



T.H.O.R.

The Heartland Organization of Rocketry

THOR's Hammer

The official newsletter of The Heartland Organization of Rocketry!

Contents

July/August Calendar – Page 2

Editor's Hammer – Page 3

Fire on the Farm VII – Page 4

NASA's Space Place – Page 14

Meeting Minutes – Page 15

July 2004

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Volume 11 Number 4



Special Fire on the Farm VII edition! (Richard Burney)

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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.

July/August 2004 Calendar

July

Event: LDRS XXIII.

When: High power commercial flying from Thursday the 1st through Sunday the 4th. Experimental flying on Monday the 5th and Tuesday the 6th.

Where: Geneseo, NY.

Description: Large and Dangerous Rocket Ships number 23! This is TRA's big, national high power launch of the year.

For More Information:

<http://www.gorocketry.com/brs/LDRS23/>

Event: July Meeting.

When: Tuesday the 6th, 7:00 to 10:00 PM.

Where: La Vista Community Center.

Event: Low Power Launch.

When: Sunday the 11th, Noon to ?

Where: La Vista Sports Complex.

Fee: Free.

Description: Low power sport flying.

Event: High Power Launch.

When: Saturday the 24th, 9:00 AM to 5:00 PM.

Where: Pickrell, NE.

Ceiling: 15,000' MSL (13,650' AGL).

Fee: \$5.

Description: High power and low power sport flying.

For More Information: Check the rocketry hotline for any delays or cancellations if weather looks questionable.

Event: NARAM 46.

When: Saturday July 31st through Friday August 6th.

Where: The Plains, VA.

Description: NAR's week of model rocketry competition. Typically there is a lot of sport and some high power flying, too.

For More Information: <http://www.naram.org/>

August

Event: Low Power Launch.

When: Sunday the 1st, Noon to ?

Where: La Vista Sports Complex.

Fee: Free.

Description: Low power sport flying.

Event: August Meeting.

When: Tuesday the 3rd, 7:00 to 10:00 PM.

Where: La Vista Community Center.

Event: Offutt AFB Air Show.

When: Saturday the 21st and Sunday the 22nd.

Where: Offutt AFB, Bellevue, NE.

Event: High Power Launch.

When: Saturday the 28th, 9:00 AM to 5:00 PM.

Where: Pickrell, NE.

Ceiling: 15,000' MSL (13,650' AGL).

Fee: \$5.

Description: High power and low power sport flying.

For More Information: Check the rocketry hotline for any delays or cancellations if weather looks questionable.

Editor's Hammer

By Richard Burney, Secretary and Newsletter Editor

So much news!...

Due to all the recent news and developments regarding THOR's recent launches and some of the major developments on the amateur/private rocketry front (**Ky Michaelson's CSXT** and **Burt Rutan's Space Ship One**), the normal July/August issue has been broken up into two separate issues... if I hadn't, this newsletter might have possibly ended up being 30 pages or more in length! The main focus of the July issue will be Fire on the Farm VII. The August issue, which I plan to send out to everybody a few days latter, will mainly focus on the CSXT's successful flight into space along with Space Ship One's recent flight to over 40 miles up. Definitely some exciting times!

Ronald Reagan...

On Saturday June 5th America's 40th President, **Ronald Wilson Reagan**, passed away after a 10 year long fight with Alzheimer's disease at the age of 93. As a tribute, I have included below his address to the nation on January 28th, 1986 just hours after the **Space Shuttle Challenger** explosion. Just like the crew of the Challenger, Ronald Reagan has "slipped the surly bonds of earth" to "touch the face of God."

Ladies and gentlemen, I'd planned to speak to you tonight to report on the state of the union, but the events of earlier today have led me to change those plans. Today is a day for mourning and remembering. Nancy and I are pained to the core by the tragedy of the shuttle Challenger. We know we share this pain with all of the people of our country. This is truly a national loss.

Nineteen years ago, almost to the day, we lost three astronauts in a terrible accident on the ground. But we've never lost an astronaut in flight; we've never had a tragedy like this. And perhaps we've forgotten the courage it took for the crew of the shuttle; but they, the Challenger Seven, were aware of the dangers, but overcame them and did their jobs brilliantly. We mourn seven heroes: Michael Smith, Dick Scobee, Judith Resnik, Ronald McNair, Ellison Onizuka, Gregory Jarvis, and Christa McAuliffe. We mourn their loss as a nation together.

For the families of the seven, we cannot bear, as you do, the full impact of this tragedy. But we feel the loss, and we're thinking about you so very much. Your loved ones were daring and brave, and they had that special grace, that special spirit that says, "Give me a challenge and I'll meet it with joy." They had a hunger to explore the universe and

discover its truths. They wished to serve, and they did. They served all of us.

We've grown used to wonders in this century. It's hard to dazzle us. But for 25 years the United States space program has been doing just that. We've grown used to the idea of space, and perhaps we forget that we've only just begun. We're still pioneers. They, the members of the Challenger crew, were pioneers.

And I want to say something to the school children of America who were watching the live coverage of the shuttle's takeoff. I know it is hard to understand, but sometimes painful things like this happen. It's all part of the process of exploration and discovery. It's all part of taking a chance and expanding man's horizons. The future doesn't belong to the fainthearted; it belongs to the brave. The Challenger crew was pulling us into the future, and we'll continue to follow them.

"The future doesn't belong to the fainthearted; it belongs to the brave." – President Ronald Reagan

I've always had great faith in and respect for our space program, and what happened today does nothing to diminish it. We don't hide our space program. We don't keep secrets and cover things up. We do it all up front and in public. That's the way freedom is, and we wouldn't change it for a minute. We'll continue our quest in space. There will be more shuttle flights and more shuttle crews and yes, more volunteers, more civilians, more teachers in space. Nothing ends here; our hopes and our journeys continue.

I want to add that I wish I could talk to every man and woman who works for NASA or who worked on this mission and tell them: "Your dedication and professionalism have moved and impressed us for decades. And we know of your anguish. We share it."

There's a coincidence today. On this day 390 years ago, the great explorer Sir Francis Drake died aboard ship off the coast of Panama. In his lifetime the great frontiers were the oceans, and a historian later said, "He lived by the sea, died on it, and was buried in it." Well, today we can say of the Challenger crew: Their dedication was, like Drake's, complete.

The crew of the space shuttle Challenger honored us by the manner in which they lived their lives. We will never forget them, nor the last time we saw them, this morning, as they prepared for their journey and waved good-bye and "slipped the surly bonds of earth" to "touch the face of God."✚

Fire On The Farm 2004

Article by Kevin Trojanowski

Pictures by Richard Burney

Here in the Midwest, to many folks April means planting season. To THOR (The Heartland Organization of Rocketry) and our fellow rocketeers, it means it is time for the first "big" launch of the year. To us a "big" launch means 30 or more registered fliers, which may be small to some, but it sure keeps us happy!

Up until 9/11, Fire On The Farm was held in Breda, Iowa, as a joint effort between THOR and ISOAR (Iowa Society of Amateur Rocketeers). After the terrorist attacks, we were unable to obtain reliable waivers for the Breda site so the launch was moved to THOR's Pickrell, Nebraska launch site. At the same time, ISOAR decided to drop out of co-hosting the event. While the ISOAR support has been missed these past two years, the event continues to be a success.

Friday, April 30th...

As is standard for most three-day launches, Friday was experimental day, with Saturday and Sunday being for commercial motors. The Friday date was eagerly anticipated by a small group who were anxious to launch their first experimental flight, having just started making motors last fall, with several successful test-firings. In addition, the group consisting of Rick Bosworth, Matt Jones, Don Rice and Kevin Trojanowski were also planning to static fire their first 3-inch motor. All motors were the relatively well-known Wimpy Red formulation developed by Tony Alcocer.

While the excitement level was high, the cloud ceiling was not and Friday proved to be an overcast, dreary day with sporadic light rain. The weather obviously meant that no flying could take place, but a little rain cannot stop a dedicated group from firing a few motors. With the assistance of a few spectators, the group pulled out the test stand and set up the 2-grain 3-inch Wimpy Red motor.

The cameras were rolling, the computer was reading data from the load cell and the countdown was started. At zero, the button was pushed and the motor came to life. Unfortunately, as the motor was coming up to full thrust it suffered a cato, destroying the case, doing some damage to the test stand and demolishing the load cell. Research is still underway to determine exactly what caused the problem, although possible culprits are grain fracture from removing

the coring rod or improper measurement of one of the components.

After picking up the pieces of unburned propellant, the group took a look at the case and decided that they were merely expressing themselves and decreed the case "Rocket Art".

Following the excitement of the cato, Don felt the need for some success, so he pulled out his micro hybrid. It is amazing how successful one dedicated rocketeer can be when given \$10 worth of igniters, a short piece of thermalite and a stubborn motor. After watching Don go through much consternation and several igniters, a fellow flier offered him a piece of thermalite, which finally coaxed the motor into firing.

Due to lousy weather, the creation of rocket art and the firing of the micro hybrid were the only events of the day. Saturday would be a new day, so everyone headed home, confident that the weekend would provide an opportunity for greater success.

Saturday, May 1st...

During the Saturday morning drive to the launch site the weather was much more promising – bright, clear skies and minimal wind. Of course, being Nebraska, the weather was just teasing us and the wind picked up around the time the waiver opened. Fortunately we are accustomed to dealing with the wind and the 12 to 15 MPH winds, while less than ideal, are considered part of the price of flying rockets in Nebraska.

We knew a few days in advance that Kent Burnett of Giant Leap was not feeling well, and would not be attending the launch. So folks had placed their orders with FlyFast, in anticipation of Matt Jones's ability to deliver motors. Those plans were quickly dashed when a blown engine stopped Matt short approximately two hours from the launch site. This also put a crimp in the plans of a few of us, including myself, who store their motors with Matt.

While the lack of motor deliveries on Saturday put a damper in a few folks' plans, many fliers already had their motors in-hand, and several were kind enough to offer to make their personal inventories available to anyone needing something for a certification flight.

The big buzz of the day was that Dave Leininger of Minnesota had brought a HyperTEK M along for his level three certification. While we see a fair number of certification flights in Pickrell, M flights, and especially Level 3 certification flights, are a rarity. While Dave was prepping in the morning, just about everyone made sure to drop by to see what he was up to, as well as to offer words of encouragement.

While Dave was prepping his rocket, others were making flights. Ted Geisert flew his USA-1 on a cluster of four G35s. Unfortunately only one motor lit, resulting in a spectacular lawn-dart. The nosecone stuck in the ground and the body tube broke in half.

One of the more entertaining flights of the day was Jacob Pursley with his Football Pad. This unique creation is a junior sized football with a launch lug up the middle and two motors in one end, both canted to provide spin stabilization. The Football was punted on a pair of C6s, which was sufficient to attain about 50 feet in altitude. Jacob did not achieve much hang time, and the football landed in some tall, dry grass before the ejection charges had fired. After putting out the small ensuing fire, we pointed out to Jacob that while we call the launch Fire On The Farm, we do not mean it literally. Regardless of the minor mishap, everyone thoroughly enjoyed Jacob's creation and it was a point of discussion for the rest of the weekend, as well as the club meeting on the following Tuesday.

Terry Smemo, another of the Kansas City area contingent who traveled to the launch with Jacob, flew another oddity, in the form of a safety cone he called the Safety Rocket. The Safety Rocket was launched on an I205 for a beautiful, straight boost. Apogee is where things began to go wrong, with the shock cord separating, resulting in the motor assembly coming down on the parachute while the cone itself came in ballistic.

Having witnessed the record of her traveling companions, Karen Wiley felt the need to show that the Kansas City folks can indeed have successful flights. Karen flew the fourth version of her Toaster rocket, which we have seen several times at the Pickrell field, on an I285. As is typical of the Toaster, the flight was beautiful, with an optimal recovery.

Larry Mills, a frequent attendee from Missouri, flew his Glueless rocket. The amazing thing is that during the entire weekend, there was not an AMRAAM in sight. For folks who know Larry but cannot remember his name, The AMRAAM Guy is a sufficient description, as Larry owns and flies AMRAAMs in a wide variety of sizes from 29mm up to an 11 foot tall monster.

The Glueless rocket is a special creation of Larry's which uses heavy phenolic body tube with aluminum couplers held in place by machine screws. The entire rocket is screwed together and performs beautifully. This flight was on a J570, which is a fair amount of motor for a 5 pound rocket that is only 1 3/4" diameter. The rocket screamed to over a mile in altitude and had an optimal deployment. Using his radio tracking

equipment, Larry was able to quickly find and recover the rocket.

Around mid-day, Dave Leininger got his Level 3 project ready to go. The rocket, named Major Flagellation, is a beefy 11' 3 1/2" long, 8 1/4" in diameter and weighs in at 52 1/2 pounds fully loaded. Dave flew the rocket on a HyperTEK M1010 EFX with an RRC2, P5 and Magnetic Apogee Detector for electronics. When Dave had everything ready to go, the flight was announced and you could feel the excitement in the crowd as the nitrous fill was started. After the fill completed, the LCO gave a 10 count and at zero the motor fired.

The rocket screamed to 8,633 feet with the crowd cheering the whole way. The HyperTEK motor produced that unique vibrating sound that is so distinctive for these motors. The electronics deployed the drogue right at apogee and the main came out at 1,000 feet, earning Dave his Level 3. Congratulations to Dave on a job well done!

In the afternoon, Don Rice flew an Art Applewhite 12" 38mm flying saucer. These are a fun little creation of Art's that use amazingly large motors, yet stay very low to the ground. You can almost hear the motor grunt as it struggles to propel this high-drag creation into the air. While we have seen Don fly the saucer on H153s, on Saturday he stuck with the G69, which provided a nice flight. Flying saucers are always a crowd pleaser.

Later in the day, Andrew Wimmer pulled out the 3-stage rocket from the West Point, Nebraska, Team America Rocketry Challenge. During practice flights, Andrew's team used the rocket to attain an altitude of 1,232 feet, only 18 feet from the target altitude! Unfortunately, during the actual qualification flight, the rocket only attained 1,143 feet. Andrew and his parents are regulars at our club events, so we have seen much of Andrew's work and we are confident that he will be back next year and get his team into the finals.

For Saturday, Andrew decided to give the well-worn rocket one last flight. Prior to this point, it had been used for over a dozen practice flights, so the parts were a bit worn, the rocket was not quite as rigid as it had been originally. Andrew flew the rocket on a G80 staged to a D12 staged to an E9. The flight was slightly wobbly, due to the well worn parts, but was otherwise perfect. Including qualification flights, this was the 18th flight for this rocket.

Saturday closed out with 63 motors burned for a total of 18,486 total Newton-seconds. The average motor was 293 Newton-seconds, a nice sized H.



Mark Havel and *Erin's Angel*. *Erin's Angel* is named in memory of Mark's daughter.



"Where's Rich Burney's truck?" Rick Bosworth and his Launch Pad Exocet.



Liftoff on a Pro38 I285.



Liftoff on 2 Estes D12-5's. Fortunately, it missed it's target!



Fire on the Farm VII was not just about high power rocketry! From left to right: Caleb Pahl, Amie Engelman, and Cody Engelman.



The second to go up was Cody's Estes Alpha on a B6-4.



The first of the three to go up was Caleb's Estes Wizard on a B6-4.



Amie's rocket was last, powered by a C6-5.



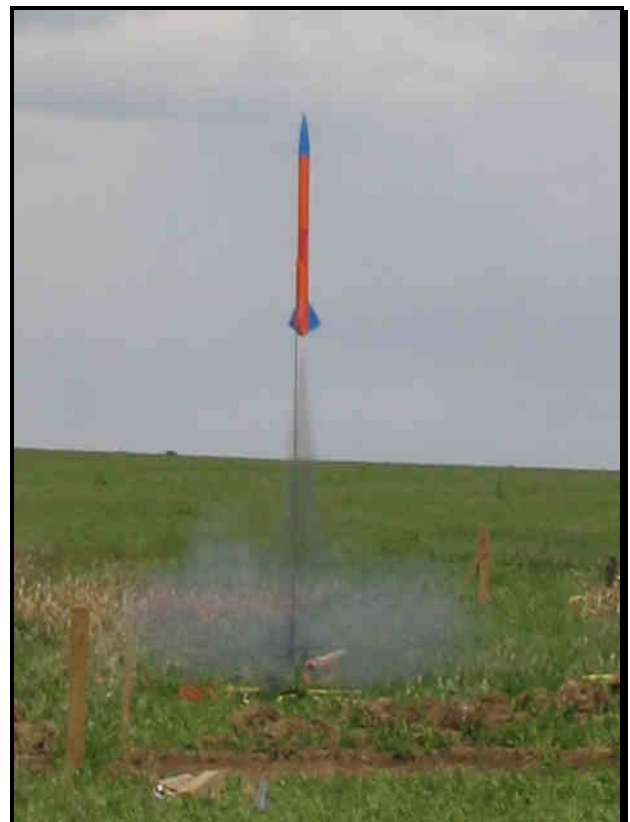
A "You Betchas!" (of Rocket Challenge fame) reunion! Dave Leninger's *Major Flagellation* was Dave's Level 3 attempt. From left to right: Lincoln Kibsgaard, Dave, and Brian Elfert.



Doug Buhрман with his PML Quasar.



Liftoff on a HyperTEK M1010. *Flagellation* reached an altitude of 8,366'. Congratulations on a successful Level 3, Dave!



Liftoff on a G80.



Scott Pearson and his Nike variant.



Andrew Wimmer and the three-stage rocket he used as his entry into the Team America contest. For this flight, a G80 was used for the booster, a D12 ignited by a PET2 timer for the second booster, and an E9 for the third stage. Two eggs were in the payload section.



Liftoff on a Pro38 I285.



Liftoff! All three stages properly staged and the eggs came back intact.



Joe Michel's and his Der Red Max 2.5x upscale. Joe Der Red Max survived being lawn-darted at our field last November.



Karen Wiley of "The Rocket Babes" fame (Rocket Challenge) and her Toaster Version 4. Notice the "toast" shaped fins!



Liftoff on an AeroTech H210 Redline.



Liftoff on a Pro38 I285.



Time for the strange and bizarre! Brian Elfert and his *Spool* rocket.



Now talking about "strange and bizarre!" Terry Smemo and his *Safety Rocket*.



Liftoff on a Pro38 J330.



Liftoff on a Pro38 I205. The *Safety Rocket* lawn darted due to the rear-ejecting motor mount separating from the cone with the chute.

Sunday, May 2nd ...

Sunday morning was promising with clear blue skies and minimal wind for the drive in. Of course, the weather report promised the wind would pick up as the day progress, and the weather reports were correct. By the time the waiver opened, we were back to our standard Nebraska winds. As the day progressed, we quickly discovered that the surface winds were much worse than those over 1,000 feet and rockets did not drift as badly as we would have guessed.

More promising for Sunday was the presence of Matt from FlyFast Industries, with our motor deliveries. For a few folks who were only able to attend on Saturday, the deliveries were a day late, but for many who had eagerly anticipated some high power motors, the day was looking good!

One of those waiting for a motor was Barry Conner, who planned on making his first K flight with his Bullshark, a PML Bullpup with a really nice shark's mouth airbrushed on the nosecone. At 12 pounds total weight, the Bullshark boosted quickly on the K660 Barry had selected. The flight appeared to be nominal until Barry returned, at which point he showed us the severe zipper the rocket experienced. To Barry's credit, he shrugged off the damage and started consulting with other fliers on recommendations on how to fix it. By the end of the day, Barry was excited about the opportunity to fix the damage, and in the progress, make some improvements.

Scott Fraiser came to the launch with a nicely built PML Hydra in hand, as well as a few questions regarding motor retention for his planned certification flight on an I205. The presence of a tailcone presented a different challenge, and friction fitting with masking tape was discouraged, especially due to the presence of a piston. The final solution was to drill small holes through two of the fins near the body tube and run a piece of wire through one hole, around the nozzle, up through the second hole and back. This held the motor nicely, allowing Scott to earn his certification. Congratulations, Scott!

Later in the morning Thomas Kernes and his children, Elena and Ian, setup their Estes kits on the low power pads. Elena flew her Purple Alex on an A8-3, Ian flew on Alpha III on an A8-3 and dad flew a Fat Boy on a C6-7. These three showed what a great family activity this is, with three perfect flights.

Mid-morning on Sunday we saw a face we have not seen for a while, Mark Uhlenkamp, our former Prefect. Mark has been unable to participate for the past few years, so it was great

to see him back again. Mark brought along his "experienced" Thoy Falcon which is painted to look like a giant maroon crayon and is called Color The World. The rocket was flown on a Cesaroni J210 for a really nice flight. Welcome back Mark!

Late in the morning, Brian Elfert flew Old Yeller on a HyperTEK M1000. Having two M flights on the same weekend is a rare treat for us, so everyone was excited to see Brian's flight ready to go. The boost was beautiful, but at apogee the drogue did not appear and a collective groan went up from the crowd. As the rocket gained speed on its way down, all along the flight line you could hear folks yelling for a parachute. Just as the rocket disappeared behind a hill, the main could be seen coming out and instantly shredding. The rocket was a complete loss and Brian was a bit dejected, which is understandable.

The afternoon saw several flights, including Terry Smemo returning with an interesting creation he called the Picnic Rocket. This rocket is made entirely from plastic picnic ware from a department store, with cups forming the body tube, a goblet with the bottom cut off as the nose and pieces of plates as fins. The rocket is extremely colorful and immediately caught the eye of everyone who saw it. Terry prepped the rocket with a G104 and hand a picture-perfect flight.

Andrew Wimmer returned on Sunday for more flying, this time with his upscale Estes Corkscrew, which he flew with his dad, George. The upscale Corkscrew is 66" long, 3" diameter and weighs 7 pounds. Andrew and George flew the rocket on an I285 for a nice flight with a visible corkscrew in the smoke trail.

Sunday we gained our second member in a unique fraternity in which membership is not necessarily desirable. One flier, who shall remain anonymous (although we all know who he is) forgot that Pro38 motors need that nifty aluminum tube in order to work properly, resulting in a motor failure at ignition. This helps prove how important it is to not be distracted while prepping a rocket for flight.

Sunday closed out with only 28 total motors burned, but an increase to 20,324 total Newton-seconds for the day, for an average of 725 Newton-seconds per motor.

Fire On The Farm 2004 was a big success. While we only had a total of 32 registered fliers, we came, we flew, we chatted with fellow rocketeers, we had some fun and nobody got hurt. That, to me, is the formula for a great launch! ✨



Richard Burney and his *Mobile Rocket Gundam*. *Gundam* was rebuilt over the winter after its flight last October didn't go so well.



"Long time no see!" After a several year absence, Mark Uhlenkamp attended his first THOR high power launch in a long time.



Liftoff on a Pro54 K660. The altitude achieved was 3,290'. A successful flight!



Mark's "Crayon" style rocket, *Color the World*, "colors" the sky with a Pro54 J210.

NASA's Space Place

<http://spaceplace.nasa.gov/en/kids/>

Far-out Ideas

By Patrick L. Barry

Ever had a great idea for a new spacecraft propulsion system, or for a new kind of Mars rover? Have you ever wondered how such "dinner napkin sketches" evolve into real hardware flying real missions out in the cold blackness of space?

The road to reality for each idea is a unique story, but NASA has defined some common steps and stages that all fledgling space technologies must go through as they're nursed from infancy to ignition and liftoff.

Suppose, for example, that you've thought of a new way to shield astronauts from harmful radiation during long space missions. In the first stage, you would simply "flesh out" the idea: Write it down, check the physics, and do some quick experiments to test your assumptions.

If the idea still looks good, the next step is to build a "proof of concept." This is the "science fair project" stage, where you put together a nifty demonstration on a low budget—just to show that the idea can work.

For your radiation-shielding idea, for example, you might show how a Geiger counter inside a miniature mock-up doesn't start clicking when some radioactive cobalt-60 is held nearby. The shielding really works!

Once that hurdle is cleared, development shifts into a higher gear. In this stage, explains Dr. Christopher Stevens of JPL, the challenge isn't just making it work, but making it work in space.

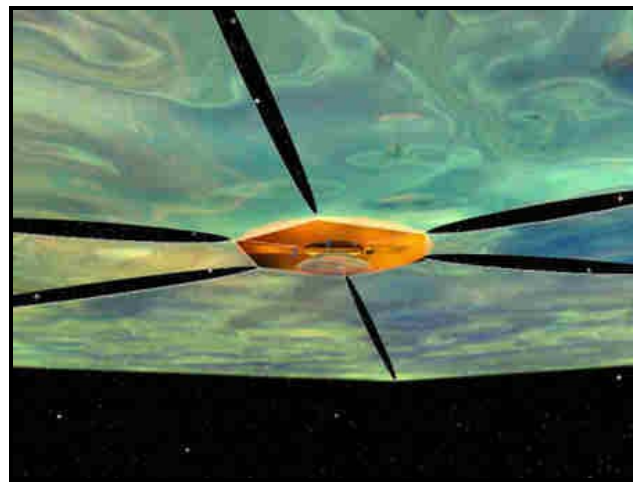
"Some conditions of space flight cannot be adequately simulated here on Earth," Stevens says. Cobalt-60 doesn't truly mimic the diverse mixture of radiation in space, for example, and the true microgravity of orbit is needed to test some

technologies, such as the delicate unfolding of a vast, gossamer solar sail. Other technologies, such as artificial intelligence control systems, must be flight tested just because they're so radically new that mission commanders won't trust them based solely on lab tests.

Stevens is the manager of NASA's New Millennium Program (NMP), which does this sort of testing: Sending things to space and seeing if they work. In recent years the NMP has tested ion engines and autonomous navigation on the Deep Space 1 spacecraft, a new "hyperspectral" imager on the Earth Observing 1 satellite, and dozens of other "high risk" technologies.

Thanks to the NMP, lots of dinner napkin sketches have become real, and they're heading for space. You can learn more at the NMP website, nmp.nasa.gov/.

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



This is just one idea of how a solar sail could be used to power an interstellar probe. A solar sail is one possible type of new technology that NASA's New Millennium Program would test in space before it would be risked on a scientific mission.

THOR Meeting Minutes

Compiled by Richard Burney, Secretary

THOR Meeting Minutes 5/4/04

Attendance: Richard Burney, Greg Rothman, Sherri Bosworth, Rick Bosworth, Kevin Trojanowski, Matt Jones, Barry Connor, Arley Davis, Denis Gilbert, Joe Ebacher, Troy Muller, Bruce Lee, Jon Damme, Nathan Warner, Scott Fraiser, and Thomas Kernes.

Meeting starts at 19:15.

Bruce briefly talks about **Fire on the Farm VII (2004)** which was held this past weekend.

Bruce reports that **Jerry Irvine** has been fined in excess of \$50,000 for shipping his rocket motors as "airplane parts."

Bruce talks about the current situation regarding the ATF case ruling. Single-use, preassembled motors are considered **Propellant Actuated Devices (PAD's)** and now currently can be sold and used with out an **LEUP**.

The finalists for **NAR's Team America** contest include the team from the high school from Waterloo, NE. Andrew Wimmer's team from West Point Jr.-Sr. High School placed 107th and thus ended up as an alternate. Here's hoping that Andrew's team makes it next year!

The next low power sport launch is scheduled for Sunday, May 16th. The next high power launch I scheduled for Saturday, May 22nd.

Arley recently built a guide which shows the size of nearly all existing Estes tubes. For each tube, Arley cut an end off of each tube and glued it to the board.

Kevin Trojanowski shows the remains of his motor casing in which he was testing an M class experimental motor on the EX day of FOTF VII.

Rich Burney talks about his Pro54 K660 flight he did with his **Mobile Rocket Gundam** on Sunday. Rich discusses some of the digital photo printing options available at some of the local department store chains.

FOTF VII stats – 32 flyers and an intake of \$500+ for the club.

Rich finishes off the meeting by showing some of the pictures he took on his digital camera on the TV.

Meeting adjourned at 20:45.

THOR Meeting Minutes 6/1/04

Attendance: Richard Burney, Kevin Trojanowski, Alex Trojanowski, Rick Bosworth, Arley Davis, Jon Damme, Bruce Lee, Jeff Moon, Nathan Warner,

Denis Gilbert, Greg Rothman, Scott Fraiser, and Bill Richardson.

Meeting starts at 19:10.

Bruce talks about the **CSXT's** successful flight into space a few weeks ago. Bruce shows pictures from the project and the launch itself. After the payload section was found and things were found, Bruce along with Ky and Jodi Michaelson took a trip to San Francisco. Bruce and company got to visit speed record legend Craig Breedlove. A 1 hour special on the CSXT will air on the Discovery Channel this fall. A biography on Ky Michaelson is also scheduled to air.



Bruce Lee (r) and Craig Breedlove (l). (Bruce Lee)

Arley shows some of the new Fliskits that are now out.

Nebraska Heat VII will be held on the weekend of June 18th-20th.

Rich Burney had his ATF interview for his LEUP renewal last week. Rich should be getting his updated permit in the next week or two.

Jeff Moon shows his Level 2 rocket. Jeff built this from his Moon Dart which was badly damaged at the March launch at Pickrell.

LDRS XXIII will be during the July 4th weekend.

Meeting adjourned at 20:35.



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 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 to THOR members in PDF format (via e-mail) 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
6211 South 141st St.
Omaha, NE 68137**

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