





MASA

Established January 1998 NAR Section 576 2006 NAR Medium Section of the Year 2007 NAR Medium Section of the Year Host of NARCON 2007 Host of NARCON 2008

2008 LAC Newsletter Award Recipient 2009 LAC Newsletter Award Recipient

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Ares 1st Stage Test Update

NASA and ATK have rescheduled the test of the new firststage solid rocket motor for the Ares I rocket. The static firing of the five-segment solid motor, designated development motor -1, is scheduled for 1 p.m. MDT on Thursday, Sept. 10, at the ATK test facility in Promontory, Utah. The first firing attempt on Aug. 27 was scrubbed because of an anomaly with the ground test controller. The test will be carried live on the



NASA media channel beainning 10 minutes prior to the firing. For NASA ΤV streaming video, downlink and schedule information. visit: http://www.nasa.g ov/ntv

MASA Planet Does It Again!!

When I took over as MASA Planet newsletter editor from Ted two years ago, I had no idea that the first issue I produced was the start of a new contest year for the LAC Newsletter Award. In fact, I don't think I even knew what the LAC Newsletter Award was at that time. But I knew that Ted had been producing an amazing newsletter for the past 5 or 6 years, and that I had some pretty big shoes to fill. As excited as I was to start this new venture, I was pretty nervous about spoiling the hard work that Ted had been doing, and the last thing I wanted to do was to let down Ted or the members of MASA. So I was completely shocked that a year later at NARAM 50 in 2008, it was announced that the MASA Planet was the winner of the LAC award given by the National Association of Rocketry for the best section newsletter of the year. To further that shock, another year later at NARAM 51 in 2009, it was announced that the MASA Planet was the winner of this award for the second year in a row.

I am proud that we were able to bring this trophy back to Minnesota for a second year. It is pretty cool to look at its history and see where it has been for the past 4 decades and it has had a very interesting past filled with rumors and traditions. In the 41 years, only seven clubs (now including MASA) have won it more than once. This is only the fifth time that it was awarded to the same club that won it the year before. And only one club, NARHAMS, has won it three years in a row, which they have accomplished on two separate occasions. I would also like to point out that NARHAMS has won it an astonishing nine times!

So, I would like to sincerely thank every member who has contributed something to the MASA Planet in the past two years. I couldn't have done this on my own, and I share this award with all of you. I would also like to encourage everyone to contribute to the MASA Planet. This newsletter belongs to all of us at MASA, and I can't make it better on my own without the help of all of you. I would also like to thank the LAC Newsletter Award Judges who sift through all of the newsletters from around the country, and judge them against a set of criteria that surely intimidates even the best of editors.

Thank you! - Jeff





In the custom car world, a "Sleeper" is a car that may look completely normal or even a bit run down on the outside, but on the inside it is packed with unexpected amounts of horsepower. So why not do the same in the rocketry world? I have always liked the looks of the Centurion. Maybe it is the clean lines and simple unassuming black and white paint job. Whatever it was that drew me to the Centurion, I figured it would make a great sleeper project.

Centuri Engineering Company released the Centurion in 1970 and introduced a patented ejection baffle to eliminate the need for recovery wadding by cooling the ejection gasses before they entered the payload area. In 1970, Centuri sold the kit for \$3.00. Today, Semroc has faithfully recreated the Centurion as part of their Retro-Repro line, with only minor changes to the nose cone shape and changing the 20" parachute with two 12" parachutes.

The first step was to bump up the horsepower and replace the stock 18mm motor mount with a 24mm motor mount. Semroc sells a motor mount kit that fits perfectly in the 1.64" diameter body tube, which makes the swap even easier. I purchased this motor mount kit (Semroc part number EM-9-16P) for only \$3.25 from semroc.com. Construction of this mount is identical to the standard 18mm mount with the kit.



The next change was to upgrade the 1/8" launch lugs with 3/16" launch lugs. I felt that a 1/8" rod may be a bit flimsy to safely support an "E" powered launch. 3/16" launch lugs are available at any hobby store or everywhere on-line that sells rocket parts.

The Semroc Centurion's body tube comes in two pieces, and the joint is where the ejection baffle is located. After gluing the baffle to the lower body tube as instructed in step 9, I got the idea to try yet another modification and make it a zipperless design. I glued the nose cone and eye screw to the upper body tube, so instead of having the nose cone separate from the upper body tube, the upper body tube would separate from the lower body tube. Since the nose cone was now



an integral part of the upper body tube, I added a bit of Elmer's Wood Filler (thinned with water) to the nose cone/body tube joint for a smooth seamless finish. I used a length of Kelvar shock cord for the section between the parachutes and the upper body tube.

The fillets for the fins were made with a small bead of Elmer's Wood Filler (again thinned slightly with water). To get an even fillet I used a chopstick as a sanding block with a piece of sandpaper wrapped around the chopstick.

For the real sleeper effect, I wanted to keep the external finish looking stock, so I painted the rocket with Rusto-leum Painter's Choice Gloss White for the lower half and

Gloss Black for the upper half. I added the standard decals that came with the kit with the help of Microscale Micro Set and Micro Sol decal solutions.

As with every other Semroc kit I have built, the parts are top quality, and the instructions are clear and easy to follow. The Centurion is available at semroc.com for \$19.50 (including shipping).

Rocksim simulations for a stock Centurion on an 18mm C6-5 show agogee at about 480 feet, but with the 24mm motor mount and an E9-6, this one should reach apogee at 1,380 feet! How is that for sleeper performance?

Body Diameter: 1.64" Length: 25.7" Fin Span: 6.3"



National Event Review NARAM: Oh, The Things That You'll See By Ted Cochran

If you've never been to a NARAM, you've been missing out on an amazing experience. Over the course of a week, flying and watching rockets fly, I was able to collect a huge variety of rocketry experiences, many of which simply could not be had in Minnesota. I had more fun than I can possibly write about, but here are some highlights:

• I got to watch Todd Schweim's Internats helicopter entry eject at a relatively low altitude, hover in place for a little while, and then start rising straight up - not moving left or right, just up - until it disappeared from view. It's probably landed in Serbia by now, waiting for him to get over there and find it next year.

• I saw fliers decorate the sky with dozens of huge (four feet in diameter) mylar parachutes, just like the holidays. Timers for Internats flights were allowed to use binoculars. No matter; the models still flew out of sight.



• I was able to stimulate the sagging

local economy by putting neighborhood kids to work, finding rockets for money. One of them even returned a rocket he had hidden under a bush. No matter, the going rate was low and it kept them out of trouble.



 I flew a stuffed cow in my LOC-IV. Somehow, in 25 flights over 11 years, the thought of flying a cow in my Level 1 certification rocket had never occurred to (although me the Pillsbury Dough Boy has taken a few rides). Todd helped me rectify the bovine deficiency. Todd found the cow right away; the LOC-IV took 24 hours longer.

 I had fun searching for and recovering rockets over square miles of terrain, with not a single

patch of rocket-eating corn to be found (at least not within two miles). I might have preferred the corn, because in Johnstown, we had to brave hornets, a skunk, and at least ten species of thorny, nettlesome, brambly, calf-ripping shrubs in the thickets. And that was for the sport models - many of the contest rockets were unrecoverable regardless of the technology. George Gassaway tracked a D-powered dual egglofter



using a radio beacon for over two miles before losing the signal - and the transmitter, over the next ridge. Speaking of hills, there were lots of them, which made for great aerobic exercise. And, for those willing to make the trek, where in Minnesota could you find to sit and watch the range in the valley below you, with rockets launched far below you, reach apogee still below your eye level, and then rise on thermals to float overhead?

• I was able to put my Minnesota tree-eating rocket recovery skills to good use, recovering a rocket from a 55-foot tree with a 45-foot pole.

• I had plenty of time to wait for four days of iffy weather to fly my new Saturn V for the first time. (On that field, for that rocket, "iffy weather" meant wind in the wrong direction, or at the wrong speed (greater than zero, say), or overcast skies that made photography more challenging). It was worth waiting for, though!



• I got to drag race my SweetVee RC glider against a G-powered pyramid. Not intentionally, but that's what happened. It made for an exciting boost, given that I wasn't watching the first two-thirds of it. (Surprise!)

• I met a little girl who was as happy as a little girl could possibly be because she got her very own rocket to fly, and it had princesses all over it, too! IT was way better than her brother's (although her brother thought that princesses on a rocket was just wrong, and his rocket was the best in the whole universe). People from our club made those rockets, and many more!

• I had the pleasure of meeting with a whole bunch of rocket people over seven days. Lots of neat ideas, interesting opinions, creative designs, and exciting plans were discussed. Eight of these interesting people were my fellow NAR trustees, and we spent about 12 hours making reviewing plans to improve the website and the headquarters software, grow the association, improve our services to the members, and give more scholarships to deserving kids. What could be better than that?

Yes, those of you who haven't yet been to a NARAM have a lot to look forward to!



Andy's Amazing Fi/Ti Rocket Donations Cartoon and Superhero Rockets for Kids

By Andy Heren

Last year, along with other members of MASA, I participated in the Fly-It, Take-It program for NARAM 50. The idea is to let kids attending NARAM to pick a rocket that has been built by an experienced rocketeer, fly it, and then take it home.

Last year I built 3 Alphas. I thought how the Alpha is the quintessential first rocket. Afterward I learned that others had built bigger and possibly more exciting rockets. I began planning then what I would build for this year.

One of my personal favorites is the Estes Big Bertha. It is probably my most launched rocket. It is a large rocket with exciting lift-offs. I set a goal to build the Big Bertha, the Quest Big Betty, and the Estes Baby Bertha. Next I began planning exciting paint jobs. I tried thinking what would catch a young person's interest. Ah, cartoons and superheroes. I decided on "SpongeBob SquarePants", "Charlie Brown", and superhero "The Flash".

I have some laser printer decal paper, but I have yet to use it. So I decided to use paint on all. After building each rocket I sealed the fins with sanding sealer. Then, as I usually do, I painted the rocket with a gray primer, sanded it, painted it with a flat white and then sanded that smooth and then began the special painting for each character.

The Baby Bertha became Charlie Brown. I started by painting the top part of the rocket yellow, then the bottom brown to match his pants. To finish his body I masked off and painted the black jagged stripe around his middle. I painted the nosecone an almond color and used a permanent marker to draw his face, ears, and little sprout of hair on the back of his head. Charlie Brown is sometimes referred to "the round headed kid" in the comic strip. I considered naming this "the rocket headed kid," but figured it would be better to let it go as simply Charlie Brown. If a person can't tell who it is, then I really blew it. I thought this was a good one to build since Charlie Brown was "born" in St. Paul.

The second one is the Big Betty, which became SpongeBob SquarePants. I considered naming this SpongeBob Rocket-Pants, but again, maybe it should just go unnamed. After building and sealing the fins, I painted the rocket yellow. Then I taped off and painted the next part, the white shirt. Next came the brown bottom "pants." For his face I taped off the white part of his eyes. Then the blue irises. Next came his pink tongue, white teeth, and then black mouth. I outlined all this with a black paint marker. Then I painted the red tie, added the shirt collar and black belt. For the green sponge spots, I used a sponge to blot three different sized green circles.



The third, the Big Bertha, was going to be a different superhero, but time was running out and it would be easier to do The Flash. I painted the fins yellow, painted a yellow stripe for the belt, and put a white spot toward the top, and painted the body tube and nose cone red. I had covered the white with a masking tape logo for The Flash. Next I masked and painted a yellow lightning bolt. I outlined the logo with a black paint marker.

I am overall satisfied with the finished product. I think future superhero rockets will have laser-printed water slide decals. Or, as my painting improves, I will keep doing it that way.

No matter what, I hope that the rockets I built will spark that interest in some young person to pursue the hobby of model rocketry. It was a lot of work for rockets that are given away. However, like my cooking, it isn't as enjoyable if you don't share it. And, it is all about getting kids interested in the hobby, right? May these three characters fly high and straight!

MASA Welcomes the Following New Members:

- Kevin AndersonCheryl Anderson
- Hunter Anderson
- Levi Anderson
- Scott Heaton
- Kelli Heaton
- Andy Heaton
- Aidan Heaton
- Jim Copple
- Paige Copple
- Kaylee Copple
- Caleb Griswold

© Jeff Taylor

FlisKits Turns Seven!

This year marks the seventh anniversary of FlisKits, Inc. started by Jim and Kathy Flis of Merrimack, New Hampshire. In just seven years, FlisKits has grown from a small start-up business offering only 12 kits to one of the most respected names in rocketry offering 63 kits and tons of parts and accessories. FlisKits is known for thinking outside the box and producing unique and exciting designs such as the Deuce's Wild, A.C.M.E. Spitfire, Richter Recker and Borealis, to name only a few.

To celebrate their seventh anniversary, FlisKits is offering the following for the month of September: - Free shipping for US and Canada orders

- Special Anniversary Range Box Stickers with each order placed in September

- Send FlisKits a Happy Anniversary message and get entered into a drawing for a \$75 gift certificate

For more information, visit www.fliskits.com



2009 Launch Windows Subject to Change

Check MASA Website or Yahoo Group for updates

All MASA Launches are "Misfire Alley" (bring your own launch pad and controller)

MASA September Launch *

Saturday, September 26 - 10:00 am to 4:00 pm Location: Nowthen sod fields Theme: Clusters Special Event: Deuces Wild Drag Race

MASA October Launch *

Saturday, October 24 - 10:00 am to 3:00 pm Location: Nowthen sod fields Theme: Odd-Rocs

MASA November Launch

Saturday, November 21 - 10:00 am to 2:00 pm Location: Elk River VFW

* For Nowthen sod fields only: FAA waiver will be in effect permitting high power flights to 4,500 feet AGL. Field size supports up through J motors.

MASA Directory

Established January 1998 Founding President: Russ Durkee

2009 President and Webmaster Alan Estenson - estenson@mn-rocketry.net

2009 Vice President Carol Marple - cjmarple@peoplepc.com

2009 Secretary/Treasurer Rick Vatsaas - rick@vatsaas.org

MASA Planet Newsletter Editor Jeff Taylor - jeff.taylor@mn-rocketry.net

Club Website www.masa-rocketry.org

Club Yahoo Group http://groups.yahoo.com/group/masarocketry/



- Your current MASA Membership Badge if you plan to fly an "E" Engine or larger

- Your current NAR or TRA Certification Card if you plan to fly High Power Rockets

This is YOUR responsibility

Don't assume that the RSO/LCO knows you are a MASA member or that you are certified for HPR



Glen Overby's "I'm Yellow" on a Mojave Green



MASA August Launch Pictures High Def Video Stills From David Whitaker and Glen Overby

Tube, These amazing images are video frames taken from David Whitaker's high definition video camera submitted by Glen Overby.

Videos of Glen's "I'm Yellow" (above) and David's "Hybrid Farty-Pants of Death" (below) were shot with the unmanned camera mounted on a tripod near the launch pad.

Video of the 8th Annual Comanche-3 Drag Race (right) was shot with the hand-held camera from behind the flight line. This year's Comanche-3 Drag Race had the following six participants and engine combinations: see David's com

Mark Thell - D12-0 to B6-0 to C6-7 Lyle Merdan - D12-0 to B6-0 to A8-3 Alan Estenson - D12-0 to C6-0 to C6-7 ("Full-Up") Glen Overby - D12-0 to C6-0 to C6-7 ("Full-Up") Dave Schaffhausen - D12-0 to C6-0 to B6-6 Ken Hoyme - D12-0 to B6-0 to B6-6

David Whitaker's "Hybrid Farty-Pants of Death"





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MASA Outreach Report 2009 4-H Rocket Launch Stearns County Fair

By Mike Erpelding

The weather for this year's 4-H rocket launch was partly sunny with winds out of the Northwest at 10-20 mph. Although the wind speed isn't ideal for a rocket launch, the wind direction was perfect for the layout of the fairgrounds: carrying the rockets out over the empty demolition derby pit area and the empty outdoor horse arena/exercise area. This was again a record for 4-H member participation, up to 27 4-H'ers. About 40 rockets were launched in about an hour and a half. I had Double Dozen set up with six pads. We were scheduled to start flying at 1:30pm; but due to a shortage of volunteers, I didn't get done with the safety meeting and roll call/ participation ribbon hand outs until 2:00pm.

My parents and Ethan were in attendance to watch the launch. My mom said that whenever a rocket was launched, Ethan would pump his arms up and down while grunting and then say "COOL!" Sounds like I might have a future rocketeer! :>)

Some 4-H'ers supplied their own engines and I still had plenty of engines in my dwindling stockpile for the others. A8-3's, B6-2's, and B6-4's were the main engines used. All rockets flown were single stage only. I talked one 4-H'er out of flying his Mean Machine in 15 mph winds for fear of it pranging upwind out of the grandstand.

On a sad note, the fourth grader whose rocket took grand champion at the fair, decided to fly it. Unfortunately some other unknown kid picked it up after it landed and was seen running off with it. Fortunately he was too young to exhibit it at the state fair; but it was still a major bummer.

I did talk the reserve champion rocket owner out of flying his rocket. This rocket is going to be his trip to the state fair and I would hate to see it broken or lost before then.

The launch wrapped up at about 3:30pm. Thank you to my dad for helping pack up my launch equipment.

MASA Outreach Report Cub Scout Pack 5 St. Ambrose - Woodbury By Buzz McDermott Photos by Rick Vatsaas

I want to thank all of the MASA members who volunteered [Buzz McDermott, Neal Higgins, Jason Colt, Rick Vatsaas, Art Gibbens –Edit.] their time to come and help out with this outreach. Those who were not able to make it missed a great time. I showed up right at 6 pm and a couple of other MASA members were already there to meet me. We set up shop in the middle of the field next to the church. I brought along my 4-pad controller. This group was right at the limit of what a 4 pad setup can handle but we made do with it. My unit has four separate launch buttons. We did actually get through over 100 flights in 90 minutes! After about 30 minutes, I started having the kids launch their rockets together. Since they could still all launch their own rockets they loved the 'drag race' aspect of the launches.

One of the boys had bought an original MPC Flat Cat kit at a garage sale and built the glider himself. He flew the glider three times in all. All three were very nice flights. The first was on an A8-3 and he decided that just wasn't 'enough' so for the next two flights he used B6-4 motors. The breeze was blowing in the direction of the corn field (last year it was 'switch grass') and the 3rd flight was so good that the glider drifted well into the corn. The whole time it looked like it was 'trying' to turn into the wind to stay closer to the pads. The old Stine Flat Cats are like that. It is a real classic of a design.

Another boy brought along his Cici Express but didn't have any motors for the first stage. I donated a C11-0 to the cause and that turned out to be a great booster for the field size. Both stages worked great on the first try and the whole pack loved the flight.

Despite angling the rockets a little up wind and reefing shroudlines we still lost a few of the rockets to the corn field. This was because the Pack had brought along B6-4 motors to fly. I had recommended A8-3 but they already had a number of B6-4 boxes left over from prior launches. The Pack leader told me he had more boxes of C6-5s than B6-4s and was originally planning to bring those!

Mike Erpelding NAR # 79922



Cub Scout Pack 5 Outreach Continued

One of the mothers that came to the launch said she took about 200 pictures with her Canon EOS. I saw a preview of a few of them and she got in some great launch shots. She took my address and said she would mail me a CD of the full sized photos. Canon makes an awfully nice digital SLR. I can't wait to get the photos. I will certainly pass them on to the club when I receive them.

We had one rocket that got hung on the pad and I guess it won the "closest return and lowest flight" of the day award. We also had one launch which took the launch rod with it. We were using Estes plastic pads (to keep the rods low where the boys could reach the top). I guess the rod wasn't secure enough in the pad or was fitted into the 3/6 slot on the pad instead of the 1/8 slot. This is just another data point to add to safety checks of the equipment prior to starting a launch making sure all of the launch rods are SECURE.

The high point of the launch was of course Mr Spudnik on an E9-4. I will defer the description of that flight to others.

I had a great time. More importantly, I am pretty sure all of the cubs (and siblings) had a great time. It looked like most of the parents were having a good time. The parents and pack leaders were all very appreciative of the support from MASA and are planning to do this again next year. We arrived at six, flew over 100 rockets and left by 8. It was a VERY successful outreach for MASA!



MASA Members Clean Up FAI Fly-Off Results for the Selection of the 2010 U.S. Team

The fly-offs to determine the US Team going to the FAI finals in Serbia were held in conjunction with NARAM 51. 25 Seniors and 14 Juniors (the most Juniors ever) participated in this year's team selection fly-offs. Congratulations to Caleb Boe, Ray King and Todd Schweim for placing so well in the fly-offs.

In the Parachute Duration event, Caleb took Second Place in the Junior Division with 591 points. In the Senior Division, Todd took Second Place with 703 points and Ray took Ninth Place with 300 points.

In the Boost Glider event, Caleb took First Place in Juniors with 465 points and Todd took Fifth Place in Seniors with 290 points.

In the Streamer Duration event, Caleb took Second Place with 180 points in Juniors. In Seniors, Todd took First Place with 205 points and Ray took Tenth Place with 125 points.

In the Scale event, Caleb easily took First Place with 805 points in Juniors with his Saturn 1B.

In Helicopter Duration, Caleb took First Place in Juniors with 172 points while in the Seniors, Todd took First Place with 311 points and Ray took Sixth Place with 138 points.

Congratulations Caleb, Todd and Ray! The final team selection will be announced early in September.



Fédération Aéronautique Internationale The World Air Sports Federation events.fai.org

Images From NARAM 51









Ray in His Secret Parachute Laboratory



Ted Tries to Convince Vern Estes That His Rocket Will, In Fact, Go Up Ted's Saturn V Lifts Off



MASA Members Pay Forward NARAM 51's Fly It/Take It **Rocket Donations By Carol Marple**

I'd like to thank everyone who donated rockets for the NARAM 51 fly-it/take-it event. There was an amazing response to my request!

I was *hoping* for maybe 20 rockets - we donated 10 last year, and I hoped to double it - but MASA members really came through for this great "pay it forward" opportunity. In all, MASA members donated 36 rockets!!!

No, that's not a typo. We really donated 36 rockets from 16 MASA members !!!

I was amazed by the response, not just in the quantity of donated rockets but the quality. We donated rockets of all types, sizes, and colors. Everyone took great care in building, finishing, and painting each and every rocket.

Each rocket got its very own information sheet, which listed the rocket name, manufacturer, suggested engines, the builder's name and email, and our club web address. (If I didn't have your email address, or I didn't ask for your permission to use it, I used my email address instead. I'll post any responses I receive.)

Again, thank you so very much for your support!

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The Fi/Ti Table at NARAM

Photo by Ted

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Carol - MASA V.P.

Photo by Carol

Rockets by Andy Heren (1-3), Mark Thell (4-5) and Neal Higgins (6-9): GILEU

Rocket Name: Baby Bertha Rocket Manufacturer: <u>Estes</u> Suggested Engine Size(s): <u>A6-3</u>, <u>B4-4</u> or <u>B6-4</u> Built by: <u>Red W/b</u>: I'd love to hear about your first nocket flight. Please feel free to contact me at the email address below. rod.whip@rocket.meil.com od.whip@rocket.mail.com Good Luck From Ninnesotal

Posting from Ted at NARAM:

They went fast!

Saturday was the first day, and they didn't have many kids, but many of our rockets were selected. The real crowds came Sunday, and last time I looked, in early afternoon, they were practically all gone.

I saw a mom and a little girl who had flown the "Hello Kitty" rocket, and were extremely grateful--they were happy there was a card so they could send a picture. I heard second hand that Carol's rockets were oohed and ahhhed over, and while a little boy picked out a payloader, his mom wanted Little Mermaid.

job--they sure were Great beautiful rockets!





Rockets by Jeff Taylor (18-20), Todd Carpenter 21-23) and Ted Cochran (24-26):



Rockets by Alan Estenson (27-32), David Whitaker (33) and Jim Meyers (34): [Not Pictured, Rockets from Buzz McDermott (35 - 36)]



MASA Member E-mails

Thank-You Notes From NARAM 51 Fi/Ti Rocket **Donation Recipients**

To Buzz McDermott

Hi Buzz,

I wanted to thank you for the cool Big Betty Rocket I got at the NARAM meet today. I am 8 and this was my first time flying rockets. It was a lot of fun.

It was really cool and flew great. My mom attached a picture of me with it.

Thanks again, Kenny



To Jeff Taylor

I wanted to thank you for the beautiful Hello Kitty style Patriot rocket you made and donated to the NARAM fly it take it. My 5 year old daughter immediately chose it and was *so* excited to have her first rocket. Her older brother has been making rockets and she was excited to

To Caleb Boe

My name is Andy Muth and I was lucky enough to get your Thing a ma jig rocket at the NARAM I just came home from rocket camp where I made a baby bertha, bull pup and super neon. The thing a ma jig flew great. It was really windy and went really far and my dad and I had to

go looking for it. We found it a little bit away in a farmer's pasture.

My mom attached a picture of me with it. I'm 9.

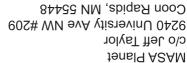
Thanks again, Andy











ADDRESS SERVICE REQUESTED



- D Dual Egg Loft Duration: Caleb 2nd Place (B Division)
- B Altitude: Ray 17th Place (C Division)
- B Rocket Glider Duration: Ray 10th Place (C Division)
- Place (C Division)
- Random Altitude: Caleb 3rd Place (B Division) and Ray 3rd
- 1/2A Parachute Duration: Caleb 3rd Place (B Division) and Ray 11th Place (C Division)
- A Streamer Duration: Caleb 1st Place (B Division)

- Ray 9th Place (C Division)

- 1/8A Helicopter Duration: Caleb 2nd Place (B Division) and

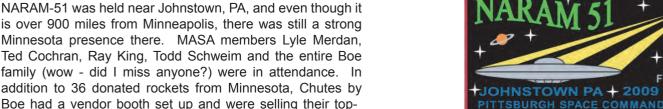
Some NARAM results (which hopefully are acurate) include:

Caleb and Ray (and Even

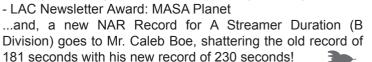
Showings at NARAM-51

MASA) Have Strong

quality parachutes.



- Meet Champions: Caleb 5th Place (B Division), Ray 21st Place (C Division) and MASA 10th Place (Sections)



FIt Q3



email to jeff.taylor@mn-rocketry.net