



# MASA Planet

Volume 7, Issue 6

November 2004

## *Safety First!*

### **No Wind? Be Careful!**

*Even perfect weather can cause problems*

**Ted Cochran, NAR 69921**

At the first TARC national fly-off, the winds were calm. Most of the teams launched their rockets straight up, but the flights didn't always end up that way, and rockets came down all over the place.

At the last Tripoli launch, the flying conditions were absolutely perfect, with little or no wind. A Pterodactyl Jr. suffered a forward closure failure during boost, and after a bit of creative aerobatics, the smoking fin can landed on the equipment trailer.

The hardest part of learning to windsurf is learning to stand up on the windsurfer.

What does windsurfing have to do with falling rockets? Balance. If there isn't a steady force to direct a rocket in a given direction, its trajectory is free to be perturbed by any little force that comes along. Until windsurfers learn to lean against the wind, they face the same problem.

The moral is that rocketeers need to make sure their rocket will go in a predictable direction after launch. If the wind is calm, tilt the launch rod a little bit!



## *Outreach*

### **Judging 4-H Aerospace Exhibits**

*Fun at the Minnesota State Fair*

**Ted Cochran**

It's hard to grow up in Minnesota without encountering 4-H in some way. The organization has had a big influence on millions of kids across the country, and Minnesota is no exception.

One of the highlights of 4H is competition in local county fairs, with the winners going on to compete in the Minnesota State Fair. Most people are familiar with 4-H livestock competitions, and you may have heard about other competitions as well--in veterinary sciences, small engine repair, arts and crafts such as photography, and, to get to the point, aerospace.



Projects in the aerospace competition can cover a wide variety of topics. Entries include plastic models of aircraft or other aerospace subjects, model rockets, papers or posters, RC aircraft, and photo albums. The primary judging criterion is the knowledge of the topic that is demonstrated by the entry, with craftsmanship a secondary, but still important, consideration.

At the county level, judges interview each participant to determine who gets white, red, blue, or the coveted purple ribbons, and a trip to the State Fair. At the State Fair, judging is done in small groups, in which six to eight contestants meet with a judge for about an hour. Because of the number of entries, judging is carried out in a number of separate sessions, with each session

*4-H, continued on page 2*

## **ALSO IN THIS ISSUE**

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usually consisting of two judges meeting with two groups during a morning, afternoon, or evening.

I have been fortunate enough to be able to help judge Aerospace entries for several years, including two of the sessions in this year's Minnesota State Fair.

The neat thing about the State Fair is that a lot of the entrants come back year after year, with bigger and better entries. There is also an incredible variety of entries, and because the State Fair represents the best of the entries in county fairs around the state, the vast majority of entries are quite good--judging is a real challenge!

About half of this year's aerospace entries were flyable rockets--mostly model rockets, but a few kids built large model rockets or high power rockets, too. About half of the remaining entries were plastic models in static displays, usually with a poster or booklet covering the history of the model or something about its function. The remaining models included a huge Wright Brothers Flyer made of K'nex, a few RC aircraft, a giant full scale static model of a Skywinder, a water-powered bottle rocket project, and several reports, investigations, or photo essays. The Estes Renegade



Ted Cochran

4-Hers entered rockets, RC aircraft, plastic models, and even a Wright brothers plane made out of K'nex.

was a popular kit this year, but dozens of kits made at least one appearance.

Craftsmanship ranged from good to superior. The knowledge demonstrated by some of the kids was unbelievable: Some could rattle off the performance characteristics of every World War II carrier based aircraft, for example, while others knew all the tricks for getting Estes two stage models to stage properly.

Of the models I saw in my two sessions, the most impressive was a flyable, scratch-built, three-stage, high-power scale science fiction model based on the new ride at Disney World.

The entire model was based on a drawing obtained from a web site. The prototype is complex, especially the space plane that comprises the third stage. All of the transitions and fairings were well-built and well-finished, including the tricky strut-based first interstage. Each of the stages used a microswitch to ignite its own motors once separation was detected.

I was very impressed by the whole experience, and I left the 4H building with considerable optimism about the future potential of model rocketry, as evidenced by the interest and enthusiasm of these kids!



Ted Cochran

Excellent flyable three-stage SF/F scale HPR model based on a Disney World ride!

## MEETING SCHEDULE

### THURSDAY, NOVEMBER 4

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

Time: 7 PM to 8:45 PM

Topic: 2005 MASA Officer nominations  
Attic Treasures (by Russ Durkee)

### DECEMBER

Location: TBD

Time: TBD

Annual MASA Holiday Party!

### THURSDAY, JANUARY 6

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

Time: 7 PM to 8:45 PM

Topic: 2005 MASA Officer Elections

## LAUNCH SCHEDULE

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

### SATURDAY, NOVEMBER 20 (ONE WEEK EARLY!)

Location: TBD

Time: 10 AM - 4 PM

MASA Launch & NAR Section Meet:

1/2 A BG, C SD ( MR), and Open Spot Landing

### SATURDAY, JANUARY 22

Location: TBD

Time: 10 AM - 4 PM

MASA Launch

## OUTREACH OPPORTUNITY

### SATURDAY, NOVEMBER 13

Location: Camp Lakamaga

Time: 9 AM - 4 PM

Girl Scouts' Fall Encampment: 125 scouts will build rockets in the morning and fly them in the afternoon!



SpaceShipOne nears its historic touchdown on October 4, 2004.

## President's Corner

# A Good Year

As we enter the month of November, I would like to reflect on the past year.

2004 has been a good year for outreach projects. From Cub Scout pack meetings, to the National Girl Scout Jamboree, 2004 TARC, and the presentation at the Science Museum of Minnesota for the premiere of Mars 3D. I would like to thank all of the volunteers that made each of these events possible. I would like to again encourage other MASA members to please consider helping with outreach projects in your own local communities. Community service is not only rewarding for its recipients; it is also rewarding to the person making a personal sacrifice. Even the smallest effort helps make this world a better place.

The highlight of the year might have been finding our new launch site, Fricke and Sons Sod Inc.'s sod farm north of Elk River near Nowthen, MN. Unfortunately the weather didn't cooperate for our October MASA launch. As soon as we have a Saturday with nice weather and no schedule conflicts with Tripoli and MRCSS, I will try to hold another "extra" launch at Fricke's.

We still need to find more launch sites. Weather/ crop harvest problems may make it necessary to move a scheduled launch to a different location from time to time. We need to have several site options in the future, in the event that we lose one for one reason or another.

November 20th's MASA launch should be a lot of fun! There will be a notification in place, so anyone wanting to try for their Level 1 cert. ( weather permitting) are welcome to try. An added bonus at this launch will be our first NAR Sanctioned Section contest of the new contest year. The events include: 1/2 A BG, C SD (MR), and open spot landing.

Election time is here again! After two years of dedicated service, Lee Frisvold has told me that he won't be running for another term as club Secretary/Treasurer.

I have not yet consulted with Ted to see if he is willing to serve another term. I want to encourage all MASA members to consider running for club office. Club officers make launches, meetings, picnics, and parties possible. Will you serve?

Mike Erpelding, 2004 MASA President  
NAR 79922





**Outreach**

# MASA Exhibit Wows Science Museum Donors

*We Help Celebrate World Premier of Mars 3D*

## Russ Durkee

On Thursday, October 7, 2004, in lieu of the regular meeting, MASA members conducted an exhibit and demonstration launch at the St. Paul Science Museum's World Premier of *Mars 3D*. *Mars 3D* is a digital, 3D movie about the Mars Exploration Rovers (MER-A and MER-B, AKA Spirit and Opportunity) mission. The premier was a by-invitation-only event for museum patrons. Following the screening, Jim Bell, a lead MER scientist, gave a brief presentation, followed by a question and answer session. Then the audience retired to the lobby for refreshments and rockets!



We had a great turnout. There were a LOT of rockets there! Andy Heren brought a fleet of rockets his students had made. Stuart and Elliot Lenz brought a number of rockets, including a whole armada of scratch-built MicroMaxx models. Dave Whitaker brought an example of his impeccably finished work, and Alan, Ted, and several others added more models to the mix.

We also really impressed the crowd with our night launch. We set up down by Iggy the Iguana in an open grassy area next to the museum. Early in the evening Ted, Mark, and I did a few test flights using Brenda's Glitter Bomb on a 1/2A and then an A8-3. Even in the dark, these flights were completely reasonable.



Once the movie was over a crowd of about 50 or so gathered at the launch site. Despite the light drizzle, we had a few 1/2 A flights in an Alpha, and Glitter Bomb flew on an A8-3. The pompoms did not deploy completely but the flight did garner the closest to pad award. My Serval then had a nice flight on a B4-4 with a streamer, and a good recovery thanks to Seth Cochran. After several attempts Ellison got his micro-max UFO off the ground to cheers from the crowd.

The VP of Marketing and Sales told me we "made the evening" with our enthusiasm and launch. She also said we would be asked to do a building session and launch sometime in the future.

What fun.

Congratulations MASA!



**Plans**

# ICAN II

*A SF/F model*

**Paul Jarosch**

## Background

I found this theoretical rocket in Popular Science's SPACE 2100 special edition magazine (page 75). It looked feasible, interesting, and moderately challenging. It was a unique experience getting the numbers right. However, the space between the two transitions was extended, so that a recovery system could be available. Otherwise it is a scale from the pictures shown.

The fuel pods, the engine, solar panels and few other things could have been more detailed, but I wanted to keep the weight low, plus it was only to be an approximate simulation of the rocket.

This rocket, in theory, could get to Mars in 45 days. This is because It uses matter / anti-matter annihilation to produce violent bursts of light and energy (from magazine).

## Instructions

### Parts

- A] BT-80 "Bertha" Plastic Nose Cone 4 in
- B] BT-80 BMS Tube 4 in
- C] BT-80 to BT-60 Balsa Transition
- D] BT-60 BMS Tube 10 in
- E] "Fake Transition"
  - a. Card Stock
  - b. Transition Supports (6) from pattern
- F] BT-50 BMS Tube 34 in (full length)
- G] Deflector
  - a. BT-60 BMS Tube (Partial) 0.5 in
  - b. BT-60 to BT-50 centering ring
- H] Anti-Hydrogen Fuel Pod
  - a. (2) Centering rings (BT-80 to BT-50)
  - b. BT-80 BMS Tube 4.5 in

- I] Hydrogen Fuel Pods
  - a. Card Stock
  - b. BT-60 BMS Tube (4) 6 in
- J] 0.25 in diameter launch lug 1 in
- K] 0.25 in diameter launch lug, plus stand off 1 in
- L] (3) 16 in x 1.5 in x 1/8 in (thickness) balsa
- M] (4) Balsa fins from pattern
- N] Card Stock Ring 1 in
- O] 1/8" length motor clip
- P] Eyelet, to screw into balsa transition.

### Directions

Cut tubing to necessary lengths. Secure screw eye into balsa transition (the BT-60 end). Use card stock to create "fake transition", caps of Hydrogen Fuel Pods [I], and to create aft ring. Upper launch lug will require a stand off to match it up with the one placed on the BT-80 tube in the aft section. The "deflector" is for decoration, mainly, but I used it for an extra place to secure the fins. The hydrogen fuels have balsa strips fitted after pods are on main body tube to help secure them, plus add strength.

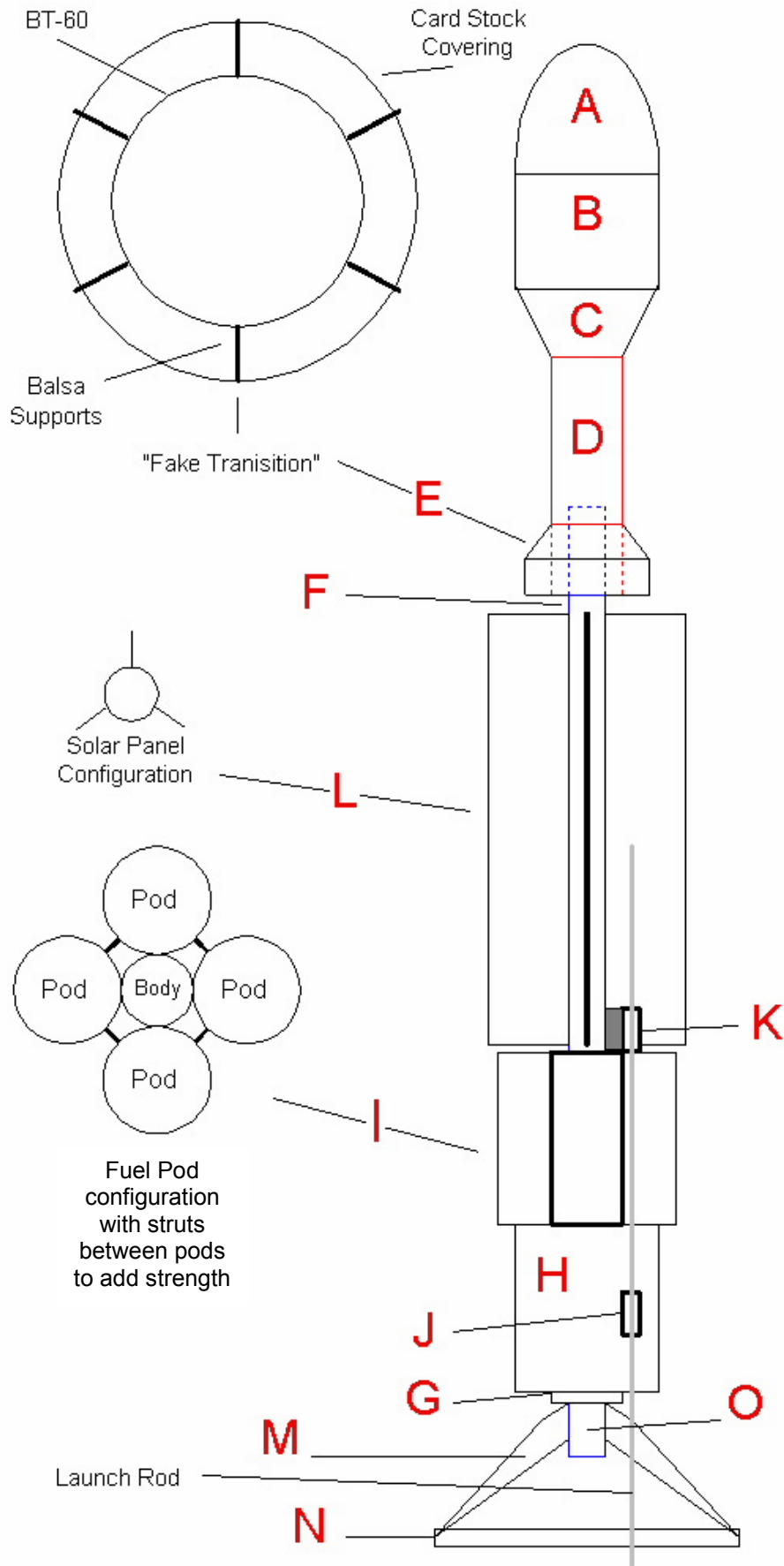
### Detailing

I use paper decals found at Hub Hobby, for m

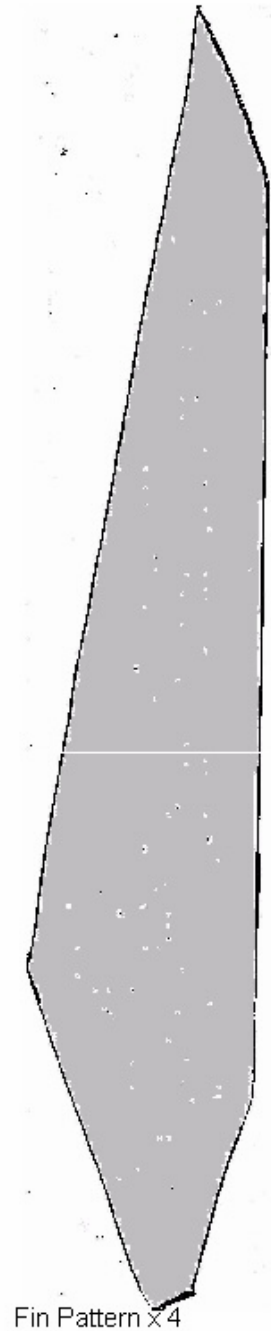


- Fins, ring, and deflector: silver
- Between fins on body: black
- Large fuel pod: gold
- Small fuel pods: blue
- Solar Panels: shiny reflective silver (decal)

- Black stripes going up BT-60 tube between real and fake transitions.
- Miscellaneous space stickers sporadically placed along rocket.



Transition Support x 6



## MASA Goes to Antarctica!



This month's centerfold is MASA member Brenda Everitt, wife of President Emeritus Russ Durkee. Brenda is spending her summer (our winter) in Antarctica. She's pictured above, wearing her MASA name tag, holding on to the South Pole.

Brenda couldn't bring any model rockets along (Remember, you can't bring rocket motors on passenger aircraft, even when they're ski-equipped Air Force C130s), but perhaps she'll be able to hook up with the folks at Halley Antarctic Base who sent us an email a couple of years ago asking us how to dispose of 300 Estes C6 motors.

On the other hand, maybe not--Halley is half a continent away (and 15 degrees of latitude south)!

I'm not sure about the legalities of setting up a new NAR section in Antarctica, but we'll at least unofficially consider Brenda the first member of NAR Section 576, subsection A (for Antarctica).

You can follow Brenda's progress on her blog, which is here: <http://www.home.earthlink.net/~beveritt/index.html>. She can be reached via email at [Brenda.Everitt@usap.gov](mailto:Brenda.Everitt@usap.gov), (or you can visit her in person after months of planning and then taking four aircraft over a period of several days...)



*Road Trips*

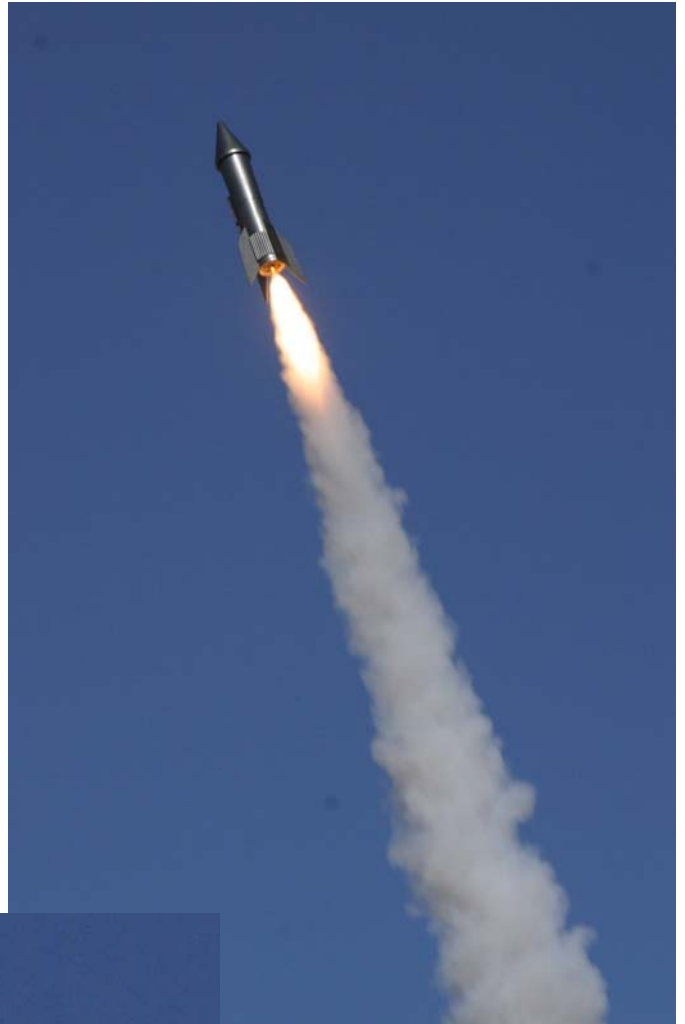
# Hindrocket Flies!

*Rick flies a scaled up coin bank, or is it a Powerline blogger's logo?*

Rick Vatsaas' project for this year's G. Harry Stine launch was the Hindrocket, named for the icon used by John Hinderaker, one of the Powerline Bloggers. The Hindrocket Icon is based on a vintage die cast metal Rocket Bank, made during the fifties and sixties. Rick's website has all the gory details:

<http://www.vatsaas.org/rtv/arsenal/rickrocs/hindrocket/hindrocket.aspx>

The blogger buffs can debate whether Rick was celebrating the Powerline folks or trying to send them to the moon; we just wanted to show you the money shots!





# The Pessimist's A to Z Dictionary of Rocketry Words

## *Twisted Terms for Twisted Fliers*

### Seth and Ted Cochran

[Editor's note: Seth recently got a book of wacky definitions for fishermen (*fish-ing*, by Henry Beard and Roy McKie, Workman Publishing, 2002). We thought that people in our sport could use some similar, um, help. The two entries marked with an asterisk below are based on the book; the rest are all our fault.]

**Adhesive.** A class of substances used to permanently attach rocket components to incorrect locations. (see also [Superglue](#)).

**Altimeter.** An electronic device that would have reported the maximum altitude achieved by a rocket had it not been destroyed in the crash.

**Altitude.** The distance above the ground level achieved by a rocket, as measured by feet, meters, or wishful thinking.

**Apogee.** The point during the flight of the rocket at which the probability of the [ejection charge](#) firing is zero.

**BATF.** An organization composed of federal law enforcement officers dedicated to their mission to capture terrorist bombers, just as soon as they are finished developing detailed regulations concerning the buying, selling, and storage of toy propellant devices.

**Battery.** A device designed to store an electrical charge sufficient to activate test equipment and continuity indicators but not [igniters](#).

**Body tube.** 1. Thin cylindrical cardboard container for the seething mass of flaming [CATO](#) products. 2. The structural component of the rocket that is used to separate the [fins](#) from the ground after flight.

**Boost glider.** A type of rocket in which one of the parts separates during flight and crashes way more spectacularly than it otherwise could.

**CATO.** Energetic disassembly of [motor](#) components, often resulting from the creative interpretation of motor assembly instructions.

**Contest.** An event during which a rocketeer tries to make a collection of bits of paper and cardboard outperform someone else's collection of bits of paper and cardboard.

**Core Sample.** A relatively rare event that results when a rocket descends without its [nose cone](#) and [parachute](#), penetrates the earth, and creates a hole. The event is rare because rockets usually hit something harder.

**Corn.** A species of giant domesticated annual grass (*Zea mays* ssp. *mays*) of tropical Mexican origin sowed by the devil himself in close proximity to rocket ranges.



**Countdown.** A public demonstration of an ability learned in kindergarten, designed to raise expectations before nothing happens.

**Delay.** A period of time established by a measured length of a pyrotechnic composition designed to burn at a precisely calibrated rate so as to ensure that the [ejection charge](#) is not ignited before the rocket hits the ground.

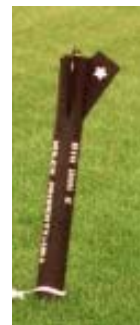
**Egg.** An object produced by the avian species *gallus domesticus* to demonstrate the utter rocketry ineptitude of members of the mammalian species *homo sapiens*.

**Egg loft.** The use of rockets for the propulsion of [eggs](#) to high altitudes, for the purpose of testing their ability to withstand impact after ballistic descent.

**Ejection charge.** Small quantity of black powder placed at the forward end of the rocket [motor](#) for the purpose of toasting [parachutes](#).

**Engine.** An oil leak surrounded by pistons, valves, and other metal parts in the front of the vehicle used to transport rockets to the range.

**Fence post.** The inverted vertical landing position frequently assumed by a laboriously-constructed rocket, often a [scale model](#) after its first flight.



**Fin.** 1. A flat surface at the aft end of the rocket used to ensure axial stability during supersonic descent from [apogee](#). 2. A flat surface at

the aft end of the rocket designed to vibrate harmonically in order to create spectacular clouds of smoking bits of balsa.

**Ground.** The soft, forgiving surface used to hold rocks in place for rockets to land on.

**High Power Rocket.** A large collection of \$20 bills wrapped into a [body tube](#) and hung in a [tree](#).

**Igniter.** 1. A device used as a key to free imprisoned [Wooshes](#). 2. A device designed to fail to perform when the launch queue is longest. (See also [misfire](#)).

**Junk Yard Rocket.** A model that is likely to crash and burn, built from parts of rockets that have already crashed and burned.



**Kit Bash.** The deliberate rearrangement of parts in a commercially available rocket kit, so as to ensure that a rocket that had little chance of flying well has no chance at all of flying well.

**Launch.** 1. The act of faith in one's abilities symbolized by pressing the button. 2. An event akin to a religious revival during which multiple rocketeers make those acts of faith. 3. The most common means by which found rockets are converted into lost rockets.

**Launch controller.** A metal box containing switches, lights, relays, and wires designed to ensure the safe and efficient launching of the wrong rocket.

**Launch lug.** The device on the side of the rocket that holds the rocket on the pad while the [motor](#) burns a hole in the blast deflector.

**Launch pad.** Apparatus designed to hold rockets in an erect position during [misfires](#).

**Launch rod.** Long rod attached to the launch pad, responsible for twanging rockets into nearly horizontal trajectories.

**Lawn Dart.** See [fence post](#).

**LCO.** The person on the launch range responsible for delaying rocket launches with interminable periods of inane PA system chatter.

**Luck.** The only reasonable explanation for the fact that your fellow rocketeer beat you in a [contest](#) in spite of your obviously superior skills.\*

**Masking tape.** Adhesive-backed paper product that, when used in conjunction with rocketry, has magical powers.

**Microclips.** Devices attached to an igniter used to collect all of the soot that results from ignition.

**Misfire.** The common name for the phenomenon that often produces silence at the end of "5, 4, 3, 2, 1".



**Motor.** A device for imprisoning a [Woosh](#), which can be set free by means of an igniter.

**Motor retainer.** A device for rigidly holding a motor in place as the rocket plows into the ground.

**National Association of Rocketry.** An organization of rocketeers with completely different interests than those of the [Tripoli Rocketry Association](#), except for interests having to do with rockets.

**Nose Cone.** The conical structure at the forward end of the rocket used to reduce aerodynamic drag and then terradynamic drag. 2. The fixture used to maintain the upright position of the rocket after flight (see also [fence post](#)).

**Nozzle.** The hole at the end of a rocket motor designed to be just small enough to prevent the easy insertion of an igniter.

**Oddroc.** A model that looks nothing like a rocket, and often flies just as well.



**Overpowered.** See [shred](#).

**Paint.** A decorative substance that when laboriously applied to a rocket significantly increases its chances of crashing.

**Parachute.** A piece of plastic or cloth, typically circular, that is wrapped with string and stuffed into a rocket for no apparent reason.

**Plastic Model Conversion.** 1. A contest event requiring the conversion of a hopelessly unstable plastic model to make safe flights using a rocket [motor](#). 2. A contest to create smoking holes in the ground surrounded by bits of carefully painted polystyrene.



**Power line.** A structure used to ensure that Darwinian evolutionary principles are applied to rocketeers.

**Prang.** The natural result of a rockets' instinct to return to the state from whence it came.

**Quad pod.** A massive [launch pad](#) used to ensure that even the flights with the worst possible finish get the best possible start.



**Range.** 1. A large cleared section of territory used to demarcate the area beyond which rockets always land. 2. Two or more times the estimated distance between an observer and a rocket's landing site.

**Range box.** A plastic container for not holding the part or tool most needed at any particular time.

**Recovery wadding.** Bits of flameproof paper that are inserted between the [parachute](#) and [ejection charge](#) for no apparent reason.

**Rocket.** A device used to precisely locate the topmost part of the only tree in an otherwise empty wasteland.

**Rocket glider.** A type of rocket that has been modified to incorporate many additional failure modes, several of which involve sensational special effects and/or the inducement of feelings of panic.

**RSO.** The person on the rocket [range](#) assigned to ensure that rockets safely land in smoking craters.

**Scale model.** A multi-million-dollar-space-vehicle-shaped expensive collection of carefully painted wood, paper, and plastic used to create smoking holes surrounded by bits of carefully painted wood, paper, and plastic.



**Shock cord.** 1. A length of nylon or other material used to create tears in the end of rocket bodies. 2. A length of nylon or other material used to disconnect [parachutes](#) from rocket parts at [apogee](#). 3. A length of nylon or other material used to prevent [parachutes](#) from inflating. (See also [streamer](#), [zipper](#)).

**Shred.** The destruction of a rocket during boost, caused by an unexpected collision with a flock of tiny invisible birds. That's our story and we're sticking to it.

**Shroud.** A large piece of cloth used by rocket enthusiasts to cover dead rockets.

**Stage.** A rocket component designed to exponentially increase opportunities for failure in return for a slight improvement in performance compared to using a larger motor.

**Streamer.** 1. The typical deployed configuration of a [parachute](#). 2. A device designed to separate from a rocket during ejection and drift a long way in the wind.

**Superglue.** Space-age compound used to attach one's body parts to one's rocket, workbench, or pets.

**Superroc.** The name for a contest event that results in long rockets being made into short rockets as energetically as possible.

**Thermal.** A rising bubble of warm air that is never observed during one's flights in duration contests but often observed after successful [parachute](#) deployment during one's flights of prized rockets.

**Tree.** An outdoor display stand for the seasonal exhibition of prized rockets.

**Tripoli Rocketry Association.** An organization of rocketeers with completely different interests than those of the [National Association of Rocketry](#), except for those interests having to do with rockets.

**Underpowered.** The characteristic of a too-heavy rocket using a too-small motor, often resulting in the rocket's hovering in flight before embarking upon a ground-seeking trajectory.

**Velocity.** The speed of a rocket in feet per second, or, if it is flying horizontally behind you, in footprints per second.

**Woosh.** The tiny but extremely loud species of leprechaun imprisoned in rocket [motors](#).

**X-Acto knife.**

Irritating but highly reliable device used to quickly but precisely locate the position of ones' thumb at the bottom of a [range box](#).\*



**Yaw.** 1. Rotation, usually undesirable, about the vertical axis. 2. First word in the resulting warning, "Yaw git outta d'way!"

**Zipper.** The name for the tear in the end of a [body tube](#) that often results on those rare occasions when the [parachute](#) actually deploys.



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

**MASA's 2004 OFFICERS:**

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

Submissions may be made to the editor at: [masa.planet@mn-rocketry.net](mailto:masa.planet@mn-rocketry.net). (Volunteer quickly, lest you be asked to host the next MASA Holiday Party!)

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

## **Milestones**

### **Nartrek Bronze Completion**

Caleb Boe

### **New Level 2 Certification**

Dave Whitaker: Stretched Minnie Magg,  
October 9, 2004 (see below!)

## **Parting shot**



4235 Dupont Avenue South  
Minneapolis, MN 55409

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