

# MASA PLANET

The Official Newsletter of the  
**Minnesota Amateur Spacemodeler Association**

Established January 1998

2006 and 2007 NAR Medium Section of the Year

Host of NARCON 2007 and NARCON 2008

2008 and 2009 LAC Newsletter Award Recipient

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## Planet Table of Contents

Ares 1 Launches its First Test Flight .....	1
2009 MASA Officer Nominations .....	1
Safety Tip: Alan Builds an HPR Motor Container .....	2
Glen Overby Catches a Nighttime Shuttle/ISS Fly-By .....	3
HPR Ignitor Safety .....	3
MASA Welcomes New Members .....	3
2009 MASA Club Directory .....	3
Electronics: Ted Builds a Pad-Side Continuity Tester .....	4
Todd Proves That He's Certifiable .....	5
Carol Announces a New NAR Membership Drive .....	5
Contributors to This Issue of the MASA Planet .....	5
Art Shares His Impressions of NASA's Duane Carey .....	6-7
2009 MASA Launch Schedule .....	7
Atlantis Launches - But Only 5 Shuttle Missions Left .....	7
MASA Holiday Party Announcement .....	7
Outreach: National Science Teacher Association .....	8
Avionics: Larry Sounds Out Against Evil Corn .....	9
Outreach: Cub Scouts Build and Launch Rockets .....	10

## Ares 1-X Flies!

Excerpts from [www.boston.com](http://www.boston.com)



NASA Photo - Sandra Joseph and Kevin O'Connell

On Wednesday, October 28th, NASA launched its Ares I-X prototype vehicle, the first launch from Kennedy's pads of a vehicle other than the space shuttle since the Apollo Program's Saturn rockets were retired. NASA's Constellation Program's 327-foot-tall rocket produced 2.96 million pounds of thrust at liftoff. The two-minute sub-orbital test flight encountered a few problems along the way, as the launch pad was slightly damaged, a planned stage separation did not go quite according to plan, and a possible parachute failure led to a hard splashdown for its first stage.

## 2010 MASA Club Officer Nominations are Open!

The nomination period for 2010 MASA Club Officer positions opened at the MASA Meeting on November 5, 2009 and will run through the next MASA launch, which is scheduled for November 21. During that period, nominees are asked to either officially accept their nomination and become an official candidate, or decline their nomination and have their name withdrawn. Nominees must be MASA members and senior NAR members. You may nominate someone for an office by posting to the masarocketry mailing list or sending an email to Alan Estenson at [estenson@mn-rocketry.net](mailto:estenson@mn-rocketry.net). You may nominate yourself.

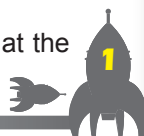
Current nominations (as of press time) are:

President: Carol Marple

Vice President: Jeff Taylor (declined) and Neal Higgins

Secretary/Treasurer: Rick Vatsaas and Jason Colt

The election for 2010 MASA Club Officers will be held at the January MASA meeting.



AP Photo - Chris O'Meara

## Safety First

# Storage for High Power Rocket Motors

By Alan Estenson

Thanks to the successful resolution of the ATF lawsuit earlier this year, high power enthusiasts may again possess large rocket motors without BATFE permits and approved storage magazines. Now that the rules of ATF's "orange book" no longer apply, we turn instead to NFPA 1127 for guidance on proper storage of these motors.

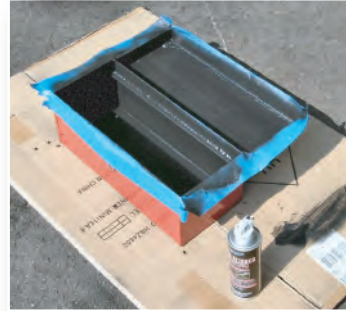
To summarize Ted's paraphrasing of the relevant parts of NFPA 1127, the Storage Container must (A) be re-closable and non-combustible, (B) be painted red, with 3 inch white letters on top that say: "EXPLOSIVES - KEEP FIRE AWAY", and (C) when located indoors, must contain no more than 50 pounds of materials. The location of Container must (A) be stored 25 feet from smoking, open flames, and other sources of heat, and (B) must not be inside a residence, but may be in a garage attached to a single family residence, or in a detached garage or outbuilding.

Earlier in the summer, I started thinking about what to use as a suitable storage container for the high power reloads that I planned to purchase. While NFPA didn't specify details, the ATF codes had talked about steel boxes with non-sparking liners, and those sounded like good ideas to me. On one visit to Fleet Farm, I picked up a surplus 50-caliber ammo box for about \$4. It was more than a little rusty, though, and I was looking at having to bead-blast, prime and paint it, and then line the interior.

Since that sounded like a lot of work, I started pondering easier alternatives. On another visit to Fleet Farm, I purchased a 20-inch steel toolbox ("Stack-On" Model #R-420). It was steel, had a lockable latch, sturdy hinge, carrying handle, and was already painted red ("Durable baked epoxy finish resists rust and solvents"). The removable tote tray was surplus to my needs for motor storage, but I'm sure that it will find uses around my garage.

Thinking about the simplest way to add a non-sparking lining, I went over to the automotive area of the store and picked out a spray-on rubber coating ("Blue Magic" Pure Rubber Coating). Of course, the lettering slipped my mind, but a later visit to Menards produced a package of 3" white self-adhesive vinyl letters. In total, I spent about \$35 for the toolbox, spray coating, and vinyl letters.

I started the conversion by scuffing up the interior of the toolbox with a "Scotchbrite" pad, and then cleaning it up with spray cleaner and paper towels. Next, I used blue painters tape to mask off the hinge, edges of the toolbox, and other areas that might cause problems with the fit of the lid if coated. Working outside and donning gloves and safety goggles, I sprayed on two coats of the stinky rubber goo



waiting about 15 minutes between coats. This left a firm, textured black coating that sealed up all the joints and corners. I did manage to get a little overspray on the outside of the toolbox, but it wiped right off with some naphtha. I left the toolbox sitting outside in the sun for an hour to dry, removed all the masking tape, and then left it open in my garage for a few days to make sure that it was fully cured.

The final step consisted of labeling the box. I used the white vinyl letters to spell out the required warning on the lid. Because I happened to have them, I put a "FLAMMABLE SOLID" sticker on each end of the box. It was starting to look a bit intimidating, so I added a label to the front of the box - "CONTAINS LARGE MODEL ROCKET MOTORS". The final touch was a label with my name and phone number. Two more labels that I should add are "MAX CAPACITY 50 LBS" and "NO SMOKING. KEEP AWAY FROM OPEN FLAMES AND HEAT SOURCES."


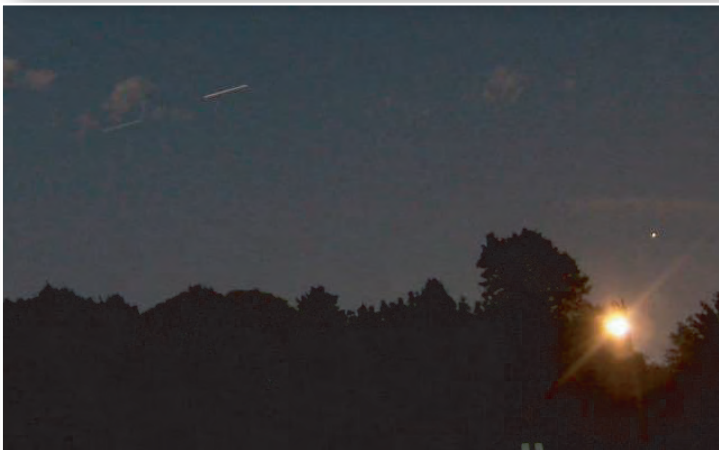
Of course, this is just my personal interpretation of a suitable motor storage container; your version may be different! 




Photo Ops

## Space Shuttle & ISS Fly-By

Photos By Glen Overby



Glen Overby took these pictures of the International Space Station and Space Shuttle flying over on the evening of September 28, 2009 shortly after the Shuttle departed the ISS on its journey back to Earth. These were taken from a beach on the west side of Lake Nokomis in Minneapolis. Glen used a Canon point-and-shoot 3.1 megapixel camera with a separate viewfinder. These shots are four second exposures. 







### **Safety Reminder:**

**Do NOT install ignitors in your high power motors while you are still working at your car.**

**Install HPR ignitors ONLY after your rocket is on the launch pad.**



## MASA Welcomes the Following New Members:

-  **Jack Baecker**
-  **Jo Baecker**
-  **Mari Baecker**
-  **Nick Baecker**
-  **Brian Kilberg**
-  **Don Kilberg**
-  **Laurie Kilberg**
-  **Bob Moyle**



### **MASA Directory**

Established January 1998

Founding President: Russ Durkee

#### **2009 President and Webmaster**

Alan Estenson - [estenson@mn-rocketry.net](mailto:estenson@mn-rocketry.net)

#### **2009 Vice President**

Carol Marple - [cjmarple@peoplepc.com](mailto:cjmarple@peoplepc.com)

#### **2009 Secretary/Treasurer**

Rick Vatsaas - [rick@vatsaas.org](mailto:rick@vatsaas.org)

#### **MASA Planet Newsletter Editor**

Jeff Taylor - [jeff.taylor@mn-rocketry.net](mailto:jeff.taylor@mn-rocketry.net)

#### **Club Website**

[www.masa-rocketry.org](http://www.masa-rocketry.org)

#### **Club Yahoo Group**

<http://groups.yahoo.com/group/masarocketry/>

## Electric Tech

# Build a Pad-Side Continuity Checker

By Ted Cochran, NAR 69921

Some launch systems provide continuity checking at the console, but not at the pad. The 12-pad system I built years ago for outreach launches is like that, as are the NAR systems used at TARC and NARAM. These systems are simple and reliable, but if you want to confirm continuity, you have to ask the LCO - or provide your own tester. Why bother the LCO for continuity checks when you can easily make a simple, reliable, in-line continuity checker?

I built a simple system with a switch that disconnects the pad from the launch console, and tests continuity with a nine-volt battery at very low amperage. Better still, while you're testing continuity, the circuit to the launch console is disconnected, and the LCO can't accidentally launch your rocket.

I built my tester in a couple hours, using parts I mostly had lying around the house. I got a bit fancy and used a three position, double pole switch. When the switch is in the "off" (middle) position, the leads to the rocket are completely disconnected. When the switch is in the "test" position, the launch console remains disconnected, but the battery puts a tiny current through the igniter, and a piezo buzzer sounds continuously to confirm you have good continuity—you don't have to look away from the clips to check a light. When the switch is in the "armed" position, the leads to the launch console are connected just as they should be, and in addition, an independent second circuit illuminates an LED so you confirm you're ready to go. The LED also functions as a battery tester.

To build one for yourself, you'll need:

- An enclosure. I used a 90-degree elbow for 3/4-inch PVC electrical conduit, but a project box will do fine, too, as will a plastic junction box and cover rated for outdoor use.
- A double-pole, double throw switch, preferably with a center "off" position. The switch contacts should be rated for at least 15 amps. If you don't want to incorporate the battery tester and "armed" (ready-to-launch) indicator, you can get away with a single pole switch. AxMan has 20 amp three-position DPDT switches at a great price. Remember that the center terminal on a double throw toggle switch is typically connected to the terminal opposite the position of the switch lever—if the lever is up, the middle connector is connected to the bottom terminal; if the switch is down, the middle connector is connected to the top terminal.

- A piezo buzzer. I used a part from radio shack; it draws a few milliamps at nine volts and is safe for all commercial igniters, including the Quest Q2G2.
- A nine-volt battery and a snap on connector for it. You could also use a battery holder for AAA batteries; just match the piezo and LED to the available voltage.
- A super-bright LED rated for nine volts.
- A connector for the leads to your rocket. I used a two-conductor AC socket, into which I plug a "MASA-standard" red AxMan two-wire extension cord with alligator clips on one end. If there's any chance someone might plug your leads into an electrical socket, you should use something else, like banana jacks or a rated molex connector.
- A connector for the clips on the leads from the launch console to hook onto. I used metal banana jack test terminals, but there are lots of possibilities. Again, use something rated for fifteen amps or more at twelve volts.

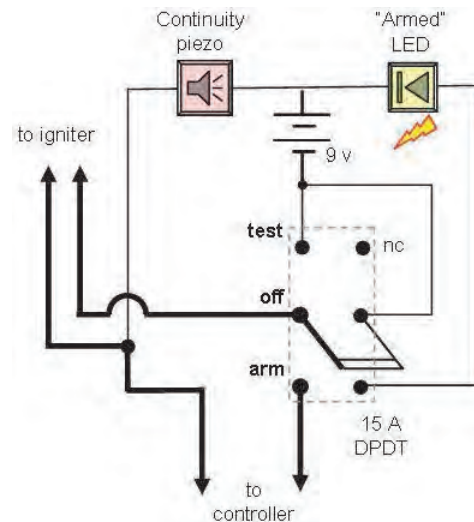


- Assorted hookup wire (make sure the leads from the controller connectors to the igniters are 12 gauge or larger).
- Crimp-on connectors and/or solder and heat shrink tubing.

Building is easy. Note that both the piezo and the LED are polarity sensitive—they have a positive and negative terminal that you'll need to pay attention to. You might want to hook everything up with test leads to confirm you have all the polarities correct before you start soldering.

One nice thing about the PVC box is that it's easy to mount it on a length of PVC conduit to use as a stake—that keeps the connections off of the ground. The piezo buzzer was almost exactly the right size to fit in the hole in the side of the conduit box—a little hot glue was all it took. Also, you shouldn't have to worry about battery life—a standard 9-volt battery should last for a years of normal use.

Once you're done building your tester, please ground test it for safety—especially if you use low-current igniters like the Quest Q2G2—before you bring it to the field. The addition of a relay and connectors for use with a pad side battery is left as an exercise for the reader.



# Todd Carpenter Receives his L1 High Power Certification

# MASA PLANET

Congratulations to Todd, who received his Level 1 High Power Certification at the September MASA Launch on the 26th. Todd flew his yet-to-be-painted PML Tethys on an AeroTech 38mm H242 Blue Thunder for a flawless flight and successful recovery.



BEFORE...



AFTER...

DURING...

## 52 by 52

By Carol Marple

Did you hear the news?!?

The NAR will be holding its first-ever membership drive in early 2010. The drive will run from January 1, 2010 until July 2010. The NAR is working to increase membership to 5200 members by the beginning of NARAM 52 ("52 by 52"), which will be about a 10% increase from the current membership level.

There is a particular interest in increasing membership in the "young adult" category of 25-40 years of age. According to Trip Barber, NAR President, "NAR demographics show we are still not attracting enough young members to sustain our long-term future. Our 4-H partnership and TARC are efforts to reverse this for juniors. What we need most now are young adults, ages 25 - 40."

So, what does being a NAR member mean for you? Your yearly membership includes 6 issues of Sport Rocketry Magazine, a copy of the NAR Membership Guidebook (which includes valuable vendor coupons), insurance coverage, and monthly E-Rocketeer newsletters. As a NAR member you can also obtain your high-power certification, participate in NAR competition flying, and try out for the FAI international competition team.

Membership dues also help cover the cost of NAR student member college scholarships, necessary legal fees (which helped win the BATFE case), some financial support for the FAI international competition program, and the cost of operating NAR headquarters, which has only one part-time employee working out of her home.




5,200 Members by NARAM 52








## MEMBERSHIP DRIVE

Have you heard? The NAR will be holding a membership drive in early 2010. Watch for details in the January/February issue of Sport Rocketry.



Watch for additional exciting details for the "52 by 52" membership drive in the January/February issue of MASA Planet and Sport Rocketry. 

## Contributors to this issue of the MASA Planet.... Thank You!

-  Ted Cochran
-  Alan Estenson
-  Art Gibbens
-  Carol Marple
-  Glen Overby
-  Larry Schwartz
-  Jeff Taylor

To contribute pictures, stories, build reviews, or just about anything, email to [jeff.taylor@mn-rocketry.net](mailto:jeff.taylor@mn-rocketry.net)



## The Right Stuff

# An Evening with Duane "Digger" Carey

By Art Gibbens

When I first saw Alan's e-mail about a NASA astronaut coming to the U of M to speak I immediately thought of my son Mathias who is one day hoping to be able to be working for NASA. It's been an aspiration of his for quite awhile now and who knows, maybe he'll end up on Mars some day. Anyways, I forwarded the e-mail on to him to see if it would fit into his schedule and if he would want to go. It did and he did, so we both made reservations and plans to attend.

We were not disappointed. It was fun to see that many people streaming into the auditorium because they shared an interest in space. I sat next to a U of M alumnus who got a card in the mail to be there. I shared with her that I was there as one who has been flying model rockets since 1972 and as a mentor for TARC. I shared with her that our local club, MASA, had put the word out and that's how we ended up there. She was quite interested to know that there were folks like us in the twin cities. (Side note – as a club, for the most part we are way under a lot of people's radar.) She encouraged Mathias to keep after his goal.

Digger was a very down to Earth kind of guy (bad pun – sorry) and related well to everyone in the room. He started out very informally sharing how he had ended up in the Air Force in the first place. He related how he had gotten out of high school, ridden his motorcycle and hitchhiked around the country living one day at a time with no real direction in his life. While tending bar one night he started talking with a fellow barkeep and found out this other guy had been a fighter pilot in the Vietnam War. As he tells it, he thought it would be a whole lot more fun getting paid to fly a fighter plane than being poor driving a motorcycle.

The catch was he had to go back to school and learn "hard stuff" like math and science if he was ever going to fly an air craft for the Air Force. He accentuated this fact numerous times for the benefit of all the students in the room (of which there were many), that learning the hard stuff will never keep you from attaining your goals but rather they will open doors and take you places you never imagined in your wildest dreams. So off to college he went to learn the math and science so he could fly in the Air Force. Eventually he ended up being a test pilot flying new aircraft or aircraft that had been modified to see how they would perform in reality, not just in theory. He then became a NASA astronaut "on loan" from the Air Force. One day he was tapped to be the pilot on the STS-109 shuttle mission to the Hubble space telescope and had

only a year to prepare. He shared some thoughts that have already stuck with me; like at the time, about half of what we knew about the universe was discovered by the Hubble telescope. Let that sink in for a minute. That piece of equipment that is whizzing around up there at around 18,000 mph and is only the size of school bus has doubled what we know of the universe in the short time it has been aloft.

He also shared that he was the last person to land Columbia safely, which was a somber moment for many. As he shared about the failure of the spacecraft and the events leading up to its destruction during reentry, he stated with candor that the Air Force and NASA weren't communicating well at the time. He shared that the Air Force had some spy technology that had discovered the problem which led to the disintegration of Columbia and had tried to let NASA know about it, but NASA basically told the Air Force that "we can take care of it." He shared how both agencies learned to better cooperate with one another and to listen to what the other is trying to say, which has led to better communication between the agencies today.



NASA File Photo

He then shared his video presentation and narrated it so we knew what was going on in the pictures we were seeing. It was amazing for me to learn how orchestrated the lives of the astronauts were, that their every move had been choreographed and practiced many times here on Earth in simulation before going into space. This was another point he drove home for the benefit of the students in the audience, that practice makes perfect. Whether that was on the football field or in a music ensemble, that practicing is a real part of performing your best in any endeavor. He also shared

along the way that the technology on the Space Shuttle is equivalent to the i386 computer architecture. While the technology is a bit dated, it is very capable of doing the job.

He shared an opinion which I had never heard before and I'll try to restate it here: basically he said that in retrospect, he wishes NASA had designed, built and worked the kinks out of the shuttle program and then handed off or sold the rights to running the project so NASA could do what it does best - that is to explore new ways of doing things in outer space. That way the shuttle venture would have become commercialized and not cost so much out of NASA's budget, both of time and money. The inference was that the shuttle program would probably still be going strong instead of going through the last phases of its lifespan.


He took some questions from the audience at the end and in response to one of them he got off a little on a tangent and shared his concern that the American space presence has been hampered by the way things get funded at a national level. The start and stop funding process is an inefficient way to build rockets and rocket programs where the technology keeps changing at such a rapid pace. He shared that after the



**Continued on the Next Page...**

# "Digger" Continued

last shuttle lands in 2010 that there didn't look to be any American launching vehicles for manned space travel for 6 or maybe 7 years. He found that unacceptable but unavoidable because of how things are budgeted. He encouraged us to contact our congressional representatives to change that process.

As I sat there as he was winding up his presentation I wished it could have worked it out for the HCA TARC Team to have been able to hear this guy for I was impressed with his "realness" and not the photo op kind of presentation this could have been. I would very much recommend that if you get a chance to hear him speak that you avail yourself of the opportunity and go hear him. You won't be disappointed. 

## 2009 Launch Windows

### Subject to Change

Check MASA Website or Yahoo Group for updates

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

### MASA November Launch

Saturday, November 21 - 10:00 am to 2:00 pm

Location: Elk River VFW

**Last MASA Launch of 2009!**

## STS-129

# Atlantis Launches

On Monday, November 16th, NASA launched Space Shuttle Atlantis, on shuttle mission STS-129 to service the International Space Station. The six member crew will spend 11 days on this mission. When they depart, they will bring back an ISS crew member with them that has been living at the station for more than two months.

Since the shuttle program's first launch of Columbia on April 12, 1981, the program will be coming to an end next year after 134 missions. There are only five shuttle missions left before the vehicles are retired.


The remaining launches are:

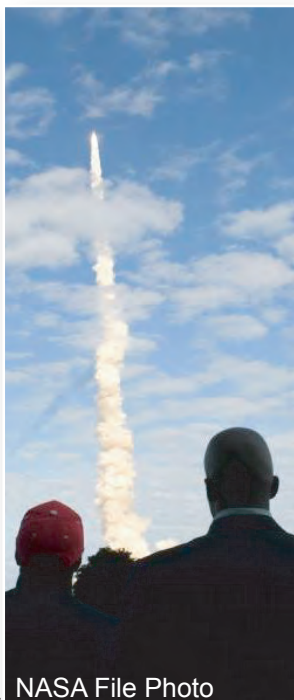
**STS-130** (Endeavour) scheduled to launch on February 4, 2010

**STS-131** (Discovery) scheduled to launch on March 18, 2010

**STS-132** (Atlantis) scheduled to launch on May 14, 2010

**STS-134** (Endeavour) scheduled to launch on July 29, 2010

**STS-133** (Discovery) scheduled to launch on September 16, 2010 



NASA File Photo

# MASA PLANET

## Mark Your Calendars!

# MASA Holiday Party

By Alan Estenson

MASA members, families and guests are invited to attend the 2009 MASA Holiday Party. No RSVP's are necessary.

This year's party is on Saturday, December 12 from 6:30 PM to 9:00 PM at the "Sun Room" at the Chaska Community Center located at 1661 Park Ridge Dr, Chaska, MN.

<http://www.chaskacommunitycenter.com/ccenter/>

Note to Google Maps users: Google maps is not up to date with the new Highway 212. Please use MapQuest to plan your route.

The Sun Room is on the right half of the building (as you face it from the parking lot), just outside of the theater near the back of the building. It's easiest to use the doors labeled "Theater Entrance" and walk straight back in that hallway. The Sun Room will be on your left at the end of the hallway. Overflow parking is across the street at the middle school.

Food and snacks are pot-luck. Please bring something tasty to share with the group. MASA will be providing beverages, plates, utensils, etc. No alcoholic beverages, please!

This is an evening of fun, socializing, wacky gift exchange, the 2009 MASSY Awards, free door prizes, and much more!


There will be tables set up for display of rockets, projects, memorabilia, or whatever! Feel free to bring something along to share.

We'll have seating for 40 plus extra tables for food, rocket and project displays (or whatever).

Big thanks to Lyle Merdan for arranging this party location!

Bring:

- Yourself and your families
- A tasty food item to share
- Your MASA name badge
- Optional but recommended: A wrapped rocket-related mystery gift item, total value no more than \$15, for a fun gift exchange. Do not include identifying information. (NO gag gifts, please!)

Check out the MASA website ([www.masa-rocketry.org](http://www.masa-rocketry.org)) for all the details 



## Outreach for Teachers NAR and MASA Attend the NSTA Convention


By Ted Cochran

Carol Marple, Jeff Taylor, Lyle Merdan, and Ted Cochran spent Thursday, Friday, and Halloween morning staffing a NAR booth at the National Science Teacher's Association regional convention at the Minneapolis Convention Center. Two of us worked at a time. The attendees were elementary through high-school-level science teachers, mostly from the five state area (ND, SD, MN, WI, IA).

We had a corner booth, designed to acquaint science teachers with our activities relevant to students in all grades, with particular emphasis on middle and high school (TARC and SLI).

Jeff made an awesome paper mache sculpture; Jeff and Carol bought their Cape Coalwood rockets with Rocket Boy's autographs (a surprising number of teachers recognized Homer Hickam's!); John Lyngdal provided the prototypical TARC model, and Ted set up some scale models and the two stage Quantum Leap--a rocket meant to be representative of SLI. We ran AIAA and SLI videos on a laptop, and gave away NAR Educator CDs, TARC flyers, NAR Educator brochures, and back issues of Sport Rocketry. We also collected about 40 email addresses to add to the Educator newsletter list.

Many of the teachers were quite familiar with all we do. We talked to half a dozen TARC team teachers, and lots more knew teachers who were doing TARC. Some teachers didn't know much about us, but were interested; these were the ones we paid special attention to. There were about 400 or so of these; most of them got CDs and brochures and seemed enthusiastic when they left.

It wasn't a bad way to spend the day, and a lot of teachers left knowing much about about rocketry. 





## Corn Abatement Devices (Beepers)

# I Hate Corn

By Larry Schwartz

I HATE CORN! Or more specifically, I hate losing rockets in the corn. So much so that it caused me to order up several beepers. What follows is an evaluation of the three units I ordered: Tansolve's MicroTransBeep (w/ case) and TransBeep, and Pratt Hobbies Microbeacon. Also included is my research on Adept's Rocketries beepers, and some miscellaneous observations.

### Pratt Hobbies Microbeacon:

<http://www.pratthobbies.com/proddetail.asp?prod=MB%2D12>

The advertisement on their website is a good description of the product: "Snap in the battery, and put a wrap of tape around it to secure it. Loop the Kevlar® lanyard through your nose cone eye screw, or tie it to your shock cord, and tuck the MicroBeacon into your rocket on top of the chute. You're ready! The MicroBeacon is not loud; if it were, it would have to be bigger and heavier. However, because of the warbling tone it generates, it's easy to hear under most conditions. Ever notice how far away you can hear a cell phone ring? Same principle!"

Pros: The unit looks to be very rugged and well built. At 2.75" x .75 (approx) it's small enough for modrocs, and weighing in at 18 grams it's light enough too. At And, it includes a Kevlar mounting strap. Service from Pratt was great as usual.

Cons: It's not loud -- in fact I doubt I would be able to find a rocket lost in the corn unless I got within a few feet of this unit (YMMV). No on / off switch or activation mechanism.

Conclusion: Not recommended. IMHO it's not loud enough to be useful.

### Transolve MicroTransBeep (w/ case):

<http://www.transolve.com/Transolve/Files/Products/MicroTransBeep/MicroTransBeep.html>

Here's the advertisement from their website: "Pack with chute, uses 12V battery and slide-switch arming. Weighs 14 g. (with batt.). Usable in Estes rockets. Optional plastic case adds protection in ejectable operations (rig to recovery device). Also amplifies beeper !!! Size - 3.05" x 0.6" x 0.6"; Weight - 14 g. w/battery; Bat Life - 12 hours."

Pros: Small enough for modrocs. And at 23 grams (w/ case), it's light enough too. Much louder than Pratt's unit.

Cons: No activation mechanism, and the "case" is nothing more than a plexiglass tube. I would find it hard to believe that the case "amplifies beeper", and could need modification to allow the sound to exit more freely (i.e. drill some holes above the piezo element). Also, the beeper is attached to the case via a plastic screw, which hangs out and increases the overall diameter to approximately 1", so I'll probably replace the screw with a loop of Kevlar.

Conclusion: Recommended with reservations.



### Transolve TransBeep:

<http://www.transolve.com/Transolve/Files/Products/TransBeep/TransBeep.html>

Here's the advertisement from their website: "The Transolve TB TransBeep features a 105 dB sonic beacon and is activated by an electric eye upon deployment of the either the drogue parachute or main recovery system. The revolutionary TB TransBeep eliminates the annoying screaming beeper sitting on the launch pad. Unit will not sound until exposure to light activates circuit. In flight activation prolongs battery life. This is important when a long search for the rocket is necessary. The TB TransBeep comes with 12-volt battery installed, which typically has a forty-hour life. The TB TransBeep is attached to the shock cord or screw eye and is packed in with either parachute. Size - 1.25 x 6.5 in. (3.18 x 16.51 cm.); Weight - 6 oz. w/battery (170 g.); Power - Supplied 12-volt battery"

Pros: LOUD! Activates in sunlight, so there's no noise at the pad. Mine weighed in at only 150 grams, 20 grams less than the specified weight.

Cons: Too big for modrocs. Does not activate under fluorescent lighting - which may be a pro or a con.

Conclusion: I'll never fly another HPR or large mid-power w/o this unit on-board.

### Adept Rocketry:

<http://www.adeptrocketry.com/beepers.htm>

Adept sells a complete line of beepers that seem to be about the same as the Transolve units.

Pros: All beepers look to have deployment activation jumper.

Cons: Much higher prices than Transolve on comparable units. The mechanical activation could fail in the event of a tangled chute.

### Miscellaneous Observations:

I can't for the life of me figure out why beeper outputs aren't built into every HRP flight computer sold -- It seems like a waste to add a separate battery and electronics. And considering how every beeper I purchased used a round case, I don't see why beepers couldn't be built into ejection pistons as well.

And then there's the subject of tone frequency - of importance to older flyers, since the ability to hear higher frequencies diminishes with age. Adept was the only vendor that specified the output frequency of their beepers: Ranging from 2.8 KHz to 4.8 KHz. When I emailed Transolve, they replied that theirs were 2700 KHz.



## Outreach Report

# MASA Helps Out the Cub Scouts

By Alan Estenson

On the evening of Tuesday, October 20th, MASA members Jason Colt, Alan Estenson, and Buzz McDermott helped with a rocket building session at Living Waters Lutheran Church in Circle Pines. A group of 40+ Cub Scouts built rockets during a two hour period. The youngest Scouts built Estes Spaceloft rockets. The older Scouts built a combination of Estes Viking, Estes Wizard, and Custom Razor rockets. With their individual fins, the Vikings and Wizards presented more of a challenge - especially for those Scouts who insisted on putting the maximum five fins on their Vikings. The tube fins on the Razors were more assembly-friendly. Most Scouts had a parent helping them. [My observation - Moms did better at helping with the rocket building than Dads. Probably because Moms read the instructions.] Buzz provided a variety of stickers, so many of the rockets were brightly decorated. The rest went home to be painted first.

The launch was originally scheduled for the afternoon of Sunday, October 25th, but was postponed due to poor weather. With the launch rescheduled for the morning of Saturday, October 31, MASA members Alan Estenson and

Neal Higgins met at Blue Heron Elementary in Lino Lakes. It was a cool morning with a stiff breeze out of the west. The launching area was a softball field with about 250 feet of recovery distance before a scrubby/marshy area.

A six-pad launch range was set up with a separate prep area nearby. Neal manned the prep table and was kept hopping as he helped the Scouts get their rockets ready to fly. Each Scout was able to launch their rocket at least twice.

Alan operated the launch range, and the flying started just after 10am. The Scouts were all excited, and the enthusiasm was contagious! A count of the flights wasn't kept, but there were easily 80 launches in about 90 minutes time. Full racks of six rockets were being launched one after the other. Stealing a trick from Ted, the Scouts were told that told that rockets fly better when the countdowns are LOUD! :-)

The flights nearly all went well; there were a few separations and one lawn dart. Thanks to Neal's excellent work at the prep table, there were only three misfires all morning. With the stiff breeze, a small number of rockets drifted off the field - about two or three were lost.

One unusual event, about halfway through the launch, was a flyover by a B-52 bomber at low altitude! Needless to say, we all stopped and watched.

Everyone had fun, and all the rockets had been flown by 11:30. We packed up the equipment and headed home to warm up.



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