



THE ZOG-43

The Newsletter of NARHAMS, NAR Section #139.
NAR National Champions 2001, 2004



Jan/Feb 2013
Vol 35 Number 1



An Ode to the Ed Pearson Legacy on Page 3. Here is Ed pointing to the RSO at the Goddard Contest.

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About NARHAMS

NARHAMS serves Baltimore, the state of Md., Washington DC and the surrounding Metropolitan areas. The club is a section of the National Association of Rocketry (NAR) and we are the oldest continuously active model rocket club in the United States, first established as a high school club in 1963, changing our name to NARHAMS when chartered as a NAR section in 1965. NARHAMS is the only seven time winner of the NAR "Section of the Year" award.

Years won: 1997, 1998, 1999, 2001, 2004, 2006, and 2007

NARHAMS members regularly fly their model rockets at NASA's Goddard Space Flight Center on Soil Conservation Rd. in Greenbelt Md. The launches are open to the public and are held the first Sunday of every month (weather permitting), starting at 1 PM.

Sport Launches are usually held the third Saturday of every month at Old National Regional park near Mt. Airy, Md. Check the web page for updates.

NARHAMS welcomes all prospective new members to our monthly meetings. They are held on the first Saturday of the month from 5:30 to 9:30 PM at the College Park Airport Annex Building. Dues are 10 cents a week, with an initial 50 cents up front (good for 5 weeks) as a sign of good faith.

Monthly meetings available on-line via chat-room, simply go to the NARHAMS homepage and click on the link.

Directions to College Park Airport:

Follow I-495 to Kenilworth Ave. South. Make a right onto Paint Branch Parkway, then make a right on Cpl. Frank S. Scott Dr. At the airport entrance go straight to the Operations Building, the annex building is adjacent to the "Ops" building.

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ZOG-43

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ZOG-43 is the official newsletter of NARHAMS the National Association of Rocketry Headquarters Astro Modeling Section # 139

NARHAMS is the oldest model rocket club in the United States!

ZOG- 43 is dedicated to model rocketeers of all ages, abilities, and interest. We are committed to providing the most current, up-to-date information on model and real world rocketry, and to provide educational material as well as entertaining information. ZOG -43 is published bi-monthly and is available to anyone on a subscription basis. Current rates are \$10 for email or \$15 for meeting pickup or \$20 for postal mail U.S. Funds for 6 issues a year, payable to NARHAMS Material in ZOG -43 is not copyrighted. Free and unlimited reproduction is granted with the proper credit to the author and/or ZOG-43.

For more information.....

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ZOG (President)
Alex Mankevich

VICE ZOG (Vice-President)
Frank Panek

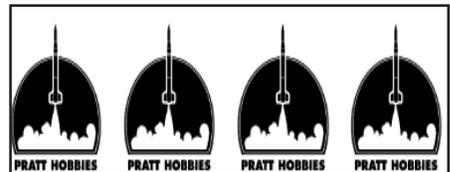
COLLECTOR OF THE ROYAL TAXES (Treasurer)
Jennifer Ash-Poole

KEEPER OF THE HOLY WORDS (Secretary)
Chris Kidwell

COURT JESTER (Section Advisor)
Mark Wise

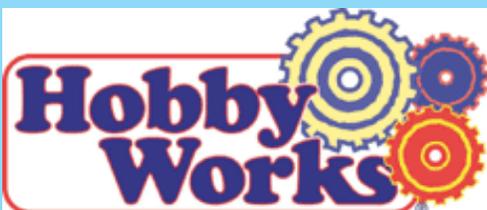
Welcome Renewing Members

Dimitre & Stoil Avramov
Don Carson
Robert Ferguson
Dave & Brandon O'Bryan
Frank Panek
Chuck & Isaac Schoefer
Alec Waterhouse
Mark Wise



Pratt Hobbies is proud to announce that we are now a QUEST dealer! Contact us for all your Quest and MicroMaxx products.

Check it out at
www.pratthobbies.com
Mention your NARHAMS membership on the online order form for a Special Ludicrous Discount!



Save up to 20 % at Hobby Works when you show your club membership card.

THE ZOG-43

Expanding Upon the “Ole Ed Legacy” at Goddard

Alex Mankevich – King Zog

Model rocket enthusiasts everywhere should be made aware that another enduring cycle came to a conclusion near the end of last year. While most people were preoccupied with the end of the Mayan calendar cycle, a glorious round of dedication, professionalism and excellence wound down in the form of Ole Ed Pearson stepping down as head of the NARHAMS Goddard Public Launch activities. The mantle of heading the Goddard launches has passed into the capable hands of Jennifer Ash-Poole.

It's been said that “imitation is the sincerest form of flattery”, and I'm a believer in that idiom. If we NARHAMSters desire to continue Old Ed's legacy at the Goddard launches, we don't have to invent another Ole Ed, we simply need to continue in his footsteps.

Mr. Pearson made each and every Goddard launch feel special. He made each successive launch somehow feel fresh and exciting, like you knew you were doing something exciting at a special place. Sure, it helped to be conducting the launches at Goddard's rocket garden. The Delta, Black Brant and Apollo capsule are excellent backdrops for any model rocket launch. But, let there be no mistake. What made an Ole Ed Goddard launch special was Ed's love for launching model rockets. More importantly, that love showed and it rubbed off on us all.

Old Ed has either created or promoted some of the memorable tag lines that are frequently heard during Goddard launches. Who can ever forget the rhyming ‘launching from pad two, what will it do?’ Who has ever gotten tired hearing of the classic ‘5, 4, 3, 2, 1 ... Now that was a perfectly good countdown. But, we can do better!’ Who amongst us hasn't cracked at least a smile each time Old Ed warned the kids to ‘please hold on tightly to your parent's hands so that they don't go running off chasing after the rockets’.

Ole Ed has been our brightest star, but he was also surrounded by an outstanding cast of dedicated and capable NARHAMSters who brilliantly did their part to give the Goddard launches their special appeal. Over the past few years, familiar faces had unfailingly shown up to assist on the first Sunday of each month. Dedicated folks like Jennifer Ash-Poole, Mike Cochran, Jef and Ellen Finneran have worked brilliantly as a team to make each Goddard launch come off like a well-orchestrated ballet or Broadway production.

Jennifer usually takes on either the launch announcing or the safety check-in duties. She is also a

badged employee who can retrieve rockets that land across the fence. Mike, Jef and Ellen have combined to create what is arguably the finest pad assistant team in the known universe. They are experienced and efficient at loading rockets and connecting the wire leads. They are highly valued in their expertise in identifying igniter wire problems, and are quick to solve the problem.

Other frequent assistants include Alan Williams, Ward Poole and Ian Cochran who show up to make the range duties easier with their practiced presence. Jennifer sometimes drags her husband Ward to the launches. Ward is an experienced firing officer. He is ‘in’ on all the Ole Ed launch jokes and ‘planned misfires’. Ian is Mike's son, and he's an experienced pad assistant and rocket retrieval pole expert, since he has been coming to Goddard since he was two.

Richard Crisco is a newcomer who is setting down a track record at the Goddard launches. Richard had been assisting at crowd control at the ‘on deck’ queue. Lately he has taken on expanded range duties to include the rocket loaner program and has performed safety check-in and pad assignments.

The Finerans have spearheaded an added dimension to the Goddard launches. Jef and Ellen have pioneered the gathering of the launch team at the nearby Five Guys hamburger joint. We gather at that venue over peanuts, burgers and soft drinks to dissect the important rocketry events of the day. If you are an experienced gourmet, you can meander with Jef and Ellen next door to the ice cream joint and wolf down a cone or an ice cream sundae (don't try this at home, kids).

I am pleased to note that Ole Ed hasn't faded away from the Goddard launches. My recent experiences have taught me that sometime during the launch day we'll feel a ‘presence’, and when you look over your shoulder you'll see that it's Ole Ed! He politely says ‘hi’ and he's quick to thank all of us for what you are doing. Ole Ed has been perfect as a goodwill ambassador and professor emeritus of the Goddard launches.

Ole Ed has created a legacy at the Goddard launches of which we can all admire and be proud to say we've had some role in sharing. Knowing the good people that we have in our NAR section, I am confident that we will continue the good deeds and professional service that makes each month's Goddard launch something special. The Ole Ed legacy is alive, well and in capable hands!

See more pictures of Ole Ed in Action on page 11!

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Goddard December launch

The December Goddard launch was a sunny and fun day. We had several scout troops and dens there to make it a very busy launch. It almost felt like an April launch, we had that many scouts.

Helping out were Alex Mankevich, Jef and Ellen Fineran, Alan Williams, Mike Cochran, Tom and Joann Bagg and your cub reporter Jennifer Ash-Poole. I think Richard Crisco showed up, but I couldn't tell once we started launching. The line was to the building (as you can see from the picture above.)

At one point, Tom Bagg went over to the other side of the fence to collect rockets. Both Jef and Tom worked hard on getting one rocket to finally launch. Joann had a bag full of ignitors, when came in handy for the misfires.

I did write down how many launches we had, but the number is at the Visitor Center. Thanks to Jef and Ellen for taking so many pictures.



Note there are more people in line than watching the launch. A busy day at Goddard. - Photo by Ellen Fineran



Dessert time after a launch day at Goddard.
Photo by Jef Fineran



A rocket launching at Goddard.
Photo by Jef Fineran



Jef Fineran, Tom and JoAnn Bagg work on getting a rocket ignitor changed out.
Photo by Ellen Fineran

THE ZOG-43

December 2012 Sport Launch at Mount Airy

Frank Panek – Launch Manager

The weather for December 15th Sport Launch cooperated and 29 rocketeers came out to fly at Mount Airy under sunny skies and mild December temperatures. The Holiday Theme was honored by Alex Mankevich and John McCoy who flew several models in keeping with the spirit of the season. John's models included a Christmas Tree, Christmas Candle & Holder, Crystal Icicle, and Frosty the Snowman. Alex flew his Santa Clause is Rocketing to Town which landed really hard on Santa's head the first time off the pad on a B4-4 but did much better the second time on a B6-6 successfully 'rocketing into town'.

Kevin Johnson mentored two TARC Teams in several diligent attempts to achieve the flight objectives for this year's challenge. One of the teams flew their rocket on a cluster of three D12-5s and then later, a cluster of C11-5s in both cases, overshooting the target 750 ft. Maybe next month we will see these teams return for qualifying attempts. Alec Waterhouse entertained everyone with a couple of 2-stage flights. His Stretched Super Alpha, Semroc Kit Bash Rocket and an Alien Chaser all went off nicely and were safely retrieved after some high altitude flights.

Two attempts were made at the 'Walls of Daring' by Frank Panek. The first with an Estes Photon Probe with an Apogee D10-5 for the 1,000 ft wall but unfortunately, the altimeter failed to record an altitude. The second attempt was for the 1/10th mile wall (528 ft) with an Estes Phoenix that flew successfully to 566 ft. Jonathan Plane was flying his Payloader-2 on a B6-4 with varying payloads and measuring altitude with an Altimeter-1 for his high school science project. Overall, Jonathan flew 13 flights and collected some good data for his project. We wish him luck with his science fair project.

A Cub Scout Den from Clarksburg with nine boys and some of their parents kept things busy for a few hours as the scouts flew a variety of rockets, mostly on A and B motors. Some mid-power models were flown by Kevin Johnson, Jef and Ellen Fineran, Frank Panek, Tom Ha, Alec Waterhouse, Stephen Eller.

In total, we had 91 flights for what turned out to be a very nice day.

Launch Stats

Micro-Max	9
A	20
B	23
C	21
D	8
E	10



Frank Panek running the range with lots of spectators.
Photo by Ellen Fineran



King Zog making faces as Kevin Johnson is stalking him.
Photo by Ellen Fineran

THE 20G-43

Kitbash 2012

By Maria Ha

It all started at the November planning session. I, Maria Ha, brought up the idea of doing another Kit Bash. I like that I can beat Tom at something related to rocketry! I volunteered to be contest director and immediately started thinking about kits. After spending hours, looking at all the choices of rockets from SEMROC, I decided to use two smaller rockets and some extra parts. The kit bash included: the Point rocket, the Sky hook rocket, instructions for the rockets, an extra 4"x8" sheet of balsa, an extra 6" of body tube and a large coupler. There was both a parachute and a steamer included. The rocketeer could use only the materials given in the bag, including the bag, to make a unique rocket, but did not have to use



everything in the bag. There were 18 Kits ordered that were distributed at the April meeting along with the rules. The rockets had to be flown successfully at a club meeting and the rockets were strongly encouraged to be 2 stage. Nine rockets made it through their flights and to the December meeting for the judging. One rocket came to the meeting although it had not been able to fly due to the cancellation of the AG center launch in November.

All attendees at the NARHAM's Christmas party got to vote on their favorite rocket, the winner was Raul Pena. The rockets were then judged by John McCoy on creativity/originality, craftsmanship, and visual appeal, rockets were given a point for a safe flight, and the CD also had a point to give at her whim. The points were doubled for having a 2 stage rocket. Only one rocket was a single stage. It "won" a booster section to become a two stage rocket.



Raul won first place (again). This is what he had to say about his rocket. It was inspired by recent ion engine experiments and research on dark matter detection. I wanted to keep it simple but still have some futuristic look. I used all the fins, one nosecone and body tube of the sky hook. The nose cone was a challenge as it was cut at a 230 angle then glued to form the "dark matter" collector that feeds the main drive (booster). The coupler was cut to form the "ion cells". The model was flown at Mt. Airy's October launch. The color combinations were by a Subaru 4WD wagon.

Second place was Chris Kidwell with his Lunar Explorer. He took his inspiration from the 1982 Estes Asteroid Explorer and used the balsa sheet to make the landing gear "dowels." He strengthened them by reusing the paper instructions and CA. His booster stage and sustainer fins fit together seamlessly so the model does not appear to be a 2-stage model at first glance. Chris also flew his model at Mt. Airy in October. It was still being talked about at the November launch, and not in a good way.



Third place went to Alex Mankevich with his Turbine Stager. Alex did up a very pretty and detailed write up on his rocket. He also flew his rocket at the October Launch in Mount Airy.

(photos: top- all models ready for judging; left: Raul Pena's model; bottom right: Chris Kidwell's model; bottom left: Alex Mankevich's model)

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There was a three way tie for fourth place, between Maria Ha with her Arrow Capsule, Jim Baird with his SkySpear transport and Jim Filler with a Saturn 1HL. Maria fabricated the booster section from the instructions, glue and the body tube of the point. The



other two body tubes and the shroud from the point were used in the sustainer. Of course there are the decorative and necessary for stability BBs that are in the hollowed out nose cone and around the top of the rocket. This was a first attempt at a two staged rocket for Maria and she had a straight flight with good separation and staging at the November Mt. Airy Launch. Jim B's SkySpear Transport was also a first attempt at building a multistage rocket. Due to the Point's wide profile he used it as the booster stage. Jim added detail to the booster by making "attitude jet" from one nose cone. He used the coupler as part of the fin assembly on the sustainer then gave the rocket a "retro-futuristic" passenger transport look. Mr. Filler used thermalite to delay the upper stage by 2 seconds from the first stage ignition at the November Mt. Airy Launch. (He almost was DQed for unsafe flight) Jim created the tank tubes from the instructions, hand rolling them on a brass mandrel. He cut the large tube at the top from the shroud material from the point kit. And the fins were cut from the additional balsa sheet provided.

Fifth place (the CD says it is 5th place!) went to Tom Ha with his Upside down Point. "Get the point?" Sixth place went to Alec Waterhouse. He did not do a write up but I witnessed his flight at the November launch and it is the first time I've seen a rocket do a 90 degree turn when the booster and sustainer separated.

Kevin Johnson build a single stage rocket called the Ganymede probe. He successfully flew at the November launch on a C6-3 motor. The transition and main body shroud were created by printing transition patterns on the existing Point shrouds. Balsa fins were used from both kits and the balsa sheet. Strips made from the balsa sheet the dish supports and the equipment at the end of the wings were cut from various tubes.



Jennifer Ash-Poole was able to build a rocket but did not get it flown due to a cancelled launch. She sent her rocket to the holiday party for everyone to see.

Prizes for the contest were donated by SEMROC. Thank you Carl, Sheryl and Bruce for supporting rocketry!



Photos: Top row: from left to right, Maria Ha's model, Jim Baird's model, Jim Filler's model; middle right: Tom Ha's model; bottom left: Kevin Johnson's model; bottom right: Alec Waterhouse's model

THE ZOG-43

The Orion Skyquest XT 8 Classic and Smartphone Adapter

Article and Photos by Bradley Grant

Most of us have other enthusiasms closely related to the hobby of Model Rocketry. One of mine is Astronomy.

Recently (like two weeks ago) I had the good fortune to be able to purchase from Orion Telescopes an XT8 Classic Dobsonian Telescope. I also added to this purchase an Orion Steady Pix Universal Smart Phone Adapter.

The XT 8 is a Reflector Telescope that is about five feet tall and weighs about 40 Pounds. It has an eight inch diameter mirror, giving me the ability to gather in large amounts of light. You can either use 1.25 or two inch magnifying lenses on the scope. Its optimal magnification is 480X.

The scope on its own can give you remarkable views of the moon, planets and other astronomical objects. Putting this scope on the Orion Nebula for the first time was really quite remarkable. The colors will only be in black and white (your eyes can't distinguish other colors that far out) you clearly see its wings or sails on both ends and the dark line running towards the middle.

The Dobsonian Mount that the scope uses makes it very easy to point your scope to the location in the sky you want to view and for me it is allot easier to deal with than the equatorial mounts.

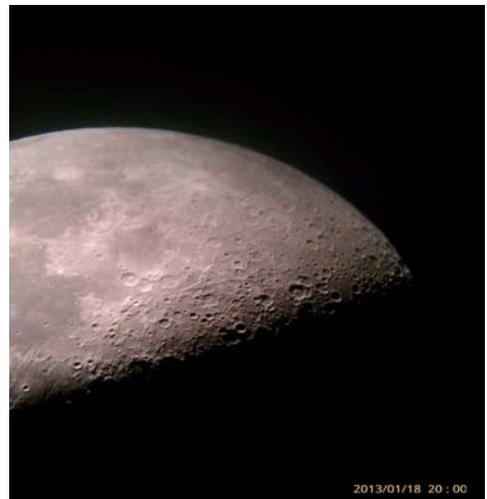
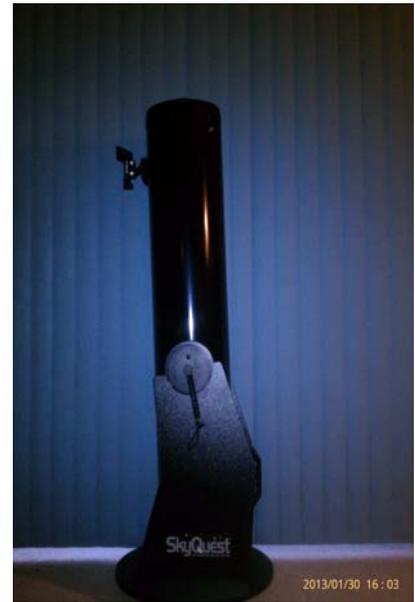
I was able to assemble and start using the scope in about an hour and with the handle built into the mount, was quite easy to carry.

When purchasing this telescope, something else caught my attention of my eye. Orion was selling an adapter to attach your smartphone to your magnifying lens. This would allow you to take pictures of the items you were viewing in your scope.

While this device allowed me to take pictures of the Moon and Jupiter, I found the braces did not keep my phone snug so it wouldn't move. The vendor also suggests lining the camera lens with magnifying lens before putting the magnifying lens into the scope. However, I couldn't really do this. I had to move the camera away from the magnifying lens to get the object in the sky in focus under the scope. After completing this, I had to line the camera and magnifying lens while the lens was in the scope. The product did allow me to take some nice pictures of the moon

and Jupiter, it didn't work so well when taking pictures of Star Clusters or Nebula.

The Telescope and Smartphone adapter costs about \$430.00 and I was able to get free shipping and not pay sales taxes. While expensive, this Telescope has enough flexibility and capability where I won't need to buy another. Its ease of use will also become more important as I get older. So while it isn't a model rocket, I can get a better idea of where I want to aim my model Rockets!!!!



The Moon taken with a 20mm lens

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The Moon 10mm lens and Shorty Barlow.



The Moon 10mm lens, Shorty Barlow and zoomed the lens on the smartphone.



Jupiter and IO, Europa, Ganymede, Callisto

Congratulations to our 'HAMsters!

Congratulations to the NARHAMSters that received (or will receive shortly) cash money in the form of one or more \$5 bills! Your NAR has been running a membership promotion where every NAR member who gets a non-member to join the NAR will get a \$5 bill. You only need to make sure the new member writes in your name as the source of the reference. The NAR is sending out nearly \$1000 to its members as a thank-you for your efforts to increase our membership!

(Editor's note - I recieved a \$5 bill. I have no idea who put in my name, but it's nice to be recognized by the NAR, and nice of a person to put in my name as how they learned about the organization. Maybe I'll save it for the Presidentail Payload at the next sport launch. So don't forget to talk up the NAR next time you see a new rocketeer)

ZOG article

What have you been up to, Tom? Oh, mostly work and well, more work. But I had an opportunity recently to work over a number of the rockets I got from the holiday party, or even plural, parties, since I've been collecting them for years and not really focused on them.

What I've noticed is that there are many of them that are missing launch lugs, as in never installed. I'd understand that more if they were difficult to place, or scratch-built rockets, but even some classic kits are missing their launch lugs. The next most common problem I noticed was an unconnected (or missing) shock cord. Most of them aren't connected at the top end, like someone wasn't sure if they wanted to permanently attach them or add a snap swivel. Finally some of them have broken fins. Maybe these are the ones that others never felt like fixing, but I've fixed them all up. So my box o' broken rockets is now down to about four at the time I write this and I have high hopes of returning them all to service.

So come out to a launch when I'm there and you might see a familiar rocket, and at the least you'll see quite a variety, from Big Daddy to Space-X, to Big Betty and an Estes Polaris. There are at least fifteen rockets ready now that haven't been flown by me yet!

PA Tom



Goddard in January - by Jim Filler

The January Goddard launch was held on Sunday, January 5th at the Visitors Center per the normal routine. Spending many years as the club president and a while as the section advisor, I spent most of my club time at park launches and club meetings. I rarely would make the trip to Goddard for the launch. Jennifer Ash-Poole has stepped in to run the majority of the Goddard launches these days. For this launch she claimed some excuse about being in Vegas and couldn't make the launch.

I arrived to find Ummer getting ready to open the Visitors Center and the Narhams President, Alex Mankevich was out back arranging the crowd stanchions. Mike & Ian Cochran showed up and along with Jef & Ellen Fineran and, Richard Crisco we had quite a nice range crew. Alex took care of check in and safety check. I took the PA and launch control. Everyone else floated as needed.

The weather was very nice for this time of year. It was sunny with a light breeze and temps in the upper 40's. We launched a total of 78 flights with many smiling faces coming through the pad are two and three trips. We closed down just after 3pm; we all chipped in to put away all the equipment. We reconvened at Five Guys just across from the Visitor's Center for some tasty burgers to close out the afternoon.

Top - Jim Filler at the mike at Goddard; Left - Richard Crisco doing Safety Check-in.



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Kit Review by Tom Ha

So you thought this would be a review of some neat kit, huh? Well, not so fast! I'm going to challenge each of you reading this to dust off an old review or write something up, brief or long, as a review of a rocket. I sent in a review of the C-Thru rocket kit by Newway Rocketry several months ago and next up for me will be a review of another square rocket from Newway, once I determine which ones bought at NARAM are mine and which ones are Maria's. We have the Spike, the Skyscraper and the 2X4 to build. Usually I use a big Sharpie to label the kits that each of us buy but this time I must not have had a Sharpie on me.

So let's each step up and write something and make the ZOG editor happy! Its prime building season right now (unless you're in a garage heated to 59 degrees like me!)

More pictures of Ed Pearson in action!



Painting rockets

Now that it's gotten cold, I find myself wanting to paint rockets. Of course, it's easier now that I have a paint booth, but I'm just not entirely happy with it. I've bought a second or replacement exhaust fan for it to pull more air out and keep my garage less smelly. I've also bought an electric rotisserie skewer (quite the journey to locate one in winter!) and plan to add that through the bottom to make a rotating stand for easier painting. But I've never been known as a painter of rockets, so I don't know when these enhancements will happen. If I had another rocketeer up this way aside from my busy family, I'd certainly offer a beer or hard cider in return for an assist!

PA Tom

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NARHAMS 2013 CALENDAR

Feb 2	5:30 – 9 pm	Monthly meeting, Show and Tell	College Park, MD
Feb 3	1 – 2 pm	Goddard Public Launch	Greenbelt, MD
Feb 16	10 am – 3 pm	Sport launch, Presidential Payloads (Jim Baird)	Mt. Airy, MD
Feb 23	10am - 4pm	Ag Center launch (Jennifer Ash-Poole)	Westminster, MD
Mar 2	5:30 – 9 pm	Monthly meeting, ECRM Event Discussions (Various)	College Park, MD
Mar 3	1 – 2 pm	Goddard Public Launch	Greenbelt, MD
Mar 16	10 am – 4 pm	Sport launch, Ping Pong Ball Spot Landing (Tom and Maria Ha)	Mt. Airy, MD
Apr 6	5:30 – 9 pm	Monthly meeting, Rule Change proposal discussion (Jim Filler)	College Park, MD
Apr 7	1 – 2 pm	Goddard Public Launch	Greenbelt, MD
Apr 20	10 am – 4 pm	Sport launch, Paratrooper Spot Landing (John McCoy/Alex Mankevich)	Mt. Airy, MD
Apr 28	noon – 5 pm	Rockville Science Day, Rockville Community College	Rockville, MD
May 4	5:30 – 9 pm	Monthly meeting, ECRM building session	College Park, MD
May 5	1 – 2 pm	Goddard Public Launch	Greenbelt, MD
May 11	7 am – 5 pm	TARC 2013 Finals	The Plains, VA
May 18	10 am – 4 pm	Sport launch, Wall of Daring (Kevin Johnson / Frank Panek)	Mt. Airy, MD
Jun 1	5:30 – 9 pm	Monthly meeting, Making metal gizmos (John McCoy)	College Park, MD
Jun 2	1 – 2 pm	Goddard Public Launch	Greenbelt, MD
Jun 8-9	9am - 5pm	NOVAAR Regional Meet	The Plains, VA
Jun 15-16	10 am – 4 pm	ECRM-40 Regional Meet (Jim Filler)	Mt. Airy, MD
		Events: 1/4A HD, A RG, 1/8A PD MR, B SD, SpSc (Sunday, Cowboy Hat Day)	
Jun 22	10am - 4pm	Ag Center launch (Mark Wise)	Westminster, MD
Jul 6	5:30 – 9 pm	Monthly meeting, Pot Luck Picnic (Mark Wise)	College Park, MD
Jul 7	1 – 2 pm	Goddard Public Launch	Greenbelt, MD
Jul 14	12pm-4pm	Apollo Contest (Jennifer Ash-Poole)	Greenbelt, MD
Jul 20	10 am – 4 pm	Sport launch (Frank Panek)	Mt. Airy, MD
Jul 20 –26		NARAM-55	Aurora, OH
		Events: 1/8A PD MR, 1/4A HD, 1/2A ALT, A PAY, A RG, B SD, C DEA, R&D, Scale	
Aug 3	5:30 – 9 pm	Monthly meeting, NARAM Recap	College Park, MD
Aug 4	1 – 2 pm	Goddard Public Launch	Greenbelt, MD
Aug 17	10 am – 4 pm	Sport launch: Triathlon contest (Chris Kidwell / Brad Grant)	Mt. Airy, MD
Sep 1	1 – 2 pm	Goddard Public Launch	Greenbelt, MD
Sep 7	5:30 – 9 pm	Monthly meeting, Elections	College Park, MD
Sep 14 - 15	9am - 5pm	Capital Cup FAI World Cup	The Plains, VA
Sep 14	10 am – 4 pm	Sport launch, Night launch (Jim Filler)	Mt. Airy, MD
Sep 28	10am - 4pm	Ag Center launch (Mark Wise)	Westminster, MD
Oct 5	5:30 – 9 pm	Monthly meeting, Ole Ed movie night (Ed Pearson)	College Park, MD
Oct 6	1 – 2 pm	Goddard Public Launch	Greenbelt, MD
Oct 19	10 am – 4 pm	Sport launch, Flying Ships (Maria Ha)	Mt. Airy, MD
Nov 2	5:30 – 9 pm	Monthly meeting, 2014 Planning meeting	College Park, MD
Nov 3	1 – 2 pm	Goddard Public Launch	Greenbelt, MD
Nov 16	10 am – 4 pm	Sport launch, Military Rockets (Bradley Grant)	Mt. Airy, MD
Nov 23	10am - 4pm	Ag Center launch (Mark Wise)	Westminster, MD
Dec 1	1 – 2 pm	Goddard Public Launch	Greenbelt, MD
Dec 7	5:30 – 9 pm	Holiday party, Greenbelt Community Church	Greenbelt, MD
Dec 21	10 am – 4 pm	Sport launch, Mid-power rockets	Mt. Airy, MD

Note: Sport launches at Mt. Airy are open to NARHAMS members only for the first 2 hours, and open to everyone thereafter.