SHROUDLINES

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Chris Bender's upscale Satellite Interceptor, a DARS Fall Classic Best in Show winner, takes off at the Tulsa Rocketry High Frontiers 12 launch. Photo by Chris Bender

Ignition!

By Gary Briggs

In getting ready to put this column together I decided to jump into the way back machine and think about the things that used to get my imagination going on rocketry. Certainly the old catalogs were there first thing that came to mind as they offered a huge variety of designs and then the tools and supplies to modify those or go off the map and build something yet unimagined.

As I dug through some of these, additional publications caught my attention. After you had placed an order with Estes and they had your mailing address, they would send you supplemental catalogs a few times a year. Those catalogs often featured special deals on certain rockets, sometimes exclusive introductions of new kits, and this little ditty called Model Rocket News. MRN was a mini publication unto itself often covering NAR national events, the international space modeling championships, original design plans, rocketry cartoons and, as in the case featured here, a whole line of rockets based on a new Sci Fi movie or TV series. Here's one from the Fall '77 catalog featuring Star Wars, the original, numero uno, well actually number 4 by revisionist history. Suffice it to say that there had never been anything like it to that point and it was a big deal to all of us geeks.

At the time it was one of there very few places to get this type of rocketry related information. I guess the NAR had a publication of some sort back then, but for those of us flying independent out in the sticks, this was it.

MODEL ROCKET NEWS

Vol. 17, No. 5
October, 1977

Vernon Estes . . . . . Publisher
Dane Boles . . . . . Editor
Mary Roberts . . . . Asst. Editor
Bob Cannon . Dir. of Publications
Charlie Webb . . . . . Photographer
Ron McClaren . . . . . Staff Artist
Steve Garcia . . . . . Staff Artist
©Estes Industries 1977

JAWAS, LASER BURNS AND DARTH VADER

by Mike Dorffler
Photos by Charlie Webb

It was strangely quiet as we slowly approached the designated vine covered structure. The "silence" was broken only by the nearby San Diego Freeway traffic and the rapid overflight of private aircraft from an airport located closeby.

As I read the sign on the massive wooden door I suddenly felt a tremor in the FORCE and thought we may have made a serious mistake in coming. It read: "ENTER AT YOUR OWN RISK, (signed) Darth Vader." We said nothing but stared at each other not knowing what to expect. We knocked the pre-instructed number of times then moved away from the door. After a few moments, it opened just far enough for one of the occupants to gaze at us with one eye. Then a low voice said, "State your name and business".

"We're from Estes Industries and have come to examine the spacecraft," one of us stuttered.

"Ah-h-h, good. You're expected." The door opened further and we entered making every effort to keep our balance as the four heavy equipment cases we carried made movement difficult.

Once inside one could feel the awesome presence of the FORCE. The silence was again deafening. Only the FM stereo receiver blaring hard rock and the sound of hyperactive typewriters kept us from speaking in hushed words. We had safely passed from the outside world into the incredible Industrial Light and Magic Studio where the STAR WARS special effects were filmed. It was to be an experience that Charlie Webb, Wayne Kellner and I will never forget.

We tried to hide our drooling, pop-eyed, tongue hanging expressions to no avail as we introduced ourselves to the team of brilliant artists (and Model Rocketeers) who made STAR WARS such a success.

We met Joe Johnston, the creator of all the spacecraft used in the movie. He is an outstanding artist and it was his renderings that guided the construction of the models used in filming. He was also responsible for doing the "story board" illustrations used to guide the team in filming the action shots. We met a few of the guys who actually built those unbelieveable models, like Steve Gawley, Lorne Peterson and Grant McCune. We talked to Mas Norihiro, Richard Edlands, Doug Smith and the man who created the computerized camera system to film those fantastic space battles, John Dykstra.

After we visited for about an hour exchanging model rocket experiences, asking thousands of questions about the models and sound effects, and the problems they encountered making the film, we were led into the film studio where the STAR WARS models were stored.

There in one corner were several large, white wooden crates with STAR WARS stenciled all over them. Charlie, Wayne and I waited breathlessly as the first crate was opened. The foam packing sheets were lifted out followed by a huge three-foot square plexiglass dust case. I had to re-adjust my pacemaker as I saw the T.I.E. Fighter for the first time. It was huge! It was nearly two feet from engine panel to engine panel, and almost as high. The detailing was breathtaking. You could even see the wrinkles on the pilot's

Darth Vader's TIE Fighter screams past the "ominous" Death Star, to challenge the X-Wing Fighters of the Rebel Forces.

Joe Johnston (Right), creator of STAR WARS spacecraft explains detail of Darth Vader's TIE Fighter to Estes photographer, Charlie Webb.

Charlie Webb closely examines Darth Vader's super-highly detailed TIE Fighter.

Wayne Kellner (Right), Estes R&D Staff, raps with Grant McCune, STAR WARS model builder.

Wayne takes scale measurements of Y-Wing Fighter.

STAR WARS Flying Models

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One thing I tried to find when this all started coming back to me was a picture that was published in either MRN or possibly one of the technical manuals. The picture I am thinking of showed goldfish in the payload of a bay of an Estes Scrambler. Now PETA would have a field day on this one, but back in the day, these things were considered a scientific endeavor. I think about it now as to the challenges of getting a fish in an out of a payload bay and being able to seal that such that everything could hold together for the flight. Talk about an interesting engineering challenge. This may be a job for John Dyer to find this picture. I would really like to see it again.

This month we cover a few rocketry topics. Bill Gee gets us started with his something on the Dallas Maker Space. Then we conclude Robert Vanover's Level 3 odyssey with his trip to BALLS 2015 and his successful launch of his Uber Pike. Congrats Robert! Next up is Nick Viggiano covering the rocketry bumps and bruises we all know so well that come with regular flying. They start out looking so nice and show room fresh and then gain "character" through their usage. I follow up with a quick repair and a complete rebuild of a couple of rocket to put them back on the flight line. We complete the issue with some additional pictures from BALLS and the last couple of DARS events. Enjoy!

Bill's Something #16- What I did on my summer vacation...

By Bill Gee

Imagine an air-conditioned and heated workshop with the usual power tools: drill presses, scroll saw, band saws, miter saw, table saw, router table, lathes, sanders, grinders, sand blaster and welding equipment.

Now throw in some not so common equipment: 3D printers, laser cutters, a vacuum forming machine, CNC (computer numeric control) routers for wood and for making simple printed circuit boards, a pick-and-place machine and a reflow oven for surface-mounted electronics, CNC milling machines, a pottery kiln and a two-post automotive lift.

With the newly acquired 3D scanner, you can now make a copy of that long out of production plastic nose cone.

Add a creative arts studio with a silkscreen press and a large vinyl cutter. And a digital media studio for editing that launch footage.

The indoor paint room was shut down by the fire marshal for insufficient venting but there is a desire to bring it back.

This comes with around a thousand creative members working on individual or group projects meaning a huge brain trust to tap when you get stuck and do not know it all.

Top it off with numerous classes to learn how to play with all of these cool toys.

Well, you do not have to imagine. It is real. And it is just around the corner and up the street behind Tanner Electronics in Carrollton just west of the Valwood exit on I-35E.

I joined the Dallas Makerspace. It is better than West Virginia - it is heaven. About the only way it could be better is if they had a large flying field outside their back door.

Seeing is believing. If you would like to believe for yourself, visit their weekly open tour night Thursday evenings or I can let you in at some other time and show you around the facilities. Check them out at http://dallasmakerspace.org

I have begun to host rocket build sessions there once a month on the second Wednesday evening. Let me know if a different night would be better. Bring your model or high power rocketry projects and we will build together, sharing stories, techniques, tools and supplies. I will have some of my tools and supplies with me but do not have enough for everyone; please bring your own to prevent having to wait. Generally, you will be using white or wood (yellow) glue, a hobby knife, masking tape, a pencil, a ruler and some sandpaper (220 to 400 grit.) Model rocket kits are available locally at hobby shops as well as craft stores such as Hobby Lobby.

The plan is to have these sessions every month. Kids are welcome if they are interested in rocketry; minors need to have a parent or guardian present. If you are not a member of Dallas Makerspace and need to get in the front door, please call me at 972-985-5034. We are scheduled to 10, but if there is interest and the room is available, we can stay later. Arrange to come early or stay late and we can go back into the workshop to cut fins or centering rings with the lasers.

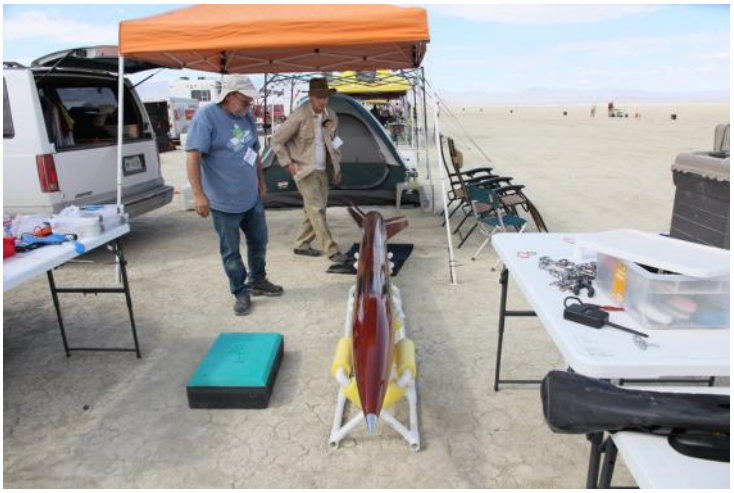
You do not have to be a member of DARS or the Dallas Makerspace to attend. If this is your first time there, we ask that you sign a liability waiver at the kiosks in the lobby acknowledging that you are aware we have potentially dangerous tools on the site. I'm sorry, we will not be using any of them for the sessions though I can give you a tour if you are interested.

If you would like to discuss this further, post your comments to the DARS-General Yahoo group at http://groups.yahoo.com/group/DARS-General where I like to hang around.

We Can Lick Gravity—Part 3, Scenes from BALLS 2015

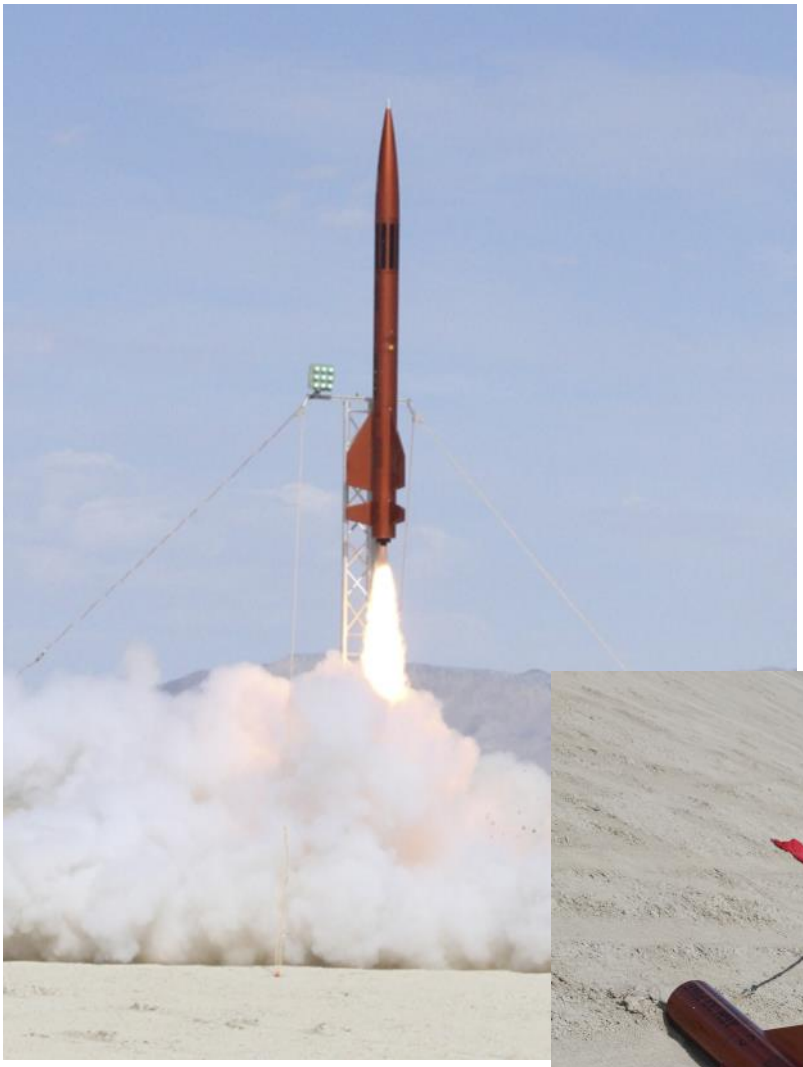
By Robert Vanover

Many of you have been following the build of Uber Pike, my L3 project so I planned on finishing the story regardless of how things came out. The flight took place on the first day of the Tripoli Rocketry Balls launch at Black Rock, NV a dry lake bed and the largest flat spot on the planet. Rockets flown during the event reached the edge of space and their video shows the blackness of space, the curvature of the earth, and the California pacific coast. I watched motors up to Q impulse launch and flights to 130,000 recover safe.



Mine was not like those amazing achievements and barely clawed out 4000 ft., it was absolutely text book in is perfection while remaining in full view the whole time. I had two laptops, two Canon DSLR's, two GoPro's, and four two-way radios – all my favorite toys and my truck in the dustiest place on earth and it all functioned perfect. I had a great time and am looking forward to a return trip with an extreme project maybe in two years. Now the pictures:


AGM 33 PHOE




AGM 33 PIKE
SERNO 33301

Rocket Finishing and Flight Abuse

By Nick Viggiano

I have been a BAR for 3 years. I started in 1966, before the Internet and all the info on spirals, papering fins, etc. Interest waned during the high school years. Built a Estes Omega in 1980 for, well it was against the NAR Code, but it was around July 4. Then in 1993 built a Estes Phoenix Missile with my nephews. I can't remember how I tried to fill the spirals on the Phoenix or how I found out about filling them, but I was happy with the results. But as was the case with my earlier rockets, lost interest in filling the grain in the fins after 5 coats of balsa filler. The Phoenix CATO on it's first flight. Ejection occurred approximately 25' AGL.

It was when I got back into rockets in 2012 that I started to put a real effort into finishing my rockets. With the internet and forums I learned most of the tricks to getting a good looking rocket. I have built 13 vehicles in those 3 years, so my skills are about average.

First let me say that like many rocketeers, I am never 100% happy with the finish of my rocket. I always see some imperfection, and will point out the imperfections when someone says "that's a great looking rocket".

In our hobby we have the range from flying naked to spending 100's of dollars to get a silver/ chrome finish that won't be fragile and last! We have discussed and debated on forums and over drinks everything from filling spirals to clear coating, and the reasons why to do this and why not to do that.

Some will say "why spend the time and money when a rocket can suffer a CATO, lawn dart or get eaten by the dreaded Rocket Eating Tree species!" Or they will say "95% of people viewing your rocket will be at least 20 feet away and couldn't tell if the spirals were filled or not".

For those at the other end of the spectrum the most common reason is pride in workmanship, and that includes myself. I fill spirals, paper fins, use Elmer's White Glue to fill balsa cones and transitions, prime/sand, repeat till I get a satisfactory surface, if not perfect. I use lacquer rattle can paint, mostly Duplicolor (for primers also) and Tamiya and Testors One Coat. Some cite the high cost for these brands, but I believe that the quality and the selection (ie: Duplicolor Metal Specks) makes them worth it.

However, I do not clear coat the finish! I have read too many horror stories about ruined paint jobs when attempting to protect the finish. It horrified me that after building, prepping and painting a rocket that it could all be for naught while trying to protect the finish. I don't believe that a clear coat can protect the finish from the stresses of multiple launches and landings. Don't get me wrong, some day I will attempt to clear coat a rocket. Most likely it will be a silver rocket and it will be one of the pricey two step finishes.

The authors rockets when new below and after some usage to the right.

Now let me state I am not dissing rocketeers that don't put a lot of effort in finishing, in fact I sometimes envy them.

I have found that a good percentage of us are also are involved in other modeling, like scale modeling and model railroading. In both of these hobbies there is an procedure for added realism called "Weathering". The idea is to make a locomotive to look like it's been used in all kinds of weather and use. The method is to use paint, oils chalk, to represent soot smeared top, dirt and grime around the wheels. With scale modeling of war planes, the paint is worn on the leading edges, soot from the gun ports, exhaust stains etc.

I have come to the conclusion that my rockets will become naturally "weathered". That some spirals will become visible from the stress of flight, that some bubbling of paint will happen from the heat of ejection gases, there will be dings and dents from landing in the wrong place.

I still finish my rockets with the goal to look like brand new vehicles right off the showroom floor. But I realize that over time they will show age, just like most earthly creations (including people). Oh, I will try to buff out the scratches and even replace sections of body tubes. But the the dents & dings I can't fix become battle scars that are displayed with honor.

I find that flying a bird that I spent the time and effort to look good adds to the anxiety at countdown and to the feeling of accomplishment with a successful flight.

Rocket Repair and Resurrection

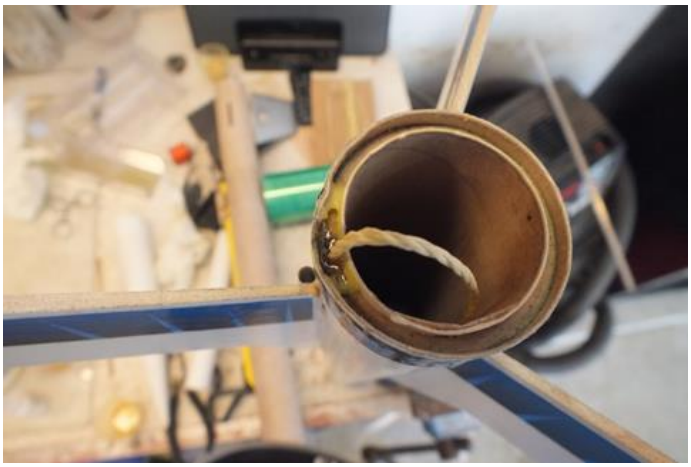
By Gary Briggs

As I discussed in last issues *Ignition* column, our recent family trip to Michigan yielded some additional rocket projects (like I didn't have enough already). I have always liked the resurrection and repair aspects of rocketry since once you understand that you can pretty much fix anything, given time and available parts, then your fear of rocket destruction significantly decreases and your wiliness to fly some of your best stock increases. Here are a couple of examples of rockets needing repair and resurrection based on recoveries from that trip.

First up is a relatively minor repair to bring a classic back on line for several more flights. The rocket is an Estes Sizzler (#2127) that my father in law built in the late 90's. I always liked the lines on this rocket, and was a nice size for a variety of flying conditions and fields. It's one weak point and its most unique characteristic is its rear ejection design with a slid out stuffer tube with a parachute attached, similar to some of the classic Estes gliders like the Sky Dart and the Citation Bomarc. What's different from those on the Sizzler is that it attaches a shock cord to engine mount so that the entire rocket recover under that chute wrapped around the slide out motor tube. It's a workable design, but was accomplished using a fabric elastic band which is located near the engine exhaust. Now these things will wear out no matter what you do, but add a little corrosive engine exhaust and heat from repeated launches, not to mention stretches from multiple ejections and sooner or later your flight profile looks like this: Rocket lifts off as usual, rocket ejects separating the shock cord from the body, body minus the engine mount becomes a lawn dart, engine mount either drifts away on the parachute or remains wrapped around the now ballistic engine mount and falls to the ground. Luckily when I had this scenario, the rocket landed well away from spectators and on very soft ground causing no damage to the rocket. Also the engine mount came in ballistic, so much so that I didn't even know that it had come out of the body until someone found it on the ground. I originally thought that it didn't eject at all and maybe the motor had just shot out the back rather than the entire assembly.

I thought about a couple of approaches to repairing this rocket. One would drill a hole through the inside bulkhead to run a shock cord up to the nose cone for an anchor point. That way, with the nose cone friction fit, you could easily replace the shock cord if it were to wear out again. The second approach followed the original plan, but used a Kevlar cord in place of the elastic. The advantage of the Kevlar is that it is flame prof and very strong. Additionally, it can be mounted into a small hole drilled between the inner and outer body tubes and epoxied in for extra strength. My first idea may still be the better one, but lacking a drill bit extension, I didn't have a good way to get the hole in the bulkhead. I went with the

second design and time will tell if we should switch back to the first. It's a quick fix and this one is ready to go to its next launch. 1 down, but the next one is just a bit more involved.

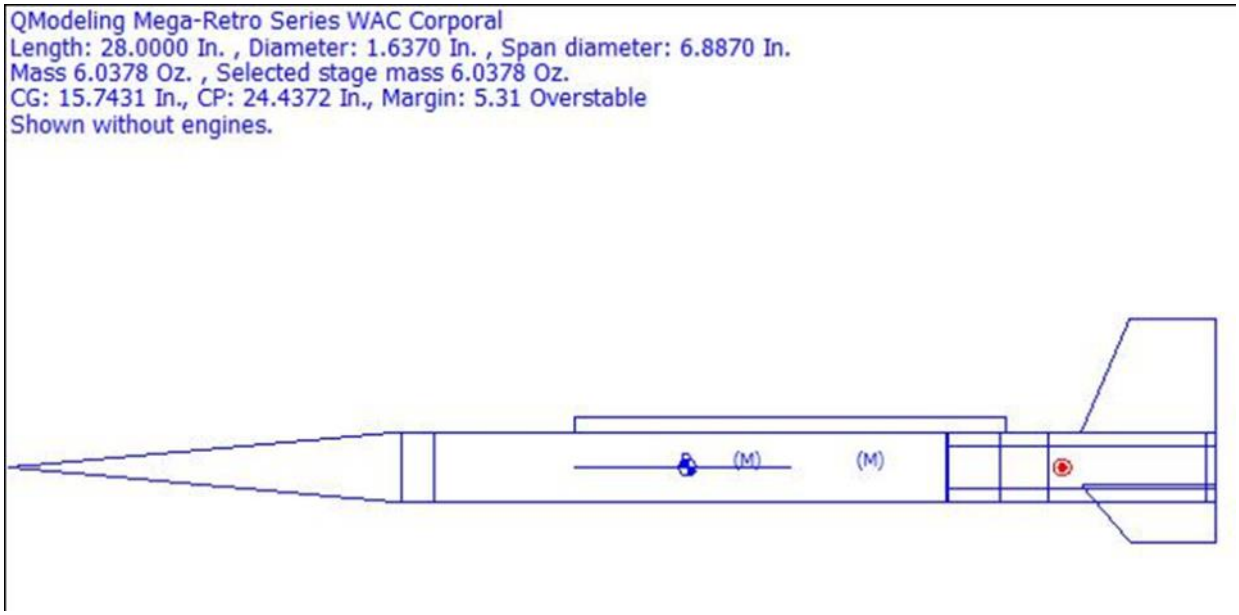


In the December 2013 issue of *Shroudlines* , I highlighted a couple of fleet rockets that had been lost to the rocket gods that year (see *Lost Boys 2013*). That included my QModeling WAC Corporal that had been a scale competition winner as well as a great all around flyer. It had lodged in the top of a pine tree with no real way to recover it, its Kevlar shock cord holding it very firmly in place. We knew sooner or later it would come down. Sometime in the fall of 2014 the body tube finally became dislodged. For the time it spent in the tree and type of weather that it saw, it was in remarkably good shape. The Rustoleum yellow on the rocket was completely intact, even though the body tube underneath it had become completely flexible, water logged, and out of shape. The fins were still firmly attached, although there was some bubbling of the paint there. The nose cone, well, as far as we know, it's still up there and will need to be replaced, or maybe by next summer it will come down as well.

Reconstruction on this one starts with deconstruction. This is almost a rekit, but some good engineering makes it pretty quick and painless. I removed the engine mount first and was not all that surprised to see that this very cool piece of balsa engineering was still very much intact. This was always a very unique design feature of the QModeling kits, and it proved its durability this time for sure. I replaced the actual motor mount tube, but reused all the rest of the parts, lengthening it slightly. I

also did some minor repairs to the structure and reinforced it with super glue. I ended up saving the conduit/launch lug structure which had previously involved quite a bit of sanding to make this look good. It was slightly warped, but straightened out nicely, simply by clamping it to a flat surface, after I sanded the body tube remnants off the structure. The fins were pulled out of the motor mount without too much issue fortunately, allowing for their reuse. Bubbled paint was sanded off the fins.

Reconstruction of this one became a tale of what I had in hand verse what I needed. The body tube on this kit is just shy of 20" in length. Since I didn't have a longer piece of BT60 tubing, I ended up using 2 pieces to create the total length. That is where lengthening the motor tube and then adding an additional centering ring and coupler tube was required. I had to mark the body tube first and cut out the slots for the fin tabs and check their alignment before reassembling the lower body tube and motor mount, followed by the upper body tube to the motor mount. My tip here to the newer builders is to always use white glue when sliding in couplers and motor mounts since the current versions of carpenters glue



am not sure it will happen. Too bad if they don't make it as they had some cool upscales of bygone classics. My other options are wait for gravity to do its thing in Michigan, keep searching ebay, or substitute a PML 38mm nosecone for this one. We shall see what ends up working best.

tend to "grab" really quickly here, leaving you no working time to ensure everything is where you want it before it's permanent.

This one has a little ways to go yet as I need to find a nose cone for it. QModeling website says it has been "on the way back" for a very long time, so at this point I

Hopefully that provides some quick perspective on a minor and a major repair and how to get some birds back into the fleet in short order.

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DARS supporters not currently offering a discount

ROY'S HOBBY SHOP

HobbyTown Fort Worth

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Click on logos to link to websites

Parting Shots

Photos by Various Artists

Top row: Pictures from the DARS September launch by Chuck Crabb
Bottom row: A very large Mosquito which flew on an O motor. A 1 point landing from 30K feet, pictures by Robert Vanover

Pictures from the October DARS Frisco launch by Buzz McDermott

Photo by Robert Vanover

How to Contribute to Shroudlines

We all share a love for the rocketry hobby and all have different experiences and expertise to share. You don't have to be a Pulitzer Prize winner to write for this publication. Anyone can do it!

Submissions can be in the form of plain text files, emails, or MS Word documents. Pictures can be of most any format, but .jpg files are generally the norm. Keep the content family friendly and free of political discussion; just rocketry.

We publish every 2 months so we need your content submitted by the 15th of an even numbered month (.i.e. February 15, April 15, June 15, etc.). You can submit via the contacts page on dars.org or direct to the editor at garyb2643@att.net.

DARS Officers

President	**Jack Sprague**
Vice President	**Dave Shultz**
Treasurer	**Suzie Sprague**
Secretary	**Bill Gee**
NAR Senior Advisor	**Chuck Crabb**

Upcoming Events

11/7	**DARS Business Meeting @ Coppell**
11/21	**Monthly Launch @ Frisco**
12/5	**DARS Business Meeting @ Coppell**
12/19	**Monthly Launch @ Frisco**

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. Go to the website, fill out and send in an application, to join or renew your membership.

The club normally meets on the first Saturday of each month at 1:00 p.m. and the current meeting location is in Coppell, just off the Sam Rayburn toll way and Denton Tap Road.

Visit the DARS website for the meeting location: www.dars.org