



# T.H.O.R.

## The Heartland Organization of Rocketry



September 2003

---FREE---

Volume 10 Number 5



Special LDRS XXII coverage inside! Above is Kevin Trojanowski's Level 3 rocket, *Lusty Corn Maiden*. Front row (L to R): Kevin Rich, Sherri Bosworth, and Rick Bosworth. Back row (L to R): Greg Rothman, Kevin Trojanowski, Bill Richardson, Oscar Valent (of Star Rocketry; Oscar was responsible for running the Hypertek setup at LDRS), and Deb Trojanowski.

## Fall Meeting Schedule

Tuesday September 2<sup>nd</sup>, Tuesday October 7<sup>th</sup>, and Tuesday November 4<sup>th</sup>. Each meeting will start at 7:00 PM at the La Vista Community Center.

## September/October 2003 Calendar

### September

**Event:** Low Power Launch.

**When:** Sunday the 7<sup>th</sup>, Noon to ?

**Where:** La Vista Sports Complex.

**Fee:** Free.

**Description:** Low power sport flying. This is also HobbyTown's *Field of Wings* event which will be held in conjunction with our launch.

**Event:** High Power Launch.

**When:** Saturday the 13<sup>th</sup>, 9:00 AM to 5:00 PM.

**Where:** Pickrell, NE.

**Ceiling:** Our standing waiver is 10,000 MSL (8,650 AGL) for the majority of the day, with a window to 15,000 MSL (13,650 AGL) from 1PM - 3PM.

**Fee:** \$5.

**Description:** Mainly a high power event, but regular model rockets are flown, too.

**For More Information:** Check the rocketry hotline (1-402-896-2069 or 1-888-546-0396) for any delays or cancellations if weather looks questionable.

**Event:** Balls 2003

**When:** Friday the 21<sup>st</sup> through Sunday the 23<sup>rd</sup>.

**Where:** Blackrock, NV.

**Description:** The big national experimental high power rocket launch of the year!

**For More Information:** Go to [www.ahpra.org/b2k.html](http://www.ahpra.org/b2k.html)

### October

**Event:** Low Power Launch.

**When:** Sunday the 5<sup>th</sup>, Noon to ?

**Where:** La Vista Sports Complex.

**Fee:** Free.

**Description:** Low power sport flying.

**Event:** High Power Launch.

**When:** Saturday the 18<sup>th</sup>, 9:00 AM to 5:00 PM.

**Where:** Pickrell, NE.

**Ceiling:** Our standing waiver is 10,000 MSL (8,650 AGL) for the majority of the day, with a window to 15,000 MSL (13,650 AGL) from 1PM - 3PM.

**Fee:** \$5.

**Description:** Mainly a high power event, but regular model rockets are flown, too.

**For More Information:** Check the rocketry hotline (1-402-896-2069 or 1-888-546-0396) for any delays or cancellations if weather looks questionable.

## **THOR Special Flights at LDRS XXII – Part 1**

*Article by Richard Burney, Pictures as Noted*

LDRS XXII took place at the KLOUDBusters' field south of Argonia, KS starting from Thursday July 17<sup>th</sup> through Tuesday July 22<sup>nd</sup>. This is the fourth time that LDRS has been held at this site. Other than the oppressive heat (it was typically 105+ degrees each day of LDRS), the wind conditions were mostly good (...for the Midwest, Thursday was the windiest day) and the KLOUDBusters field is a nice place to fly from.

Due to the proximity of this field to southeast Nebraska, a significant portion of THOR's membership attended this LDRS. At least 5 THOR members, Kevin Trojanowski, Mark Havel, Tony Nicklin, Greg Rothman, and Don Rice, flew their Level 3 projects at LDRS; Tony, Greg, and Don were successful. Some members flew some very unique rockets such as Bruce Lee and Ky Michaelson's flying Porta Potty, *Our Stinkin' Rocket*, while numerous THOR members were involved with the 50+ foot tall *Stumpy* which undoubtedly is the world's tallest "model rocket" built and successfully flown. Larry Drake and Bruce even attempted to break Larry's old motor cluster record with their *Maxie D* which was equipped with 316 Estes D11 motors. Others were involved with some of the contests which were filmed by the First TV people for future airing on the Discovery Channel (first show on November 8<sup>th</sup>!). It was a very fun and memorable LDRS.

On the next few pages are some of the special projects and events that THOR members were involved with at LDRS. This first installment covers some of those flights and events on Thursday through Saturday. The October issue will cover Sunday and Monday. Besides the pictures that were taken at LDRS, I have also included some pictures of what it took to make some of these rockets a reality.

### **Kevin Trojanowski's *Lusty Corn Maiden* Level 3 Project**



***Lusty* in the process of being raised up on its pad. *Lusty* was flown on Thursday the 17<sup>th</sup>. (Burney)**

**Richard Burney's *Mobile Rocket Gundam***



Kevin poses with *Lusty*. Unlike *Lusty's* flight at LDRS XXI, the timer was to be triggered by its gravity switch and not by pull pin. Motor for this flight would again be a Hypertek M1000. (Burney)



Liftoff! Unfortunately, the nose cone, which was to deploy on its own chute at low altitude, deployed at apogee and drifted on its own separate way. Loss of the nose cone resulted in failure of Kevin's second Level 3 attempt. Third time's the charm! (Burney)

*Mobile Rocket Gundam* was built for the purpose of testing out possible design and construction techniques for my Level 3 project. It also commemorates the 25<sup>th</sup> anniversary of Japanese anime classic, *Mobile Suit Gundam*. (Burney)

Greg Rothman's *Blazing Glory* Level 3 Project



MRG was flown late in the morning of Friday July 18<sup>th</sup>. MRG stands 91" tall and weighs over 20 lbs fully loaded. My largest rocket yet! (Burney)



Liftoff on an AeroTech K700, which happens to be the largest motor I've flown to date. This was also the first time I used both an altimeter and timer for deploying two separate ejection charges; my first completely electric flight! (Burney)



Here I am after a very successful flight and recovery. Next stop, Level 3! (Burney)



This is the shoulder assembly for the fin canister section of *Blazing Glory*. (Rothman)



The fin and motor mount assembly. The plywood fins are thick... either 3/8" or 1/2"! (Rothman)

**Mark Havel's *Aquarius* Level 3 Project**



Greg had the three major assemblies on display at the May launch at Pickrell. Greg had the rocket with a coat of primer at Nebraska Heat VI. (Burney)



Mark and his finished *Aquarius*. (Havel)



Greg and his patriotically finished *Blazing Glory*. *Glory* was flown in the middle of the morning on Saturday the 19<sup>th</sup>. The motor for the flight was a Hypertek M1000. Besides the recovery electronics, a GPS transmitting walkie-talkie was used to help locate the rocket. Though I wasn't able to get a picture of the flight, the flight was picture perfect. Congratulations on earning your Level 3, Greg! (Burney)



*Aquarius* is readied for launch. (Burney)



*Aquarius* flew Saturday on a Hypertek M1000... motor of choice of many non-LEUP, Level 3 flyers at LDRS! Sometime after powered flight, the epoxy of the Slimline retainer weakened and the whole motor fell out ruining a successful flight. Ouch! (Burney)

**NASA's Space Place**

<http://spaceplace.jpl.nasa.gov/index.shtml>

**Careful Planning and Quick  
Improvisation Succeed in Space Biz**

*By Tony Phillips*

On December 18, 2001, ground controllers at JPL commanded NASA's Deep Space 1 (DS1) spacecraft to go to sleep. "It was a bittersweet moment," recalls Marc Rayman, the DS1 project manager. Everyone was exhausted, including Deep Space 1, which for three years had taken Rayman and his team on the ride of their lives.

DS1 blasted off atop a Delta rocket in 1998. Most spacecraft are built from tried-and-true technology-otherwise mission controllers won't let them off the ground. But Deep Space 1 was different. Its mission was to test 12 advanced technologies. Among them: an experimental ion engine, a solar array that focused sunlight for extra power, and an autopilot with artificial intelligence. "There was a good chance DS1 wouldn't work at all; there were so many untried systems," recalls Rayman.

Nevertheless, all 12 technologies worked; the mission was a big success.

Indeed, DS1 worked so well that in 1999 NASA approved an extended mission, which Rayman and colleagues had dreamed up long before DS1 left Earth-a visit to a comet. "We were thrilled," says Rayman.

And that's when disaster struck. DS1's orientation system failed. The spacecraft couldn't navigate!

What do you do when a spacecraft breaks and it is 200 million miles away? "Improvise," says Rayman.

Ironically, the device that broke, the 'Star Tracker,' was old technology. The DS1 team decided to use one of the 12 experimental devices-a miniature camera called MICAS-as a substitute. With Comet Borrelly receding fast, they reprogrammed the spacecraft and taught it to use MICAS for navigation, finishing barely in time to catch the comet. "It was a very close shave."

In September 2001, DS1 swooped past the furiously evaporating nucleus of Comet Borrelly. "We thought the spacecraft might be pulverized," Rayman recalls, but once again DS1 defied the odds. It captured the best-ever view of a comet's heart and emerged intact.

By that time, DS1 had been operating three times longer than planned, and it had nearly exhausted its supply of thruster-gas used to keep solar arrays pointed toward the Sun. Controllers had no choice but to deactivate the spacecraft, which remains in orbit between Earth and Mars.

Rayman has moved on to a new project-Dawn, an ion-propelled spacecraft that will visit two enormous

asteroids, Ceres and Vesta, in 2010 and 2014. "Dawn is based on technologies that DS1 pioneered," he says.

Even asleep, DS1 continues to amaze.

Find out more about DS1 at

<http://nmp.jpl.nasa.gov/ds1> . For kids, go to <http://spaceplace.nasa.gov/ds1dots.htm> to do an interactive dot-to-dot drawing of Deep Space 1.

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



**This was the final image of the nucleus of comet Borrelly, taken just 160 seconds before Deep Space 1's closest approach to it. This image shows the 8-km (5-mile) long nucleus from about 3417 kilometers (over 2,000 miles) away.**

**THOR Meeting Minutes**  
*Compiled by Richard Burney, Secretary*

**THOR Meeting Minutes 7/1/03**

**Attendance:** *Richard Burney, Greg Rothman, Bruce Lee, Andrew Wimmer, George Wimmer, Kevin Rich, Jeff Moon, Arley Davis, Jacob Davis, Denis Gilbert, Dan Crammer, Larry Kopiasz, Eric Kopiasz, Rick Bosworth, Scott Pearson, Jon Damme, Doug Buhrman, Barry Connor, and Larry Drake.*

**Meeting starts at 19:15.**

Bruce shows the casing, components and even a slug for his Mostly Missiles N3000. Bruce will be flying it in the *Bomb Pop* at one of the experimental days at LDRS.

Greg shows the GPS tracking units he will use in his Level 3 rocket. The units also act as walkie-talkies.

The flying Porta Potty will now be powered by a twin set of M1419's, thus it will now be able to fly on one of the commercial days at LDRS.

A verdict in the Tripoli/NAR lawsuit against the ATF is still pending.

Jon Damme found some AeroTech F21's at a local Hobby Lobby (*Editor's note: a week later, I bought them up!*). Jon shows some of the equations equating the size of a tube or bolt one can stick between a tube cluster.

Kevin Trojanowski shows the work he has done on fixing up the *Lusty Corn Maiden*. Kevin has been painting a number of members' rockets for LDRS.

Kevin next shows the 50+ foot tall rocket that he, Bruce, Greg, Kevin Rich, and Larry have been working on (the aptly named *Stumpy*). A plywood structural frame will be used internally in some of the tube to help stop the tube from flexing in flight.

Larry Drake has finished most of the construction to *Maxie D*.

Bruce mentions that Larry's rocket and *Stumpy* could qualify as possible entries into Guinness.

Barry Connor shows the work he has done to his PML Bulldog. Barry hopes to do his Level 2 with it in August.

Arley Davis shows his special project for LDRS, *Alien with an Attitude*. Very reminiscent of some old Estes "rocket man" kits! It will be powered on a J or a K.

Jeff Moon is hoping to fly his *Moon Magg* (a LOC Minie Magg) at LDRS for his Level 1 and 2 attempts.

Kevin Rich has been doing a lot of parachute and shock cord work for various members' LDRS projects.

Andrew Wimmer and his father George show the work they have been doing on an upscale of the Estes Corkscrew. It will be flown at LDRS.

Low power sport launch will be on Sunday. It will be kept short due to the priority of people getting their LDRS projects ready.

High power launch in August will be moved to the 16<sup>th</sup>. THOR will be having a display at the Offutt Air Show on the 23<sup>rd</sup>-24<sup>th</sup>. Work also needs to be wrapped up for the Pickrell site.

Treasurer's report - @\$500 was made from Nebraska Heat VI.

Tripoli legal defense raffle is held.

**Meeting adjourned at 21:00.**

## **THOR Meeting Minutes 8/5/03**

**Attendance:** Richard Burney, Doug Buhrman, Nathan Warner, Kevin Trojanowski, Greg Rothman, Kevin Rich, Rick Bosworth, Doug Holverson, Bruce Lee, Jeff Moon, Arley Davis, Barry Connor, Tom Kernes, Denis Gilbert, Eric Kopiasz, Larry Kopiasz, Tony Nicklin, Bill Richardson, and Larry Drake.

**Meeting starts at 19:05.**

Larry Drake shows the footage he shot with his camcorder of numerous flights at LDRS XXII.

The first episode of *Rocket Challenge* will air on the Discovery Channel on November 8<sup>th</sup>. The featured flights shown from LDRS in this first program will be *Our Stinkin' Rocket* (Ky and Bruce's flying Porta Potty) and one other rocket. The "From the Ground Up" contest, that was held on Monday July 21<sup>st</sup>, will probably be aired on the second episode of *Rocket Challenge*.

The issue of the recent press conference where Senator Frank Lautenberg (D-New Jersey) and Senator Charles Schumer (D-New York) besmirched model/high power model rocketry along with pushing for the blocking of Senator Mike Enzi's (R-Wyoming) is discussed.

Doug Holverson shows the work he has been doing on some old Estes and Centuri kits; these are mainly re-releases (Estes) and clones (Centuri).

Kevin Trojanowski's second attempt for Level 3 at LDRS XXII using his *Lusty Corn Maiden* went much better than his attempt at LDRS XXI, but the nose cone deployed prematurely causing it to drift out of sight thus preventing him from certifying.

Nathan Warner is introduced to the group.

Doug Buhrman talks about his Level 2 plans for next weekend.

Bill Richardson talks about his LDRS XXII experiences.

Only 138 of the 300+ D11's lit in Larry and Bruce's *Maxie D*. This may have resulted from the rocket being aimed at an angle causing the black powder in the flash pans to shift. The plan is to recycle the surviving motors for a possible retry.

Denis Gilbert talks about his two tries at LDRS XXII to get his Level 2 Certification. All together, it took Denis a total of FOUR flight attempts before finally getting his Level 2! Congratulations, Denis!

Tom Kernes' shows *Big R.O.Y 2*. *Big R.O.Y 1* was shredded on a J330 at Nebraska Heat VI. (*Editor's Note: Big R.O.Y. 2 was subsequently lost at the launch on the 16<sup>th</sup>. Tom has a lot of motors, parts, and rockets floating around out there!*)

Barry Connor shows his virtually complete PML Bulldog ("*Bullshark*") which he will fly on a J275 for his Level 2 on the 16<sup>th</sup>.

Tony Nicklin had a successful Level 3 flight at LDRS. Tony shows the work he has done on his PML Explorer and the electronics bay he built for it.

The Offutt Air Show will be on the 23<sup>rd</sup> and 24<sup>th</sup>. It will need to be decided in the upcoming days on who will man the display and what rockets will be displayed.

Kevin Trojanowski talks about the costs for our Hypertek hardware and the costs that members may have to pay to use it.

Discussion is made for the next steps to be taken and the schedule for completing the improvements to the Pickrell site.

**Meeting adjourned at 21:20.**

## CLUB OFFICERS

### PRESIDENT - Bruce Lee

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### NAR SECTION #562 LEADER - Bruce Lee

### NEWSLETTER EDITOR - Richard Burney

## THOR on the Super Information Highway!

<http://www.nerocketry.org/>

### What is THOR?

The Heartland Organization of Rocketry (THOR) is both an officially sanctioned prefecture of the Tripoli Rocketry Association (Tripoli Nebraska #46) and is an officially sanctioned Section (#562) of the National Association of Rocketry. THOR conducts low through high power model rocket activities through out the year. THOR strictly adheres to the safety guidelines that have been established by the NAR and Tripoli.

### When and where does THOR meet?

Meetings are usually held the first Tuesday of the month at 7:00 PM (different days or times will be announced in advance) at the **La Vista Community Center at 8116 Parkview St., La Vista, NE** (turn east at the Sinclair Gas Station on 84<sup>th</sup> St. and go a block east). Visitors are welcome to attend.

### For additional information...

For club launch times, launch locations, or for those with additional questions call THOR at (402) 896-2069 or toll free 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 to 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 number to the applicable organization):

NAR# \_\_\_\_\_ TRA# \_\_\_\_\_ NERO# \_\_\_\_\_

Are you certified for high power rocketry (check mark your applicable TRA or NAR Certification Level):

Level 1 \_\_\_\_\_ Level 2 \_\_\_\_\_ Level 3 \_\_\_\_\_

### Membership Rates

½ year memberships will divide by 2 and add \$1. Write your check payable to "The Heartland Organization of Rocketry" or "THOR". Mail it to the below address or pay at the next meeting.

**Family Membership - \$36**

**Senior Membership- 18 and over - \$24**

**Junior Membership - Under 18 - \$12**

**Correspondence Membership - \$10**

(Members over 50 miles from Omaha)

**Newsletter Only (6 issues a year) - \$6**

I agree to comply with THOR's policies as pertains to the safety guidelines set forth by the NAR and Tripoli. Failure to do so is grounds for expulsion.

Signature: \_\_\_\_\_

Dated: \_\_\_\_\_

**The Heartland Organization of Rocketry  
6211 South 141<sup>st</sup> St.  
Omaha, NE 68137**

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