

# SHROUDLINES

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Carl McLawhorn, Mark Mayfield, and  
Johh Dyer at the Frontiers of Flight  
Museum's 40th Anniversary Celebration  
of Apollo 7.

## Ignition!

By Gary Briggs

Welcome to the April 2014 issue of Shroudlines! I am up to my 4th issue as the editor and I am very thankful for all the contributions thus far and I know that there are many more great stories and technical build articles out there. Get yourself in print and share your experience with the rest of DARS.

I will need your help in the coming months as I go through some personal changes. After 26 years of employment with one company (well one that got bought by another), I decide it was time for a change and some new challenges. I think it will be a great thing for my personal sanity, but it will likely cut into hobby time over the next several months, so any help you can provide during this time (i.e. articles) is greatly appreciated.

There is much going on in DARS land. There were a couple of great launches in Frisco in March and April, and as we prepare to go to print, there are High Power launches scheduled in Gunter for April and May. And let's not forget about DARSTAR X in Frisco in May. Plenty of opportunities to fly, compete, and just have fun.

This month I re-publish my first article from another magazine. John Dyer put this article together with editing from the former Shroudlines editor and departed friend James Gartrell, for Launch Magazine just before it went out of

print. This is a great story from a bunch of different angles.

First it was a big build that pulled together a team of DARS members to support an important celebration for a specific Apollo mission that brought together a bunch of the big names we all know from the program.

Next, the rockets that were built for this event were Semroc Saturn 1B's, specially updated to match the Apollo 7 specifications, by Carl McLawhorn. We lost Carl last year, and due to an extended illness and recovery that his son Bruce went through, Semroc announced that they are going out of business this year. This one really hurts us all as Semroc was **THE** place for out of production components, especially those for Centuri clones. Carl helped me to recreate a childhood I never had, with parts to clone a bunch of Centuri models including the Mach 10, USS America, Centurion, and the E.S.S Raven. The Raven came together based on an email to Carl, just inquiring about making the fiberboard fins. I made a point of sending him pictures and the Shourdlines article covering the USS America that I built prior to them bringing it back into production. Well for whatever reason, he sent me out the 2 sets of the Raven fins, gratis. Carl was just that kind of guy and will be greatly missed.

Lastly, it's a story about a plan coming together and rockets coming in from across the nation for the event. The part where several DARS members get to meet their childhood heroes is pretty cool as well.

Also in this issue, we get the next installment of Robert Vanover's MadCow 5.5" Pike rocket. Robert's work is a piece of engineering beauty. This article takes us through the remainder of the construction, avionics, and recovery. He has promised one more installment covering the finishing and the first flight. I can't wait so see this one in the air. It should be awesome thing.

Bill Gee provides his "Something", this time discussing changes to the NAR competition rule making process and competition flying in general. I put in an article on one of the new tools I recently discovered, and George Sprague rounds us out the writing with some random thoughts on rocketry. Nick Viggiano joins the contributors with some great shot shots of the April Frisco launch. Enjoy!





## Bill's Something #8

By Bill Gee

As I write this, the NAR competition Rules Change Process (RCP) is in full swing again. The comment period has just ended and voting is about to start.

The proposed changes are posted on a special forum not visible except to those who join. Members of that forum are allowed to post comments to the proposals; none of this is available to anyone else to see. Why all of this secrecy? The forum should be like most other forums - open for all to read, but only members can post and vote. People not already involved with the process get absolutely no encouragement to become active and participate. At best, this is voter disenfranchisement of those who do not want to or cannot use the electronic forum for whatever reason.

Again, I will not be voting. I will not join something so that I can see what is in it.

This new approach began two years ago, and supposedly, the response was not good. Well, the results for that year are in. Surprisingly, some proposals did not pass as I had been expecting. Only 44 people voted; an even worse turnout than previous year's "dismal" participation of around 60. I hear the results from last year were not any better despite the fact that a PDF of the propositions had been published before the deadline for voting.

Proponents of electronic voting like to point out that mailing out a hardcopy of the Model Rocketeer costs the NAR over \$10,000. This

is at a time when the NAR claims it has plenty of money to spend on services. There has got to be another agenda in play. If saving that money was the motivation, then why not coordinate to print the rule change material in the same issue of the Model Rocketeer as the ballot for the NAR Board of Directors? There has got to be another agenda in play. Why not publish the list of proposed changes on the web site, along with a ballot that an interested member can print and mail in. There has got to be another agenda in play. I suspect that some want to take the board elections electronic as well, that the RCP is only a trial balloon. Why I do not know. What I do know is that switching to electronic voting has not increased turnout. Why not an all of the above approach instead of blindly dumping the old for the new?

But I digress. A recurrent theme at recent NARAMs is that participation in competition is declining. A major concern is that if the number of contestants drop much more, the ability to staff range duty positions may be in jeopardy. There has been much discussion about how to increase interest, including special meetings to talk about options and to brainstorm for fresh ideas. Some of those present feel that the events have become too mature; that there is not much room for a better design to stand out. Being competitive at the national level has become a combination of luck and an ability to choose optimal atmospheric conditions to fly. Most competition birds look the same.

Many think that new and different events are needed to get enthusiasm back among those bored by the current ones, but no consensus was reached about what form these events should take.

Part of the problem is the lousy economy; few can justify taking an entire week off from work to travel to a faraway place and stay in an expensive hotel. Some of the discussion revolved around how to lessen the cost of attending, from fewer contest days to cheaper lodging options. For the most part, our hands are tied: the number and diversity of contest events pretty much requires four or five flying days and the need for meeting rooms mandates the use of a pricey "headquarters hotel."

Another aspect is that the nature of the NARAM attendee has changed over time. There was a time when the sport range at NARAM was an afterthought. Not any more. Recent NARAMs have seen as much activity on the sport range as on the contest range. There have been some talk about trying to deemphasize sport flying to get more to enter the contest. That would be a huge mistake. My understanding is that sport fees are now a significant part of the income for a NARAM. Some will probably choose to attend an NSL or LDRS instead of a NARAM with substandard sport flying opportunities. Dare they risk killing that golden goose?

Things appear to be still healthy at the local level. Clubs are still holding local and regional events. We still have people flying in our

contests. But it is not the same as it was. We no longer have large numbers of people making pilgrimages to Houston or Austin to fly a regional. Except for Chas Russell, we have no one who regularly competes at NARAM.

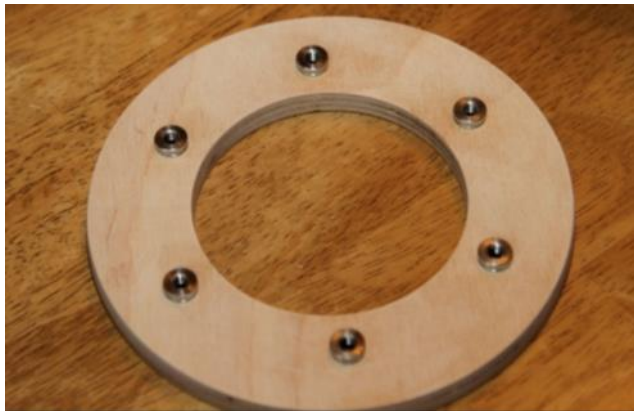
We will continue to hold NAR contests as long as there is interest. And if the Pink Book ever goes out of style, we have a history of holding fun contests just because. But I do not see the glory days of competition returning.

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> or Ye Old Rocket Forum at <http://oldrocketforum.com> where I like to hang around.

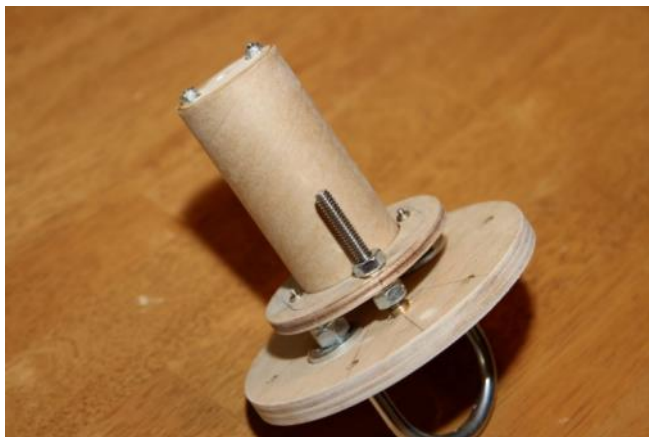
## Madcow 5.5 inch Fiberglass AGM-33 Pike—Part 2

By Robert Vanover, Photos by Robert Vanover

The aft airframe is done except for drilling and tapping for #4-40 nylon screws for shear pins, I will do those when I set-up to do the ones for the nose. I had a few holes to drill for the back end, a 1/8<sup>th</sup> vent, the rail buttons, the twin 5/16" U-bolts, and three for the thrust plate retainer\ aft CR but that was nothing compared to the front. The front is all about drilling accurate holes.



The ring above is 3/8" thick 5.38 x 3 inch CR with 6 holes for # 10 screws and PEM nuts pressed in. I also sanded a taper in the ring to make it fit as far up in the nose as the FG bulkhead did.



The assembly at the bottom left is a 4 1/2 inch by 3/8" disc of plywood with a 5/16" U-bolt and two 1/4" rods to mount the tracker bay to. Six bolts go through the disc to mount it to the ring. The tracker mount is 38mm tube and bulkheads to hold my BRB gps unit.

The Aluminum tip on the nose was removed and thread locker applied then reinstalled. Aeropoxy was used to attach the coupler to the nosecone. All of this replaces a single 1/8" FG bulkhead in the nose, no wonder this pig keeps getting heavier.

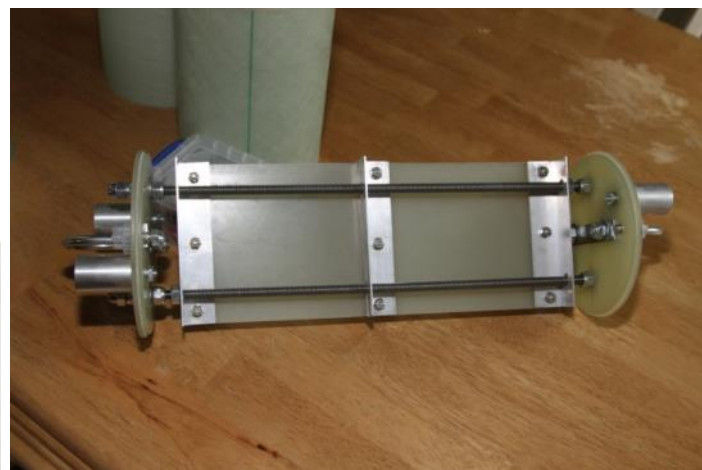




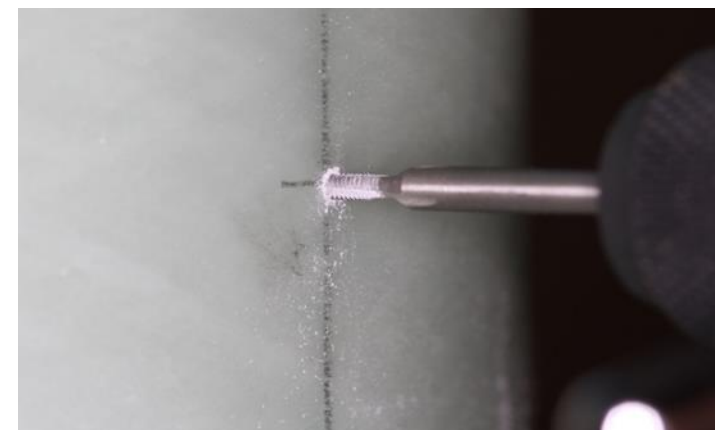
I epoxied the 2 inch switch band 6 inches from the end of the coupler, then back to drilling holes. The Av-bay vent hole sizes are based on the internal volume and ours needed three 9/32" vent holes for the altimeters. Plastic reusable rivets are used to pin the bay in the forward airframe. I slid on the forward airframe and marked the three holes, they are offset from the vents so they don't disturb the airflow. As soon as I drilled the first 1/4" hole though both parts I inserted the rivet to keep everything lined up while I drilled rivet number 2, insert then drill #3.



Below is the view of the three pieces of 1"x1" angle aluminum cut and drilled to attach the 4 3/4" by 12" G10 FG sled to the rods. Four nuts allows the sled to be centered in the bay.



I carefully measured and marked for #4 -40 nylon screws used as shear pins in in nose and aft airframe. First drill the correct size hole, and then add a drop of super glue. Then cut threads with tap, be sure to always insert the screw to hold alignment when you drill the next hole.



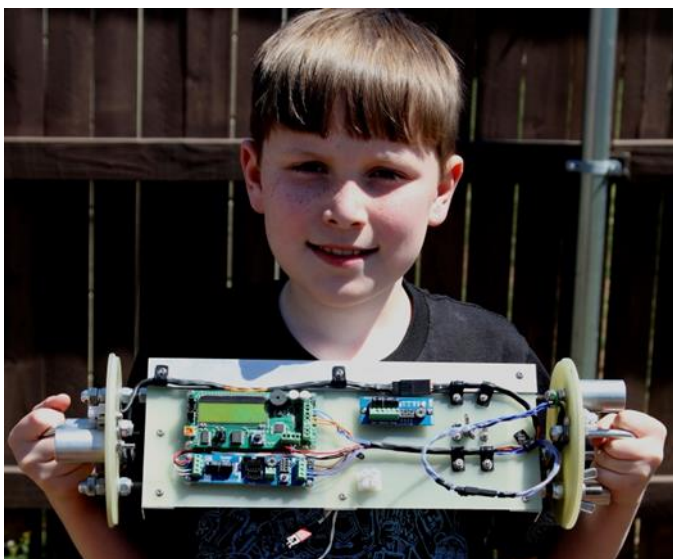
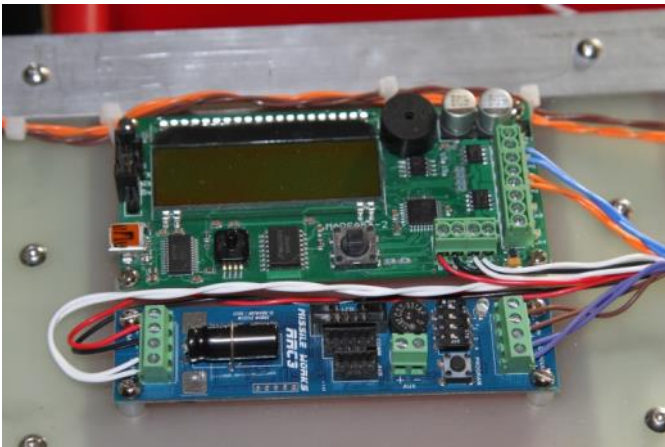
This is the forward Av-bay end, first I roughed-up with 120 grit sandpaper one face of both a coupler and airframe bulkhead and epoxied them together using a bolt, nut and washer in the center hole to keep it aligned till it sets up. Holes were then marked and drilled for a 5/16" U-bolt, a pair of 5/16" rods, charge holders and terminal strips. The holes for the wires to pass have not been drilled yet in the picture above.

The next picture shows the SS locknuts and washers





The back view shows the #4 PEM nuts pressed in for mounting altimeters and the battery hold downs. Mounting the batteries on the back side and adding fiberglass hold down is a “belt and suspenders” solution to make sure the batteries don’t come loose in flight. There are also shims to keep the batteries sliding aft that can’t be seen in this picture.



The front view (previous column) shows a MARSA54 as primary altimeter and a RRC 3 as back-up. At the upper side is a 12 inch piece of angle I added when I was considering switch mounting options but in the end this is what I decided on:



The twin key switches have a dramatic look and feel that I kind of like, they are wired so that the keys can only be removed in the “powered on position”. The switch holes are  $\frac{3}{4}$ ” and require a Forstner drill bit to keep from breaking out the backside of the fiberglass. That is a shear pin centered below the switches and  $\frac{1}{4}$ ” vent holes on sides.



The recovery gear consists of a Sky Angel cert 3 large main chute / 30" pilot for the first flight with a K1275R motor and a cert 3xl for later flights with heavier 75mm L motors. The main chute is protected by a custom deployment bag made by Mark at LOC that I designed. The drogue is a custom made 36" Sky Angel. A pair of 25' shock cords made of one inch nylon web with sewn loops connects everything. Nomex fabric and 1/2 "Kevlar bridles are used to protect the chutes from heat and the deployment charges.

*Editors note: Thanks again to Robert for the details of this build. He has offered one more installment covering finishing, decals, and the first flight. Tune in next issue for the conclusion.*





## Project Saturn—One Builders Prospective

By John Dyer with James Gartrell

*Editors note: This article is reprinted from the December 2008 issue of Launch Magazine with the permission of Mark Mayfield. The pictures have been adjusted from the original article.*

Friday, October 17, 2008 is a day that I will remember as long as I live. I will fondly remember the events leading up to this day as well. My involvement began with a simple email from a friend - Mark Mayfield. In the email, he made a simple request:

“...I’m writing to tell you about a wild project we’re going to attempt to put together for an October 17 luncheon at the Frontiers of Flight Museum in Dallas, marking the 40th anniversary of Apollo 7 and honoring Walt Cunningham...” I didn’t realize at the time that this request would give birth to a project that would involve over 30 people (including Mark, the McLahorns, Dot Cunningham, and 26 master modelers) and would end with me meeting some of my childhood heroes.

Mark originally wanted my Dallas group to build all 30 models, but I didn’t feel I could coordinate the manpower and resources locally to complete that many Saturn 1B’s in the allotted timeframe. Over the next week or so I spoke with Carl and Mark several times over the phone, and I organized the initial “Dallas Team,” Jack Sprague, James Gartrell, Stuart Powley and myself. Our team would commit to building 10 models – 1/3<sup>rd</sup> of the needed number. After reviewing several options, Carl, Mark and I came to the conclusion that we needed to include talented

modelers from across the country. This would increase costs, but would provide the best guarantee that there would be enough models completed so that there would be one on every table at the luncheon. I stressed the need to get started – it would be a race to the finish.



*This is not a reflection. This is actually the line up of multiple Semroc Saturn 1B models on the tables at the Frontiers of Flight Museum’s 40th Anniversary Celebration of Apollo 7 in 2008.*

During the following week I made more calls and emails to Carl and Mark to discuss logistics and to develop a game plan. Since we were in Dallas (where the luncheon was to be held), the Dallas Team would be able to build and deliver our models to the museum either on or before the day of the luncheon. Later on we added two other members to the team: Bill Gee, and Chas Russell. I did not know that Chas was one of the other talented modelers Mark and Carl had asked to help out until 2 weeks into construction. Since Chas lives in Fort Worth, we invited him to join us in the build and the number of models built locally increased to 11.

Ten days after Mark’s first email, on Thursday August 28<sup>th</sup>, the kits arrived. Carl worked a miracle pulling together the kit parts and producing the SA-205

(Apollo 7) specific decals and parts and getting them in the mail so we could receive them before the Labor Day weekend. Construction began the Saturday of the Labor Day weekend (August 30<sup>th</sup>) and continued for the next 7 weeks.

I had high hopes that we would complete the initial structure build of all 10 models by the end of the day on Monday (Labor Day). I came upon the idea to build all 10 models “assembly style” in order to draw



upon the strengths of each member of the Dallas team and to reduce “wait” time. For example, while James and Stuart assembled the basic rocket structure, I cut out all the paper parts – scalloped shrouds, Lunar module shrouds, and fin covers. Jack was tasked with constructing the 8 fins for each of the Saturn 1B’s – 88 total fins. With his previous experience building up structures (model airplanes, Space Shuttles, etc.) he was uniquely qualified to produce the museum quality fins we needed. Suzy, Jack’s wife, helped out wherever a steady set of hands was needed. She helped me cut out some of the small paper pieces, and came up with a great way to produce a clean crease in the fin skins.

I vastly underestimated the amount of time it would take to construct 10 Saturn 1B’s at one time, even using the assembly line method. After the first weekend, there was no question that completion of the models would take longer than I expected. Little did I realize at the time that it would take a full 7 weeks and extra work by Jack, Bill and I during the final week to complete the models by the deadline. Not only was it a huge imposition on the Sprague household, our site for the joint build sessions, but also the sacrifice of almost two months of everyone’s free time was taxing. I didn’t underestimate the commitment of



the team, though. They stayed steadfast on target, making whatever sacrifices were needed to meet our goal.

We made great progress by the end of Labor Day Monday. All 10 models had all 4 of the white tank tubes attached to them, and the black tank tubes had been masked for the decal and painted. After encountering several problems trying to work around the black tubes, a few weeks later we decided to repaint them white and then re-mask and re-paint black as the roll patterns were painted. This was a setback, but did not prove to be fatal to the project.

Bill Gee joined the team on the second weekend (September 6<sup>th</sup> and 7<sup>th</sup>). He helped by constructing the Apollo capsules while other team members constructed “Fiddly Bits” and added them to the model. He also helped Jack with final touch-up, adding filler where needed and sanding smooth. Bill, Jack, James, and I masked the models prior to painting the black roll patterns on them. As I mentioned before, Chas Russell was able to attend several weekend sessions and helped attach “Fiddly Bits” to the models. He also constructed the antenna assemblies for all 10 models, and helped to remove the masking tape after the models had been “shot” with black paint. Chas expertly removed the tape from one model that I had, as Jack called it, “armor plated” with masking tape. Jack was also busy putting details on the LEM shroud and service module using the design template he and Mario Perdue had developed.





A few weeks into the project, Carl sent an email to the builders telling us that Buzz Nau (Eagle3) had created a private thread for the team on Ye Old Rocket Forum. This proved to be a godsend. We were able to meet and talk with other members of the team, and discuss details and construction techniques that would not have been possible otherwise.

We estimated that each team member averaged over 150 hours on this project, primarily on the weekends and weeknights. James was driving almost 160 miles to attend each session and Jack put in many extra hours during the day to ensure the models were completed on time. After spray painting of the models was complete, and all the “fiddly bits” and decals were applied, Jack applied clear coat. The models were considered complete on October 12<sup>th</sup> – 5 days before the event.

The incredible journey was far from over, though. I offered to receive and store the models from the modelers scattered across the country. During the week of the luncheon I received 23 models in the mail. I have great respect for the US post office – 20 of the models were shipped via express mail and all of them arrived in great shape. Only 2 models shipped by other carriers were damaged, but were easily repaired.

Jeff Graham’s model was the first to arrive on Thurs-

day, October 9<sup>th</sup>. When I unpacked his model, it looked so great that I knew this was going to be an incredible event!

The busiest day was Tuesday, October 14<sup>th</sup> when 10 models arrived. The postman was great – he knew when I would be home and came back to drop any packages that required a signature. By the time Thursday rolled around we had only a few models left that were “in transit”.

Late Thursday afternoon Carl, Cheryl and Bruce arrived in town. Since their hotel was only 3 miles from the museum we decided to move all the (still) packaged models to their room to make it easier to transport the models Friday morning. They were at my house when the last model arrived via UPS. It was really amazing that Carl sent out 35 models to be built and we received 34 of the 35 prior to the luncheon. One was unable to be completed. Considering the luck they were having, I told both Mark and Carl they needed to go out and buy lottery tickets!

About a week before the event, we found out we were going to be able to actually attend the event. What a fantastic opportunity! Having to arrive early for setup, we were able to watch the panel session and attend the luncheon. If that wasn’t fantastic enough, we were also seated at the Launch Magazine table right behind the Astronaut’s table, close





*In the photo above you can see Astronauts Neil Armstrong and Bill Anders. If you look a little harder you will see Laurie Powley, John Dyer, and James Gartrell.*

enough to reach out and touch Neil Armstrong. All too soon the luncheon was over. I was pleased that the Astronauts hung around for awhile to talk to admirers and fans. I attempted to meet Neal Armstrong, but the crowd around him was too big. He was gone before I had an opportunity to shake his hand. I was lucky enough to meet and shake hands with Bill Anders and Alan Bean, and Buzz Aldrin. I was lucky enough to meet Buzz (and Jack Schmitt) last year at the International Space Development Conference that was held in Dallas, so seeing Buzz this year was like “icing on the cake”.

As the crowd began to thin, the team reassembled to begin packing the models for shipment. Many of the models were sold before they were even boxed. I was amazed that several of the buyers stayed until their model was packaged for them. One gentleman was planning on transporting his model to Germany! All too soon the boxes were filled, the crowd was gone, and it was time to leave. I remember looking around and thinking to myself (with apologies to a certain credit card company):

“Hours spent building models: 150 – 200 each;  
Paint supplies: \$50;  
Glues, tape and other supplies: \$50; and  
The look on Walt Cunningham’s face – Priceless.”

I want to thank Mark and Carl for the opportunity to be involved with this truly amazing project. I also want to thank all the builders for their dedication and hard work for making this project possible. Special thanks go to Jack, Suzy, James, Stuart, Bill, and Chas for building 11 incredible models and making Project Saturn a great success. I also want to thank Nina, Laurie, and Gail for being “Rocket Widows” for the 7 weeks of the Saturn build.

I can’t help but think, “What’s next?” The answer is obvious – there is another special anniversary next July...



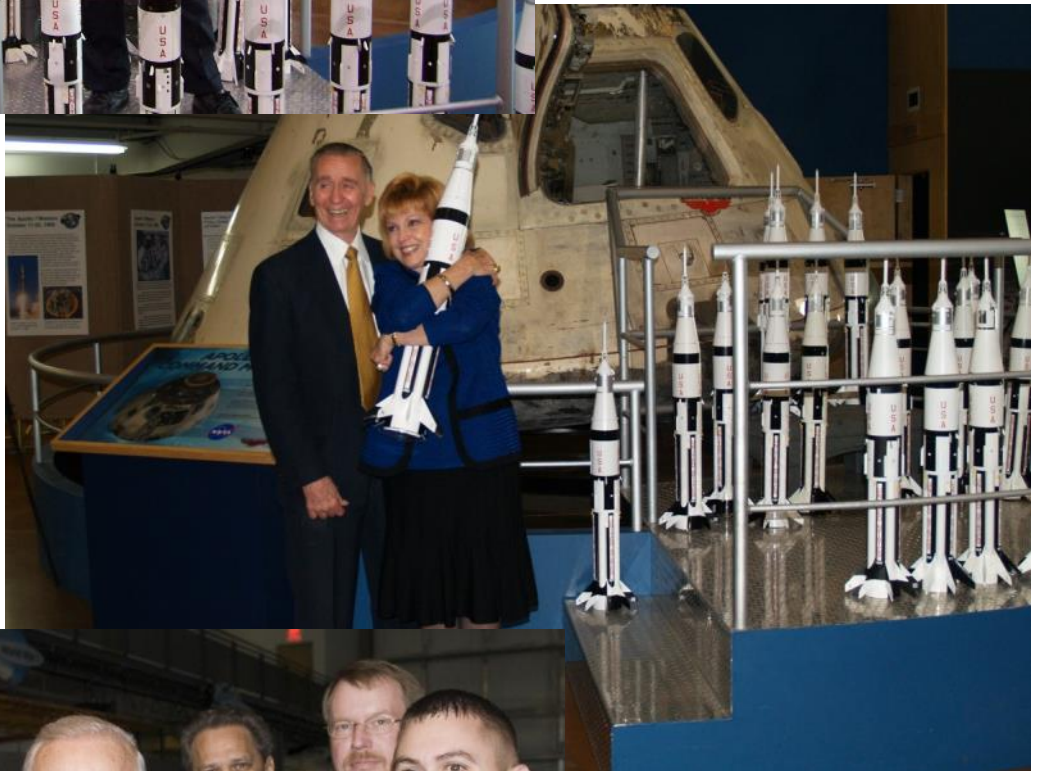
*Apollo 7 Astronaut Walt Cunningham*

*Editors note: Everyone seemed to have a ton of great pictures from this event. I saved a few more for the last page. Enjoy!*



*Carl McLawhorn with a group of the Saturn IBs in front of the Apollo 7 capsule.*

*Astronaut Walt and wife Dot Cunningham pose with the Saturn's and the capsule.*



*Stuart Powley, Mark Mayfield, Bill Gee, Buzz Aldrin, James Gartrell, John Dyer, and Bruce McLawhorn.*



## A Darn Handy Tool

By Gary Briggs



Here's one I knew I needed but resisted buying for entirely too long. A circle cutter is a device that does just that; it lets you cut perfect circles with a compass like tool. Anyone who has tried to cut out a circle, especially a smaller one for a decal or some other small circular structure, knows that it is very difficult to keep the paper moving and to get a smooth

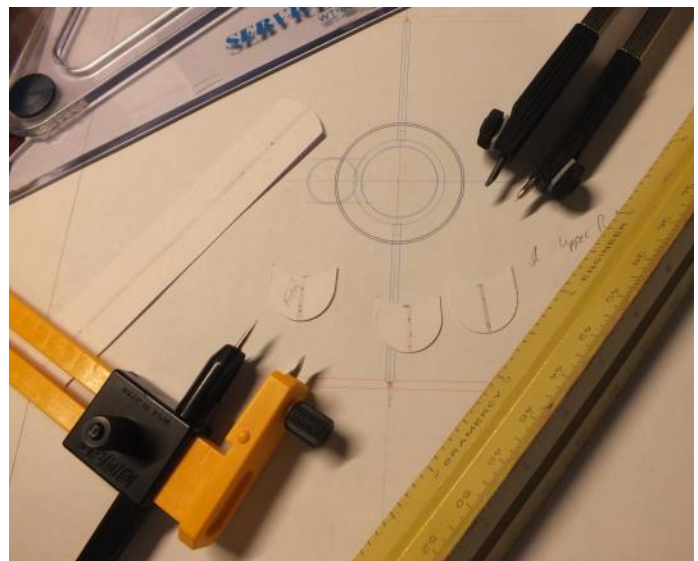
arc without flat spots when using scissors. My need arose when building an AGM-37C Jayhawk for a sport scale competition. The Jayhawk had a compound circle structure where the rear tail cone and a flare tube come together at the back of the rocket, and cutting that any other way short of CNC was going to be ugly. Enter the OLFA CMP-1 Compass Circle Cutter (\$12.59 from HobbyTown USA).

This device made from high quality plastic, with a metal compass point and blades, plus screw type fasteners to adjust you radius and attach your blade. It comes with 6 blades and a rubber foot that can be used on items where you don't want the compass point making a hole in the finished product. It is a really sturdy little tool that shows when properly engineered and not squeezed for the last dime in material cost, plastic doesn't have to have a bad name here. The device is tight and precise and should work for years to come.

It works like, and as a companion to, a standard drafting/geometry compass. I took drafting classes most of my high school years and even a couple in college, so I am pretty comfortable with these tools. I am not so old that we didn't do some CAD in college, but I guess the point here is that you really don't need a computer program if that is not your thing. A little geometry will get you through just fine.

In this case, I started with a full scale RockSim 9 drawing of the rear view of the rocket. I then cut a card stock strip the same size as the diameter of the flare tube circle that I was trying match up to here. From there I used a compass to get the correct dimensions for the top and bottom arcs and drew those on the strip. I then transferred those dimensions to the circle cutter and cut perfect arcs in the final pieces. The blades are really sharp and should work well on other materials beyond heavy cardstock. Obviously you won't be cutting diamonds with them, but they will serve you well for a number of model rocket scenarios.

I admit that it took a couple of tries using the device for the first time, but when does prototyping not take a couple of tries? The end product fits well and required minimal finishing to look good. I am sure I will be reaching for this tool a lot in the future.



## Random Rocket Thoughts

By George "The Other" Sprague

Every launch brings more ideas and perspective to this hobby of rocketry. Observing one's and other people's flights, successful or otherwise, imparts lessons to ponder.

So here are a few of the ideas that I've collected from recent launches:

- Pack everything you need for a launch beforehand – make a list and work off that. Good to look at the list just before driving to the range. (Oops! I left the --- at home...)
- Make sure you protect your rockets from harming themselves during transport – more rockets get damaged in the car than most would think!
- Bring extra igniters, have them with you after you have placed your rocket on the pad – that way, if you need to replace the igniter, you don't have to walk as far to get one, or buy one from me at over inflated prices.
- When building model rockets, consider using a loop of Kevlar cord as the attachment point for your shock cord – instead of gluing the shock cord to the mount, glue the loop to the mount, then glue inside the body tube, leaving an inch or two protruding from the body tube. Much easier to replace shock cords this way.
- If your shock cord is at least two, if not three times the length of your rocket, the stress on the shock cord mount will be lessened and you diminish the chance of having the nose cone come snapping back and crimping your body tube.
- Pre powder your parachutes and keep them in labeled baggies.
- And speaking of parachutes, use a fishing swivel to attach the 'chute to the shock cord rather than the nose cone – if the shock cord breaks, the parachute will take off on its own, the nose cone and body tube will come down closer and you should be able to find both.
- Sort your motors out and place in labeled containers.
- Spent motors can be used as stand offs on the pad – and during construction, one can be used to prevent a motor tube from crimping as you slice slots for the motor hook.
- Bring scouring pad, or sand paper to clean off clips and launch rods – these get gunked up by 2 in the afternoon!
- Those almost pre made model rockets with the plastic twist motor retention caps? After you have the motor in, secure the cap with tape – just in case the cap decides to fly off on its own during flight.
- Bring hand sanitizer – handling expended motors and launch rods can get a little messy.
- Having a hard time friction fitting your motor with masking tape? Use cellophane tape – wrap it close to the nozzle, make sure it's a snug fit inside the rocket's motor tube. The heat will expand the tape a little bit and provide a good grip.
- Use needle nose pliers to extract used motors that are obstinate and want to hang on!
- Nose coned a bit loose? Use tape NOT around the nose cone shoulder, rather, pieces of tape placed from the shoulder down over the lip and bottom part – this prevents the tape from curling up while inserting the nose cone into the body tube.
- Crud and debris inside the body tube? Bring a can of compressed air, the kind that is sold at office supplies, and clean out your rocket.
- Simple Green is a great cleaner for reloadable motors. Spray on, let sit for 5 minutes, rinse out with water, dry and you are set to go. And, an old tooth brush works great on the end closure threads.
- Crepe paper sold at party supply places make great streamers – and it is flame retardant!

And the most important thing of all: Show up to the launches and join in on the fun!



### 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](http://dars.org) or direct to the editor at [garyb2643@att.net](mailto:garyb2643@att.net).

### DARS Officers

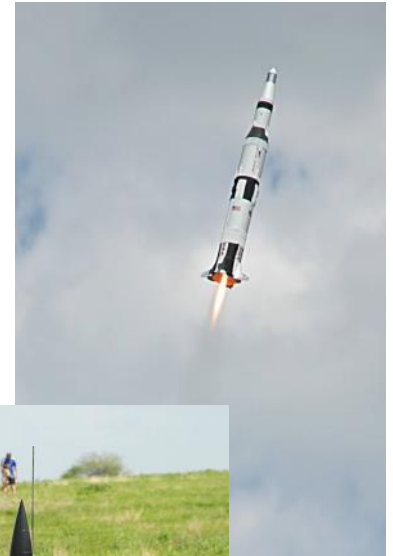
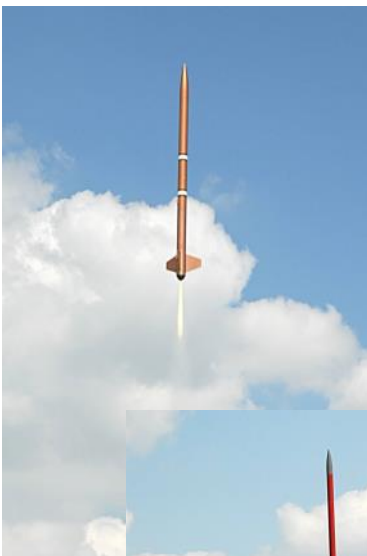
President	Jack Sprague
Vice President	Dave Shultz
Treasurer	Suzie Sprague
Secretary	Bill Gee
NAR Senior Advisor	Sam Barone

### Upcoming Events

5/3	DARS Business Meeting —Coppell <b>2:00</b>
5/17 -18	Monthly Model/Mid Power Launch and DARSTAR X Contest —Frisco
6/7	DARS Business Meeting—Coppell
6/21	Monthly Model/Mid Power Launch—Frisco

### Parting Shots

Photos by Nick Viggiano



## Use Your DARS Card and Save Money—Member Discounts



8.25% Discount on the field and at meetings



20% Discount on all rocketry related items.  
Great selection of saucers, odd rocs, and

**HobbyTown USA**<sup>®</sup>  
DALLAS ROCKWALL HURST LEWISVILLE

10% Discount on all rocketry related items.  
The Dallas store carries Estes, Quest, Aero-  
tech, and PML kits with a great  
selection of Estes and Aerotech motors.

**R\C Zone**

Plano @ Parker and 75

10% Discount on all rocketry related items.  
Selection of Estes kits and motors. Great  
selection of plywood and balsa.

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PLANO NOW @ 75 & PARKER

10% Discount on all rocketry related items.  
Lots of kits and motors from Estes and  
Aerotech

Click on logos to link to websites

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](http://www.dars.org)

**SHROUDLINES**

A Dallas Area Rocket Society Production