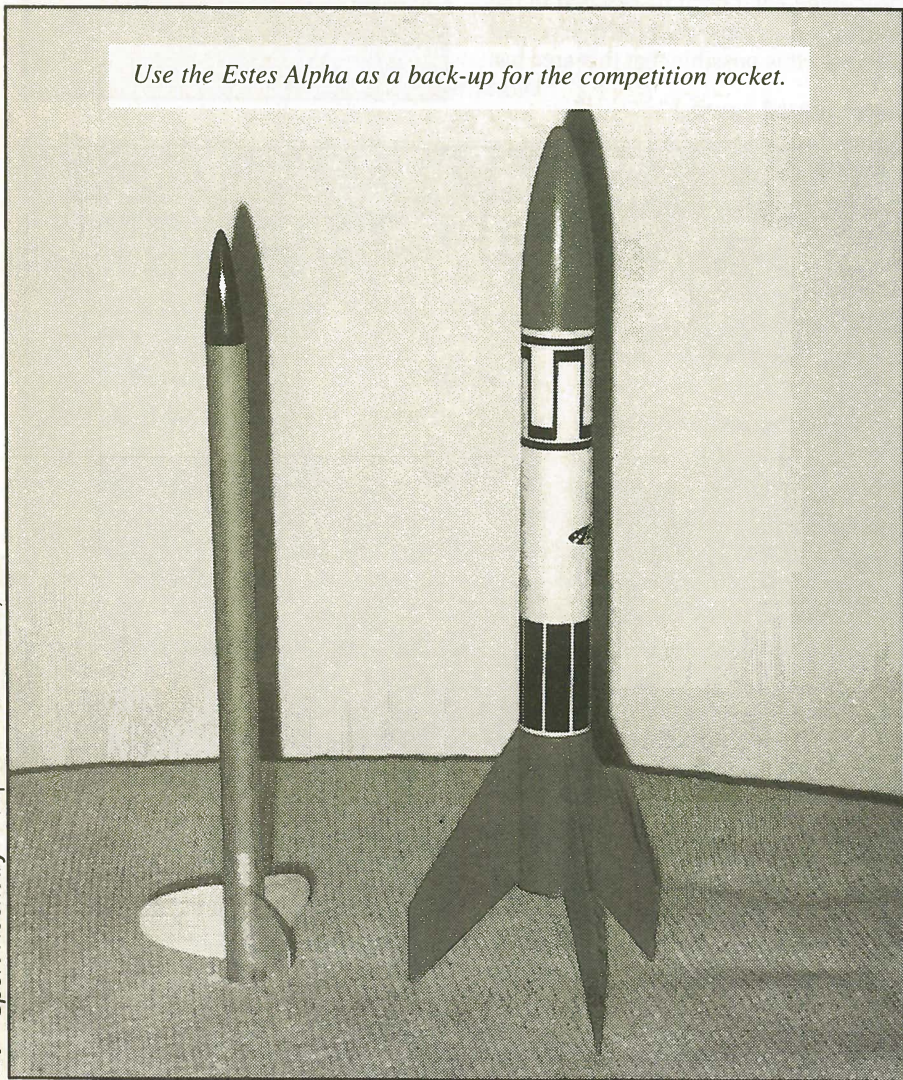
Finally, my first flight in Parachute Duration resulted in a chute that didn't deploy. The second flight was successful with about a 30 second duration. Far from the winning time of approximately 5 minutes. So, I DQed almost every event I entered and ended up tying for last place. But, I did have lots of fun and learned some important lessons.

I have since competed in other contests—about two a year (usually "Pike's Peak or Blast" and "Winter Fest" held in Colorado). I have improved my flying skills and have even taken a first place in an event or two.

Here is my small bit of wisdom regarding competition flying for the first time:

1. Be familiar with the events you are going to fly. By this, I mean know the rules. Get a copy of the Pink Book (the NAR's official rule book on competition rocketry) and read it. Talk to experienced competitors to get their insights into events as well. How many flights are you allowed? Can you use more than one rocket for the event? Are there limitations on the size of the rocket, shape of the streamer, and so forth. You may also spend the first part of a contest just watching the other competitors fly.
2. Start out by entering only one or two simple events in a contest to gain experience. Try your hand at something like Parachute or Streamer Duration. You can easily get overwhelmed and discouraged if you try to fly in all events during your first contest.
3. Practice flying your rockets for the events beforehand. A contest should not be the first time you try out a new rocket design. (NARWIN IV was the first time I ever flew a Boost Glider. You read the results of that fiasco!)
4. Have spare rockets handy to use as

Use the Estes Alpha as a back-up for the competition rocket.



BEGINNING COMPETITION ROCKETRY

- back-ups. If you lose or break a rocket, you can fall back on your spare. (During one Pike's Peak or Blast contest, my Apogee Streamliner CATOed on the launch pad. Luckily, I had an Estes Omloid egglofter as my back-up, which I flew for my second flight. Unluckily, its parachute stripped some shroud lines at deployment. I'm still learning.) That old reliable Estes Alpha can always serve as a back-up for a parachute or streamer duration event. You may not win but you can at least get a qualified flight with it, if needed.
5. Have materials on hand to make repairs to your rockets in the field. Have such items as CA for mending broken fins, extra parachutes and streamers, shock cords, shroud lines, a hobby knife, masking tape, sand paper, talcum powder, and so forth.
 6. Always powder both sides of a competition chute before packing. Those thin mylar chutes can easily stick together. Use a good covering of talcum powder to ensure deployment.
 7. Have a friend available to help you during recovery to see where your rocket lands. A second pair of eyes comes in handy. Consider using binoculars as well, for those high altitude flights.
 8. For altitude events, place tracking powder (colored carpenter's chalk) into the rocket. This will help the altitude trackers to see your rocket at ejection.
 9. For scale events, do not forget the documentation. Have a scale drawing or photo of the actual rocket your model represents. Check with a good library to find sources to use. NARTS has some scale material available. A really excellent source for scale information is Peter Alway's book *Rockets of the World*. I recommend it for any serious rocketeer. Finally, do not forget to put your NAR number somewhere on the scale model. I lost a few points in one contest for failing to do so.
 10. Have fun!!! That's what rocketry is all about. Don't be too serious out there. I still consider myself just a beginner

ROCKET TERMS

REYNOLDS NUMBER (RN)

A dimensionless number used by fluid flow engineers to characterize the way a fluid (gas or liquid) will behave when passing over a solid surface. The number combines the fluid's density, viscosity and velocity with the length it traveled along the surface. No matter what the fluid is or what size the surface, the flow conditions (laminar, turbulent, detached, etc.) should be the same at the same Rn . Discovered by Osborne Reynolds in the 19th century while studying the flow of water in pipes and channels, it has proven most useful to aerodynamic engineers and naval architects in scaling up wind/water tunnel test results to full size.

at competition rocketry. (Heck, I haven't even flown in a NARAM yet.) I hope this list of ten lessons I learned, however, will help any beginning competitors out there to avoid some of the mistakes I made. Good luck and have a blast!

MiniMite 750

The Dremel MiniMite Model 750

by Mort Binstock, NAR 27182

One of my favorite and most useful rocket building tools is my battery powered Dremel MiniMite. What is this tool and why do I find it so useful?

Dremel manufactures a variety of small, hand held, high speed rotary tools. Some of these Dremels reach speeds as high as 30,000 RPM. Dremels are similar in concept to a Dentist's high speed drill. Dremels drill, saw, sand, grind, cut, polish, wire brush, and even more. Don't let a Dremel's small size fool you, it is powerful! I also use mine to for heavy duty work cutting mufflers, tail pipes and rusted bolts off my cars.

The battery powered MiniMite runs, for a Dremel, at a relatively low speed. The MiniMite runs at two speeds: 5,000 and 10,000 RPM. Many accessories are available for Dremels. Some accessories come with the MiniMite. The MiniMite comes with a drill, grinding stone, wire wheel, sanding drum, and metal high speed cutter.

I use my MiniMite often during the construction and even repair of a rocket. I use it during construction to sand fins, sand plastic parts, cut small piano wire parts, cut out plastic parts, drill holes, and drill pilot holes for screws. During repairs I use the drum sander to remove the remains of damaged engine and shock cord mounts from the inside of the body tube.

The lower speeds of the MiniMite, compared to Dremel's higher speed models, are better for sanding & cutting. Lower speeds



don't melt plastics nor burn up sanding disks and drums.

Another feature of the MiniMite important to me is its cordless, "go anywhere" battery power. I am not limited by access to an electrical power outlet. I do not like to sand indoors—indoor sanding quickly fills my work shop with dust. I use the freedom I obtain from cordless battery operation to do my sanding outdoors.

The Dremel MiniMite comes complete with accessories and a 3-hour NiCad battery charger. It cost is between \$30 and \$35. A second spare battery pack is available as an option. A second battery allows continued operation while the first battery is being recharged. I have found that I can normally manage using just one battery. A second battery pack is nice for heavy sanding required when constructing a large complex model such as an Estes StratoBlaster.

Myriads of additional accessories for the Dremel are available both at your local hobby shop or by mail order. Accessories are interchangeable between my cord and cordless Dremels.

I own both an electric cord operated Dremel as well as the battery operated model 750 MiniMite. The MiniMite, because of its cordless flexibility, is the one I use most. I recommend this lower cost, lower speed, battery operated Dremel MiniMite for modeling work. This MiniMite makes model building easier.

