



# MASA Planet

Volume 7, Issue 3

Winter Flying

May 2004

## *Safety First!*

### Fins Forward?

*Keeping the pointy end up*

**Ted Cochran, NAR 69921**

Full-scale missiles typically have fins on the front to control their trajectory as they seek their target. These missiles need to be agile, and are not overly stable.

Model rockets need to be stable, and so problems may arise in designing models with fins near the front of the airframe. If you're building a scale model, the only solution is to provide sufficient nose weight. The Estes Bullpup is an example: It is inherently unstable unless the provided clay nose weight is installed.

What if you're designing your own rocket? RockSim is by far the best way to ensure that your rocket will be stable for all anticipated flight conditions. However, you can get a fairly good idea of how far you are pressing your luck by using the same math you would use to balance weights on a lever to maintain its center of gravity. Just as a lever will balance if the sum of the products of the masses and their distances from the balance point is zero, a rocket will be aerodynamically balanced (in a cardboard cutout sense) when the sum of the products of the fin areas and their distances from the center of pressure is zero.

Remember that the CP of a rocket is typically fairly far aft, so forward fins thus have a long lever arm. This means they have to be kept very small if the rocket is to fly well, no matter how cool they may look otherwise!



## ALSO IN THIS ISSUE

- 3** Event Schedule; President's Corner
- 9** Elsberry Regional Championships
- 12** Milestones; Parting Shot

## *Outreach*

### TARC 2004

*Local teams compete for a spot in the finals*

**Mike Erpelding, Art Gibbens, & Ted Cochran**

The National Association of Rocketry and the Aerospace Industries Association are once again sponsoring the Team America Rocketry Challenge. This year's goal: Fly two eggs in a two-stage rocket to 1250 feet, and return them safely to earth. The competition is open to teams from middle schools and high schools. Last year, 873 teams signed up from around the country including ten from Minnesota. Of the 873 teams, about 240 (27%) submitted qualification flight scores (including six from Minnesota), and 101 teams (including three from Minnesota) competed in the finals in Virginia.

This year, 609 teams signed up from around the country, including seven from Minnesota. Of these teams, 205 (34%) completed qualifying flights, including 3 from Minnesota, and 101 teams, including one from Minnesota, will compete in the Finals. This article describes the experiences of four of those teams, including three that were mentored by MASA members.



Ted Cochran

*North St. Paul's final qualification flight lifts off!*

## Apple Valley High School

Ted Cochran mentored Apple Valley High School again this year. This year's team was an all-rookie affair, with little prior rocketry experience. The team starting meeting in September, first by reviewing

*TARC 2004, continued on page 2*

*TARC 2004, continued from page 1*

data and photographs from entries in last year's competition. Last year the AVHS team created a massively clustered model, staging five C motors to three C motors. This year the team decided to go in the completely opposite direction, aiming for a very simple and lightweight D12 to D12 design. The idea, as Ted remembers it, was to reduce the issues associated with misfiring in clusters and to decrease variability associated higher impulse needed by larger rockets. The chief tradeoff is in fitting everything into a small rocket (and getting the recovery system back out!), and ensuring that staging never fails.

The AVHS team spent quite a bit of time learning how to scratch build rockets and in testing parachutes and egg protection, and started making test flights in January. The first flight went up just fine, but suffered a separation accompanied by a complete parachute blow out.

A rebuilt rocket flew a few weeks later, but ejected its motor and lawn darts. It was lost in the snow for about two weeks. Several launches after that had recovery problems of various sorts: screw eyes tearing out, shock cords breaking, and lots of shredded parachutes. All in all, about eight test flights were flown, with completely successful upwards flights but a relatively dismal record for gentle recoveries. The good news is that the team has learned a lot! The team tried a variety of different parachute designs, beefed up motor retention, redesigned deployment, and made steady progress, albeit at the cost of lots of eggs and egg capsules. The altimeter turns out to be extremely rugged, having survived one freefall and numerous



Ted Cochran

*Apple Valley's minimalist entry on its successful qualification flight.*

"streamer recoveries" from altitude, cushioned only by the eggs in front of it.

The final design used a Pratt dual egg capsule, an Estes parachute (reinforced with mylar tape) attached only to the payload section, a backsliding sustainer fin can, and a tumbling booster. The team made a successful qualification flight to an altitude of 1115 feet on their final attempt on April 9, which was good enough for a place near the bottom of the

alternates list for the TARC finals in Virginia.

### **North High, North St. Paul, MN**

North High again fielded a spirited team that came out to qualification day with some creative designs. The team intended to conduct a fly-off of two different models to determine which was best. Alas, both were a bit under-powered, using two D12s in the booster to light two E9s in the sustainer. Both of their flights on April 4 were unsuccessful due to failure to light both booster motors. The first rocket power-pranged after staging; the second had an even more exciting flight (see *The Agony and the Ecstasy*, page 7).



Ted Cochran

*Apple Valley's team, fingers crossed!*

*TARC 2004, continued on page 4*



Glen Overby

*North High's team with two creative entries.*

## MEETING SCHEDULE

### THURSDAY, MAY 6

Location: [Science Museum of Minnesota, St. Paul](#)

Time: 7 PM to 8:45 PM

Topic: RSO/LCO training; Scale model show and tell

### THURSDAY, JUNE 3

Location: [Science Museum of Minnesota, St. Paul](#)

Time: 7 PM to 8:45 PM

Topic: Contest rocket building session

### SATURDAY, JULY 17

Location: VFW field in Otsego (Probably)

Time: 10 AM - 4 PM

Annual MASA Summer Picnic!

## LAUNCH SCHEDULE

**NOTE: TIMES AND LOCATIONS SUBJECT TO CHANGE!  
CHECK THE WEB SITE FOR UPDATES**

### FRIDAY, MAY 14 TO SATURDAY, MAY 15

Location: Sheboygan, WI

Time: 9 AM - 4 PM

[Rockets for Schools](#) Launch

### TUESDAY, MAY 18 OR WEDNESDAY, MAY 19

Location: Bryn Mawr Meadows, Minneapolis

Time: 3 PM to 7 PM (tentative)

[Rocket League](#) competition launch

### SATURDAY, MAY 22

Location: TBD: Buffalo or Otsego

Time: 9 AM - 4 PM

MASA Launch: Tour de Deuce launches

### SATURDAY, MAY 22

Location: The Plains, VA

Time: 7 AM - 4 PM

[Team America Rocketry Challenge](#) Finals

### SATURDAY, MAY 29 TO MONDAY, MAY 31

Location: Hearn, Texas

[NAR National Sport Launch](#)

### SATURDAY, JUNE 26

Location: Buffalo or Otsego

Time: 9 AM - 4 PM

MASA Launch

### SATURDAY, JULY 17

Location: VFW field in Otsego (Probably)

Time: 10 AM - 4 PM

Annual MASA Summer Picnic Launch!

## Next Issue

Coverage of the TARC Finals, the first ever MASA Section Competition, and Rocket League launches!

## President's Corner

# Past, Present, Future

## Looking at the past

The past year held a lot of disappointments to our club and the hobby in general. The worst thing that happened last year was the loss of the Fricke & Sons Sod Farm to a developer. This great launch site will always be missed. I am just glad that we had the opportunity to enjoy this launch site while we could. Hopefully we will find other landowners as kind as the Frickes were to us. The next big thing impacting our flying was the BATFE's regulations. This has temporarily reduced our HPR flying due to the change in the rules pertaining to easy access motors and black powder ejection charges. The other old problem has been the shortage of composite motors still occurring as Aerotech works to recover from their fire.

As each of these events posed great set backs, I'm glad to say our hobby and club will survive. We all have to remember that these things are only temporary. We will keep searching for new launch sites. We do have to remember that the sod farm set the bar for comparison pretty high. I encourage each member to try to find leads on any and all potential launch sites. We may get permission to use them and we might not, but we will never know if we don't ask. I encourage each member to act on behalf of the club when pursuing these sites. A local familiar face will likely have a higher success rate than someone they don't know who lives several miles away.

## Looking at the Present

Our club has been very active in supporting the 2004 Team America Rocketry Challenge. I would like to thank both Ted Cochran and Art Gibbens for being mentors this year. I would like to send special congratulations to Art and to Hope Christian Academy for making it to the TARC finals next month. Good luck! We as a club also owe Ted a big thank you for getting permission to use the Apple Valley High School athletic fields for our March club launch. I hope MASA can continue this relationship with Apple Valley High School into the future. Both Ted and I will be attending the Fly-off again this year to serve as part of the contest's range crew.

## Looking to the future

This should be an eventful flying season for MASA this year. We have a lot of opportunities coming up.

*President's Corner, continued on page 11*

Undaunted, North's team returned on April 9 with a rebuilt rocket, and their increased attention to igniter connections led to a successful ignition of both booster motors. Unfortunately the rocket weather cocked in the



Glen Overby

*North High's first practice flight wanders off uprange.*

breeze and then turned even more at staging. It was last seen doing a low altitude flyover of the rocket-eating forest to the west. Search parties were immediately deployed, but had no luck. Unfortunately, it is still out there! The limited thrust of two booster motors just wasn't sufficient to

get them to Virginia in 2004. Despite a lot of effort, North will have to wait until next year.

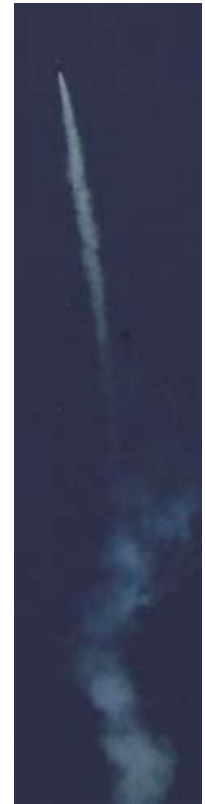
## Hope Christian Academy, Cottage Grove, MN

Art Gibbens mentored this team. They spent a lot of time on the simulator, and, like North, came to the qualification trials on April 4 prepared to fly for the first time on their qualification attempt. The flight was nearly perfect, just a bit too high (see *The Agony and The*

*Ecstasy*, page 7). They returned on April 9 to lower their score to eighteen feet, and have been invited to the finals.

The Hope Christian Academy TARC Team #2213 started last fall by Art making a presentation in front of the whole school at the beginning of an all school assembly where he made a "sales pitch". Art told them what TARC was all about and what this year's challenge was. Five students stepped forward throughout the next week. There were two seventh-graders in Katie Ross and T.J. Smith. Three ninth-graders also came forward in Christa Krussow, Mathias Gibbens and Harrison Samuels.

The first thing they did was all build an Alpha kit to get them all familiar with the terminology used in rocket designing and building. The plan was to fly them at the November launch, but they chose not to fly because of the wind. So they never did launch those rockets. However, the students learned a lot about construction techniques.



Glen Overby

*Hope Christian Academy's first flight.*



Ted Cochran

*Hope Christian Academy's team poses with their rocket (spiffy paint job!), ready to fly on its first flight--and a qualification flight, no less!*

The next step was the longest: playing with RockSim until they figured out how to use it to make rockets that in theory were actually stable and flew well in simulation. They all then had to design a rocket that met the objectives of TARC: A two-stage rocket that takes two raw hen's eggs 1250 feet into the air and returns them safely, using engines from the approved list. That last part caused a lot of angst.

After they all had their own design completed, the team took a look at what each other had done and they then had to decide which rocket was the best using a number of criteria. Because none of them had ever built a rocket from scratch before, Art had them look critically at complexity

versus simplicity. They also had a long discussion on reliability and repeatability. They went back to the drawing board a number of times until they came up with a design everyone could agree on.

In the midst of all this was basketball season with three of the TARC team members playing on the school's basketball teams. So the team had to shift its meeting time from after school to Saturday afternoons. They ended up only having six Saturdays for building sessions. They all liked playing with the power tools, a Dremel, a drill and a jigsaw. Sawdust and pieces of cardboard and tubing were everywhere! They all agreed that pre-cut fins were a real improvement in



*The altimeter is readied for flight*

rocket kits because none of them liked cutting the balsa. Cutting the tubes to length and square was their least favorite task: There were many sore knuckles from holding the utility knife square to the line and rolling the tube until they broke through. When they were done, they really understood the concept of square cuts making straight rockets, which then make straight flights.

The payload section was the responsibility of T.J. and Harrison. T.J. was also responsible for the altimeter bay. Harrison's job was protecting the eggs and making provision for adding clay.

Christa and Katie were responsible for the sustainer section and the parachute, with Katie making the parachute and Christa making the centering rings/engine mount and attaching the fins.

Mathias was responsible for the booster, which incorporated through-the-wall fins and a reducer/funnel to channel the ejection charges from the four booster engines down to the one engine in the sustainer.

They ended up getting together on the Friday night before the first TARC launch, the one that had the low ceiling and high winds, to paint the rocket. Because they had run out of time in building it, the team strategy was to get in a qualifying flight if possible on the first launch. That way if they broke an egg, they still had one more launch to try to get in with. Now they needed a good day to launch. During the week of waiting for another opportunity to fly, the team makes the decision

to go on a diet, as the rocket was heavier than RockSim had projected. They did this by taking out the heavy nylon parachute and shock cord and putting in a plastic parachute and a 20-foot piece of band elastic. A week passed and the second Saturday they were hoping to launch on was windier than the first. However, Apple Valley had an FAA notification in place for the following Sunday, which looked to be a good day to fly, at least according to the weather forecasts.

Boy was it! It was almost perfect, with a beautiful blue sky, and light and variable winds. There were about a dozen spectators that came out to encourage the HCA Eagles. It turns out that their strategy worked well, as they qualified on their first flight with an altitude of 1408 for a score of 158.

They flew with no added weight, as RockSim was predicting 1108 to 1350 feet, depending on wind speed, temperature and humidity. So punching a hole in the sky that tall was a real relief because they knew they could add weight to tune their rocket down to the 1250-foot height. They only had minor repairs to make, as they broke a booster fin when it tumbled to the turf.

So they went back to their RockSim program and calculated the Cd of their rocket, and then added weight until they reached the target altitude, again depending on wind speed, temperature and humidity. Then they waited five days until Friday afternoon to make the second qualifying flight. With not as many spectators looking on, they prepped the rocket as before and added the required amount of weight. They then put it on the pad, pushed the launch button and watched their rocket scream skyward to 1268 feet.

Again they recovered their payload section with no broken eggs so it was a second successful qualifying flight with a score of 18.

It turns out that their first flight would not have been good enough to qualify, but their second flight certainly was. They heard from the TARC Officials on April 15th that they have been invited to fly at the National Competition on May 22nd. They hope that the weather is good for the MASA launch on April 24th, so they can do one more tune-up flight to get closer to the 1250-foot ideal.

### **Kimball Area High School, Kimball, MN**

As with Hope Christian Academy, Kimball got involved in TARC because a MASA member recruited them. In this case, Mike Erpelding went to Kimball (his alma mater) and made presentations to science classes in order to recruit team members. They ended up with one freshman, one junior, one senior, and four sophomores on the team. Only two of the students had ever built a rocket before. Like Ted, Mike took off from work early every Wednesday to meet with the team.

When Mike first started with Kimball, he gave each of the seven team members a Mach 12 he had left over from his workshops. By November, the students had built them and had started working with Rocksim and building two prototype designs.

Each group planned to build their design, test fly it, and then, after finding a proven design, the team would use that rocket for their qualification attempts.

Each group turned in a Rocksim design and parts list to Mike. The last student turned in his design three weeks before Christmas. Mike gave out bags of parts for five rockets. All of the designs used only one booster motor and one sustainer motor. Most used a composite motor in the booster. Mike suggested that maybe they should consider clustering some kind of BP motor combination to eliminate the required electronics to stage a composite to a BP motor. Mike thinks that the team stayed with the two-motor only designs because they were scared away from clusters after one TARC student attended the November

MASA launch with our clustered junkyard. Meanwhile, they kept pestering Mike about when they'd get to fly their Mach 12s. When the launch day for those arrived in late November, the wind was a little high, around 15mph, so they just launched the small stuff. Mike was a little disappointed that only one team member turned out.

Mr. Russ Robb, the team's advisor and Mike's old geometry teacher, did a good job of keeping up with each of the seven team member's progress. They did try to follow Trip's weekly guidelines. The goal was to have the first 5 designs ready by the end of January. The plan was that after each student had gotten a "taste" for building rockets, they would review the flights of each design and build their first competition rocket as a group. Mike hoped that the plan would help the kids discover what their personal talents were as well as making task assignments easier.

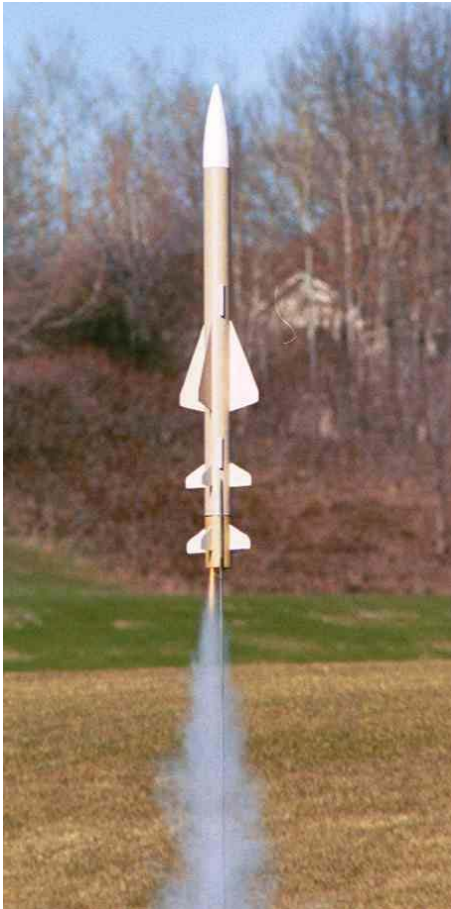
Progress was very slow in the heart of the winter. Mike reviewed again how to cut out centering rings, fins, and body tubes. He found that it was very hard to just give vague answers. Many times he was asked questions such as: "How long should the rocket be?" "What motor should I use?" "What size parachute is best?" He would tell them to run it through RockSim. They got a little frustrated once in a while when Mike wouldn't tell them what to do.

*TARC 2004, continued on page 8*



*Three of the Kimball High School team members, with their doomed first TARC rocket ready for its first launch on February 29.*

**The Agony and the Ecstasy**



Ted Cochran

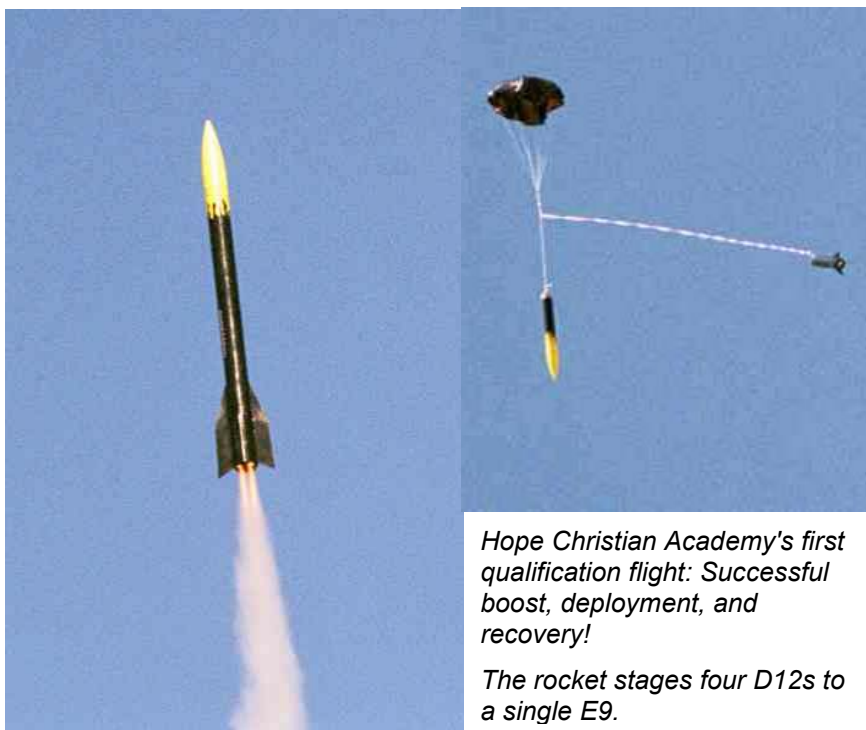


Glen Overby



Glen Overby

*North St. Paul's qualification attempt started with just one out of two motors burning. During staging, however, all three remaining motors lit: One helped the sustainer keep going, one burned up the booster, and the other fell out of the sustainer and pinwheeled off in a different direction. One criterion for unsafe flight: cowering spectators!*



*Hope Christian Academy's first qualification flight: Successful boost, deployment, and recovery!*

*The rocket stages four D12s to a single E9.*



Photos by Ted Cochran

*TARC 2004, continued from page 6*

The Kimball team flew a TARC design for the first time on February 29. Their design used an E18-4 reload in the booster and a D12-5 in the sustainer. Mike showed them how to assemble the booster motor and supervised the preparation of the Perfectflite Mini 3 Timer. There was a nice turnout of parents to watch the first flight. Things started out okay with a great boost. None of these kids ever saw a composite motor fly before. However, tragedy struck when the timer didn't light the second stage. The rocket came in ballistic, crashing through the 4 inches of snow into the frozen ground, completely destroying the payload section and part of the sustainer body tube. Then the E18-4 ejection charge popped the booster off. Mike was worried that the team would get discouraged because of the crash and maybe quit. He was relieved when they were excited instead, saying, "Whoa, did you see that! Wow, what a crash! COOL!"

Later they discussed what might have gone wrong. It could have been a loose wire or maybe a cracked igniter. Mike asked if they installed the timer with the arrow up, but they couldn't remember

This crash caused a dramatic shift to clustered BP boosters in the designs. Now the team was more motivated than before the first launch, and the building kicked into high gear. Mike placed multiple orders to Balsa Machining Service, Apogee Components, Magnum Hobbies, and made several trips to Hub Hobby. The team manager, who built the first rocket, finished his second one before the other three groups finished their first ones. After a couple weeks we had three designs to try.


The next flight day didn't have the greatest weather: Mist with a high cloud ceiling and winds 10-15 mph. Once again there was a good turnout from the parents and a couple older brothers. The first flight lit all the motors in the cluster, but proceeded to blow the booster off without igniting the sustainer. This rocket met the same fate as the first one did in February. Upon recovery of the pieces it was decided that the lack of a vent hole in the booster lead to the failure. The second rocket with booster vent holes also lit all of its booster motors, but the booster also separated without lighting the sustainer. Upon recovery of the pieces it was discovered that the glue holding the motor mount failed. The engine, engine tube, and

forward centering ring pushed up into the parachute without lighting when the booster motors pressurized the compartment. The team was glad that it had not yet risked flying the altimeters! The third and final rocket of the day was the team manager's rocket. This rocket staged perfectly but broke a fin off the booster when it landed. All in attendance commented that they enjoyed the liftoff of the rockets with 3 D 12-0 motors. Mike gave out his entire stock of parts for rebuilding efforts.

On March 29 they got in six practice flights on four different rockets, burning nine packages of D motors. All of the flights successfully staged, which was a first, but there were other problems including burnt parachutes, incomplete cluster ignition, and a CATO. Nevertheless, the team flew their first qualification attempt to 879 feet using a cluster of three D12s staging to another D12, with Mike and MASA member Lee Frisvold present. The students made some minor adjustments to their rockets during the following week and planned to fly their final attempt at the end of the week with hopes to add some altitude to their flight.

On April 9 the weather wasn't too bad. The wind out on the field was about 5 to 10 mph, and there were occasional snow flurries. All of the practice flights went well. After the launch of their final qualification attempt, the capsule was brought back beeping 1010 feet. Unfortunately the second egg was broken. So Kimball had to stand on their first score of 879 feet. As it turns out, neither score would have been quite good enough for the team to make the Finals, but hopefully they'll be fired up to do better next year.

## **Sauk Rapids High School**

Sauk Rapids is an example of the difficulties faced by NAR in structuring a program like this, as well as the difficulties faced by schools participating in new events. The Sauk Rapids school had a team build and fly rockets before Thanksgiving as part of a class. Several of the rockets crashed, and they elected not to enter this year. Their teacher explained that they had until April to get their qualified flights in, but since they work on trimesters, they would not have had the same kids in class after Thanksgiving. They are planning on doing TARC as an extra curricular activity next year, and we'll try to get them help earlier in the year. 



## Competition

# Elsberry Regional Meet

April 3-4, 2004

### Mike Erpelding, NAR 79922 Team Challenger

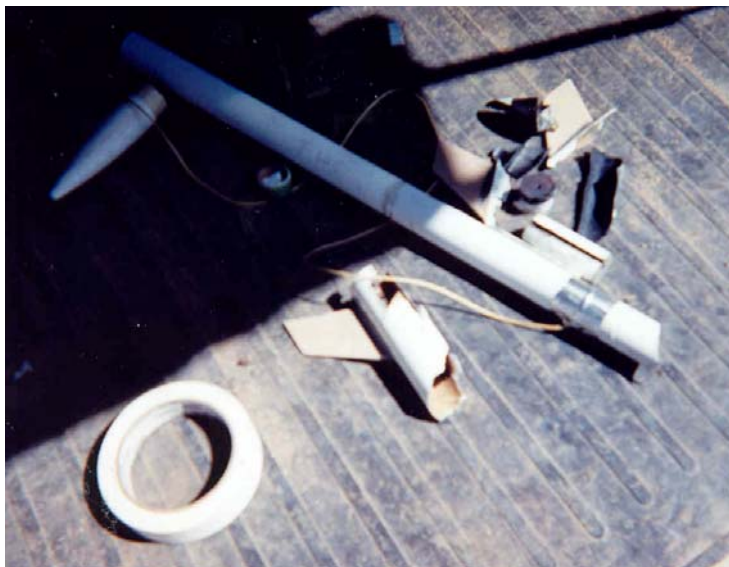
This was my "regional on a shoestring" trip. My teammate for Team Challenger, Glen Scherer Jr. wasn't able to attend this meet, so I had to make all the entries on my own. I had to work on Friday, and didn't get on the road until 2:30 P.M. I arrived in Ossecola, IA at 9:15 P.M. and decided to call it a night. I left the AmericInn the next morning at 4:25 A.M. to head out to Elsberry. I arrived on the field around 9:30 A.M.

The launch site was still being set up so I checked out Giant Leap's vendor table. After the recent expenses sponsoring my local TARC team, I budgeted \$40 max for rocket stuff. I purchased one 38 mm Slimline motor retainer and two packs of conformal rail launch lugs. I'm going to use these for a minimum diameter rocket that I'm planning on building for use with my Pro 38 G 69 motors that I bought here last fall. The price came in at just less than \$40! I looked over the new Ellis Mountain G motors including a new 24-mm G37. I also saw my first single use H and I motors.

The wind was brisk at 10 to 18 mph all day with partly cloudy skies. The first event was Open Spot Landing. John Buckley set the spot a little upwind from the pads. I used the same rocket that I used at WOOSH last fall with a D12-5 instead of an E9-6.

Even with streamer recovery I landed about 225 feet from the spot for a "FAR" score. As a result I didn't

place and only received flight points for this event. My next event was G Streamer Duration (G SD). I was very short on time before the contest, so I only had one model for this event instead of two. I used my minimum diameter Apogee Aspire that I used for E SD at NARAM 45. Many participants joked in a friendly manner that I should say "bye, bye!" to that model on a G 35-7 in the high winds. I took my FRS radio with me and walked about 600 feet downwind so I wouldn't have to run so fast to keep up with my rocket. When I was ready, I radioed in the okay to launch. Much to my surprise my rocket only moved about a foot up the 6-



G streamer model after CATO.

Mike Erpelding

foot rod. John radioed back: "Your motor CATOed, Mike." I made the long walk back to discover my rocket still on the rod with the fin can section completely gone! Pieces of the bottom of the rocket and pieces of the motor were everywhere! I was impressed that the

*Fix It* epoxy clay still held the fins to the remains of the body tube. Since I didn't have another rocket, it was declared an unofficial flight and Team Drei Woebkenberg got bumped into C division for this event. [At least two entries are required per division --Ed.] I earned no points for Challenger this time.

The next event that I flew on Saturday was B Eggloft Duration (B ELD). We all waited until late in the afternoon to fly our egglofters, hoping for the wind to die down. I finished building a shroud egglofter on Thursday night. I only had dual egg capsules in stock, so this



Mike Erpelding

A windy day for a launch: Competition tower launchers lie where they fell after being blown over.

egg rode solo. As I prepped my model, I noticed that I forgot to glue a launch lug on the fin. Fortunately St. Louis Rocketry Association has two Medalist towers at the launch. John was kind enough to let me use one. I had never used an adjustable tower before. We had to brace the tower's legs by laying the other tower on them because the wind kept tipping the towers over. I had a nice boost on a B6-2 and good deployment for a time of 14.92 seconds. Dave Woebkenberg flew his team's egglofter for a time of 15.11 seconds. Since times are rounded to the nearest second, I ended up tied for First.

We packed up the equipment and headed to John Buckley's house in O'Fallon, MO for a pizza supper and sport scale judging. Keith Vinyard and John Buckley judged the team entries. Dave Woebkenberg and I judged the C division entries. I made an ASP V-2 kit that I bought at NARAM 45 last year. I painted it as the V-2 No. 2 from White Sands on May 16, 1946. I put six coats of yellow paint on that rocket on Tuesday and Wednesday in order to get it to cover nicely. I masked off the parts that were suppose to stay yellow when I got home from the MASA meeting on Thursday night.



Mike's sport scale V2. That's Mike in the background.

Two coats of black paint covered it nicely Thursday night. I waited an hour between coats. I finished the second coat at 1:30 A.M. Friday morning. This rocket turned out to be my best masking paint job that I have ever done with no bleed through or

peeled paint. I did make one mistake that Keith pointed out to me. While masking off part of the nosecone, I didn't get the curved arc quite straight. This caused one black band to be slightly crooked. After the static judging I was in second place, mainly because of that masking problem.

I checked into the Super 8 in O'Fallon around 9:45 P.M. I had a little trouble sleeping since I was worried about oversleeping, due to the fact that there wasn't a clock in the room. The daylight-saving time change didn't help either. I was up by 5:00 A.M. and got ready. I watched a little TV before I left for Sadies Restaurant in Elsberry to meet the others for breakfast at 7:00 A.M. We were out to the field by 7:45 A.M. to set up the contest range. We were ready by 8:00 A.M. to start flying. I flew my B Rocket Glider (B RG) on a B6-2. This was my first attempt to build a rocket glider. Gliders are normally Glen Scherer Jr's department. Well it made a spectacular arc back and crashed under thrust into the soft clay. The force of the powered crash drove the motor and the engine hook to the end of my sliding motor pod. The sliding motor pod ejected out of the broken front pod and landed about 30 feet away. The wing and the rudder stayed attached to the boom. But the tail broke off from the impact. DQ--unsafe!

Kevin Vineyard gave me several pointers on gliders and rocket gliders. First B gliders should use a B4-2 motor instead of a B6, because it is a lower average thrust motor. This makes for less stress on the glider and allows more time for the glider to adjust to the wind. He also recommended using a sliding wing design like George Gassaway's instead of a sliding motor pod. They are less touchy about the placement of the shifting CG from boost to glide. I did do a good job of sanding an airfoil into my wings :-).

Kevin flew a really nice R/C B RG on a B4-4 that I timed for almost six minutes. He used a 4-second delay because it made it easier to tell when to start controlling the glider. He was able to find one thermal on that cool 50-degree morning.

Next I flew my V-2 No. 2 on a D12-5. It was a great flight that just leaped off the pad. I lost a few points for the classic V-2 wobble. The rocket had chute deployment but had a lot of spin because of the wind. The rocket's spin under the chute from about 600 feet, wound up the shock cord and the shroud lines, reefing

the chute, but it landed safely with no damage. I was penalized just a few points for a little dirt on the bottom of one fin. I stayed as late as I could, helping time other flights until I had to head home. I finished my Minnesota goodbyes with everyone and left the field at 10:20 AM. I made it home just before 10:00 PM.

Both Kevin and John e-mailed me with my results. Dave Woebkenberg from Indiana even called me this past week to tell me what I missed. Dave had his sport scale rocket CATO on an F20! Fortunately the motor failed vertically instead of horizontally like my G SD did. It didn't destroy Dave's rocket, but it did wedge the unburned ejection charge portion with part of the casing into the Aerotech baffle on the end of the motor mount. Since I had left, this created a dilemma. Dave was unable to fix his rocket on the field. If the flight were listed as "unofficial," there wouldn't be enough team entries to judge in Sport Scale, so I would have to be combined with C division entries. That would mean that all of the sport scale entries would have to be re-judged. Instead, Dave asked for his CATO to be counted as an official flight with a DQ for being unable to deploy the recovery device. I placed first in Sport Scale because of this.

Team Challenger earned a grand total of 1122 points for MASA. Points are earned by multiplying the points for placing (10 for First, 6 for Second, 4 for Third, 2 for Fourth, 1 for a qualified flight) by the Contest Factor for the event (1 for Section and Local meets, 2 for Open meets, 3 for Regional meets, and 8 for NARAM) by the event's Weighting Factor, which varies from 2 to 40 depending on the difficulty of the event. ]

### Team Challenger's Results

Open Spot Landing (WF 4)	Qualified flight
G SD (WF 14)	CATO--no flight
B ELD (WF 17)	First Place (tie)
Sport Scale (WF 20)	First place
B RG (WF 21)	DQ: Unsafe
Meet Total: 1122 points	



There's a new kid on the block: SpaceX's Falcon I launch vehicle.

### President's Corner, continued from page 3

First there is a request from The Baaken Museum. They are featuring Family Science Saturday Series in May with the topic: A Scientific Journey Through Space. They are looking for some MASA members willing to donate time on a Saturday during the month of May. The expected audience will be children from the ages of 6 to 14. They would like someone to talk about model rockets and rocketry and its role in space studies in general. This is a lot easier than it sounds. Basically you will just be telling the kids how a model rocket works and talk about rockets in general.

Also in May is Tour de Deuce, coming to MASA's May launch courtesy of MASA member Jim Myers. Two Flis Kits Deuce's Wild rockets are touring the country, with the goal of being flown in each of the fifty states. Thank you, Jim for making sure that MASA will be included in this endeavor.

The June MASA launch will feature our club's first NAR-sanctioned Section Contest. A section contest is the same as any other NAR contest, except that it is limited to club members. This will give the club a taste of NAR competition without the need to travel great distances. The events planned are A Boost Glide (A BG), A Streamer Duration (A SD), and B Parachute Duration (B PD). I will create a separate category for MASA members who aren't NAR members so that they can still participate.

Another pending project is the National Girl Scout Jamboree in July. Glen Overby is our main contact person on this outreach project. Basically Girl Scouts will sign up to build and fly a model rocket. We will be looking for volunteers to help out!

This July will be the 35th Anniversary of the Apollo 11 moon landing. This anniversary is an opportunity to help promote the hobby to the public, to raise interest in the hobby and educate the public. Hopefully this project will show to the world that our hobby is safe, fun, and educational. We can discuss what we want to do as a club for National Rocketry Month at the May meeting.

If any MASA members ever have any ideas or issues, please feel free to contact me or any of the club officers, or post it to the MASA email list.

Michael Erpelding, NAR # 79922

2004 MASA President  
fizzbin@meltel.net

The *MASA Planet* is the official newsletter of the Minnesota Amateur Spacemodeler Association, Section 576 of the National Association of Rocketry. It is published bimonthly as a service to its members. MASA authors and photographers retain rights to their submissions, which are used by permission. The *Planet* is available in color on MASA's web site:

<http://www.mn-rocketry.net/masa/>

**MASA's 2004 OFFICERS:**

<b>Mike Erpelding</b>	<b>President</b>
<b>Ted Cochran</b>	<b>Vice President &amp; MASA Planet Editor</b>
<b>Lee Frisvold</b>	<b>Secretary/Treasurer</b>
<b>Alan Estenson</b>	<b>Webmaster &amp; President Emeritus</b>
<b>Russ Durkee</b>	<b>Founding President</b>

Submissions may be made to the editor at: [masa.planet@mn-rocketry.net](mailto:masa.planet@mn-rocketry.net). (Volunteer quickly, lest you be asked to write an essay on the political history of the Tripoli Rocketry Association.)

**If your email address, U.S. Mail address, or phone number changes:** Please send notice of your change to [masa@mn-rocketry.net](mailto:masa@mn-rocketry.net). Include your name, old email address, and new address. We depend on email for communicating important information. When an email address starts "bouncing", we lose contact with you.

**Parting shots**



*BlackSky and Cesaroni's experimental aerospike nozzle is shown in NASA photos of a successful NASA Dryden test flight in Fort Stockton, Texas. The ten-foot long vehicle reached Mach 1.5 and coasted to over 25,000 feet.*



4235 Dupont Avenue South  
Minneapolis, MN 55409

PLACE  
STAMP  
HERE

ADDRESS CORRECTION REQUESTED