



Member - National Association
of Rocketry ("NAR").

Special points of interest:

- Eric Vandergriff gets a photo of our new officers.
- Shroudlines has a new editor.
- Check out THE PAYLOAD BAY to find new members.
- Find out about our president in THE CENTER OF PRESSURE.
- Come to a club meeting (see back page). We miss you!

Inside this issue:

THE PAYLOAD BAY	2
The McKinney Launch	2
THE CENTER OF PRES-SURE	3
The Rockwall Launch	4
Out-REACH for the SKY!	6
DID YOU KNOW?	6
Go For Level II	7
LETTERS TO THE EDITOR	9

DARS Elects New Officers for 2003

On December 14th, DARS members elected new officers from an excellent field of candidates. We wish our new officers the best, and a heartfelt thank you to our 2002 officers for a job well done.



President, Rags Fehrenbach (far right) Vice President, Tim Sapp (2nd from right)
Treasurer, Suzy Sprague (middle) Secretary, Bill Gee (2nd from left) Sr. Advisor, Doug Sams (far left)

A New Editor!

Hello, I'm your new editor. I hope to be able to continue the DARS tradition of producing an excellent newsletter. Considering this is my first attempt to produce a newsletter, any comments or suggestions are welcome. Don't worry, you won't hurt my feelings if you don't like the way I do things. Since I'm the editor, I don't really have to accept what you say. No, just kidding. I really would like to get your input.

Check out THE PAYLOAD BAY, where you will find changes in DARS membership, new arrivals to DARS member families, and those kinds of things. So, send me some pictures of your new spouse or baby with their name, etc. THE CENTER OF PRES-SURE highlights one of our members. Other new sections, too. Check 'em out. If you think of other regular sections to add, let me know.



Estes Astron Apogee—1962

THE PAYLOAD BAY

Each newsletter will include THE PAYLOAD BAY, a section of the newsletter that was developed by myself, Suzy Sprague and Bill Gee while attending the December 15 launch at the McKinney site; Suzy actually came up with the name. Cool, huh? The Payload Bay is where you will find changes in DARS membership, new arrivals to DARS member families, and those kinds of things.

Several new members were added in December and January!

- Tommye Rafes
- Trent, Cody and Dylan Tidmore
- Shawn Leveridge

Look them up at the next meeting and say hello.

“...Team America Rocketry Challenge (“TARC”) participants showed up to launch their rockets.”

The McKinney Launch, December 15

Well, there was good news and bad news. Although a little windy, the good news is that it was a nice day to fly rockets, and a few Team America Rocketry Challenge (“TARC”) participants showed up to launch their rockets. The bad news is that we won’t be regularly launching there due to the park’s plans to use the area for other purposes. Oh well, at least everyone had fun. Several club members came out to launch their rockets and a few TARC participants tested their egg-lofters. Bill Gee was on hand to bring back some excellent photos of the fun, like this next sequence of four photos.



James Gartrell’s Alien Space Probe lifts off to survey the field. Photo by Bill Gee.



Melissa McDermott helps a TARC participant hook up his rocket.



5 . 4 . 3 . 2 . 1 .
Start... Uh
Oh! Wasn’t the
ejection charge
supposed to
ignite a little
later?



Flaming rockets, Batman! All the motors to choose from, and he gets the bad one. Ugh!



No problem. Buzz McDermott has the situation well in hand. Safety is always a priority. Ever the optimist, after putting the fire out, Buzz says, “Hey, don’t worry. The nose cone wasn’t damaged. That’s the only part that might be difficult to replace. The rest is cheap. A new body tube and some balsa and you’re ready to fly again!”

THE CENTER OF PRESSURE

This new section of the newsletter was Rags' idea. (see if he offers any new ideas after this ;-)) Rags Fehrenbach has become president of DARS for a second term. When he first took office the beginning of last year, he said he wanted the meetings to be "less business and more fun." In my opinion, he accomplished that. The meeting always ended fairly early to begin some fun or informative event — Buzz McDermott helped us to learn more about how to clone that favorite old rocket; Jack Sprague showed us how to take care of the club equipment; Dan Stroud gave us some excellent tips for building high power rockets; and the first meeting of the new year was adjourned to a "swap meet". Heck, I had so much fun this year, I'm wondering what he'll do to top last year's accomplishments. So, during the early hours of the January 18 launch at Rockwall, I decided I would ask him. Here's what he had to say.

"I still want to continue the events after the club meetings. I thought the swap meet went really well. Hopefully, that will be something we'll do at the first meeting every year and maybe one more time during the year. Also, I'd really like for us as a club to work a little harder to get the kids more involved in activities, too. Those kinds of things would be the goals for this year. Maybe we could organize a meeting for the kids while we're having our meeting. It would have to be structured, but they could have a build session or some other organized activity while we're meeting. When we're at a launch, they could pass out t-shirts or hand out "launch info sheets." I think the info sheets would be appreciated by the visitors, so they know what the rules are during launches, that it's OK to go by and talk to the members, that kind of thing. And that would be one more way for the kids to help out. I think most of the kids would appreciate being more involved in our activities. Also, Tim Sapp suggested that we should help the kids through the NARTREK program. I thought that was a really good idea if someone could coordinate it. The kids are the future for our hobby and we really need to put more focus on them."

Wow! I think Rags has some really great goals for 2003. He's going to need a lot of help from all of us to make those goals a reality, and I'll bet we've all got some really great ideas. Contact Rags or send a "Letter to the Editor" and let us know your thoughts.

Be sure to check out this section in the next issue, too. I'll put another one of our rocketeers in the spotlight to see if they can stand being in the Center of Pressure. It doesn't

necessarily have to be a person, though. It could be something about the club or the way we handle certain issues, etc. If you think of something worthy of being put into the CP, send it in.



Blake Gartrell helps take down the range at NARAM 44. Photo by Bill Gee.



Rags Fehrenbach's Locomotive Breath rises from the pad on a K700. Photo by Dan Stroud.

"Also, I'd really like for us as a club to work a little harder to get the kids more involved in activities, too."



TARC participant Mark Webb from Gene Pike Middle School with his Estes Blue Ninja at the 1/18 Rockwall launch. Photo by James Gartrell.

The Rockwall Launch, January 18

Jesuit Preparatory School TARC participants with their teacher, Kate Sandelin (far right). The students from left to right are: Brian Lobo, Patrick Patel, and Brian Campbell.



Denton High School TARC team captain Curt Weihe with his teacher, Mike Dash (far right). Photo by James Gartrell.



What started out as a very cold and somewhat windy morning turned out to be an excellent day for launching rockets and helping out a number of students involved in the Team America Rocketry Challenge (“TARC”). It was 8:40 in the morning when I arrived outside the gate at the Rockwall field. A few minutes later I was joined by a car full of teenagers from Jesuit Preparatory School with the TARC, and not long after that Mark Brooks pulled up. A few more minutes and Doug Sams showed up with the key to the gate and let us in. Brad Gibbons and Michael Wilkins came in shortly afterwards.

Brad had his trailer full of rockets and the launch equipment. As we began to unload and set up the range, the teenagers introduced themselves to everyone and immediately pitched in to help get things set up. I must say, their teacher, Kate Sandelin, who showed up a little later, has an excellent group of students. Although it was pretty cold (thanks for the gloves, Mark Brooks), the range was set up quickly and rockets immediately began to leap from the pad as students and teacher watched and asked questions. Brad Gibbons prepped and flew rockets, and talked rockets all day long as TARC participants soon found a willing mentor. Brad had a variety of rockets on hand, and each one seemed to provide them with a real life illustration of just what they were asking. As the day went on, more and more club members, TARC participants and visitors arrived. It wasn't long before Rags Fehrenbach, club president, and myself were engaged in a healthy discussion with Como-Pickton, Paschal, and Denton high school representatives who were anxious to soak up every word of knowledge we could give. Intent on listening to us, teachers and students would get startled every once in a while

as a throaty “F” or “G” motor launched its rocket into the clear blue skies. Oh yes! Mark Sims made it out to the launch, too, and students soon found out how to really put some air underneath those frisbees, how to make ice cream cones fly, and how to lift pyramids into the sky. I feel certain the kids began to see the abounding opportunities for getting those eggs into the air. Meanwhile, Michael Wilkins was having to explain

how he was able to put liquid glass on his rockets, or at least it sure looked like liquid glass to teachers and students. But Michael wasn't just impressing everyone with the finish on his rockets, he was sending them up to the limits of those clear blue skies. I saw him send up his PML Cirrus Dart at least three times, initially on a G-35, and then a couple more times on a G-80. One of those G-80 launches sent him out for quite a walk, as he caught some upper winds blowing from west to east and sending his rocket into the farthest reaches of the thick brush located on the east side of the range. I think Bob Wilson got the record for longest walk of the day, though, after putting one up almost out of sight. Not to be deterred, he was back again and still testing the upper atmosphere. Most of the rockets stayed inside the field, despite a fairly brisk wind for most of the morning. However, the winds began to calm down after about 1pm and temperatures began to warm enough that

(Continued on page 5)

(Continued from page 4)

some of the coats began to come off. Buzz McDermott showed up about then, and was immediately swarmed by several TARC participants. Dave Schaefer came to his rescue, though, and between the two of them helped several participants prep rockets for their test flights. All in all, I think everyone had a great time. Folks from the schools were just excellent people. With all the negatives I hear these days about students, it was very refreshing to meet a group of students from a variety of schools who in no way fit that negative profile. It was a good day for a launch!

Jonathan Stewart and Doug Sams talk rockets, while TARC participants in the background try to eavesdrop from afar. Photo by James Gartrell.

Traveling from Fort Worth, the Paschal High School TARC group arrives with high spirits. Left to right are: Andrew Black, Mark Selking, Kelly Colwell, Merrell Hood, and teacher, Linda Antinone. Photo by James Gartrell.



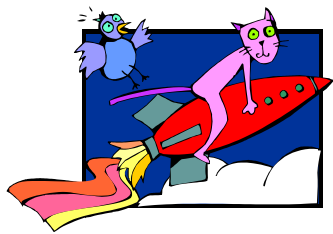
Como-Pickton High School braved the early morning cold to learn more about rockets. Left to right are: teacher, Jan Elmore, Sim Matthews, Daniel Beach, Kade Martin, and Justin Lewis. Photo by James Gartrell.

Gene Pike Middle School from Justin shelter themselves from the wind over by Brad's trailer. Left to right are: Trent Lott (yeah, he gets a lot of kidding), teacher and new DARS member, Tommy Rafes, Michael Nash and Mark Webb. Photo by James Gartrell.



Out-REACH for the SKY!

By George "The Other" Sprague



"...things you take for granted when building a rocket are not so evident to the kids..."

When the weather is fine you can be sure someone is launching rockets. We all know what fun it is to see our projects soaring through the sky. And do you know what can be just as much fun? Watching some youngster flying his or her first rocket. That is part of what outreach is all about.

Take a look at the DARS Outreach calendar on the web site. You will find we have several build and launch sessions scheduled. Uncle DARS wants you to participate and lend your expertise.

The challenge during the build session is to guide youngsters and their corresponding adults in successfully building a simple rocket kit. Often you will find that things you take for granted when building a rocket are not so evident to the kids – and some of the grown ups. For instance, the nose cone is not supposed to be glued to the body tube! The launch lug is not to be taped to the body tube. And the fins are not supposed to be glued on the end opposite of the motor mount.

Usually, we have an hour and a half to do all the building. That is where YOU come in. The more DARS members we have present, the more one-on-one directions can be provided, the faster and easier the build goes.

At the launch, the same applies. Friction fitting motors, properly packing recovery wadding, streamers and parachutes, all this is new to the kids. And we would like to see a great first flight, for this will encourage them to continue in the hobby and build better, more exciting projects.

So come join the fun! As Mark Bundick, NAR prez says, "Pay Forward". Get others involved by getting yourself involved. Aim for the sky and hope you don't miss!



"Vernon Estes got his design for the Mars Snooper from a conceptual design pictured in a Forbes 1959 ad by American Bosch."

DID YOU KNOW?

Vernon Estes got his design for the Mars Snooper from a conceptual design pictured in a Forbes 1959 ad by American Bosch. Find out more details in Jack Hagerty's book, [Spaceship Handbook](#). You can find his book at ARA Press <http://www.arapress.com/>

Eric Vandergriff has some excellent finishing tips for your rockets on his website at <http://www.skypirate.net/>. If you've ever seen one of Eric's rockets, you know he has the art of finishing mastered. Eric also contributed the design of the new front page Shroudlines header, modified a little by me to fit the publication.

Here's something you might want to check out. Jim Pierce, unrelated to DARS, has a website that offers custom graphics, <http://www.military-graphics.com>, and he quoted me a price of \$5.00 and \$1.25 shipping for a 4-inch diameter scale vinyl decal for the Patriot missile. All custom orders accepted.

Go For Level II

by Jeff Mondlock – DARS / NAR #72107

My decision to try for my Level II certification from NAR did not come quickly. I had earned my Level I certification back in 1999 at a high power launch in Windom, Texas, hosted by DARS, flying a LOC EZI-65 on an Aerotech H-242, and after that time I decided to follow the advice of many rocketeers I had talked to and read of, who all said the important thing was the journey, not the destination. In short, many experienced flyers counseled to not be in a hurry and have fun while learning.

During this past summer I felt that I had enough successful “H” and “I” motor flights under my belt to undertake the next level of complication, and had enough experience working with the requirements of building a rocket strong enough to handle a “J” motor. I had been eyeing the PML Endeavor kit for some time, as I found the split fin design to my liking. I had also witnessed several successful Level II certifications on that particular kit, so I felt the chances would be good that the kit would work for me as well.

I purchased the Endeavor kit at a local hobby store and eagerly drove home. Upon inspection of the kit elements I realized that certain modifications would better ensure a successful Level II flight. Some of the eye-bolts and other hardware associated with the kit looked a bit wimpy, so I decided to beef up several of the elements in the kit. I also decided to retrofit the rocket for dual deployment; with simulations from Wrasp running well over 3,000 feet I thought it would be nice to have the rocket recover in two stages.

So, with the decision made to “go for the gusto” I made a list of the items required to achieve my goal of a solid Level II performer. Here is what I added:

- Slim Line Motor retainer for the 54mm motor mount
- Slim Line motor adapter 38-54 mm (this increases the motor choices for the rocket)
- Giant Leap 7” Altimeter Bay
- Fiberglass tape for fin roots to strengthen the G-10 fin through the wall attachments
- Acme conformal rail guides
- Kevlar shock cords
- Nomex parachute protectors
- Missile Works RRC2 Altimeter
- “Safe-Eject” ejection canisters
- Eyebolts and quick links

In the design for the modification for dual deployment I decided to cut the booster body tube to create a separate section for the drogue parachute. I asked a buddy with a band saw to cut the body tube perfectly straight for me, and once that was done the assembly of the booster section went smoothly. I used 30-minute epoxy throughout the kit to ensure maximum strength, and used fiberglass tape to strengthen the joints of the through-the-wall fin mounts inside the area between the motor mount and the rocket body. Getting the tape placed properly was a bit of a challenge, since the fin can section is so long, but I found that with a long dowel and some patience I was able to achieve the desired result. With the fins attached I



(Continued on page 8)

(Continued from page 7)

completed the booster section by gluing in a coupler capped off with a plywood bulkhead into which I epoxied a strong eyebolt for a “zipperless” design. I then drilled a number of holes in the bulkhead in order to allow ejection gases from the motor to escape in the event I elected to fly the rocket with motor ejection, or if I wanted to use motor ejection as back up for the altimeter.

The next challenge was the construction of the altimeter bay. The bay itself, purchased online direct from Giant Leap was very straightforward. The biggest issue was figuring out how to install the bay securely into the airframe, and in placing an access hatch through which the electronics package could be armed. The access hatch idea stemmed from consultations with Jack Sprague of DARS, who advised that external arming switches or phono plugs can sometimes fail in flight.

For the installation of the bay I made a drilling template to allow for 6 holes to be drilled in each end of the bay, approximately 1/3 of the way from each end. I slipped the assembled bay into the drogue section of the airframe, taped the bay into place, and then drilled 6/32 holes evenly spaced around the airframe on the template marks. In this fashion I had holes in both the bay and the airframe that would line up perfectly. After repeating the same process for the side of the bay attached to the “main” side of the airframe, I then epoxied 6/32 blind nuts to the inside of the bay. I was careful to place a tiny amount of Vaseline into each nut in order to ensure the epoxy didn't flow into the hole where the airframe screws would go. When the assembly dried I had an altimeter bay that was firmly held to each end of the airframe sections with 6 small screws on each end with the screws firmly anchored into a blind nut – nice and strong.

The completion of the electronics bay required the installation of small ejection canisters attached to the forward and aft bulkheads, screw terminals that allowed wires to pass through each bulkhead and connect into the altimeter, and a safety switch that would be accessible through the hatch so that I could arm the electronics only after the rocket was safely out on the launch pad. I elected to purchase ejection canisters rather than try to manufacture them myself, and ending up choosing the Safe-Eject system available online from Magnum Rockets. The canisters are well made from aluminum and come complete with good instructions and mounting hardware. With the bay assembly complete a trip to the local Radio Shack provided the screw down terminals and the safety switches. I then constructed a simple mounting board to which my RRC2 altimeter could be attached via four small screws. The board has two brass launch lugs epoxied to each side so that it can easily slide down into the bay, riding on the two all-threads that hold the bay assembly together. The finished product of the whole electronics bay turned out much better than I expected, and now I have a package that can easily be retrofitted into any four-inch rocket.

The final paint scheme and logo materials for the rocket came courtesy of my 18-year old son Alexander, who during summers is a member of the Drum and Bugle Corps, the Phantom Regiment. If you have ever seen a Drum Corps competition, you will be instantly hooked. It's rather like watching your first high power rocket launch. Please feel free to visit www.regiment.org or www.dci.org for details. Anyway – I had been promising Alex for some time that I would construct a rocket honoring his participation in Regiment so this seemed like a perfect opportunity. Alex talked to the Corps Webmaster and obtained some .pdf files of the Corps logos that I took to Kinkos. In a few days I had a beautiful vinyl appliqué that went on to finish the rocket. When I assembled everything and stood the rocket up in my garage I was really excited. With the paint and graphics the rocket looked great. Phantom Regiment was ready to fly.

Launch day was November 9th at the Texas Turkey Shoot, hosted by DARS at Windom, Texas. I arrived at the field early and was disappointed to find the wind was very strong. Our club president, Rags Fehrenbach, had set up a small weather station which was measuring winds averaging 15 mph with gusts up around twenty. I spent the morning watching the sky and the few brave souls who ventured out to the high power pads in the stiff breeze. Towards lunchtime the winds calmed a bit, and after having witnessed six or seven successful flights I gave myself a “Go for Launch”. I had prepared a rather extensive checklist the week before the event, so with that list I was well focused on the task of prepping Regiment for its first flight. I also had a friend from work along who I had been talking to about the hobby for some time. My friend Tom was quite

(Continued on page 9)

(Continued from page 8)

helpful in providing a needed set of extra hands at times and in taking pictures. I had chosen a Cesaroni 670J300 motor for the flight, so after picking up the motor from Sharon Turner of Trailing Edge Technologies we marched through the prep list. If you don't currently use launch preparation checklists – I recommend them highly. Using the list helped quite a bit since I was nervous about the flight, and having the steps all laid out in an orderly fashion was just the thing in keeping me on track to ensure we didn't forget anything.

Once fully prepped Tom and I carried the rocket and all my certification paperwork (I had passed the Level II test the week before) up to the Range Safety table for inspection. Beth Sapp of DARS ran me through the inspection checklist and asked some great questions. My confidence was building as I talked Beth through the various aspects of construction, showing the mark I had placed on the rocket to indicate location of the CP, and providing a Wrasp simulation of the flight. Beth signed the flight card and wished me good luck. I handed the flight card to the Pad Manager and in moments Tom and I were walking out to one of the big rail pads.

Rick VanVoorhis from AARG was kind enough to meet us out at the far pad and showed us how to lower the big four-meter rail. That pad was a monster! We slid Regiment easily onto the rail and walked the rail to upright position. I then bolted the rail in place and went about the final few steps of the launch checklist. I accessed the safety switch from the hatch and armed the RRC2. After power up I heard the distinctive three short beeps indicating I had continuity to both charges. I buttoned up the hatch, installed the igniter, hooked up the clips, and armed the pad relay. A couple of quick portraits taken by Tom with me next to the rocket and we were ready. I walked back to the flight line nervous but tremendously excited. I had worked long and hard on this project and was anxious to see it go. So much could go wrong! But with the hours of study and prep work I was confident I had the right rocket.

The LCO counted down the launch and the J300 leapt to life. The rocket quickly cleared the pad and roared straight into the sky. That big four-meter rail really got things off to a great start despite the wind, and Regiment rose straight and true as if the rail extended all the way to apogee. The RRC2 deployed the drogue right on time; we saw a small puff of white smoke waaaaaaaaaaaaaaaaay up there, and followed the rocket down. I could see that everything was together. At 500 feet the RRC2 spit out the main, and as the big chute blossomed I felt a huge wave of excitement and relief. I watched the rocket drift over a line of trees and knew I had a successful flight.

Walking out to retrieve the rocket I had a chance to reflect on the accomplishment. I had a great sense of achievement when I walked up to the rocket, found everything intact, and heard the RRC2 cheerfully beeping out 3,800 feet. I reassembled the rocket and walked back to the flight line where I got my paperwork signed for the Level II certification. I spent the rest of the day talking to other fliers and spectators who stopped by my truck to extend their congratulations. Several people I talked with knew about Drum Corps and Phantom Regiment. It really turned out to be a fantastic day.

During the day several people asked, "OK – so now when are you going for Level III?" I am sure that one day I will get there, but for now I have lots to consider and a rewarding and enjoyable path ahead. I always try and remember it's not the destination, but the journey, that counts.

LETTERS TO THE EDITOR

Well, obviously I haven't gotten any letters yet, but now is probably the best time to talk about guidelines for sending your files. Dave Schultz gave me some very good suggestions at the last meeting. Thanks Dave! The best method is to send a file attached in an email to Shroudlines@DARS.Org. Text files are best sent in a ".txt" file and picture files in a ".jpeg", ".bmp", or ".tiff" file. If you can't send in those formats, I'll accept MS Word or Excel files, Version 9 or previous. You may need to break up and/or "zip" the files if they are large. Also, if you can't get it to me any other way, you are welcome to send a hard copy of smaller articles to my home address (see back of the newsletter). I'll do my best to convert it for publication.



Dallas Area Rocket Society
(“DARS”)

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SHROUDLINES

A Dallas Area Rocket Society Production

DARS

The Dallas Area Rocket Society is a non-profit chartered section of the National Association of Rocketry (“NAR”). Its purpose is to promote the hobby of consumer rocketry in the Dallas/Ft. Worth metropolitan area.

Membership in DARS is open to all interested persons. Membership in NAR is encouraged, but not required. Annual dues are \$10.00 for individuals and \$15.00 for families. The entire family, including children, are welcomed to the meetings.

The club meets on the first Saturday of each month at 1:00 p.m.

Meetings are held in Plano, TX at

Plano Late Night Bingo

1805 Ave K (18th and K St.)

Plano, TX 75074

Exit off Hwy 75 to East Plano Parkway (just north of George Bush Turnpike—Hwy 190) and go east, turn left on K St., and turn right into the shopping center just north of 18th St.



Stay connected! All of us will reach greater heights with your attendance at the club meetings.