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Zog-43
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Official NARHAMS Newsletter
Editor: Don Carson

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 all paid up members of NARHAMS. Club membership is open to all, dues are 10 cent per week.

If you have any questions about ZOG- 43, NARHAMS, subscriptions, or if you have any comment(s), correspondence, or if you'd like to submit an article, send them to:

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About NARHAMS

The National Association of Rocketry Headquarters Astro Modeling Section, or NARHAMS, serves Baltimore, the state of Maryland., Washington, DC and the surrounding Metropolitan areas. The club is a section (#139) of the National Association of Rocketry (NAR).

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 (1997, 1998, 1999, 2001, 2004, 2006, and 2007).

NARHAMS members regularly fly their model rockets at NASA's Goddard Space Flight Center in Greenbelt Md, at Old National Regional park near Mt. Airy, Md. and at the Carroll County Agriculture Center, near Westminster, Md.

NARHAMS welcomes all to our monthly meetings and launches.

For details, dates and directions to our club, meetings and launches, go to: http://narhams.org

From the Editor - Don Carson, NAR #11069

The NAR is looking for ways to increase participation in competition model rocketry. Competition fuels the development of new designs, materials and techniques in the hobby. I'm interested in getting more folks into contests because I think it is fun and a lot of folks would enjoy it if they gave it a try.

This issue features many low stress, easy ways to try competition. The May sport launch will feature ping pong ball spot landing. That's right, launch a ping pong ball and try to come closest a target spot on the ground. At the June sport launch, anyone can fly in the spot landing event in our ECRM contest, for free. In July, the club will be running the Goddard Apollo 11 Contest, which is another spot landing event. See details in the Competition Corner feature on these events.

In addition, all year long, we are running a kit bash contest. In this contest, you get to design your own creation by combining 2 or more kits (of any kind) into a flying model rocket. The winner will be picked by popular vote at our December Holiday Party details on page 28. In the past, prizes for this event have been pretty sweet.

This is not the NBA, NHL, NFL or the NCAA, its just a hobby. Give it a try, its all for fun.

Fly 'em high, bring 'em back, and be safe.

For questions, answers, opinions, files, photos, and more NARHAMS, join the NARHAMS Yahoo group. You have to get yourself a yahoo e-mail address (but you don't have to use it for anything else), it is free, painless, no ads, and may just be the cure for the common cold. Also: Facebook if you are not parnoid about that sort of thing.

Front Cover: Artist's concept of the liftoff of the Space Launch System (SLS) being developed by NASA to launch astronauts into Earth orbit and beyond, one day taking mankind to Mars.
Image courtesy of NASA.

Back cover: Dimitre Avraomov's Apus II RC Glider under boost of a Quest D5.
Photo: D. Carson

National Association of Rocketry Convention 2016

By Mark Wise, NARHAMS Senior Advisor

Another NARCON in the books. This year, it was off to Dayton, Ohio, home of the Wright brothers and birthplace of aviation.

Thursday, February 25, 2016, was a lousy day for driving. It was a long, windy, sometimes snowy drive through the mountains, and I was pretty wrung out by the time I pulled into the parking lot of the Holiday Inn. I ran into NAR Treasurer and fellow NARHAMSter Tom Ha in the parking lot, and we compared notes about our respective journeys.

We didn't begin the actual NAR board meeting until 8:30 PM. We met for about an hour and a quarter, all of it in executive session. Obviously, I can't go into details, but I can say that the discussion was largely about awards and insurance.

We reconvened the next morning, wrapping up the executive session and moving on to the agenda. I could devote a lot of space to the board meeting – my handwritten notes take up 12 pages. I'll spare you the details, gentle reader, but here a few topics that you might find interesting.

Membership was just over 6400 as of February 25. About 60 are Life Members.

A member asked about creating a Junior Level 2 high-power certification. For regulatory reasons, we can't do that.

NSL 2016 and NARAM-58 are coming together nicely. Our National Events chairman is especially impressed with the work the NARAM crew is doing to put a great event together.

Section renewal and site insurance renewal have successfully been moved online. No more paper forms to deal with!

Our finances are in excellent shape. Tom Ha is doing an outstanding job as our NAR Treasurer.

We also spent a lot of time on the competition question. Jim Filler, Glenn Feveryear, Jim Filler, and Scott Alexander have been working with Ed LaCroix to come up with ways to revitalize competition, which has been declining for years. They came up with some great ideas, which were well-received by the board. Expect to see details in the E-Rocketeer and Sport Rocketry as their efforts continue. [Author's Note: It might just be enough to get me back into competition, something I haven't really done since the early 90's.]

A chance to check out some Russian and Serbian international competition models that were brought by Steve Krystal and Mike Nowak
Photo: J. Filler

Continued on page 4

NARCON 2016 - continued

The formal meeting minutes should be posted to www.nar.org in the next few weeks.

Event Director Randy Boadway experimented a bit with the schedule for this year's NARCON. Notably, the banquet was on Friday night instead of Saturday. The meal was edible, the beer was mostly drinkable, and Randy's keynote speech… well, I sort of slept through it. I'd spent all day in the board meeting, I was still getting over jet lag from a business trip to Australia the previous week, and I finally ran out of steam. Reliable sources tell me it was a decent speech, but you'll have to read about it in Sport Rocketry. I was awake when former NAR trustee Randy Gilbert received the President's Award for his service on the board, and it was good to see my old friend receive a very public "Thank you" for his work.

As luck would have it, I got my second wind about the time the banquet wrapped up. I hung around to touch base with all sorts of folks, then went to the hotel's dreary excuse for a bar (they're remodeling) for a couple of drinks with Randy Gilbert and Art Upton. I'm the trustee liaison to the HPR committee, Art is the committee chair, and I manage to meet with him whenever we're at the same event. We all swapped rocketry stories, and I promised to try to complete my Level 2 certification this year.

I managed to get up on time Saturday morning, and after breakfast with Jennifer Ash, I joined the board to wrap up the meeting. Our last item of business was a vote to extend the NAR memberships of Mikayla Alexander and Zach Coffee for one year, in recognition of their assistance with the competition subcommittee.

Location has become a key part of the NARCON experience and Dayton, home of the National Museum of the U.S. Air Force, did not disappoint. After the board meeting let out around 9:30, I drove over to the museum to meet up with a tour group led by NAR member and Air Force analyst Joe Whitman. I've been to the museum many times, so very little was new to me. However, Joe proved to be a reasonably capable tour guide, and I learned a thing or two from him. For me, the most exciting additions since my last visit were the KH-8 "GAMBIT" and KH-9 "HEXAGON" reconnaissance satellites that were declassified in 2011 and put on public display in 2012. Considering that KH-8's first launch was in 1966 and KH-9's was in 1971, one can't help but be impressed with what Lockheed's engineers achieved with the technology of the day. (Of course, the fact that it took over four decades to declassify them should be an indication!)

I didn't stay at the museum long after seeing

A Side Visit to the National Museum of USAF

The Missile Pit
Photo: J. Filler

XB-70
Photo: North American Aviation, Inc.

Continued on page 5

NARCON 2016 - continued

the two satellites, since most of the remaining exhibits were pretty familiar. I drove back to the hotel, stopping off at the Huffman Prairie Flying Field Interpretive Center, part of the Dayton Aviation Heritage National Historical Park. It's a smallish site atop a hill on the outskirts of Wright-Patterson Air Force Base. It includes a monument to the Wright brothers overlooking Huffman Prairie, where they moved their flying operations after the 1903 season at Kitty Hawk. It's worth a side trip, but it's not really a stand-alone destination.

Back to the hotel, then across the parking lot for dinner with a passel of NARHAMSters and assorted hangers-on. A good time was had by all, to resort to a cliché. I also bumped into a colleague from work who was in Dayton to teach a class. Small world, y'know?

Since the banquet was on Friday, and Saturday morning and afternoon were reserved for the Museum and eRockets (more about that later), the NARCON technical sessions took place Saturday night. As always, attendees had to make tough choices. I elected to go to two sessions hosted by Randy Gilbert. The first, on building up laminated balsa fins, may be useful if you're looking to build up large or oddly-shaped fins. Randy took us through the process of selecting the right balsa, getting the fit just so, and the necessity of paying attention to grain direction (which isn't always intuitive when you're building up fins). I asked him for his PowerPoint slides, since I couldn't take notes fast enough.

The next session, delivered to a standing-room-only crowd, was James Duffy's presentation on the early days of model rocketry. He's had the opportunity to do some research in the papers that G. Harry Stine donated to the National Air and Space Museum, as well as through a collection of correspondence between Stine and Orville Carlisle. James was an engaging presenter, and he had great material to work with. I am devoutly hoping for an article, or a series of articles, in Sport Rocketry based on his work.

Randy Gilbert's second session was on decals. I didn't even try taking notes this time. He took the crowd through the selection of paper and vinyl decal stocks, design techniques, and how to print decals successfully. He then went on to discuss applying your new masterpieces to a rocket and protecting them so that they didn't peel off and the colors didn't bleed. If you look at some of his rocket photos on the NAR Facebook page, you'll see that he knows what he's talking about.

There was one final session, on liquid-fueled (not hybrid) amateur rocketry, but I was pretty tired and it wasn't my cup of tea, anyway. I

Runs good, needs paint
Photo: J. Filler

That is what is called a real drone
Photo: J. Filler

Gooney Birds were not just an Estes thing
Photo: J. Filler

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vaguely recall making my way back to the room and setting my alarm.

After breakfast on Sunday morning, Ted Cochran led the Town Hall, which closes out every NARCON. He reiterated his traditional themes of safety and outreach (especially TARC), summarized our finances and budget, and announced a $20,000 increase in scholarship and grant funds. He went on to summarize the Board's discussions on strengthening competition and thanked Ed LaCroix and his team for their hard work in this area.

That wrapped it up for NARCON, but Randy Boadway opened up eRockets for the day, and I decided to check it out. I hadn't planned to spend much time – or money – there, but I must have been there for three hours. I bought three kits, a spray can of CA accelerator, a 24mm motor retainer, and an anemometer. What was really nice about the side trip to eRockets, though, was the opportunity to sit and chat with people, something that had been sorely lacking at the hotel. I remember talking with Fran Miller, Jennifer Ash, Jim Filler, Lynn Thomas, Rick Whitman, and Joe Whitman, and I'm sure there were others. Particularly helpful was an "intervention" by Jim and Jennifer, pointing out that it had been too stinkin' long since I'd flown a rocket and it was time I did something about that! Well, I took that to heart, and I've finished three rockets since NARCON and expect to fly them before this issue of Zog-43 goes to press. (See you at the Ag Center!)

And that's about it for NARCON 2016. The drive home was much more pleasant than the drive to Dayton, and I got home before it was too late. We haven't announced the site for NARCON 2017, but it looks to be a lot closer than Ohio. Stay tuned!

A Visit With eRockets

Keeping the SEMROC legacy alive and growing plus more!

Open for business

Can It Be True About Our Own Senior Advisor?

By Jennifer Ash-Poole

Most of you know Mark Wise as our Section Advisor and NAR Board member. What you don't know is that even though Mark is in this club, does range duty, judges R&D at NARAM, he has never built or flown a rocket. I know it's hard to believe, but Mark joined NARHAMS as a way to make himself be social, and because his friends in Minnesota told him to. (And the Navy people doing his background check wouldn't completely think he is a complete hermit since he would have "friends" outside of the Navy and work.)

So, it was a surprise to me when Mark showed up at the Ag Center with several rockets to fly! It was a good thing I had my camera to document this monumental event. Attached are two pictures of Mark prepping his rocket. I know you can't see his face, but trust me, it is him. He took his time, asked lots of questions, and prepped his model. The first time for a launch, one of the clips came off of an ignitor. A newbie mistake, but even the most experienced of us has had clips fall off on occasion.

Then he had a misfire. After Maria showed him how to get the ignitor into the motor correctly, he got the rocket to work!

Mark got so fired up, that he built a glider on the field and flew it for NARTREK Silver! Proof is in the pictures! Why he skipped Bronze, I don't know, unless he thought all that judging of R&D should count for Bronze.

And if you believe it this far, April Fool! Mark was actually an active flier in Minnesota. A few of us had made a comment about how we had not seen Mark fly any rockets in a few years, and challenged him to do so. (OK, Filler threw him under the bus at NARCON for that.) So I told Mark if he built rockets and flew, I would take pictures as proof to send to the other NAR board members, and to people on the internet, that yes, Mark really does fly rockets. Mark has already posted one on Facebook. Congrats Mark, and let's not wait so long to fly again.

Editor's note: We did publish an article about last year's National Sport Launch written by Mark, in which he claimed to have flown rockets, but no one on the staff can verify this was the case. There are other reports online which also allude to his flying rockets, but, you know, its the internet.

March 2016 Mt Airy Sport Launch Report
By Don Carson, Launch Manager

On a day that was the rain date for last week's scheduled launch at Mt. Airy and the regularly scheduled launch at the Carroll County Ag. Center, the club supported two sport launches.

Easter egg beginning

Alex and I arrived at the park bright and early Saturday morning to find the access road to the field strewn with hundreds, no, thousands of plastic Easter eggs. A large Easter celebration was being setup at the pavilion/volleyball court/rocket access road. A very concerned event coordinator assured us that she had the permit to use the area wasn't told about any need to provide access to anyone. Alex worked his magic and it wasn't long before we had husbands/dads sharing tales with us of their launching rockets in their youth. Before I knew it, we were all clearing a path for the truck with the launch gear through the egg field. The access road was reseeded with plastic Easter Eggs and a Moonbounce was erected shortly thereafter.

The rest of the attendees had to park and walk to the launch site, but it was an outstanding Spring day and the walk was a pleasure. We had a nice turn out, including several new members, one joined at the field and another father/son had so much fun they are going to join up as well. We had some new flyers and folks that had just found out about NARHAMS.

The Avramovs showed up with gliders and TARC rockets in hand. Stoil and teammate Jordan flew TARC practice flights all afternoon since we did not see a single soccer game the entire day. We had a few spectators stop by, some from the Easter celebration next door. Some folks had rockets at home and said they would return next time to fly with us.

The low winds enabled the easy recovery of all but one rocket. Most of the models landed within a short walk of the launch site - E's and F's included. The pictures tell the rest.

Fyn launches his Amazon
Photo: E. Pearson

Stoil celebrated his 15th birthday at the field with goodies to eat for all
Photo: E. Pearson

Stoil and Jordan of Team Long Range Lightning, practiced TARC flights all day
Photo: D. Carson

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Historic Moment: Alan (left) went to KSC and saw the last Apollo flight. Jack (right) witnessed the last Space Shuttle Mission liftoff!
Photo: E. Pearson

Scott and Roy Bridgewater prep a rack of their models
Photo: D. Carson

Corey Witherspoon and his dad get ready to launch a model
Photo: D. Carson

Richard Crooks' V2 launches while he tracks it's progress
Photos: E. Pearson

Jim Miers preps and loads his twin cluster Big Bertha
Photo: E. Pearson

Thoren and Fyn Bruenjes with one of many flights of his well earned Amazon
Photos: D. Carson/E. Pearson

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Mt Airy launch, Continued

RC Glider competition

The theme for the launch was gliders and we flew this event for fun. It is an event in which any RC controlled rocket boosted glider can be flown with any NAR motor. You pick your own target flight duration and have to land as close to a predetermined spot as possible. You fly 3 times and the best cumulative effort of meeting your time and landing accuracy wins.

The top 3 competitors, Stoil sporting the much sought after genuine silk Ace flyer scarf.
Photo: D. Carson

We had three contestants, which is probably pretty good considering the postponement, competing NARHAMS launch, TARC activities and various conflicts that potential contestants had going. The weather was super for this event, mild temperatures and slight breeze. All the flying occured in the afternoon of the launch day. Dimitre and I put up one practice flight before our official flights. Stoil was busy with TARC practice and skipped any practice.

Dimitre gives the "Go for launch!" signal for his Apus II RC glider
Photo: D. Carson

Stoil ready to launch his Apus III RC Gider entry
Photo: D. Carson

Stoil flew a nice composite Apus III on D2.5 reloads, Dimitre flew an Apus II on smokey D5 black powder motors and I flew my “old school” balsa Decoy on C6’s. Most flights had good boosts. Dimitre’s last flight hung up for a bit on the tower, thank goodness for the D5’s nearly 5 second burn time. His model limped out of the tower and it was only good piloting that got him a decent qualified flight for that round.

Early on, I was in the lead, but then Dimetre and Stoil flew. When the final results were tallied, yours truly captured third, Diimitre took second and Stoil claimed first after all three rounds. The highly coveted first-place prize was a white silk scarf like those used by fabled WWI open cockpit fighter aces. Congrats and happy birthday Stoil!

Engines flown: A (1), B (4), C (20), D (14), E (4), F (6)
Total Flights 47, including 2 clusters, 11 RC Glider flights

Nice boost on a smoke long-burn D5
Photo: D. Carson

Don and his old school "wooden" Decoy RC glider
Photo: E. Pearson

Scale Data: Nike Tomahawk, Round 18.31

From the Dick Sipes Collection

Note from Alan Williams: Recently, I was approached by the late Dick Sipes' son-in-law, David McFarland about a lot of rocketry material that Dick had left behind. I've been working with Ed Pearson to distribute the materials. Old motors were sent off for the NARAM Cannon Educator fundraiser aution and a few models were held back for possible museum display.

Much of the material was scale data, mostly sounding rockets. About a quarter was sent to the Zog editor and the vast majority was sent to Peter Alway who is producing another in his fabulous series of books "Rockets of the World."

Over time, we will be rolling out more material from the collection of Mr. Sipes.

Launch Report Carroll Co. Ag. Center Westminster, Maryland

By Maria Ha

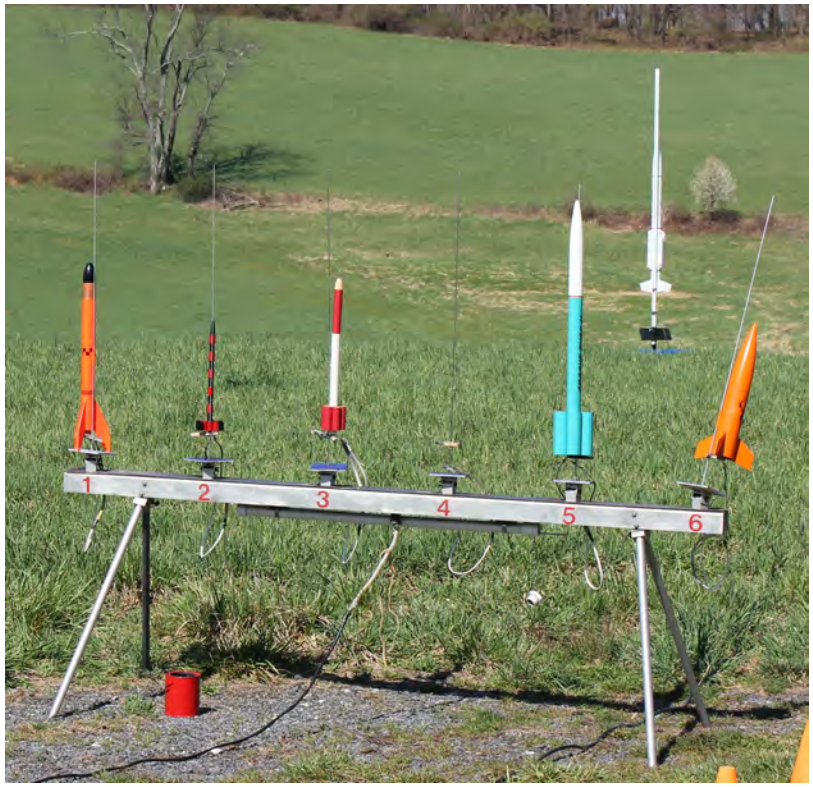
All Photos: J. Ash-Poole

Launch Managers: Tom and Maria Ha

Oh What A Beautiful Day…
for the March 26th Carroll County AG center Launch. The sun was shining, enough to give us slight sunburns. The air was crisp and cool; we needed that extra layer under the jacket. The wind was present and would be considered light and variable as it changed directions throughout the day. There were 5 different events held on the grounds, but with the help of the new signs people were able to find the rocket launch behind the buildings.

Tom and Maria Ha arrived on site at 9:15, and decided where to place the launch equipment. Mark Wise arrived soon after and the three of them set up the equipment and were ready to fly at 10 am. Maria started the day off by flying the Jim Filler parasite glider that she won at the holiday party. She was worried that it was going to land in the trees, but it turned and landed on the edge of parking lot closest to the trees. Jennifer arrived and she and Maria loaded the rack with their tubular rockets, a 13mm tiny tubular from the Dick Sipe rockets, Jennifer's 18 mm ASP tubular rocket and Maria's 24mm Groove Tube II, a present from Scott Branche. All flew well. Tom launched two rockets; his classic red Fat Boy from the holiday party and Big Orange, a nicely finished (not by Tom) Big Betty model. Mark was working on the 139m height for the Wall of Daring (see it at narhams.org) and the silver NARTREK level (see it at nar.org). He had a qualifying flight of 52 sec on his newly built Condor glider for NARTREK that flew very nicely. About this time other NARHAMsters and soon to be members started to arrive.

The Johnsons brought rockets, food and hot drinks. A big thanks for sharing! Dick Stafford and Mike Kelley had a wide range of rockets to fly. James and his father came out with rockets and a "gun". The gun caught my attention and it turned out to be an altitude tracker. They were using it to determine the altitude of the flight. James volunteered to shoot everyone's rocket height, but dad objected. We had Jim Miers TARC team show up. Mark was their mentor for the day, and discovered problems that they needed to fix before they could fly. The team worked on the rocket to remove a bulkhead and fix a fin. They were able to launch the rocket but it was very underpowered. There were a few other glitches with flights. Ed Jackson's F14 TomCat fell on its' back when Ed mixed up engines and launched it on an A8. It flew nicely afterwards on a C6



Almost a full rack and an away pad!

Jen's Totally Tubular by ASP

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Carroll Co. Ag. Ctr Launch, Continued

engine. Bill Boublitz lost track of his Hi-Flier when he launched it on a C. Bill also hung one in the top of a tree beyond the horse paddock. Charles Bruno eventually found both parts of his Flutter-By which he launched on a C engine.

Other highlights from the launch. Mike and Dick conducted test flights using the new Jolly Logic Chute Release, all were successful. It was noted that the altitude could be adjusted and dialed-in rocket-by-rocket for the best parachute-opening height. Ed and Sarah Jackson had different scales of the same rocket. Ed also has his "just a rocket" that broke into multiple pieces with the ejection charge. Tom Jackson flew two rockets on clusters successfully. He also had a very interesting rocket that he made from left over pieces. Tom, you'll have to enter the NARHAMs kitbash contest! In all there were 88 flights using 92 motors ranging from MMX to G74-6. We had 2 returning members and 3 new members pay their dues at the launch. We also had $67 in donations. Thanks to Tom, Maria and Mark for setting up the range and being LCO. Cleaning and teardown help from Tom, Maria, Mark, Mike Kelley, Bill Boublitz, James and the gentleman that took down and put away the PA system. (Sorry I can't put a name to the face.)

Everyone enjoyed themselves and we had a great turnout for this launch, with several people asking for the next date of an Ag Center launch. With very low winds, no crops and sun, it was a great day to be launching rockets into the sky for very close recoveries.

Engines: mmx, ½ A6-4, ½ A3-3, A3-4 (2), A10-3 (6), A8-3 (7), B6-4 (13), B4-4 (2), B6-2, B6-0, C6-3(7), C6-5 (10), C6-0, C11-3 (9), C11-5, D12-3 (3), D12-5 (11), E20-4, E18-4, E12-6, E16-6, F50-6, F15-4, F15-6, F26-6, F35-5, G53-5 (2), G77-4, G54-4,G74-6 (2).

Maria Ha with her Jim Filler glider she got at the holiday party

Tom and Maria prepping rockets

All Photos: J. Ash-Poole

Dick Stafford preps at his own pace

Mark Wise's Lil Devil

Mark Wise and his glider and it's flight

Launch Rails & Rail Buttons: an Alternate to Launch Rods & Launch Lugs

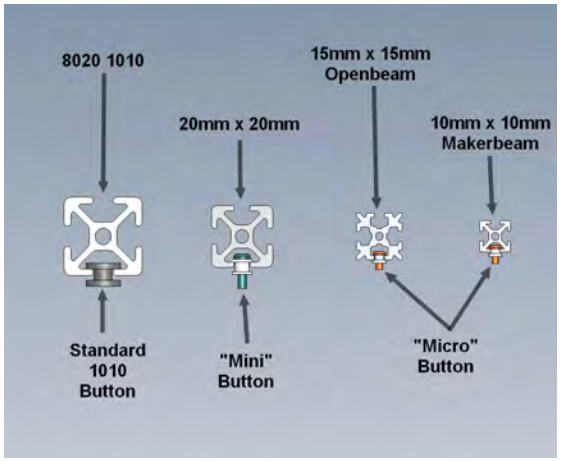
By John E. McCoy Sr.

Launch Rails:

Much has been written over the past year or so about the joys of launching from various size and length rails eliminating the dreaded "Launch Rod Whip" seen so often at many sport launches. The internet is buzzing with all kinds of stuff pertaining to what rail and how long for what size and weight rockets. This article will be a brief look at the various size rails available, the Rail Buttons and lugs used with each rail and some general suggestions for mounting these Launch Rails to personal and Club equipment. I'm sure I'll miss something along the way as I do not fly HPR, so the largest Rail I'll be reviewing is the 1515 rail. Because this rail is larger than anything we at NARHAMS will likely ever need I'll start with it and proceed downward through MPR, LPR to the smallest launch rail useable with Micro Maxx models.

Launch Rails have been in use by HPR folks for a good long time now. 80/20 inc. at http://8020.net has supplied most of the larger launch rails along with Catalog numbers 1515 and 1010 for years.

Rail used to replace an 1/8" launch rod
Photo: J. McCoy

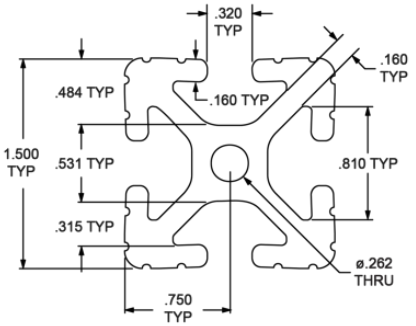


Please Note: Prices quoted in this article will likely change without notice and do not include shipping fees or sales tax.

1515 style rail
Photo: 80/20 inc.

The 1515 Rail:

80/20 Inc. part no. 1515 is 1-1/2" square aluminum with slots on all 4 sides and a center core 0.262" hole. These hefty 6105-T5 aluminum extrusions are available in just about any length one might want with 72", 96", or 120" being the most common. Currently from 80/20 inc., 1515 rails are priced at $0.53/inch.



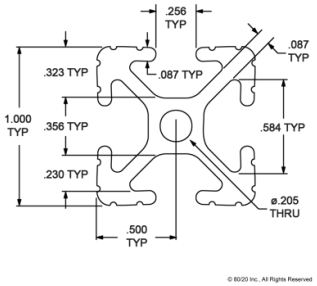
1515 Rail cross section
Photo: 80/20 inc,

Along with the rail, you will need rail buttons from any number of sources. I've found the most cost efficient vendor to be www.rail-buttons.com, which carry a complete line of buttons in 1515, 1010, Mini and now Micro sizes. Currently 1515, 1-piece Delrin rail buttons will support rockets between 15 – 20lbs. These buttons are attached to the model airframe with metal screws and epoxy. I'm told these screws are Flat Head Phillips ¼-20" steel or stainless steel machine screws.

Continued on page 15

Rails and buttons, Continued

1515 Rails themselves are generally machine screw mounted to heavy fabricated steel HPR launch pads.



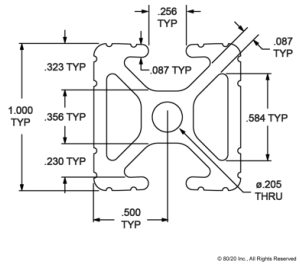
1010 dimensions - note slots on all 4 sides
Image: 80/20 inc.

The 1010 Rail:

Also from 80/20 inc., part no. 1010 is 1.0" x 1.0" square 6105-T5 Aluminum extrusion with slots on all 4 sides with a 0.205" center hole that can easily be tapped for ¼-20 threaded studs. This seems to be the most common MPR/HPR rail purchased currently at $0.23/inch. But Wait! There is another profile that is a bit stronger yet.

The 1004 Rail:

1004 Rail - note slots on 2 sides only
Photo: 80/20 inc.



1004 dimensions
Image: 80/20 inc.

Also from 80/20 inc. or McMaster-Carr this profile has only 2-slots, on opposite sides of the 6105-T5 extrusion making this profile considerably stronger along the side, and has the same 0.205" core hole. Best of all, is exactly the same price ($0.23/inch) as the 1010 rails. This is the rail profile purchased for our two major club systems. For those who might want to purchase their own, McMaster-Carr #47065T95 for the 2-slot 72", or 47065T101 for the slightly weaker 4-slot 72" at $19.79 each.

RailButtons.com has a wide variety of 1-piece Delrin or 3-piece Nylon buttons in a number of colors. All attach to the airframe with 8-32 x ½" binder head Phillips machine screws & epoxy. Currently the 3-pc nylon button 10pk goes for $2.50.

Either of these rail profiles can be mounted with through bolts or retainer sockets in many of the larger MPR Pads or with 1/4" stud pins tapped into the center core hole.

Photo: J. McCoy

The 20mm Rail:

These 20mm x 20mm square rails are actually 0.787" square with a smaller core hole that can be tapped for 10-24 threaded studs. I threaded an old 3/16" diameter 316 stainless steel launch rod to make the studs for our 48" long club 20mm rails. These will easily mount on our 3/16" rack launcher heads.

These 6105-T5 aluminum extrusions can also be purchased in 72" @ $17.19, and have the same two slot profiles as the 1010 rails. Currently, 4-slot rail x 48" McMaster-Carr 5537T101 goes for $13.09 each, or the stronger 2-slot rail x 48" McMaster-Carr # 5537T43 (which I recommend). These rails are mated with the relatively new Mini Rail Buttons from www.rail-buttons.com. Mini buttons are 4-piece nylon with 4-40 x 3/8" binder head Phillips machine screws in 10pks for about $1.50. During testing last summer these Mini buttons & Rails were used on models from BT-50 to 3" diameter with motors ranging from C6 to G with no trouble at all. Models up to about 3lbs should not be a problem, though the heaviest I have seen flown was about 2.5lb Big Daddy.

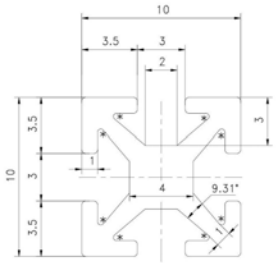
Like the 1010 rails, these shorter rails can be mounted with through bolts or 3/16" threaded studs to standard rack launchers.

The 10mm MakerBeam Rails:

Originally believed to be only suitable for Micro Maxx Models, these little 10mm x 10mm 4-slot solid core, black anodized 6063-T5 rails come in a

Continued on page 16

number of lengths 300mm(11.81”), 900mm (38.43”) and 1500mm(59.05”). Sold through Amazon.com, these little rails have proven to be great little launch rails for models easily from Micro Maxx .T2+ (.281”) to BT-80 (2.6”) D12 powered motor rockets. During last year’s testing 10mm MakerBeam rails in 900mm and 1500mm rails proved very stable, eliminating Rod Whip on rockets powered by BP and APCP Motors to F20’s. Testing with G-40 and G-80's was planned but didn’t get flown during the test dates due to windy weather.



10 mm MakerBeam cross section dimensions
Image: MakerBeam

Through Amazon MakerBeam 900mm and 1500mm rails are sold in 2-pks currently at 19.84 and 27.00 respectively.

Photo: J. McCoy

While the club does not own one of these 10mm MakerBeam Rail the author has several different lengths in his Rail Tube Storage carrier and in his MMX Range box. All are ready for mounting in any launcher that will accept 1/8” launch rods.

Rail Buttons for 10mm MakerBeam Rails are only available from www.rail-buttons.com in black or white. 10pk -2pc buttons @ 1.35/pk. Supplied with 2-56 x 3/8” Nylon binder head screws.

The 5mm NanoBeam Rails:

Quite new to the mix these 5mm (0.1968”) x 5mm (0.1968”) x 30cm (11.81”) silver anodized 6063-T5 aluminum rails come in minimum order 10 packs at 24.18 from Amazon. I haven’t yet actually had this rail in my hand, but looking at the cross section specs. It appears it will take either a 0-80 or 00-90 machine screw without sleeve or washer. As the maximum length offered at this time is 30cm (11.81”), they will most certainly be used ONLY for Micro Maxx models offering a much smaller and hopefully lighter rail button option. They will also be fitted with a standard 1/8” stainless steel mounting stud.

Options for Buttons:

Rather than traditional rail buttons, many of the above rails can be fitted with several size plastic extrusions as launch lugs. Both “I” and “H” beam sections can work depending on the width and depth of the rail slot. These small “H” sections would be surface mounted with either epoxy or glue to the airframes instead of rail buttons. These options would be especially useful on Scale and Semi-Scale model launch lugs.

Rail button Sources:

Below are a few of the many rail button sources researched for this article. With the exception of www.rail-buttons.com all other vendors supply ONLY 1515 and/or 1010 rail buttons.

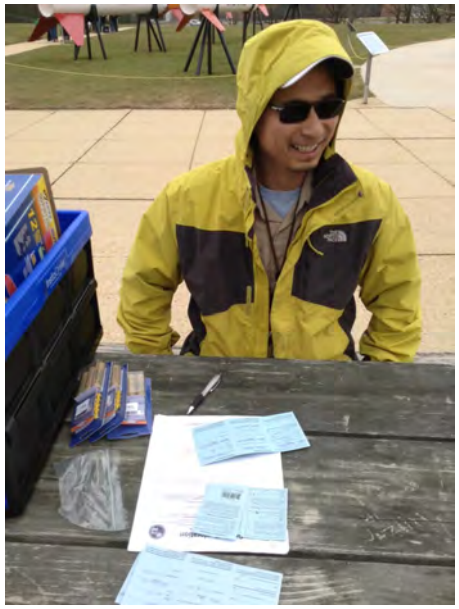
www.apogeerockets.com	-	doghouse.blastzone.org
prolinerocketry.com	-	coastrocketry.com (Canada)
cdimodelrocketry.com	-	www.discountrocketry.com
alwaysreadyrocketry.com	-	www.madcowrocketry.com

Editor's note: For more info, photos and specs, see Tech Tip 021 in the NARHAMS library.

March 2016 Goddard Visitors Center Launch Report

Alex Mankevich
NARHAMS President

The March 2016 Goddard launch started out as a family affair for yours truly. My mom and dad were in town, so naturally I treated them to a Goddard launch. My folks have previously met Ole Ed, Richard Crisco, Mike Cochran and the gals inside the Visitor Center (Julie and Shirley) during past launches at the VC. My dad helped out Ole Ed and me with the transport and set up of the launch equipment and PA system (and I didn't even have to pay him or buy him a lunch).



CJ Jung getting the badge paperwork filled out for Scouts in MD troops 5, 21, 111, and 346

You might be convinced that a March launch at Goddard would be windy and freezing. However, this day turned out to be quite pleasant with little wind. There was no snow cover on the ground to cause any slipping and sliding. Overhead there was very little aircraft activity.

The March launch was used by the Boy Scouts of America as the event at which to earn their Space Exploration merit badges. They were lead by C.J. Jung who is a Boy Scouts of America Space Exploration Merit Badge Counselor who helped the scouts in Maryland troops #5, #21, #111 and #346. C.J. has met Richard Crisco at other scout venues and during last year at the Goddard Visitor Center. C.J. works at Goddard in Earth Sciences--Code 428 in building 32.

Mike Cochran (L) and Alex Mankevich helping at the rack

CJ Jung helping out a modeller

Continued on page 18

Mar. Goddard Launch, Continued

Another group that came to this launch for a specific purpose was Stoil Avramov and his two TARC teammates Jordan and Aaron. Their intent was to gain experience in flying model rockets. Jordan and Aaron are new to rocketry, but are in good hands with Stoil. All three attend Longreach Senior High in Columbia.

Our Safety Check was once again performed by Richard, Mark and Kathleen Crisco. Their regular appearance at the Goddard launches, as well as the Mt. Airy launches, has prompted me to label this troika as “Team Richard”. Mark has also been performing the ‘rocket in the tree’ recovery duties.

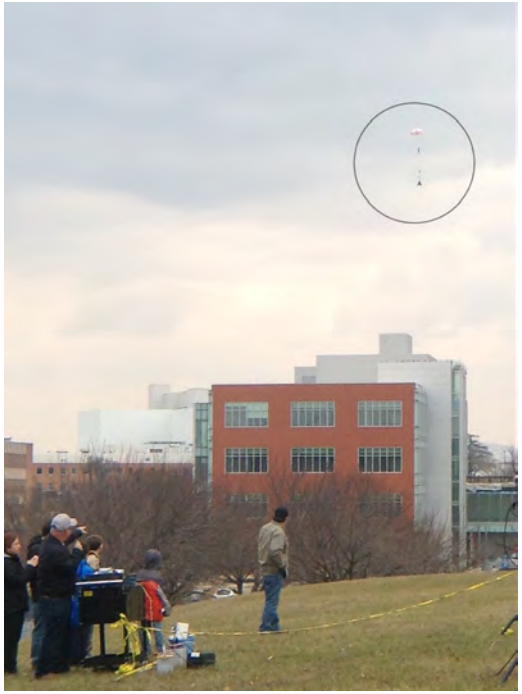
Mike Cochran and Alex Mankevich helped the flyers at the launch rack. Mike expertly handled the mis-fires by replacing bad igniter wires. 63 flights were flown for this launch and 35 first-time flyers were awarded the NAR Fly 50,000 recognition certificate.

Ever mindful of our upcoming Goddard Contest, we placed the Goddard Contest banner at a conspicuous spot near the Delta rocket. This banner will be prominently displayed at all our future Goddard launches right into July. Soon we should have the contest flyer to distribute inside the VC as well.

Kids going to load up the rack after safety check (performed by Richard, Mark and Kathleen Crisco).

Matthew Perry and his Big Daddy rocket

Al Schmid and his very nice vintage Buck Rodgers Marauder model



Alex points to a strange circle in the sky

FROM THE ZOG:
Keeping Tabs and Keeping Proud

By Alex Mankevich, NARHAMS President

Photos: A. Mankevich

One of the unheralded benefits of being an officer in NARHAMS is that you become privileged to follow the comings, goings and achievements of your fellow section members. We regularly report on the outreach activities we've conducted and which members had participated. We routinely post model rocket contest results on our narhams.org website and in our official newsletter the ZOG-43.

Being an NARHAMS officer and NAR member I have a few sources I can tap into to get the latest news and insights. As a NARHAMS member, I receive the ZOG-43 newsletter. As a NAR member, I receive the Sport Rocketry magazine. As a friend of Ole Ed Person, I receive all the photos that he is willing to share. As a Verizon subscriber, I can surf the entire web for newsworthy model rocketry stuff. But, I find that the best part is to actually attending the rocketry activities where I get to witness in person how my fellow rocketeers are faring.

One member has gotten onto my radar screen due to his string of successes in highly challenging events. Stoil Avramov has been on a torrid pace on the model rocket contest stage. Over the last few years Stoil has been consistently progressing to tougher competition. A short list of achievements is as follows:

Apollo Contest 2013 - Stoil with MSBR President Anoop N. Mehta
Photo: A. Mankevich

A few years ago, Stoil Avramov won a trophy in the Junior division during the 2013 Apollo Contest.

Stoil has placed in the top two as Meet Champion for ECRM 40 to 41. He set a new A Division record at ECRM-41 in 2014 for A Rocket Glider with a time of 369 seconds, crushing the old record of 60 seconds.

As a U.S. Junior Team member Stoil Avramov won a Silver medal in the free-flight rocket glider category at the 20th World Championships of Space Modeling held during August 2014 in Bulgaria. You can read his recollections in the January/February 2015 issue of Sport Rocketry. Stoil is currently a member of the 2016 Junior F3J Team for the World Spacemodeling Championships to be held

Stoil with mom and dad
Photo: J. Stenberg

Continued on page 20

From the Zog, continued

during July 2016 in Slovenia.

Currently, Stoil has teamed up with Jordan and Aaron from the Longreach Senior High in Columbia to compete in the Team America Rocketry Contest (TARC). Stoil is fresh off his victory in the Gliders Competition at our March 2016 sport launch.

Stoil with big glider and Puma shirt

Photo: AMA Team USA

Yet for all his achievements he remains a modest, humble and pleasant character. A model for all us NARHAMSters!

Stoil with 2016 TARC Team members Jordan and Aaron

Photo: E. Pearson

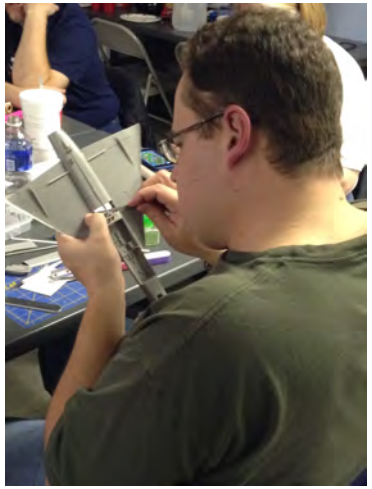
Meeting Hightlights

February

Tom Ha brought a ream of club flyers. Alex displays one in the left photo. We also had a raffle drawing for an Interceptor E and a couple of G motors. Ted Avraham won the kit and a motor; Alan Williams won the other motor but gave it to Ted! Ted, on right, displays his bounty. We also had a cold weather flying talk by John McCoy whose daughter Kathleen (a NARHAMSter too) is moving to Alaska with her husband and four children.

March

At the March NARHAMS meeting, the focus was plastic model conversion and exemplified by the focused attention of Dave Fuller putting together his Monogram kit F-106 Dart.



Photos and commentary by Ole Ed.

February 2016 Goddard Visitors Center

Article and Photos By: Ed Pearson

Super Bowl Sunday launch. Almost 80 models flown, 50 new flyer certificates issued. The launch ran from about 1-2:30 pm.

We thought at noon when the VC opened that it being a cold Feb day we'd have few flights. Turned out we were wrong.

If you didn't go inside to see the CAP cadets (MD Wing of Montgomery County), they prepared inside. Alex first and then Mike gave them guidance. The Visitors Center staff recorded 18 cadets and 6 adults. I estimate the CAP cadets were about 1/3 to 1/2 of our flyers.

The Civil Air Patrol cadets prepping inside

Shawn and Family

The range crew from NARHAMS--clockwise from upper left: Richard and Kathy Crisco doing safety check; Mike Cochran (R) helping at the rack; Zog Alex Mankevich launching and narrating; Mark Crisco doing pole recovery.

This is called sticking your landings

Bits and Pieces

Upcoming Meeting Presentation Topics:

April - Managing Goddard Launches
May - Fly It, Take It building session
June - Open building session

Upcoming Launch Themes:

April - SEMROC models
May - Ping Pong Ball Spot Landing
June - ECRM-43 Regional Meet contest

Welcome New/Renewing Members

New Members

Jack Griffith, Ginny Jackson, Sarah C. Jackson, Thomas Noyes, Michael Ratel, Ted Avraham, Khristian Ray Ward, Noah Eugene Ward, Julia and Paolo Toschi

Renewals

Thomas Bagg III, Scott Branche, Michael Brown, Chuck Schofer, Isaac Schofer, Tom Jackson, Alex Mankevich

NARHAMS Gold

National Association of Rocketry Headquarters Astro-Modeling Society (NARHAMS), NAR Section 139 presents:

Limited Edition
50th Anniversary
Model Rocket Kit

Only 139 numbered kits available!

Unique Ducted Booster
2-stage styling
Quality Kit Production
Decal sheet included

Length: 20"
Diameter: 1.34"

Suggested Motors:
B6-4 (first flight)
C6-3
C6-5

Per kit price: $30

Kits available in early March, 2015

Send checks (payable to NARHAMS) to Maria Ha, NARHAMS Treasurer, 512 Chestnut Street, Mount Holly Springs, PA 17065

or
PayPal to rocketha@gmail.com

Please use the send money to friends or family option when using PayPal!

February 2016 Mt Airy Sport Launch Report

Alex Mankevich - February Launch Manager

Photos: E. Pearson

Mike Kelly's arsenal

You could say that the February 2016 sport launch at Old National Pike Park spanned a few months. The day started with a November-like chill and ended up with an April-like warmth. Too bad not too many members took advantage of this usually cooperative weather.

Mike Kelly and Alex arrived at the storage unit precisely at 9:00 AM. Before we could finish our
"Happy New Year" small talk, Jim Filler arrived with this truck. The three of us got everything loaded up and onto the field. All the equipment worked out well even after being inactive for a few months.

Roger and James McBride were the first to arrive. They had big plans for multiple launches for a science project. Roger had emailed ahead to be sure that we could accommodate his busy schedule of launch and data recording. That was the plan at least, until the very first flight put his altimeter onto the top of a very tall tree. Roger had a back-up altimeter. The back-up was promptly placed on the very next flight into yet another very tall tree. The pursuit of science can be brutal.

Tom Jackson takes time from prepping his model to show his first Alpha, circa 1983, that he flew at Goddard launches--when he was 7 yrs old.

Anton lives in Washington, DC, and learned of the Mt Airy launches from being at Goddard. (Clockwise from top left) here it lifts off rail 2; arcs downwind; drifts back to Earth; is recovered and checked out by Anton (center), dad Steve and mom Elena.

NARHAMS members Jim Miers, Bill Boublitz, and Dave Smith got the action going with a variety of rockets. Members Paolo and Julia Toschi let fly with rockets ranging from a Mini Max to an Amazon. The launch action really picked up when the Jacksons – Ed, Sarah and Tom joined the fray. They brought out an impressive array of rockets including some golden oldies such as the Mars Snooper. Tom officially launched our first cluster models of the new year.

Jim Filler concentrated on the upcoming World Space Modeling Championships by launching a boilerplate model of

Continued on page 24

Feb. Mt Airy Launch, Continued

his Black Brant III. Jim later went “totally techie” by experimenting with a programmable chute release device. The "Chute Release" by Jolly Logic is an electronic device containing an altimeter and an actuator. After motor ejection, the rocket falls to an altitude pre-set by the modeler and the actuator releases the parachute which then fully opens. It can fit a 40 mm tube as a minimum and is roughly the size of a 9-volt battery. This device eliminates the need for a black powder charge to enable the dual deployment of a parachute. Jim’s trial flights all worked well.

Fabrice Derullieux lost his Semroc Astron here months ago, but it was found in February. Here he checks out the damage; it was in surprisingly good shape.

The theme for this wintertime launch was to loose your white-colored rocket in the snow. Alex Mankevich flew two rockets to honor this theme. Both rockets landed on the contrasting green grass well away from any patch of snow. Alex vows to return next year with a model rocket that lofts its own supply of snow so that we don’t have to rely upon Mother Nature to cooperate by providing snow cover on the launch range.

Team Crisco (Richard and Kathleen) set up shop by laying out a variety of rockets that they loaned to rocket-less youngsters. Their generosity was enjoyed by families that had that drifted towards our launch activity, including the Usdin family of son Anton, dad Steve and mom Elena. Another family taking advantage of the Crisco’s loaners was the Perry family of Matthew and his dad Matt.

Jef and Ellen Fineran, Fabrice Derullieux and Ed Pearson joined us during the course of the day to heighted the camaraderie enjoyed around the launch range.

We got in a total of 58 flights. Motors ranged from ½ A3-4T to G71-4.

Ed Jackson prepares his decades old Mars Snooper; it launches from rail 1; and lands seemingly behind Ed. (We last saw this model launched at Goddard's July launch--see the July/Aug 2015 Zog 43).

Bill Boublitz, came from Pennsylvania and prepared this nice Canadian Arrow; it launches with an Estes D12-5; we see the model deploy its 'chute; and it goes for landing way behind away pad 1.

Outreach: Space Night at Wood Acres Elementary School

By Alex Mankevich

NARHAMS President

Space Night is Wood Acres Elementary School's biennial event that is dedicated to the wonders of space, science, and exploration.

The Wood Acres Planetarium Committee contacted NARHAMS for its Space Night 2016. Jewel Fox was the 2016 Space Night Co-Chair who took over for Kenneth Lewis who was our contact in past years. The usual site at Wood Acres Elementary School was under renovation, so the event had been moved to the Radnor Center in Bethesda. Due to change of venue, no launch was conducted as was usual in past years.

The Space Night committee arranged for several space-related displays from number of supporters. An astronaut is usually the featured speaker. This year former astronaut Daniel Tani of STS 108 and ISS Expedition 16 fame was on the schedule. Mr. Tani is also the current the VP of Missions and Cargo Operations at Orbital ATK. As it happened, Orbital ATK was in the midst of preparing for its next flight to the International Space Station, so Mr. Tani had to cancel as he was needed in Florida to prepare for the scheduled launch on March 22nd . The committee arranged to have an inflatable planetarium set up in the room in place of the astronaut speaker.

Alex reached out to Jim Filler and to John McCoy for model rockets to amp up the volume on the NARHAMS display. Alex asked the AIA to supply numerous TARC flyers and Tom Ha delivered several hundred of our club flyers. Ole Ed suggested that we also put out some Goddard First Sunday flyers as well. The NASA Space Place of Pasadena, California provided a whole box of goodies to be handed out as free goodies for the youngsters.

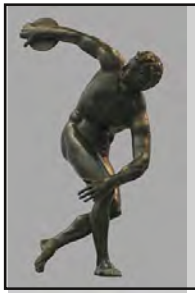
NARHAMS Booth

Photo: A. Mankevich

The event provided a fold-out ten foot cafeteria table to be used to display our rockets. Alex threw down some NARHAMS blue table cloths and used our PVC support frame to display the NAR "Fly your rockets with us" banner as a backdrop. A 10-position wooden rack display and a foam step display held most of our smaller rockets. Most of the larger Jim Filler-donated rockets framed the whole booth as free-standing models. Jim's Interceptor E was displayed on a free-standing angled mount for a dramatic 'in flight' look. John McCoy's boxed micromaxx display was centered between Alex's Outlander and Mars Lander models. At least 35 rockets were on display for the visitors to oogle and admire.

Other venues at this event displayed "Sun Power", the moons of Jupiter, NASA space suits and flight suit, a Lego Star Wars R2D2 and a robotic crawler. Hands-on activities for the youngsters included making a clay moon and Lego construction.

Ole Ed and Diane Pearson showed up for a while to assist Alex at the NARHAMS booth. Ole Ed interacted with the folks at the adjacent NASA display. As a result, Alex was able to pawn off a whole box of NASA literature and fold-out posters that had been collecting dust at his home.



Competition Corner:
New Contest Announcements

Steel City Smoke Trail XVI

E Streamer Duration
C Rocket Glider (Multi-Round)
A Helicopter Duration
½ A Super-Roc Altitude
Open Spot Landing

April 30 to May 1, 2016 in
Location: Grove City, PA

For more info, go to: www.psc473.org

Goddard Apollo 11 Model Rocket Contest

For All Area Model Rocketeers

Event: "Lunar" Spot Landing

Cost: Free
Sunday, July 17 at
Goddard Space Flight Center, Greenbelt, MD

For further info, call the Goddard Visitor Center at (301) 286-8981, Tuesday through Friday, 10:00 a.m. to 4:00 p.m.

East Coast Regional Meet - 43

June 18-19, 2016
Old National Park, Mt Airy, MD

Events
Plastic Model Conversion
Open Spot Landing
A Helicopter Duration
1/2A Super-Roc Altitude (*)
Standard Precision Payload (*)

(*) Altitude events will be measured with altimeters

NARAM-58 Competition and Sport Launch

Plastic Model Conversion
E Scale Altitude (altimeter)
G Streamer Duration
D Rocket Glider Multi-Round (no radio control in this event)
C Parachute Duration Multi-Round
A Helicopter Duration
½ A Super-Roc Altitude (altimeter)
Open Spot Landing
Research & Development

July 23 to Friday July 29, 2016 in
Location: Walnut Grove, MO

For more info, go to www.naram.org

Continued on page 27

ECRM-43 - You can compete for free!

Anyone interested in trying a contest event can enter Open Spot Landing at ECRM for free. You can use almost any model for Open Spot Landing. It cannot separate into mutiple unattached pieces. You can use any kind of recovery device as long as it is safe, but it can't be remotely controlled or guided.

The Jan/Feb issue of the Zog had helpful guidance on how to build for this and the other events to be held at ECRM-43.

The next page has plans for a fine-flying helicopter duratin model that would be a great entry in the A Helicopter Duration event at ECRM. Give it a try and bring it out to an upcoming launch to try it out. Helicopters are fun!

Mini-ROTAROC

Plans page 1 (Design & assembly)

By George Gassaway

Oct 27, 2007

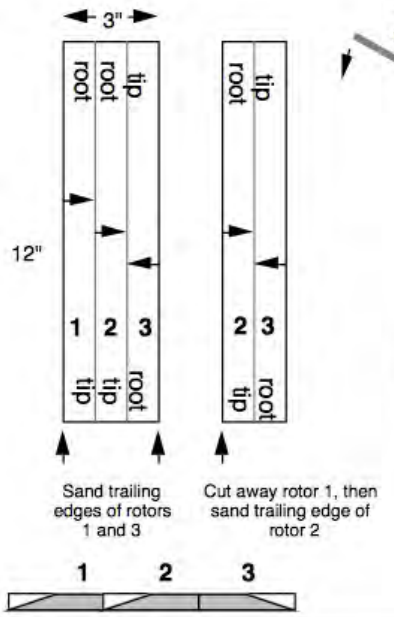
Drawings show model which would rotate counter-clockwise as viewed from above.

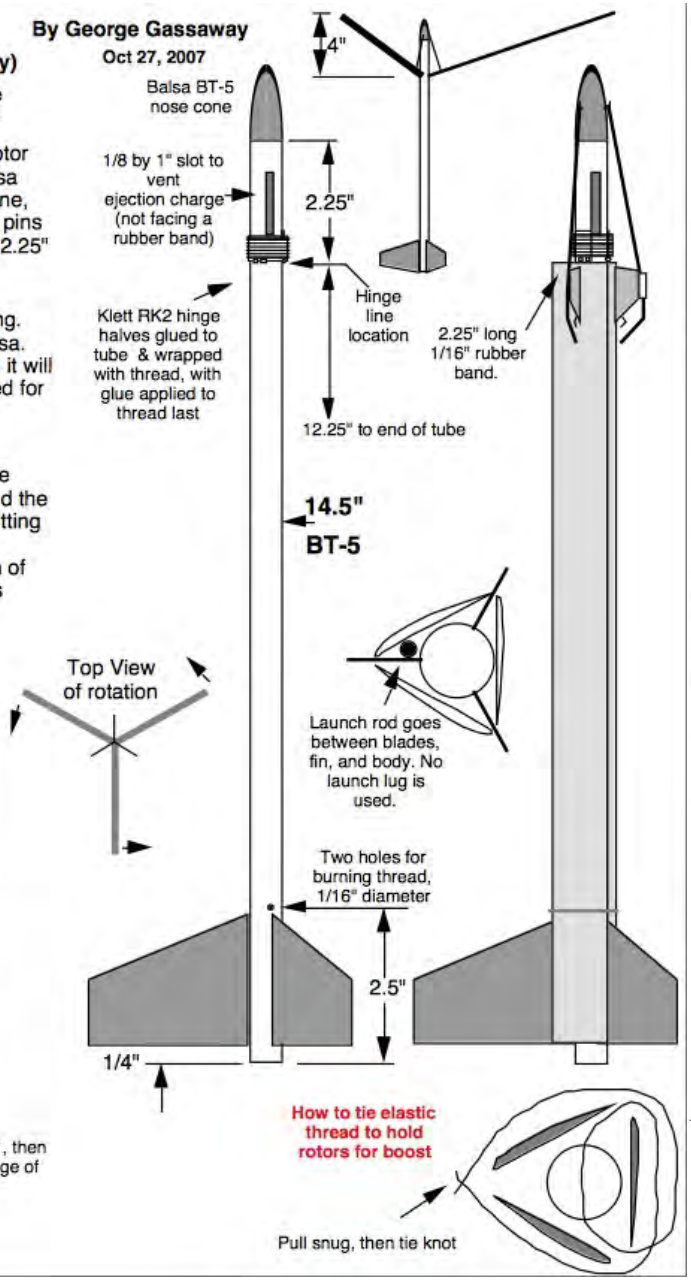
PARTS: light 1/16" balsa (fins & rotor supports), Med-light stiff 1/16" balsa (rotors), 14.5" BT-5, BT-5 nose cone, Klett RK2 model plane hinges (3), pins or model railroad spikes, 1/16" by 2.25" rubber bands.

Rotors are 1" wide (chord), 12" long. Made from medium-light 1/16" balsa. Balsa should be somewhat stiff so it will not bow outward much when folded for boost.

Rotors are fragile and easy to damage or break while sanding the trailing edge. Below is how to sand the trailing edge of all rotors before cutting out from balsa sheet.

Middle arrows point in direction of leading edge. Top view for models rotating counter-clockwise



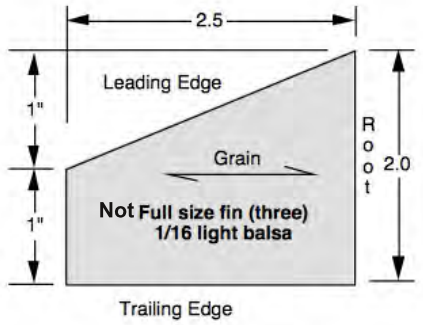


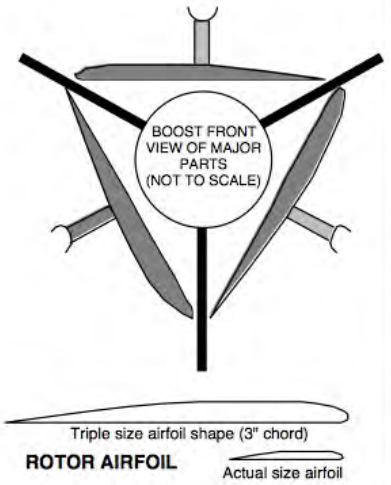
Mini-ROTAROC

Oct 27, 2007

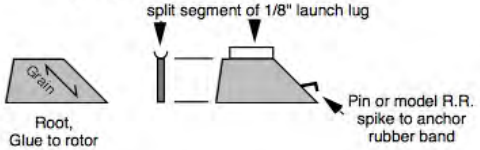
Plans page 2 (with full size templates & details)

Power: 1/2A3-2T, A3-2T, A3-4T





Not Full size rubber band standoff & dihedral angle support (3 from 3/32"" balsa, note grain)



When you glue the blade to the hinge, make SURE that the airfoil faces the correct way. The Hub hinge assembly is angled so that the rounded leading edge of the airfoil should be to the right (lower than the leading edge) , and the tapered trailing edge is on the left(higher than the leading edge)

Construction:

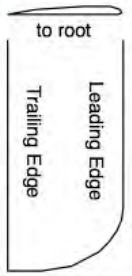
For best performance, build model carefully so that parts are not grossly out of alignment and so it will deploy and rotate properly.

Keep model lightweight in selection of parts, wood, and in construction. Use Cyanoacrylate glue.

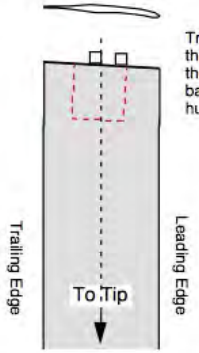
For finish, use only 1 coat of thinned clear dope on fins and nose cone, 1-2 coats of clear thin dope on rotors. Do not use any paint. For coloring, use magic marker.

Optional Rotor tip shape

(Full size, top view)



Skewed hinge mount



Trim Root edge of the Rotor to match the angle of the hinge based on the rotor hub hinge

Full Size Pattern for Rubber Band Standoff and Dihedral support

Mini-Rotaroc Plan Courtesy of George Gassaway and the NAR

Continued on page 28

One More Contest Announcement

CanAm Cup 2016

An FAI-Sanctioned World Cup Spacemodeling Competition

World Cup events: S4A, S6A, S8E/P, S9A
Open International Events: S3A, S2/P
For non-FAI flyers, NAR regional meet for the A PD, A BG, A SD, and A HD events, flown as FAI-style multiround NAR events

June 25-26, 2016
Location: Muskegon, Michigan

For more info, contact Jim Filler

43 Sightings

Rising Washington Capitals star Tom Wilson is cause for an increase in sightings of the number 43. Rumor has it that the Islanders are seeing that number in their nightmares.

Photo: E. Pearson

2016 Design/Kit Bash Contest!

Calling all Designers, Craftsmen, Plotters and Schemers.
The gloves are off for 2016's contest.
You can now combine 2 or more model kits of any kind (really any kind - rockets kits, plastic model kits, model airplane kits, you name it) to make a safe and wonderful flying model rocket.

The Rules Are Simple:

1) Use any or all the parts of 2, or more, model kits ***of any kind***, of your choosing, to make a flying model rocket.

2) Additional parts allowed are clear plastic fins for stabilization and internal components; tubes, recovery system, nose weight, etc.

3) You must fly your rocket at a club launch at either:
Old National Pike Park in Mt. Airy, MD
Ag Center in Carroll County
Goddard Visitor Center Launch
(Keep in mind field limitations where they exist)

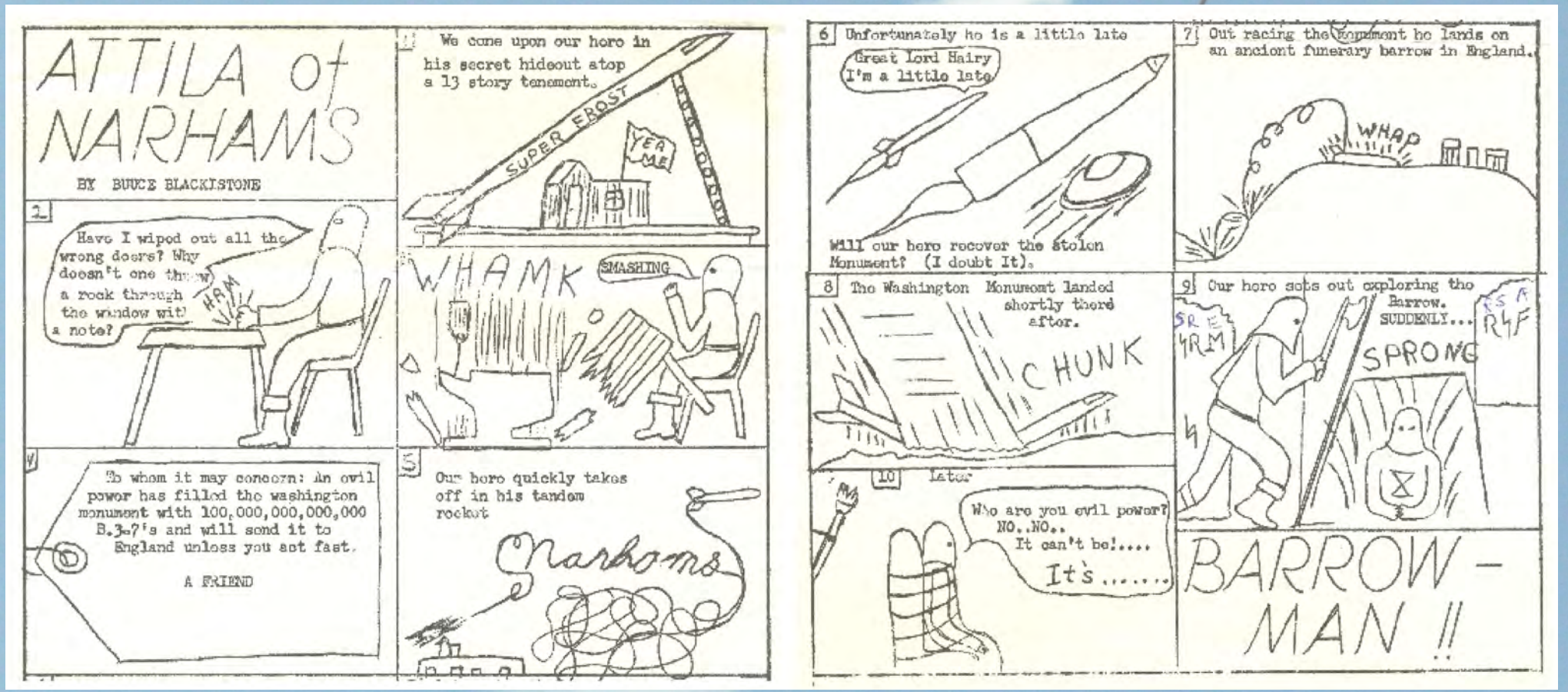
4) Models need to make one stable and safe flight (as determined by the RSO at the time of the flight; RSO cannot be the modeller). The model does not have to be painted and decaled when it flies, but construction needs to be complete.

5) Bring the finished model and some evidence of the kits used to the December 2016 NARHAMS Holiday Party.

6) Winner determined by popular vote at the Dec. 2016 Holiday Party.

7) Bask in the glory of the adulation you will receive for entering the contest.

Nike-Honest John Kit Bash Idea



From deep in the NARHAMS archives we have resurrected the much sought after first issue of Attila of NARHAMS, created by our own Bruce Blackistone. This is what graphics in newsletters was like in 1967 and we had the best.

Digitally reformatted for your widescreen viewing pleasure we bring you this blast from the past in it's original color, as the artist intended.

Old timers and model rocketry history buffs may recognize similarities to pillars of the hobby referenced in these tales, no one was sacrosanct.