



T.H.O.R.

The Heartland Organization of Rocketry

THOR's Hammer

The official newsletter of The Heartland Organization of Rocketry!

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January/February 2005

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Volume 12 Number 1



A "spooktacular" drag race at our October launch! Inset: Rick and Sherri Bosworth with *Boo Goes Boom* and *Witch Way Will She Go?*. (Richard Burney)

Club Officers

PRESIDENT – Bruce Lee
Phone Number: (402) 691-8420
E-mail: bruce.lee@tripoli.org

VICE PRESIDENT – Greg Rothman
Phone Number: (402) 891-5706
E-mail: garothman@msn.com

TREASURER – Thomas Kernes
Phone Number: (402) 484-7007
E-mail: tkernes@buckwestern.com

SECRETARY – Richard Burney
Phone Number: (402) 553-5816
E-mail: rcburney@cox.net

TRA NEBRASKA PREFECT – Kevin Trojanowski
Phone Number: (402) 292-4101
E-mail: troj@cox.net

NAR SECTION #562 LEADER – Bruce Lee

Newsletter Editor - Richard Burney

Phone Number (Local): (402) 896-2069
Phone Number (Toll Free): 1-888-546-0396

Internet Links of Interest

<http://www.nerocketry.org/>
THOR's official web page. Has information on our club, launch dates, and history.

<http://www.tripoli.org/>
Home page for the Tripoli Rocketry Association.

<http://www.nar.org/index.html>
Home page for the National Association of Rocketry.

<http://www.rocketryonline.com/index.cgi>
Rocketry Online is an excellent source of model and high power rocketry related news and information.

<http://www.flyfast.net/>
Flyfast Industries is the latest onsite vendor for THOR's high power launches.

<http://www.giantleaprocketry.com/>
Giant Leap Rocketry has been THOR's main vendor at our high power launches for several years.

<http://www.kloubusters.org/>
Home page for the K.L.O.U.D.Busters Tripoli Prefecture of the state of Kansas.

January - March 2005 Calendar

January

Event: January Meeting.
When: Tuesday the 4th, 7:00 to 10:00 PM.
Where: La Vista Community Center. –
CANCELLED DUE TO WINTER WEATHER

February

Event: February Meeting.
When: Tuesday the 1st, 7:00 to 10:00 PM.
Where: La Vista Community Center.

March

Event: March Meeting and Auction.
When: Tuesday the 1st, 7:00 to 10:00 PM.
Where: La Vista Community Center.
Description: Besides being the March meeting, this is also THOR's annual auction where members can auction off and bid on rocketry related goods... it's eBay the old fashion way! 10% of the money made from each member's auction, unless arranged differently, will go to the club.

*****ATTENTION!!!*****

Just a reminder that membership dues are due for most members at the beginning of January. Either mail your check to the address on the back of the newsletter or bring it to the next meeting.

Rocketman Super Bowl Party

*Courtesy of Rocketry Online -
www.rocketryonline.com, January 3, 2005*

(ROL Newswire) -- Ky, Jodi Michaelson and Rocketman Enterprises Inc. are having their annual Super Bowl Party. Sunday - February 6 starting at 1:00 pm. There will be lots food and beverages. This year Rocketman will be celebrating the success of the C.S.X.T. launch.

The space shot payload and booster on display along with a lot of Ky's rocket powered toys and space artifacts. Ky always has an interesting group of people at his parties. Please park in the school parking lot across the street. The address is **8337 Penn Ave So. Bloomington, Minnesota**. Phone number is **952-884-5870**. The Minneapolis St. Paul International airport is only five miles from the house. There is room for 185 people. If you would like, bring 1 lb. of seafood to throw in the pot! Please email if you are planning on attending: order@kytec.us

Editor's Hammer

By Richard Burney, Secretary and Newsletter Editor

THOR's Hammer online...

Several months ago, Tom Kernes took over the maintenance of THOR's website (<http://www.nerocketry.org/>) from Kevin Trojanowski. Tom has reworked the site including new information and pictures from some of our launches.

One of the latest editions to the site is that all issues of *THOR's Hammer* going back to the summer of 2002 are now available for viewing or downloading from the THOR site. Up until 2002, *THOR's Hammer* was sent through the regular mail to its membership; mailing costs usually kept each issue to 8 pages or less and the newsletter would usually not go beyond 6 issues a year. In the spring of 2002, *THOR's Hammer* went to PDF format; since virtually everyone within THOR has one or more e-mail accounts, we not only were able to save money since we don't have to mail out 50+ issues every two months, sending the newsletter out electronically also meant that there was no limit on how many pages long an issue could be or how many issues could come out during the year. The only limit has been that since some e-mail services, like Hotmail, have had tight limits on their members' inboxes (like 2 Megs for example), I have had to take extra steps in keeping the memory size for each issue as low as I could (usually this means reducing the quality of the pictures and graphics used in the newsletter).

With *THOR's Hammer* available directly online, this obviously has a lot of advantages. Since members can now download the PDF's directly to their computer or view them online, memory is no longer an issue. With past issues of the newsletter online, if someone is missing an issue, they are able to easily get the issue they are missing; I plan on getting most of the past issues going back to early 2000 converted to PDF soon. Finally, with THOR's newsletter online, even more people will be able to see it; it will be a great way to further promote THOR, but to also further promote our hobby.

THOR e-mail list...

Another online improvement that Tom has incorporated is the creation of an e-mail subscription list. Up to now, everyone within THOR had to cumbersome send an e-mail to everyone else in THOR by having to keep track of every single individual. I myself created a THOR "group" in Outlook Express which meant I could reach everyone with one click, but it still meant maintaining all the addresses in my address book and I would get back any "bounced" e-mails from those whose

accounts no longer exist or were full. With the creation of this subscription list, it will be a lot easier for everyone in THOR to also reach everyone else in the club.

Unfortunately, as of the end of December, only about 20 people have subscribed. Apparently, there are some who are intimidated by what one has to do to successfully subscribe. As being one of the first members to subscribe, trust me, it is quite easy to do. Here are some instructions on how to do this:

1) Send an e-mail to majordomo@nerocketry.org. In the body of the e-mail, type "subscribe general" (of course, DO NOT use quotation marks and do not capitalize any letters). As for the e-mail subject title, I would again use "subscribe general" (in my case, I did not use quotation marks and I left all letters as lower cased).

2) You should next receive a confirmation e-mail which will have a long code which will have your e-mail address at the end. Do a reply and delete everything from the reply EXCEPT the long code which has your e-mail address.

3) You should now receive a final confirmation e-mail which will have instructions for where to address your e-mails to communicate with the rest of the group (general@nerocketry.org), unsubscribing from the list, etc.

If you follow these instructions, you should be set!☺ If you need any assistance e-mail Tom at majordomo@nerocketry.org or tkernes@buckwestern.com. But since some do not want to partake in this, I will maintain my old list and use it for passing along important information (such as launch dates, availability of the latest newsletter, etc.).

New THOR Treasurer...

Besides his contributions to the online aspects of THOR (not to mention that him and his wife are now assisting Giant Leap Rocketry as a vendor for our launches), Tom Kernes is now our new treasurer. After nearly nine years of managing the club's finances, Larry Drake decided to step down as treasurer due in part because of health problems and the desire to be able to actually enjoy rocketry as a hobby again.

To Larry, I would like to thank him for his years of service to club, not only as treasurer, but also for all the range duty he has performed at our launches. I hope you enjoy your "retirement"... what's this I hear about a large scale Little Joe II?☺✦

Joint Statement of December 22, 2004

Reprinted from www.tripoli.org

This message will outline the results of the December 17, 2004 hearing in U. S. District Court in Washington, DC, before Judge Reggie Walton and next steps in our legal effort to remove unnecessary and illegal regulation of the sport rocketry hobby

NAR and TRA won both pending motions before the court.

Winning these motions are important for us because we can now move forward on two key items.

Granting the first motion means we can now legally challenge the illegally promulgated "Questions and Answers Hobby Rocket Motors" document at the ATF Explosives website within the current litigation.

Granting the second motion for final judgment under Rule 54(b) means we can proceed with an appeal of Count 1 of the lawsuit. Count 1 argued that APCP does not function by explosion and is therefore not subject to BATFE regulation. A ruling from an appellate court on our appeal will determine a key point -- whether the ATF even has jurisdiction to regulate the hobby at all.

We intend to file an appeal immediately after the judge releases his written order granting our motion.

The next scheduled event will be another status hearing, January 28, 2005. BATFE has until that time to respond to our amended complaint. Upon reviewing that filing, counsel will have an opportunity to respond, most likely with a motion for summary judgment to attempt to get the court to set aside the "Questions and Answers" document.

The TRA and NAR websites will be updated with copies of Judge Walton's written orders as soon as these are made available to our legal counsel.

We need your continued strong financial support for the legal work necessary around these two wins.

The appeal preparation and filing will cost a minimum of \$25,000. We estimate the total costs of remaining legal work on both the litigation and appeal will take approximately \$100,000 over the next two years.

Please donate today in whatever amount you possibly can. And thanks for your assistance to date.

Also, we again strongly recommend that members in the field report in detail any actions taking by ATF personnel in the field, particularly if they use the ATF's "Questions and Answers" as the basis for their action.

Forward to either of us the dates, times, names and offices involved, along with a complete description of your experience. Be factual and complete in your message. If we need additional information, we'll contact members individually.

Secondly, we again urge members to consider donating to the Legal Fund. Please make a donation to the Legal Defense Fund today, in whatever amount you possibly can contribute. Your support and generosity will be recognized and acknowledged, and you'll be able to say "I supported the fight for an unregulated sport rocket hobby."

As we have further developments, we'll continue to report them here and in our publications.

*Ken Good, President
Tripoli Rocketry Association*

*Mark Bundick, President
National Association of Rocketry* ✦

NARCON 2005

Courtesy of Rocketry Online -
www.rocketryonline.com,
December 22, 2004

(ROL Newswire) -- WOOSH (Wisconsin Organization of Spacemodeling Hobbyists) will once again be hosting NARCON. This year's event will be hosted at the University of Wisconsin - Parkside in Kenosha, WI on March 11th-13th. They have some great keynote speakers this year. To start the weekend off, Ky Michaelson will give the keynote address on Friday night. On Saturday night they will have Vern & Gleda Estes speaking. There is a lot of great content this year and more is on the way. The vendors have been great in helping support the event too. Registration is open and more information can be found at www.narcon2005.org. If you have any questions please contact the Event Director directly at director@narcon2005.org. A lot more information will be coming soon. WOOSH hopes to see you all there in March!

Information about the event may be found at:
www.wooshrocketry.org
www.narcon2005.org ✦

Ten dollar and sixty cent Rocket Rest

Article and pictures by Joe Michel

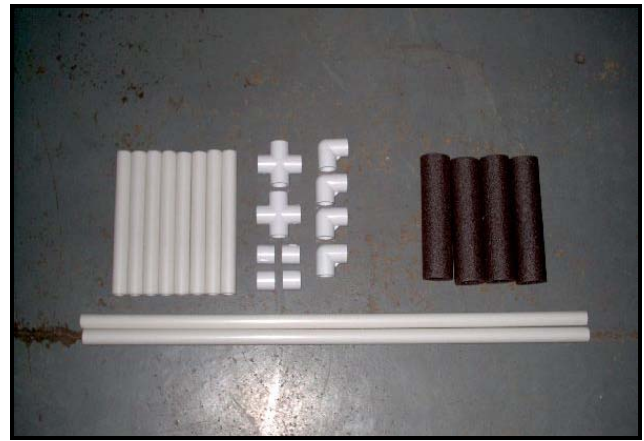
Need a cheap and quick rest to set your rocket on? These rests are really handy for working on your rocket on the bench at home and at the launch site. Figure 1 below shows what parts you'll need, and what I paid for them at our local True Value hardware store.

Figure 1

Qty.	Description	Price
4	1/2" end caps	\$2.58
4	1/2" 90 degree elbows	\$1.56
2	4-way crosses	\$2.98
1	1/2" SCH 40 PVC pipe 10'	\$1.79
1	3/4" foam pipe insulation	\$1.69
TOTAL		\$10.60

Building the R.R.

I used my 10" miter saw to cut the PVC pipe, but a handsaw could be used as well. Begin by cutting eight 8" lengths of PVC. After the first eight pieces are cut, measure what is left (around 55") and cut it exactly in half. De-burr all the cut ends with sandpaper. To fit the foam padding, assemble one 8" pipe, cap and cross. Lay insulation next to the assembly to approximate the length of cut. I found that a serrated kitchen knife cuts the insulation well. ↕



Finish Cut Parts.



Cutting Insulation.



Rocket Rest in use!!

THOR High Power Launch Pickrell, NE - October 16th-17th

Article by Richard Burney

Pictures by Richard Burney and Bill Richardson

For over six years, **THOR** has annually held two, multi-day launches: **Fire On The Farm** and **Nebraska Heat**. Ever since 2000, both events usually take place less than two months apart; Fire On The Farm in late April and Nebraska Heat in June. This has left the rest of the year without any "big" launches to look forward to in our state.

Around the end of August (2004), Tom Kernes e-mailed out the suggestion about expanding our October launch to cover the whole weekend. After a bunch of e-mails back and forth between a number of us in the club, it was voted on at the September meeting to have the launch for October 16th to also cover October 17th. For this year, this launch would have no event name, but that could change if this October launch becomes a tradition.

Saturday, October 16th...

Saturday started a little on the breezy side, but as the day progressed, the winds dropped down to an almost a dead calm. Because of the greatly improved conditions, a few of the most powerful flights of the day were sent up during the last few minutes of our waiver! It was partly cloudy all day long with the high reaching well into the 50's. Kent Burnett and Tom Kernes (**Giant Leap Rocketry**) along with Matt and Ann Jones (**Flyfast Industries**) provided their rocketry services throughout the day.

With the participation of one of the Cub Scout Packs from Lincoln along with the conditions, Saturday was a very busy day. With a mix of regular THOR members along with the Cub Scouts and their families, there was well over a **110 flights** done by over **40 flyers**. Motors burned were as follows: **A - 4, B - 16, C - 61, D - 4, F - 2, G - 5, H - 4, I - 5, J - 5, K - 2, and L - 1.**

The single L flight of the day went to Matt Jones. Matt flew his veteran V-2 with an Animal Motor Works L777. At liftoff, the leads connected to the motor's igniter somehow got caught onto the rocket. At about 20 feet off of the ground, the leads disconnected from the extension cord which leads back to the LCO/RSO table. The leads fell off at some point (they were found in the nearby grass later) and the flight was quite spectacular.

If it wasn't for my digital camera, I would have never known about Matt's V-2 taking the power leads with it! Matt's "better half", Ann, also got a flight off during the day in the form of her "No Name" rocket that was flown on a Pro 38 H153.

Right after Matt's flight, Doug Gard flew his own V-2. In his case, it was the winged A4b variant. Doug has flown this rocket at least one other time at one of our launches. After a stable flight on an AeroTech H180, the ejection charge failed to go off and Doug's A4b hit the ground hard. All that was left was a pile of debris. A sad end to such a nice rocket.

Two of Andrew Wimmer's flights for Saturday involved two Flis Kits Deuces Wild kits that are part of the **Tour de Deuces** project which has involved two of the Deuces kits being shipped around to each of the 50 states. The first two flights were done in Florida and the last two will be done in New Hampshire where Flis Kits is located. Andrew successfully flew both rockets on a C6-5 cluster. For more information about the *Tour de Deuces* project, check out http://www.fliskits.com/tour_de_deuce/index.htm.

With Halloween being just two weeks away, Rick and Sherri Bosworth converted two Halloween lawn decorations into flying model rockets: a ghost called *Boo Goes Boom* and a witch called *Witch Way Will She Go?*. Both rockets were powered by Pro38 G79 Smoky Sams. Both rockets took off almost simultaneously with *Boo* just inches in the lead. Both long, slender, finless rockets were stable during the second-and-a-half that they were under power, but as soon as the motors cut out, both rockets twisted and spun all over the place. A "spooktacular" flight!

After not being to a launch in quite sometime due to his duties in the Navy, Tony Nicklin got in four flights. Tony's big flight of the day was his upscale of the Estes Silver Comet which he called the *Blue Comet* due to him going with a metallic blue paint job instead. Tony's *Blue Comet* had a beautiful flight to 992 feet on an AMW J450 Super Tiger motor and gently landed nearby on a large Rocketman chute.

With the winds coming to an almost dead stop during the afternoon, the next two largest flights of the day were flown within ten minutes of the waiver closing. Tom Kernes sent his *RCDP Flash* up to over 4,000 feet on a Pro54 K445. Richard Burney (the author of this article) sent his veteran *Macross Plus* up to over 4,400 feet on a Pro54 K660. Even with the parachutes deploying right after apogee, my rocket landed just several hundred feet away to the east.



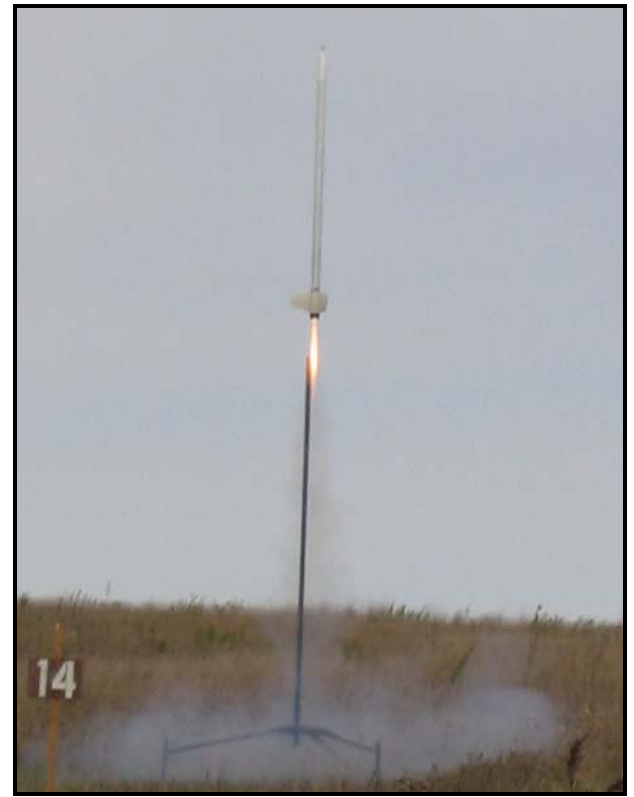
Joe Michel and his upscale of the old Estes Blue Bird Zero kit. (Burney)



What's in a name? Ann Jones and her rocket she simply calls No Name. (Burney)



Liftoff on a cluster of three C6-3's. (Burney)



Liftoff on a Pro38 H153. (Burney)



Inset: Doug Gard with his A4b (winged V-2) and Matt Jones with his own V-2. Matt flew his V-2 on an Animal Motor Works L777. The arrows point to the trailing igniter leads and extension cord. (Burney)



In Doug's case, his A4b's flight wasn't so smooth. The H180's ejection charge failed resulting in a core sample. With most of the fins salvageable, Doug hopes to rebuild. (Burney)



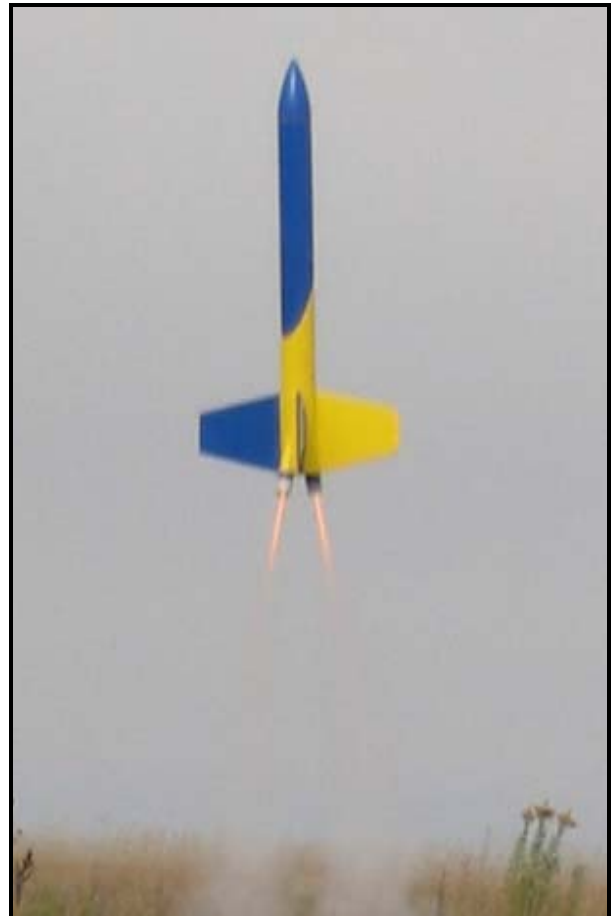
Jason Vennard is not the only one with a *Spiderman* rocket, true believers! Sharon Rice has one, too! (Burney)



On Saturday, Andrew Wimmer and his father flew two Flis Kits Deuces Wild as part of the *Tour de Deuce* project to fly the same two Deuces Wild rockets in all 50 states. (Burney)



Sharon's *Spiderman* rocket successfully slung its way on a cluster of two D12-5's. (Burney)



The first of the two Deuces goes up on a cluster of two C6-5's. (Burney)



Besides high power, there was quite a bit of low power flying by the Lincoln area Cub Scouts and their families along with the members of THOR. (Burney)



Tony Nicklin got in a beautiful flight with his *Blue Comet*. Flight courtesy of an Animal Motor Works J450... a gentle landing courtesy of a large Rocketman parachute! (*Burney*)

Sunday, October 17th...

As it turned out, it was a good thing that some of us had gotten our big flights in on Saturday because Sunday ended up being a pretty windy day. On the flip side, though, it was pretty sunny and with the winds coming out of the south, it was at least 10 degrees warmer than the day before.

With the combination of wind and the fact was that most everybody had gotten in their desired flights in on Saturday, only **8 flyers** conducted **15 flights**. Mat and Ann Jones once again represented Flyfast Industries.

The first flight of the day was by yours truly. I decided to fly my *Breath of Fire* rocket with an AeroTech H148 Redline motor. Since *Breath of Fire* weighs less than two pounds, it took off like a bullet. With the winds blowing at about 15 MPH or greater, off I went for a three hour walk to look for my rocket. After I gave up and started walking on one of the country roads back to our field, Tom Kernes picked me up in his truck and informed me that my rocket had been returned by one of the local farmers just minutes earlier!

Because of the winds the largest flight for Sunday was a Pro378 J330 flown in Denis Gilbert's *Super Bee*. *Super Bee* stands over 9 feet tall, is 4 inches in diameter, and weighs 10 pounds so a J330 doesn't take it too far up. Dual-stage deployment further helped cut down the walking distance. I have seen this rocket flown before and it most definitely screams for a K!

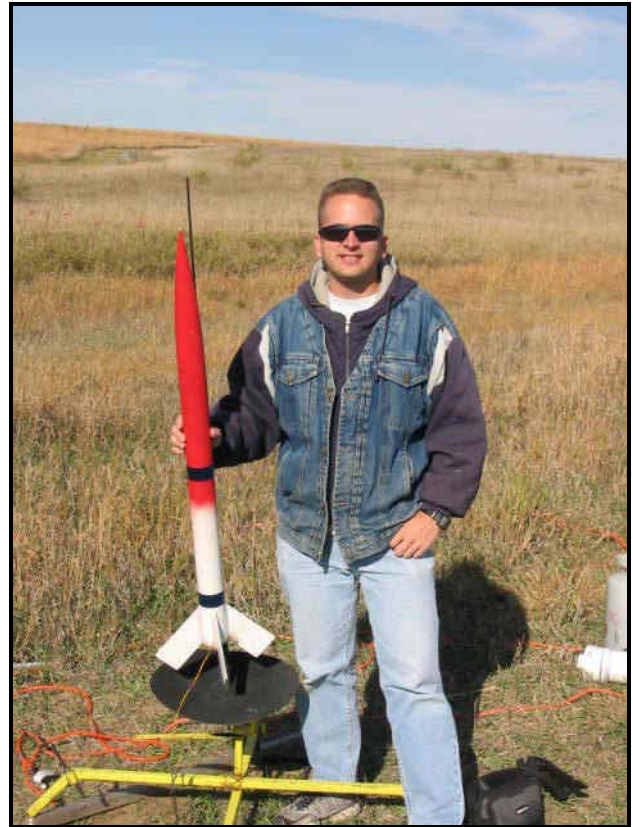
The most, shall I say, "interesting" flight of the day went to Rick Bosworth's *Big Betty DD*. *Big Betty* was kit bashed from two Estes CBU-87 cluster bombs. Both air frames were stuck together, the fins were replaced with heart shaped fins, the paint job was a light pink, and the parachutes were lace with spinning tassels... I think you get the picture of what Rick had done with these two rockets! *Big Betty DD*, rated "for adults only," was successfully flown on two C11-7's. I wonder if Sherri knows about this...☺

After having spent part of the day looking for my one rocket, I made sure to keep things low and near the pads. I squeezed off two C6-3 flights with my Estes Skywinder. With the others desiring to close down the range, I got one final flight in with my Estes Python with a C11-3.

Conclusion...

All together, well over **120 flights** were done by over **40 flyers** (most of those on Sunday had flown on Saturday). As was typical with other THOR multi-day launches, one day turned out great while the other day was less than great.

A special thanks goes to all who made this a great weekend! ✨



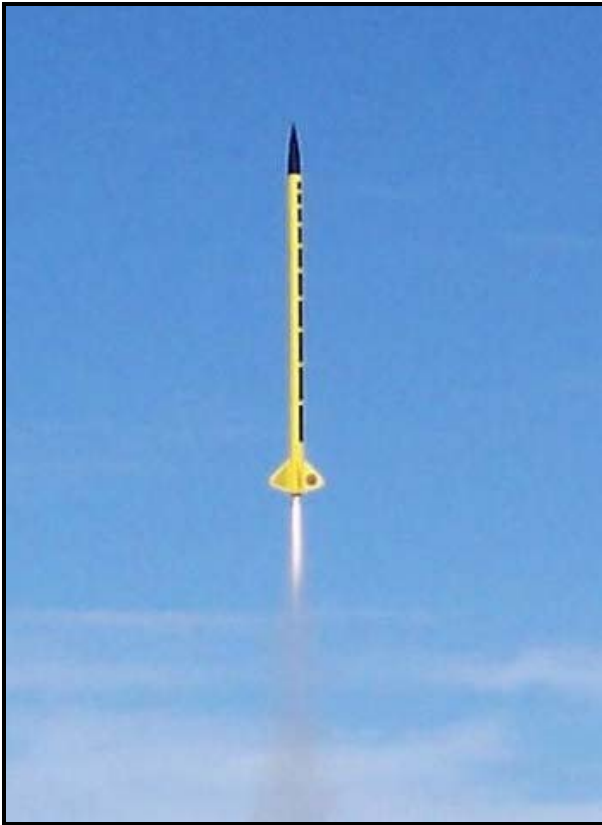
The author and his rocket, *Breath of Fire*, which has seen a lot of flights over the years. (Burney)



On a Redline H148, *Breath of Fire* was a blur. It was found by a farmer three hours later. (Burney)



Rick Bosworth's *Big Betty DD* was the result of kit bashing two Estes CBU-87's... giving a new meaning to "make love, not war!" Also, me thinks that Rick is spending too much time with his rockets!;-) (Burney)



Denis Gilbert's *Super Bee* on a Pro38 J330... the largest flight for Sunday. (Richardson)



Bill Richardson flew his 3.9" upscaled *Fat Boy* on a Pro38 H153. (Richardson)



Based on the flight cards, I believe this is Tom Kernes' *Estes Executioner* powered by an F12 *Blackjack* motor. (Richardson)

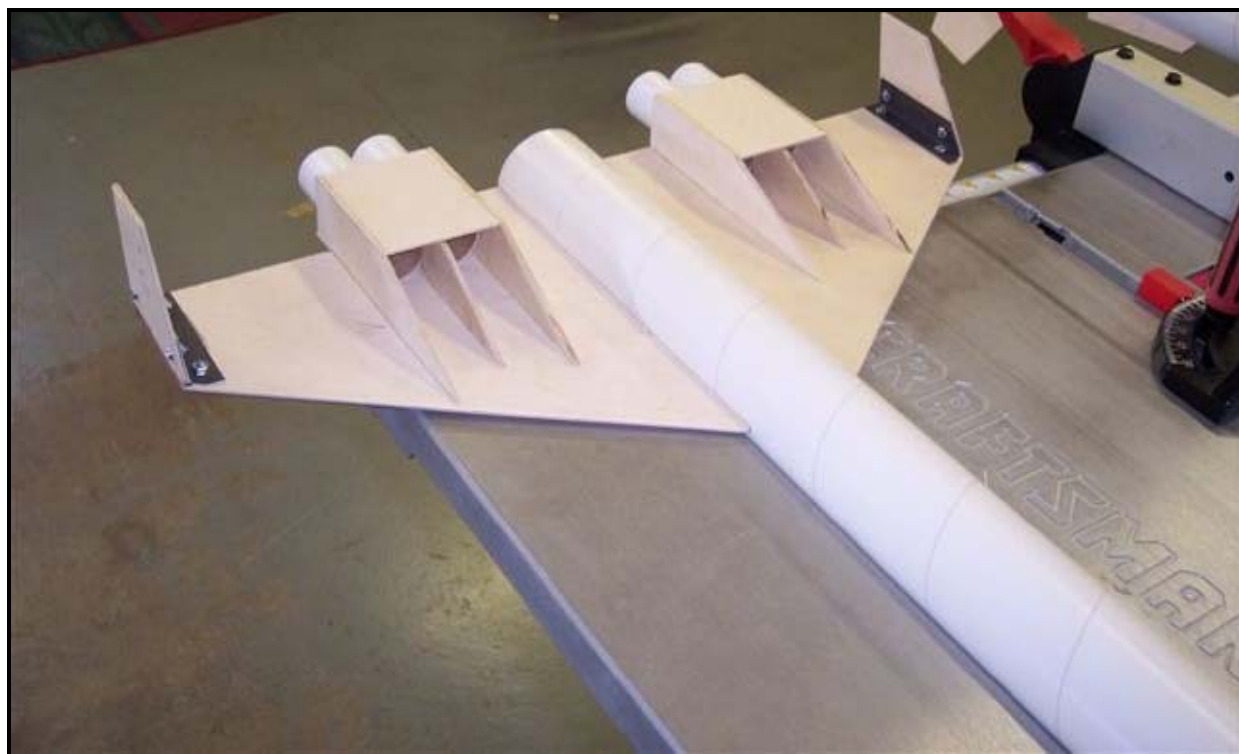
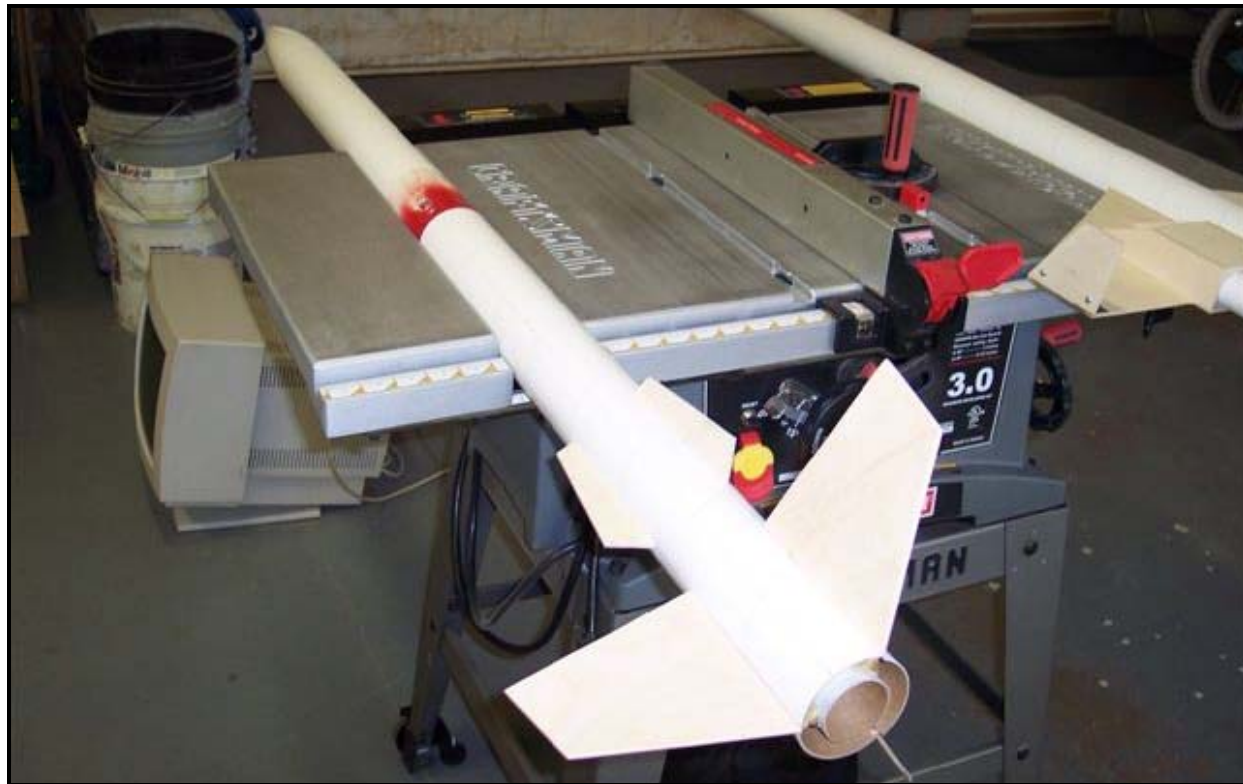


Something a little less racy from Rick! Rick flew his stretched version of the *AeroTech Initiator* on a Pro38 H143 *Smoky Sam*. (Burney)

Joe Michel 2005 Projects

Joe has been sending me pictures over the last few weeks of his latest two high power projects. The first one is what he calls the *Shadow on Steroids*. It's based on the Estes

Shadow, is beefed up for high power, and has dual-deployment capability. As for the other rocket, take a wild guess to what classic Estes kit is getting the high power conversion treatment! More to come! Check out <http://home.alltel.net/jm44316/index.html> for updates. ✦



NASA's Space Place

<http://spaceplace.nasa.gov/en/kids/>
Antennas, Designed by Darwin
by Patrick L. Barry

*[Editor's note – considering that these antennae are the result of intelligent beings (humans) looking for a specific result (the antenna **designs**) using and manipulating computers and their programs that were also **created** by other human beings, does this not present a model of creationism?@].*

Who in their right mind would design this bizarre-looking antenna? Actually, nobody did. It evolved.

Taking a cue from nature, NASA engineers used a kind of "artificial evolution" to find this design. The result may look odd, but it works very well.

"The evolutionary process improves the design of antennas, just as evolution in nature leads to fitter plants and animals," says Jason Lohn, leader of the Evolvable Systems Group at NASA's Ames Research Center.

The improvement comes from Darwin's idea of natural selection: only the fittest members of a generation survive to produce offspring. Over many generations, traits that hinder survival are weeded out, while beneficial traits become more common. "In the end," he says, "you have the design equivalent of a shark, honed over countless generations to be well adapted to its environment and tasks."

Evolutionary computation, as it's called, applies this principle to hardware design. It's particularly useful for tackling problems that are difficult to solve by hand--like the design of new antennas.

Designing a new antenna for NASA's Space Technology 5 (ST-5) mission was the challenge facing Lohn's group. ST-5 will explore how TV-sized "nano-satellites" can perform the tasks of much larger, conventional satellites at a cheaper cost. Antennas on these satellites must be smaller than usual, yet capable of doing everything that a bigger antenna can do.

The evolution of this bizarre-looking antenna happened inside a computer. Many random designs were tested in a computer simulation. The computer judged their performance against certain goals for the design: efficiency, a narrow or wide broadcast angle, frequency range, and so on.

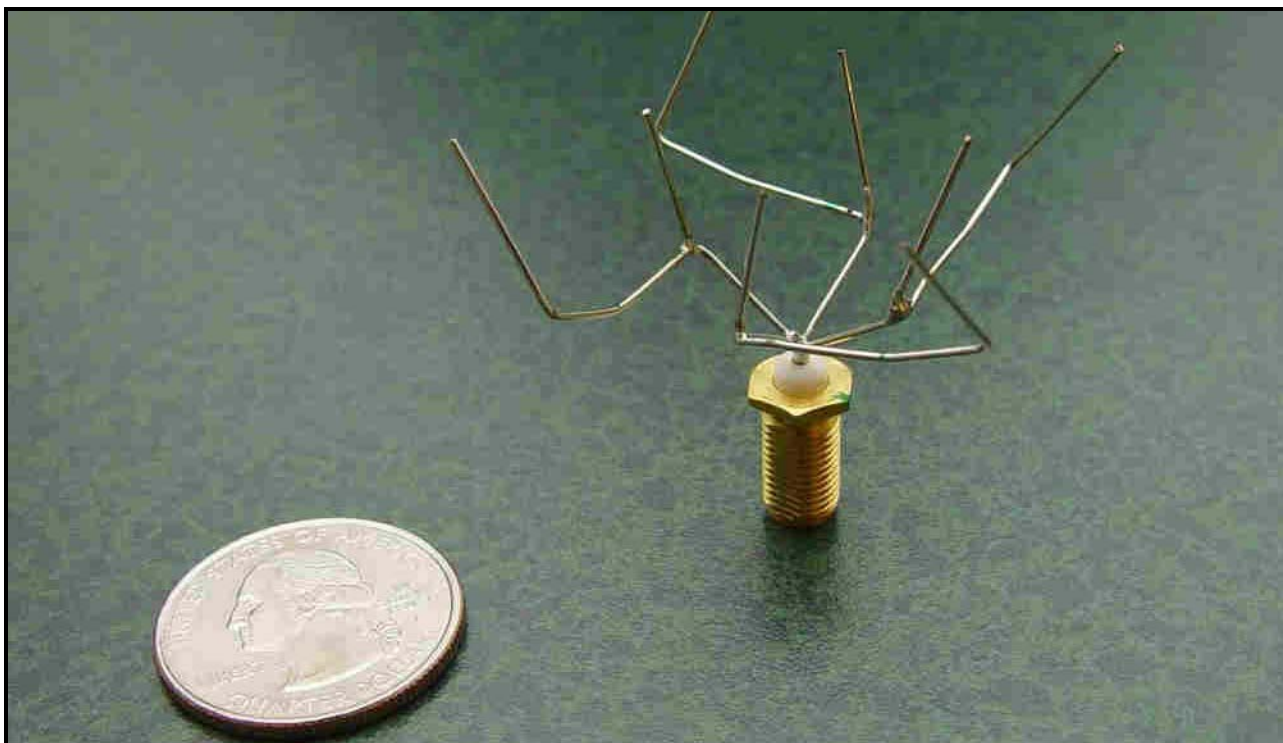
As in nature, only the best performers were kept, and these served as parents of a new generation. To make the new generation, the traits of the best designs were randomly mixed by the computer to produce fresh, new designs--just as a father and mother's genes are mixed to make unique children. This new generation was again tested in the computer simulation, and the best designs became the parents of yet another generation.

This process was repeated thousands, millions of times, until it settled onto an optimal, shark-like design that wouldn't improve any further. With today's fast computers, millions of generations can be simulated in only a day or so.

The result: an excellent antenna with an odd shape no human would, or could, design.

For more about artificial evolution, see <http://ic.arc.nasa.gov/story.php?sid=86&sec> . For more about Space Technology 5, see nmp.nasa.gov/st5. For an animation that helps explain to kids how ST5's antenna sends pictures through space, go to <http://spaceplace.nasa.gov/en/kids/st5xband/st5xband.shtml>.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration. ✦



THOR Meeting Minutes

Compiled by Richard Burney, Secretary

Pictures by Richard Burney

THOR Meeting Minutes 11/9/04

Attendance: Richard Burney, Greg Rothman, Kevin Trojanowski, Sherri Bosworth, Rick Bosworth, Jon Damme, Scott Pearson, Larry Drake, Bruce Lee, Bill Richardson, Barry Conner, Arley Davis, George Wimmer, Andrew Wimmer, Doug Buhrman, Matt Jones, and Ann Jones.

Meeting starts at 19:10.

Bruce talks about the recent ATF developments. The ATF's harassment of **AI's Hobby Shop** along with the "**Questions and Answers Hobby Rocket Motors**" document posted at the ATF's website has caused the NAR and Tripoli legal team to approach Judge Reggie Walton about this. More will be developing on this in December.

Bruce shows some pictures taken at **Balls** including an experimental M flight that he and Bruce Kelly collaborated on (cato!).

Because of health reasons, Larry Drake, will not be running for treasurer in 2005. Larry plans on tackling a number of rocket projects. In particular, he is working on a large scale **Little Joe II**. Larry is trying to get sponsorship from **Ace Hardware**.

Matt Jones reports that a number of new Cesaroni motors including the 98mm N1100 have been certified.

Rick Bosworth shows some high quality carbon fiber tubing he recently got from a manufacturer in Lincoln.

Kevin Trojanowski passes around his small porta-potty rocket. This is a kit by **Newton's 3rd Rocketry**.

Andrew Wimmer presents his prototype for entry into the **Team America Rocket Challenge** contest.

Arley shows the progress made on his PML **Lil' Lunar Express**.

Barry Conner shows the repairs that he has done on his PML Bulldog. It was badly zippered on its last flight back in May.

Bruce shows the Discovery Channel **Monster Nation** episode which featured Ky Michaelson; Bruce was even in the clip! Bruce shows us the sales promotion piece for **77 Miles Up** which is about the **CSXT**.

With the exception of treasurer, all officer positions are uncontested. Tom Kernes puts in his bid for treasurer.

Meeting adjourned at 21:32.



Arley Davis discusses the modifications that he did to his PML Lil' Lunar Express.



After suffering a major zipper at FOTF VII, Barry Conner replaced the entire main tube of his PML Bulldog.

THOR Meeting Minutes 12/7/04

Attendance: *Richard Burney, Collin Holcomb (teacher at Norris Jr. High) and students (involved with the Team America Rocket Challenge), Bruce Lee, Arley Davis, Jacob Davis, Greg Rothman, Doug Buhrman, Kevin Rich, Sherri Bosworth, Rick Bosworth, Kevin Trojanowski, Bill Richardson, Tom Kernes, Matt Jones, Ann Jones, and Jon Damme.*

Meeting starts at 19:15.

Collin Holcomb of Norris Jr. High, another teacher from the school, and Norris students who are participating in the Team America contest are introduced.

Bruce passes around pictures of the recovered CSXT booster section. Bruce plans on bringing the booster to the January meeting.

Jon Damme presents a distance conversion chart he created.

Tom Kernes shows some really unique carbon fiber tubing he recently got. The woven fibers are accented with copper. Tom also shows a scratch-built rocket that was built from normal phenolic tubing that he treated with fiber glass.

Rick Bosworth's Doritos rocket was eaten by the family dog... kind of like the dog ate my homework?☺ The rocket was built from a Doritos can and had fins that looked like Doritos chips.

Kevin Trojanowski shows a man-rated reserve parachute he got recently. He bought two of them for \$400 a piece.

Kevin Rich shows how to deploy a parachute from a deployment bag.

Greg shows some meteorites from his personal collection.

Arley shows some of his latest creations including his extra detailed Estes Exo-Skell, a Crayon bank from Toys R Us he plans on making into a rocket, and Candy's 1999 Graduator (built from a LOC Graduator) which he fixed up.

Collin Holcomb and his students discuss with the club what they are doing for the Team America contest.

Election held for officers. Tom Kernes is now treasurer. All other officers will remain the same.

Meeting adjourned at 21:30.✦



Tom Kernes presents one of his latest creations along with some special carbon fiber tubing.



A close up of Tom's copper tinted tubing.



Kevin Trojanowski presents his parachute.



T.H.O.R.

**The Heartland
Organization of
Rocketry**

What is THOR?

The Heartland Organization of Rocketry (THOR) is both an officially sanctioned Prefecture of the Tripoli Rocketry Association (Tripoli Nebraska #46) and Section (#562) of the National Association of Rocketry. THOR strictly adheres to the safety guidelines established by both rocketry associations.

THOR has been actively involved in the hobby of model rocketry (low power, high power, and experimental) in southeast Nebraska and southwest Iowa since the early 1990's. THOR members, along with their projects, have appeared on national television programs such as *Rocket Challenge* (The Discovery Channel), *Extreme Machines* (The Learning Channel), *Junkyard Wars* (TLC), and *Ripley's Believe It Or Not* (TBS).

When and where does THOR meet?

Meetings are usually held the first Tuesday of the month at the **La Vista Community Center at 8116 Parkview St., La Vista, NE** – turn east at the Sinclair Gas Station on 84th St. and go a block east (look for the big US flag). Visitors are welcome to attend.

When and where does THOR fly?

From March through November, THOR conducts one low power launch (1/4A – F class) and one high power launch (1/4A – N class) each month. Low power launches are held at the soccer fields south of 66th and Harrison in La Vista, NE. High power launches are held east of Pickrell, NE which is 30 miles south of Lincoln. THOR conducts at least two three-day high power rocketry events each year: **Fire on the Farm** and **Nebraska Heat**.

THOR's Hammer...

THOR's Hammer is the official newsletter of THOR. On average, it is published on a bimonthly basis. **THOR's Hammer** is available, in PDF format, through its website (<http://www.nerocketry.org/>) or is mailed to those without Internet access. Members are welcomed to contribute articles and pictures to the newsletter.

For additional information...

For any additional questions or to check on the status of an upcoming launch, call THOR locally at **(402) 896-2069** or toll free at **1-888-546-0396** (there is a voice mail option at the end of the message). Interested parties may also write their inquiries to the address at the right and are also welcome to contact any of THOR's officers.

**THOR Membership Application
Personal Information**

Name: _____

Address: _____

City: _____

State: _____ Zip Code: _____

Phone Number: _____

E-mail: _____

Hobby Information

How long have you been in model rocketry: _____

Do you belong to a national rocketry organization - enter your membership number to the applicable organization:

NAR# _____ TRA# _____

Are you certified for high power rocketry – check mark your applicable TRA and/or NAR Certification Level:

Level 1 _____ Level 2 _____ Level 3 _____

Membership Rates

Half year membership rates will be divided by 2 and will add \$1. Write you check payable to "The Heartland Organization of Rocketry" or "THOR". Mail check and form to the below address or bring to the next meeting.

- Family Membership - \$36
- Senior Membership (18 and over) - \$24
- Junior Membership (18 and under) - \$12
- Correspondence Membership (members over 50 miles away from Omaha) - \$10

I agree to comply with THOR's policies as pertains to the safety guidelines set forth by Tripoli and the NAR. Failure to do so or conduct deemed unbecoming may result in expulsion from the club.

Signature: _____

Dated: _____

**The Heartland Organization of Rocketry
8210 S. Cherrywood Drive
Lincoln, NE 68510**

**Membership in The Heartland Organization of
Rocketry is open to all interested parties.**