



206-43



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IN THIS ISSUE: TARC, Rockville Science Day, See a Soyuz Launch, Launch Rails Update, Spaceflight America Museum, Attila of NARHAMS, Sport Launch, SCST-16, Outreach, *And More...*

Zog-43
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March/April 2016
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.

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ZOG-43
117 Coventry Ct.
Macon, NC 27551
Email us at: zog43editor@yahoo.com

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

Creating the Zog-43 is a true team effort. In the past year no less than 28 different people have provided articles or significant photo submissions! Most of those came from club members but 6 came from sources outside the club.

Our launch managers faithfully send in a launch reports for all the sport launches. Alex Mankevich gets me a "From the Zog" column as one of the many benefits of being club president. He doesn't stop there, he submits outreach and offbeat articles that educate and entertain. Our roving photographer and cub reporter, Ole Ed Pearson, faithfully covers nearly all the club launches, meetings and other events. He is also our main first person source of club and NAR history. Mark Wise covers many national events and gives us a NAR Board of Trustees flavor. Tom, Maria and Chris Ha have provided local and international submittals. Space here doesn't allow me to address the contributions of the other 22 folks who have helped make the Zog-43 what it is.

Tom also shrinks the electronic files to a manageable size to send out by email. He also handles the printing and mailing chores. Thanks, Tom.

I want to personally thank each and every contributor for making this a terrific club newsletter. Lastly, I want to give a special shout out to Jennifer Ash who put the finishing touches on this issue when I had the nerve to schedule an overseas vacation when the Zog was due to go to press.

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 paranoid about that sort of thing.

Front Cover: The Proton rocket that launched the ExoMars 2016 spacecraft to Mars being moved into a vertical position at the launch pad at Baikonur, Kazakhstan. Launched on 14 March 2016.
Image courtesy of ESA – B. Bethge

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

Photo: D. Carson

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ZOG ROYAL COURT
(NARHAMS OFFICERS)
ZOG (President) Alex Mankevich
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COLLECTOR OF THE ROYAL TAXES
(Treasurer) Maria Ha
KEEPER OF THE HOLY WORDS (Secretary)
Chris Ha
COURT JESTER (Section Advisor) Mark Wise

TEAM AMERICA ROCKETRY CHALLENGE

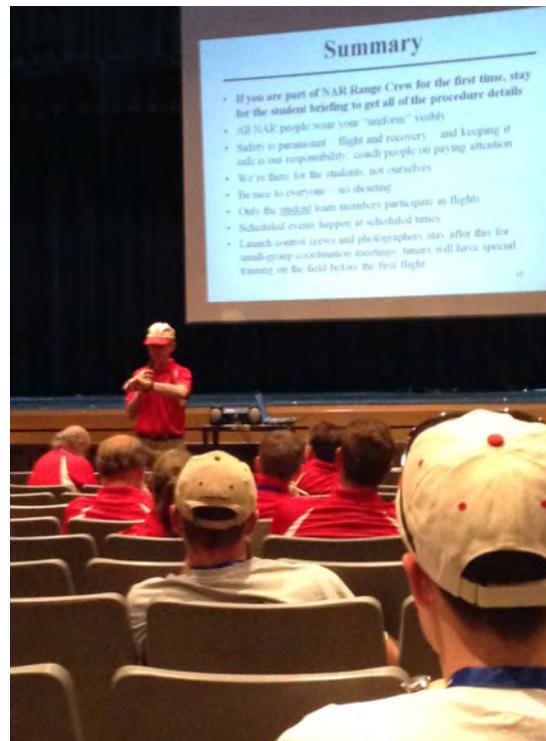


TARC 2016

Here are a few photos from Ole Ed, our roving reporter at TARC.



Gathering of the teams for Fri. Eve's briefing



Volunteer briefing



Look at those eggs

Continued on page 4



Kit bash entries



Movie night

Where is the Zog Editor??

Some people seemed very concerned that Don was running off on vacation with an issue due, and thought I was taking over as Zog Editor again when they heard I was stepping in. Nope. Just filling in as a temp.

Don and his wife have been spotted in Barcelona! Pictured with Don and Luly, is Esther Roura, Kevin's fiancé. Don and Luly then went off to Greece, while I am here, working my fingers to the bone for the Zog. Actually, Don left me a very nice issue that I only had to fill in holes. I hope you and Luly enjoyed your vacation! Please come back! -- Temp Editor Bubbles



Let's Go Watch A Soyuz Launch!

By Don Carson

The Soyuz Launch Vehicle

The Soyuz rocket, the magnificent 5-engine cluster first stage featuring 20 combustion chambers/nozzles plus another 12 smaller verniers gimbaled for steering, fueled by good old kerosene and liquid oxygen is an iconic symbol of the Russian space program. It is the same family of rockets that recorded so many space firsts: first ICBM, the first to launch a manmade satellite orbiting the Earth, and the first to orbit a human around Earth.



Apollo-Soyuz Test Program Launch

Photo: NASA

Wouldn't it be great to see a launch of this venerable launch vehicle? Not many of us are likely to make the trip to the Baikonur Cosmodrome in Kazakhstan to witness a launch. (Actually 7 club members went for the 16th World Space Modelling Championship in 2006, but they didn't get to see a Soyuz launch.)

How about a trip to the Caribbean, just one time zone away? That trip is not so far fetched for some. The Soyuz is frequently launched from French Guiana at the Guiana Space Centre by the European Space Agency. That's right here in America, well, South America.

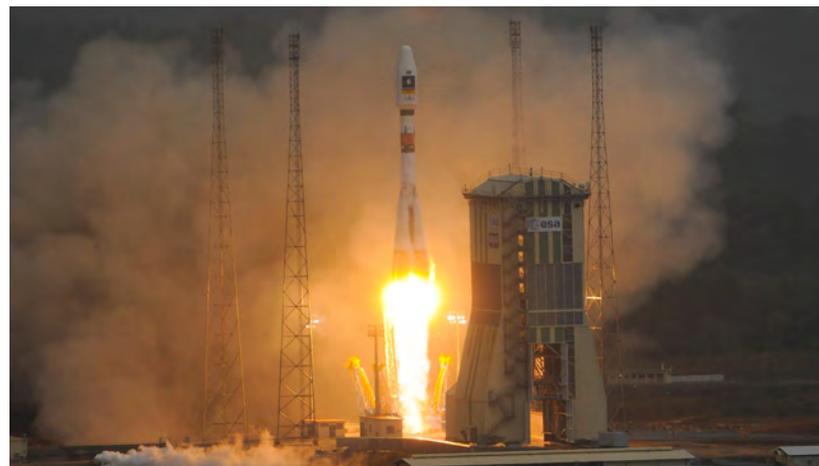


Ariane 5 Launch Pad CSG

Photo: ESA

Guiana Space Centre

Arianespace offers the Soyuz as a medium-lift capability between the Vega and heavy-lift Ariane 5. Its first launch from Guiana was in October 2011 and there have been 14 since then, the latest just last month. That is an average of about 3 Soyuz launches per year! They have ordered enough vehicles to launch 3 or 4 times a year through 2019. That leaves you some time to save up and plan for the trip.



The first Soyuz launch from CSG

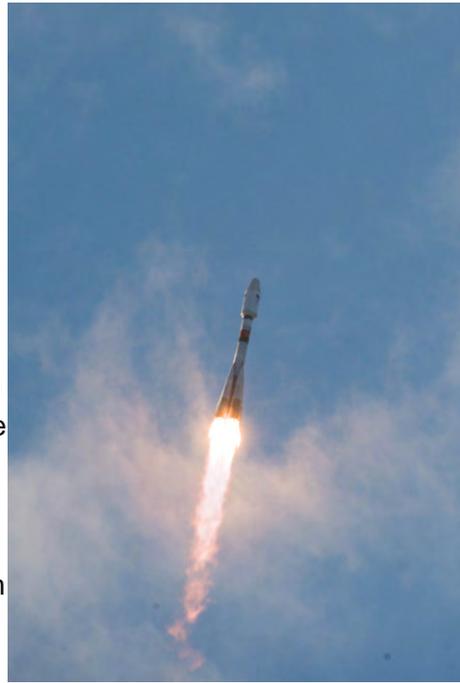
Photo: ESA

Continued on page 6

Soyuz Launch - continued

Guiana Space Centre or, more commonly, Centre Spatial Guyanais (CSG) is a French and European spaceport near Kourou, in French Guiana.

General public tours of the Spaceport are offered, but you do have to book in advance. There are no tours during the day before a launch and on launch days and the day after. The tours are generally conducted in French, though arrangements can be made for English speaking groups, start early and you may hook up with one of those tours. Never hurts to ask. These tours are available free of charge, unlike at Kennedy Space Center where tours



The most recent Soyuz launch from CSG
Sentinal-1B, April 20, 2016
Photo: ESA



Map of CSG
Image: ESA

will cost you \$50 a person to get in the visitors center plus \$25 for each "Up Close" tour if you want to see 1) the Launch Control Center, 2) the Vertical Assembly Building and launch pads and/or 3) the Cape Canaveral Air Force Station, where all the pre-Apollo and Shuttle launches were held. By the way, you cannot do all 3 "Up Close" tours in one day, so you have to spring more bucks for a multi-day pass, but I digress. There is a Space Museum located on the public side of the Spaceport. The Space Museum will set you back 7 euros to visit.

Soyuz launch site is located 12 kilometers northwest from the existing Ariane 5 launch complex, extending the Spaceport's operational zone further up the French Guiana coastline.

The Soyuz integration flow at CSG is a little different from that at Baikonur. Just like in Baikonur, the assembly of Soyuz vehicles is handled horizontally in the launcher integration building, just as they have for the more than 1,840 Soyuz missions performed to date. The Soyuz' transfer to the launch pad is performed with the launcher



The 3rd stage and satellite get packed in the fairing and meet the booster at the pad
Photo: ESA

Soyuz launch - continued



Soyuz Roll Out

Photo: ESA

riding horizontally atop a transporter/erector rail car. Soyuz is then raised into position on the pad. What differs from the Baikonur Cosmodrome processing flow, is the payload is stacked onto Soyuz, at L-3 days, out at the pad when the vehicle is vertical, instead of back in the horizontal integration building.

Let's Go!

First, visit this site: <http://www.guyane-amazonie.fr/sciences>. Here you can request an invitation to the launch. Its not required to see a launch but will get you better tours. Plus, the invitations are free. On this site there are also lots of links to hotels, restaurants and things to do.

Finding good flights from the US takes a little research. You fly into Cayenne, Guiana. The usual travel websites either come up empty or

route you through Paris! That's the long and very expensive route.

What you need to is break up the search. Find a flight from Miami to Cayenne. Here you will have some choices but they all will require some layovers, usually Tobago, Guadeloupe and/or Suriname. Sort your results by travel time and you will find that just a few dollars more will reduce the trip from 30 hours each way, to 15 hours down and 9 hours returning.

Once you have that set up, book your flights to and from Miami. I have no idea why the travel sites can't manage figuring that out.

For a random week in July, the cost from the Washington, DC ran around \$1300 round trip.

Hotel accommodations seem to range a bit from \$54 to up to \$200+ per night. Reasonable rooms seemed to be available in the \$120 range. You want to book early, I imagine things fill up around launch times. Based on my experience at NASA, I would plan on staying a few days after the launch schedule date, in case there is a slip. If it goes on time, do some sightseeing.

A Few Things to Remember

Guiana is what is called a French overseas department, while there, you are in France. The language is French and the currency is the euro. Major credit cards are readily accepted and can be used for cash withdrawals.

To visit Guyana, you must have a passport and you must provide proof of immunization for yellow fever. It is always a good idea to visit the US Department of State website if you are traveling overseas:

<https://travel.state.gov/content/passports/en/country/french-guiana.html>

Continued on page 8

Soyuz launch - continued

Children under the age of eight are not allowed on the Spaceport's grounds.

The average temperature in French Guiana is 83 deg. F., it rarely goes above 92. However, there is the usual relative humidity of approximately 90%. All of the Spaceport's buildings are air-conditioned. Light sportswear-type clothes are recommended for visitors.

Lastly, hang on to your passport. The Consulate you must go to for a replacement is in Paris, seriously.

But I Want to See a Launch in Kazakhstan

You can go to Baikonur to see a launch but there are permits and other issues. Your best bet may be a package tour. There are many available online. Those that advertise prices run around \$4600 for a 6 or 7 day trip from Moscow to Baikonur and back. That includes airfare, food, lodging, tours - "everything except tips." There are numerous side activities available like riding in a Russian Fighter Jet or in a Zero-gravity airplane. The Smithsonian Institution sponsors a 14-day trip that includes the Cosmodrome for a handsome \$15-16,000! That'd buy a lot of rocket motors.

You will still need to get to and from Moscow. For that same random week in July, that would only cost about \$700.

Sources:

Wikipedia: Soyuz (rocket family)

[https://en.wikipedia.org/wiki/Soyuz_\(rocket_family\)](https://en.wikipedia.org/wiki/Soyuz_(rocket_family))

Wikipedia: R-7 Rocket Family [https://en.wikipedia.org/wiki/R-7_\(rocket_family\)](https://en.wikipedia.org/wiki/R-7_(rocket_family))

Wikipedia: RD-107 <https://en.wikipedia.org/wiki/RD-107#Versions>

Wikipedia: Soyuz at the Guiana Space Centre

https://en.wikipedia.org/wiki/Soyuz_at_the_Guiana_Space_Centre



I Spy Safety Quiz

If It Were A Snake It Would Have Bit You--Things You Don't See In Plain Sight

By Ole Ed

Unposed photo of ignition of the "Flame;" a model of Scott and Roy Bridgewater, at a monthly NARHAMS launch in Mt Airy, MD

Sometimes you do things as a matter of course, regularly enough, that you no longer notice the obvious.

Especially at a fun launch and the anticipated excitement of a nice rocket taking off.

I was looking at recent photos, thought the above one was interesting and whoa, did a double take. There are a lot of safety features we do at a launch, I now just take for granted--GEICO plug: it's what you do.



Photo: E. Pearson

Find at least 11 safety related items
Solution on page 22

Outreach: Rockville Science Day

By Alex Mankevich, NARHAMS President

The 27th annual Rockville Science Day was held this year on April 27th at its usual location of Montgomery College in Rockville. NARHAMS conducted its usual build and fly program. NARHAMS members Scott Branche and Kevin Johnson conducted a separate display booth for Hobby Works of Laurel. Our two groups were two of over 90 exhibitors which participated in this year's event.

We again built three bulk kits (total of 36 rockets) of the Estes Alpha III. Due to the delayed start of the opening ceremonies we dispensed with our usual lottery system of determining which lucky youngsters would be allowed to participate in the activities. Instead, we welcomed the first 36 visitors that showed up and assigned them a session. We built 22 Alpha IIIs in the first session and 14 in the second.

Raul Pena again reprised his role as building session lead. Raul brought out his 'A' game in the form of large-sized components of a Super Alpha III. Raul deftly used the super-sized components for illustration to supplement the narration he provided to the builders. Veteran Science Day volunteers Samantha Steckel and Joe Camobreco of Explorer Post 1010, along with Alex Mankevich,

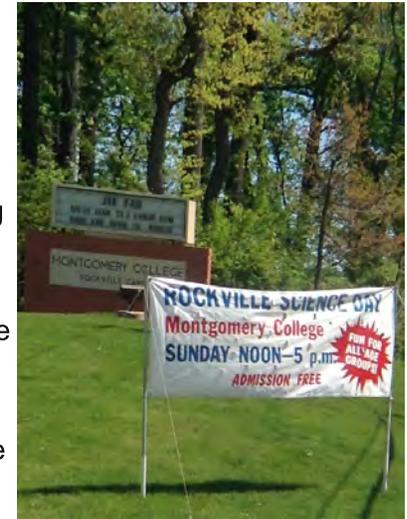


Raul Pena led the building sessions and used two super Super Alphas painted/decorated as Alpha IIIs as building aids.

attended to the tables of builders to provide hands-on guidance for gluing the components together. Ole Ed Pearson provided support for the build session and for the prepping the rockets for flight.

Alex and Joe set up the launch range on the athletic field across from the bleachers. A crowd of about 200 build session participants and Science Day attendees came out to view the launch. We used System 2, which is normally used for the Carroll County AG Center launches. The launch conditions were nearly ideal with clear skies, little wind and no low-flying aircraft. All worked well as there were no mis-fires that I could recall. Only two rockets experienced shock cord separation, a remarkable feat since the second build sessions had its glue dry for only about 45 minutes.

We debuted the new PA system created by Jef Fineran and John McCoy. This is an



Outreach, Continued

Accutronic Model #AS-20 20 Watt Public Address System attached to two 4 ohm speakers. The power supply is a series of four 12 volt 35W/Cell rechargeable batteries. Jef and John have done good work as the PA system did just fine.

Ed and Diane Pearson along with Alex later met for dinner at Hard Time Café. The day's success was given a thorough post-mortem and all agreed that NARHAMS did itself proud.



Hobby Works employee Kevin Johnson shows his motorized model airplane...the screen captures the craft's camera image of the photographer



Samantha helping at the rack.



Prez Alex Mankevich helped modelers assemble the rockets and narrated the launches...as well doing the club's logistics for the day.



Samantha Steckel of Explorer Post 1010 helped with the models assembly, prepping for launch and was the launch controller.



Joe Camobreco, of Explorer Post 1010 helped with the building and launch preparations. Joe's a sophomore at a local HS.



Steel City Smoke Trail 16 Standings

Steel City was held April 30 at the Weber Farm in Grove City, PA. It was supposed to be a 2 day meet, however the weather on Sunday was going to be rain (a precursor to what May was going to be like). NARHAMS had one C divisioner, Jim Filler, and 2 teams competing (Murphy's Lawyers and Qualified Flight PB). NARHAMS won the meet for points, out of 6 sections. Here are the results. The only pictures were when Jef Fineran got his Level 2. (See page 20).

1/2A Super-Roc Altitude

Place	Contestant	Number	Section	Flight 1	Flight 2	Total	Points
C Division							
1	Stokker, Alan	100432	IND	5000 (50 m)	8300 (83 m)	8300	420
2	Feveryear, Glenn	24931	503	8200 (82 m)	7400 (74 m)	8200	252
2	Filler, Jim	27862	139	8200 (82 m)	TL	8200	252
3	Canino, Bruce	39989	593	7900 (79 m)		7900	168
4	Gearhart, Jim	25441	205	5500 (55 m)	4300 (43 m)	5500	84
5	Bock, Greg	44161	205	4836 (52 m)		4836	42

T Division

1	Flying I-Beam Kids	473	473	TL	11000 (110 m)	11000	420
2	Murphy's Lawyers	788	139	6300 (63 m)	7000 (70 m)	7000	252
3	Calvin & Hobbes	721	205	4500 (45 m)	6000 (60 m)	6000	168
4	DUCK!	661	473	4000 (40 m)		4000	84
5	Qualified Flight PB	413	139	3600 (36 m)		3600	42

C Rocket Glider Duration Multiround

Place	Contestant	Number	Section	Flight 1	Flight 2	Total	Points
C Division							
1	Feveryear, Glenn	24931	503	81	186	267	780
2	Filler, Jim	27862	139	98	112	210	468
3	Canino, Bruce	39989	593	79	69	148	312
4	Gearhart, Jim	25441	205	54	62	116	156
5	Stokker, Alan	100432	IND	71	NG	71	78
6	McGraw, Jim	18071	503	NG	55	55	78
T Division							
1	Flying I-Beam Kids	473	473	100	175	275	780
2	Calvin & Hobbes	721	205	82	NG	82	468
3	Qualified Flight PB	413	139	NG	66	66	312
4	Murphy's Lawyers	788	139	NG	26	26	156

Continued on page 12

SCST-16 results, Continued

Open Spot Landing

Place	Contestant	Number	Section	Flight 1	Total	Points
C Division						
1	Stokker, Alan	100432	IND	12.4	1240	120
2	Gearhart, Jim	25441	205	18.6	1860	72
3	Filler, Jim	27862	139	22.1	2210	48
4	McGraw, Jim	18071	503	22.6	2260	24
5	Feveryear, Glenn	24931	503	23.6	2360	12
6	Bock, Greg	44161	205	23.7	2370	12
7	Canino, Bruce	39989	593	46.6	4660	12
T Division						
1	Murphy's Lawyers	788	139	27.2	2720	120
2	DUCK!	661	473	44.4	4440	72
2	Flying I-Beam Kids	473	473	44.4	4440	72
3	Calvin & Hobbes	721	205	47.5	4750	48
--	Qualified Flight PB	413	139	100.0	10000	12

E Streamer Duration Multiround

Place	Contestant	Number	Section	Flight 1	Flight 2	Total	Points
C Division							
1	Stokker, Alan	100432	IND	LST	231	231	480
2	Canino, Bruce	39989	593	SEP	152	152	288
3	Feveryear, Glenn	24931	503	UNS	144	144	192
4	Gearhart, Jim	25441	205	125	SEP	125	96
5	Bock, Greg	44161	205	104	LST	104	48
6	Filler, Jim	27862	139	SEP	62	62	48
7	McGraw, Jim	18071	503	41	NDP	41	48
T Division							
1	Flying I-Beam Kids	473	473	SEP	93	93	480
--	Murphy's Lawyers	788	139	LST	SEP	0	48
--	Calvin & Hobbes	721	205	UNS	UNS	0	0
--	DUCK!	661	473	NDP		0	0
--	Qualified Flight PB	413	139	DQ		0	0

Continued on page 13

SCST-16 results, Continued

A Helicopter Duration

Place	Contestant	Number	Section	Flight 1	Flight 2	Total	Points
C Division							
1	Feveryear, Glenn	24931	503	127	73	200	600
2	McGraw, Jim	18071	503	111	55	166	360
3	Gearhart, Jim	25441	205	82	56	138	240
4	Stokker, Alan	100432	IND	36	56	92	120
5	Canino, Bruce	39989	593	26	22	48	60
--	Bock, Greg	44161	205	SEP	NDP	0	0
--	Filler, Jim	27862	139	ROT	SEP	0	0
T Division							
1	Qualified Flight PB	413	139	59	122	181	600
2	Flying I-Beam Kids	473	473	108		108	360
3	Murphy's Lawyers	788	139	41	48	89	240
4	Calvin & Hobbes	721	205	26	35	61	120
5	DUCK!	661	473	NDP	6	6	60

Steel City Smoke Trail 16 Meet Champions

Place	Contestant	NAR Number	Section	Total Points	Place	Section	Number	Total Points
C Division								
1	Feveryear, Glenn	24931	503	1836	1	NARHAMS	139	2598
2	Stokker, Alan	100432	IND	1218	2	SPAAR	503	2346
3	Canino, Bruce	39989	593	840	3	PSC	473	2328
4	Filler, Jim	27862	139	816	4	NOVAAR	205	1554
5	Gearhart, Jim	25441	205	648	5	IND	0	1218
6	McGraw, Jim	18071	503	510	6	SOJARS	593	840
7	Bock, Greg	44161	205	102				
T Division								
1	Flying I-Beam Kids	473	473	2112				
2	Qualified Flight PB	413	139	966				
3	Murphy's Lawyers	788	139	816				
4	Calvin & Hobbes	721	205	804				
5	DUCK!	661	473	216				



A Visit to the Spaceflight America Museum and Science Center

By Alex Mankevich

I took advantage of not having a launch at Old National Pike Park recently by visiting the Spaceflight America Museum and Science Center in Prince Frederick, Maryland. The facility is located in the front of the Calvert High School on Fox Run Road. Their normal hours of operation actually coincide with NARHAMS' calendar of activities on the first and third Saturdays of the month, so this was a rare third Saturday opportunity to see their facility.

This museum is admittedly a start-up and continues to be a work in progress. Their mission is "to promote, preserve and restore artifacts and technology that chronicle the history of manned and unmanned spaceflight. We educate the public, and inspire the next generation of dreamers". The staff is composed of some members with actual NASA experience and they are in consultation with NASA astronauts.

I found the museum to be a combination of past, current and proposed space travel achievements. Their emphasis appears to be on the "human" experience of space travel, so as a visitor you encounter items such as helmets, gloves and spacesuits. A prime feature is a walk-through of a mock-up of the inside of the International Space Station (ISS) complete with sleeping quarters, restroom facilities and a display that shows the growing of vegetables aboard the ISS. You also encounter the ground-based side of space travel as a mission control console dominates one corner of the display floor. An international flavor is present with their "Chinese/Russian" display.

Representing the past space travel achievements are Gemini and Apollo heritage exhibits such as replicas of a moon boot, moon glove and a Apollo Command Module/Lunar Module model. A section is devoted to the achievements of the Space Shuttle era. The current achievements in space are represented by a glass display of 3-D printing aboard the ISS, medical treatments in space and

Continued on page 15



Photos: A. Mankevich

Museum, Continued



Mission Control Console

Photo: Mankevich

food products used in space. The future of space travel is demonstrated by a table display of the Bigelow expandable module which is slated for launch in the near future.

A modest fee of \$5 for adults is charged and a small gift shop is present. Allow yourself just under an hour to visit each display and read its accompanying captions and descriptions. Their website address is

<http://www.spaceflightamericamuseum.org/>



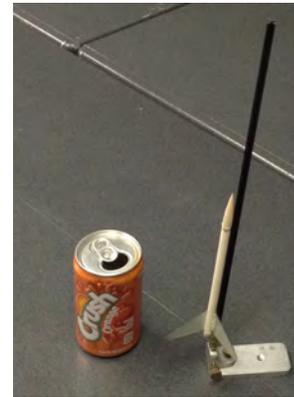
Sleeping Quarters

Photo: A. Mankevich



Meeting Highlights

April



30mm tall 5mm dia. nano beam launcher for micros...brad heads for guide buttons courtesy of John McCoy

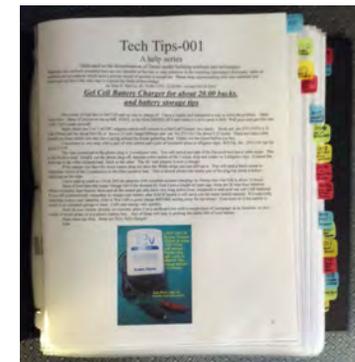


Discounted engine sales to benefit club (\$1 ea.)

May



Jef Fineran examines a stacked (bridged) nano-launch rail.



John McCoy's hard copy of the model rocket Tips and Techniques (see NARHAMS Web Site -- [Library](#); [Tech Tips](#)).

Photos and commentary by Ole Ed.

Launch Rail Update – 15mm Rails and Updates on 5mm NanoBeams

By John McCoy

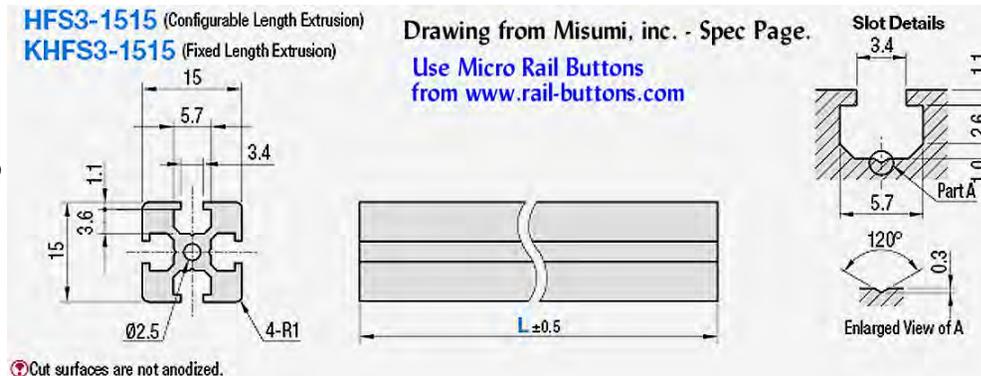
Photos: J. McCoy

The 15mm Rail: A larger and longer Micro Rail can be had from Misumi USA. (us.misumi.ec.com). Ordering from this company is a little tricky as you have to set up an account first. It's a worldwide industrial supply company with thousands of products that sometimes makes finding the correct area on the vast website a bit frustrating. It is essential not to lose the catalog number listed below which will make your search much less of a chore. The extrusion itself is pretty cheap currently at \$7.40 each but the shipping is \$12.98 so the total cost for a single 15mm x 15mm x 2000mm rail comes to \$20.38.

This 15mm (0.5901") Square x 2000mm (78.75") A6N01SS-T5 alloy Aluminum, clear surface anodized extrusion is their Catalog #KHFS3-1515-2000. While this 4-slot extrusion has a larger footprint than the 10mm MakerBeam extrusion, the Misumi rail slots also fit the Micro Rail Buttons produced by www.rail-buttons.com.

This beam comes in 2000mm (78.75") lengths and is a much heavier extruded section (680grams), but it is possible to cut this rail down to a more manageable 72" if desired.

This beam can be used with much heavier models (at least



3.3lbs) while using the smaller profile Micro Rail Buttons. Several testers last summer flew models on motors up to APCP E, F, & G powered motors without a single mishap or button failure during the testing. I was not a part of these tests but as a beta tester, I did

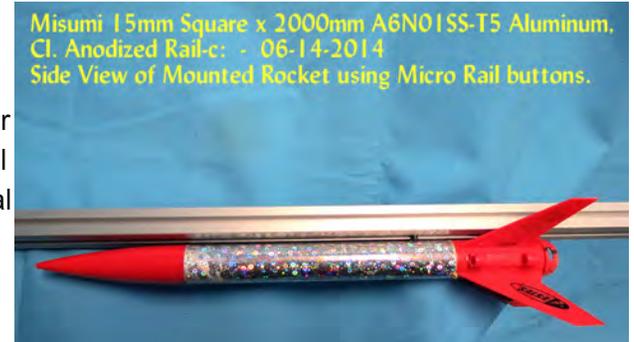


Photo: J. McCoy



Photo: J. McCoy

get data feedback from the other testers. I have one of these 72" 15mm rails set up for use on most heavy launcher bases with a 3/16" epoxy set Stainless Steel pin or clamped into square launcher brackets.

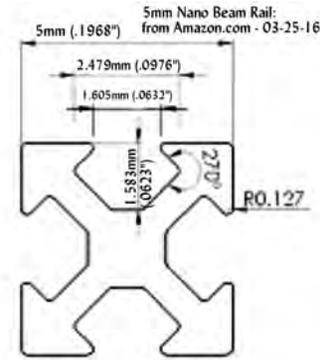
Continued on page 17

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

Rails and buttons, Continued

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.com.

Recently, I've been experimenting with this tiny extrusion. Finding a button size to fit the 1/16" open slot with a head close to the 3/32" max opening was a small challenge. After a few unsuccessful attempts with bare 00-90 stainless Button Head (BH) machine screws and several different head diameter tacks, brads and wire nail heads, I've come to the conclusion it will take either a 00-90 machine screw or an altered (flattened two sides) nail head with some form of 1/16" x 1/16" long shaft sleeve and 1/8" x 1/32" thick polycarbonate washer to keep the model centered in the rail slot. Without the sleeve and washer, the model has a tendency to rock side to side, allowing either screw or nail head to pop out of the rail.



5mm NanoBeam specs
Image: Amazon.com

As the maximum length offered at this time is 30cm (11.81") they are certain to be used ONLY for Micro Maxx models. I am excited by the 5mm profile offering a much smaller and hopefully lighter rail button option. I have fitted one of the NanoBeams with a 1/4" x 1-1/2" square brass sleeve and 1/8" diameter x 3/4" stainless steel mounting stud to fit typical launcher heads that will accept 1/8" launch rods.



NanoBeam mounted on tripod

5mm NanoBeam

Buttons: Installing 00-90 x 1/4" St. Stl. BHMS, Hand cut 1/16" PTFE sleeves & 1/8" OD Lexan flat washers.



Adapter used to replace an 1/8" launch rod



The parts



Button mounts

Close up of installed buttons



May 2016 Goddard Visitors Center Launch Report Mayday -- It's Raining Rockets

By Ole Ed Pearson

The (Sunday) May 1st public launch at the Goddard Visitor Center almost did not happen. It rained the night before and the morning of the scheduled 1pm start.

Rain did stop but we were left with a low (1,000') cloud ceiling. We decided to go for it with a 1/2 hour delay, a rainy day launch configuration (launch on the sidewalk), and monitor the engine sizes used to preclude punching into/through the clouds.

Mike Cochran and I did honors this launch which entailed planning, discussing our conditions with DHS and FAA, set up, helping modelers assemble their rockets, conducting the launch, cleanup and put away.

The visitor center phone rang off the hook from visitor inquiries about the launch.

Despite conditions, about 40 rocketeers showed including a small contingent of scouts from Pack 1818 from Fairfax and Troop 305 of Ellicot City. We launched almost two hours ending at 3:20 pm and kept below the clouds. We had 53 flights and four misfires. Wind gusted to 3mph and was not a factor. A helpful guard returned rockets that landed on the center's security side of the fence. The VC staff gave out 18 new flyer certificates. (Note--our launch coincided with the center's 57th anniversary; Goddard Space Flight Center opened on May 1, 1959).



Inside, Julie of the visitor center was busy answering the phone: Were we going to launch?



Tigers, Cubs and a Weblo from pack 1818 say, "Where did it go?"



Mike Cochran helped assemble when needed, safety check, and helped load. I was the firing officer and narrator.



FROM THE ZOG: By Alex Mankevich

Each spring the rocketry activity picks up for NARHAMS. Some of our activities are the much-anticipated annual events such as the Team America Rocketry Challenge (TARC) and the East Coast Regional Meet (ECRM). Additional regular outreach events include the build and fly program at Rockville Science Day and a number of elementary school launches we conduct in Baltimore and Howard Counties.

One event which has become a tradition at NARHAMS is the build session we conduct for the Ha family's Fly-it Take-it (FITI) program. The FITI build session is normally held at our May or June business meeting. This timing allows several model rockets to be assembled by willing NARHAMSters and for the completed models to be in the hands of the Ha family in time for their journey to the NARAM venue. A number of NAR sections actually participate in this activity. NARHAMS proudly supports the FITI program as our way of "paying it forward". Moreover, we like to assist because Tom and Maria are cherished members of our own NAR section. The "icing on the cake" is that the Ha family regularly provides the refreshments for the FITI build session.



A FITI Rocket
Photo: A. Mankevich

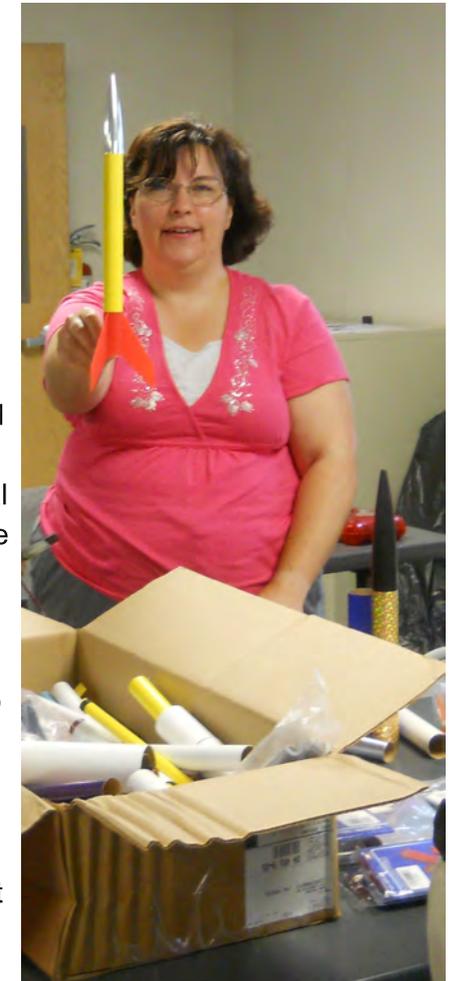


Tom assembles a model
Photo: A. Mankevich

with a rocket motor, chute wadding and assistance with prepping the rocket. They can then go to the sport range and fly their rocket. Additional flights can be made on their own".

The FITI program began with NARAM 50 in 2008 and is now a welcomed part of international, national and local rocket launches. Tom and Maria hope to gather over 100 completed rockets for each FITI event. They always provide a significant number of the donated rockets from their own blood, sweat and tears, not to mention their own supply of model rocket kits and components. They both have been unfailingly gracious in acknowledging all the persons and NAR sections that have contributed to the FITI program.

time flyers of all ages by giving them a chance to fly a rocket for free, and then keep the rocket". "Participants should be first time flyers or under 14 years old (13 or less at time of event)". "A selection of model rockets will be displayed and the participant can choose one of their liking. They will be provided



Maria Ha displays a FITI model
Photo: A. Mankevich

The FITI program is "an activity to involve young people and first-

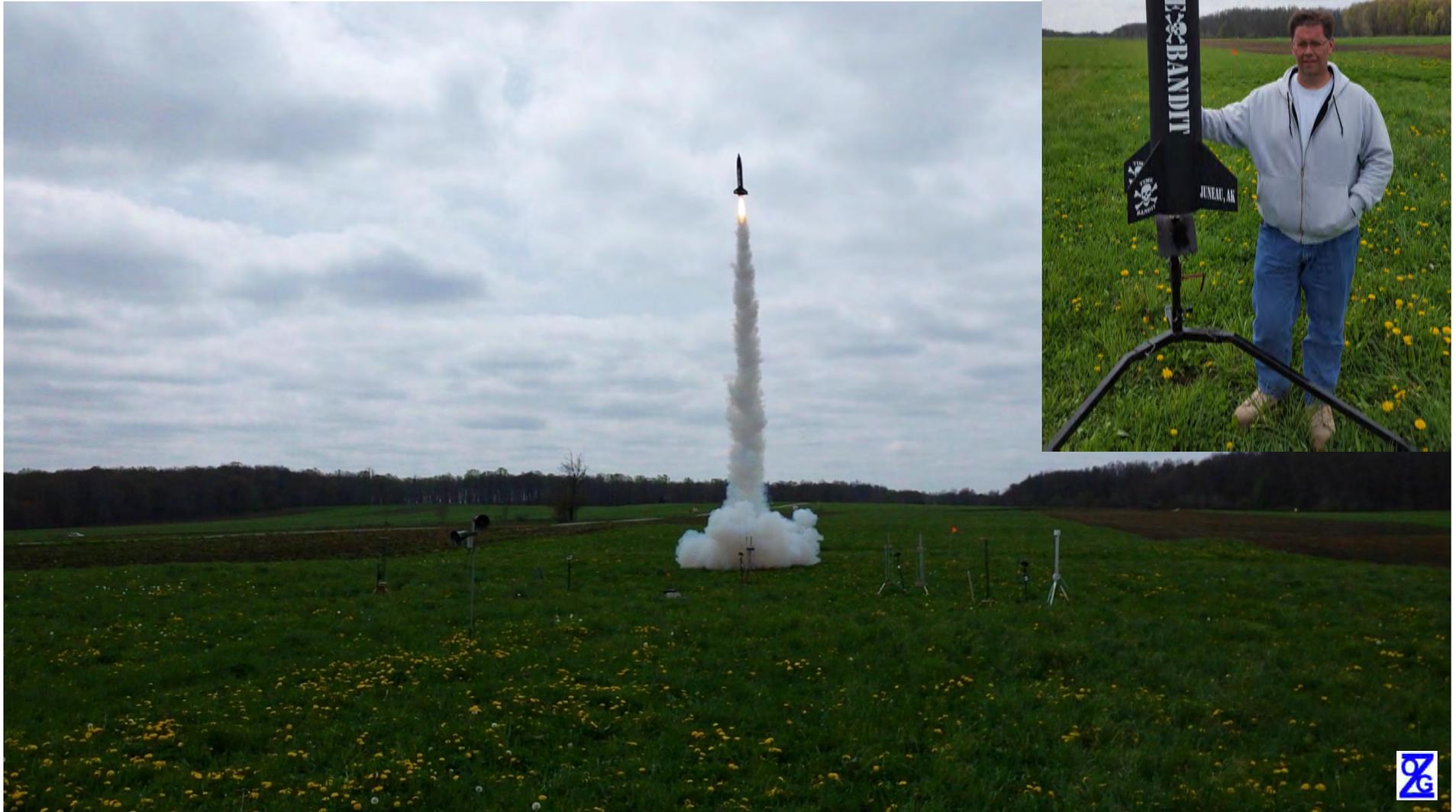


Jef Fineran Level 2 Congratulations!

Photo: J. Filler



Photo: J. Fineran



April 2016 Goddard Visitors Center Photos (except as noted) and Text by Ole Ed

Got the email about 10:45 am saying the launch was canceled due to high winds, but knew Alex would be at Goddard to do a presentation anyway. Thought that'd be nice so I showed up just before 1 pm - nominal launch time - to catch the talk. Alex always does a nice job and brings in unique observations.

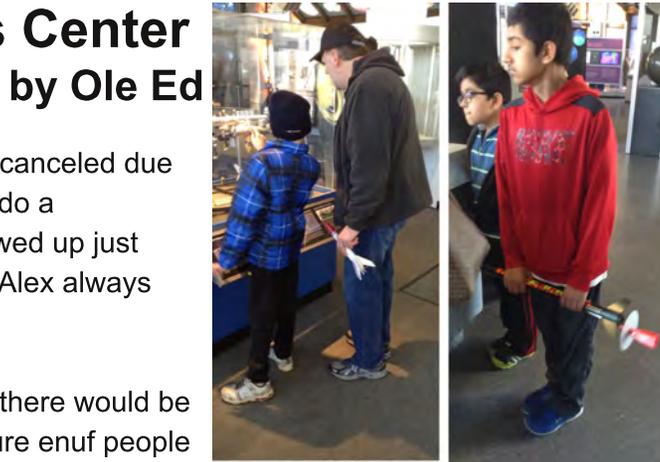
When I got there, I found the lot was pretty full; knew there would be a good audience. I came into the visitor center and sure enuf people were walking around with rockets looking at NASA displays - no launch - and thought they must have been disappointed. Walked to the auditorium to see your talk. Place was full but no Alex. Instead people prepping models!

The remote sensing weather station reading 15 mph. The handheld anemometer read the same. So we finished putting together the rack, PA, and rope line and we're ready to go. DJ and Sally came by.



Mike Cochran checking wind velocity

Shortly before 2 pm we started. DJ Emmanuel did preflight safety check. Alex narrated and launched. Mike took care of misfires and loading. We launched until about 3:20.



All dressed up and nowhere to launch.



Prepping models!



A little weathercocking due to the wind



Jennifer Ash did recovery from the restricted side of the security fence



Ole Ed and Alex on clean up duty
Photo: M. Cochran



Bits and Pieces

Upcoming Meeting Presentation Topics:

- June - Open building session
- July - Pot Luck Picnic
- August - NARAM-58 wrap up (Tom Ha)

Upcoming Launch Themes:

- June - ECRM-43 Regional Meet contest
- July - Open
- August - Flying Saucers

Welcome New/Renewing Members

New Members

Justin Fields, Scott Bridgewater

Renewals

Chris Greco, Dick Stafford, Craig Williams, Kevin Johnson

I Spy Safety Quiz Solution

- 1) Extendable Retrieval Pole
- 2) Signage
- 3) Fire Flapper Extinguisher
- 4) Remote Electrical Ignition
- 5) Blast Deflectors
- 6) Rails (tips above eye level)
- 7) Chemical/H2O Fire Extinguisher
- 8) Off-Ground Launcher (rack)
- 9) Ignitor/Trash Disposal Can
- 10) Boundary Stakes/Rope...etc.
- 11) Ground Cable Conduit (anti-tripping)



Any more?...yes,

People, with their inculcation of a safety culture and an awareness of the obvious and the anomalous, are the greatest safety feature. Will you ever see a launch the same again?



**Dave Fuller's
NARHAMS Gold
Prototype**



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

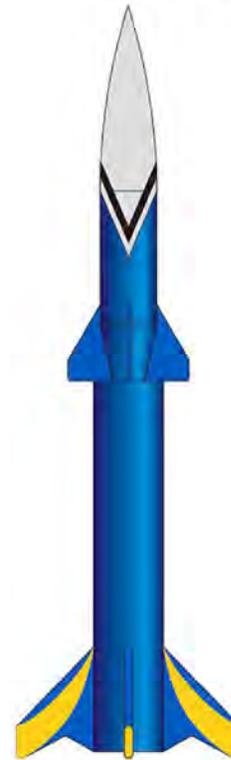
Per kit price: \$30

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!*



April 2016 Mt Airy Sport Launch

Tom and Maria Ha - April Launch Managers

Photos: "Cumberland Ed" Guigliano

SEMROC theme

Tom and Maria arrived at the storage unit in the Scion xB to find Alex and Mike Kelly waiting to help load up the equipment. After transferring the AG Center system to Alex's car, we loaded the Mt. Airy system including two launch racks into the Scion. Everything fit in the Scion except Maria. Alex moved rockets around in his car so Maria had a seat and we all went to the field. Our fallback plan was to make two trips for the gear, since the storage unit is so close by. Jim Filler arrived as we were setting up and assisted. The field was up and ready to fly in short order. Mike Kelly bid us farewell at that point, but promised to return to tear down after he went to the BRR launch to fly high power rockets.

Dick Stafford and Maria had the first rockets on the pad. Maria flew "Carl", her rocket that Carl McLawhorn had given her when she and Tom stopped to visit them in North Carolina. We treasure our memories of that visit, Carl and Sherry were very welcoming and gave us a tour and eventually we went on our way with a free rocket kit each. In other SEMROC flying, Dick flew his Gee Hod and a Tao Zero. Jim flew a Joker's Wild on 2 C engines.

In other news, Maria was able to fly a homemade mini wacky wiggler before she had to focus on launch manager duties, while Tom didn't fly anything, as he wanted to give his attention exclusively to being RSO and Launch Manager. Tom did get a "nice job" from one rocketeer for his RSO skills, which made his day.



Continued on page 25

April Mt Airy Launch, Continued

We had two Cub Scout packs show up to fly with us. Tom talked with the one group since Richard had not arrived yet. They had built Estes Phoenix birds to fly. Richard, Mark and Kathy assisted pack 278 with their rockets. There were also close to 20 NARHAMS members out enjoying the nice weather and launching rockets. We flew 137 rockets on 146 engines. The break down was: 6 fractional A's, 31 A's, 46 B's, 29 C's, 13 D's, 9 E's and 3 F's.

Many hands make light work, and we are always appreciative of the volunteers (club members or not) that help in various ways, from giving an RSO a break to bringing back a meal, to helping at the pads and doing tear down and set up. A special shout out to the regulars that always seem to be there! You know who you are!



ADHESIVES CHART

MATERIALS →	Paper	Fabric	Felt	Leather	Rubber	Foam	Styrofoam	Plastic	Metal	Ceramic	Glass	Balsa	Cork	Wood
Wood	W	C/W	Sp/C	W/C/Ca	C/Ca	C	2K/H	L/C	2K/C/L	C/Ca	C/Ca	W	W	L/W
Cork	H/W	H/L	W	Ca/C	Ca/C	2K	W	L/Ca	C/Ca	L/Ca	Si	W	W	
Balsa	W	H/W	W	Ca/C	C/Ca	C	2K/H	L/Ca	2K/Ca	L/Ca	C/Ca	W		
Glass	A/W	A	A	A/Ca	Ca	Sp	2K/Sp	C/L	2K/C	2K/C/L	2K/L			
Ceramic	A/H	Ca/A	Ca/A	Ca/A/C	C/Ca	A	Ce/C	L/Ca/C	2K/C/L	Ce/Ca				
Metal	A/H	A	C	C/Ca	C/Ca	C	2K/H	2K/C	2K/C					
Plastic	H/Sp	Sp/C	Sp/C	Sp/Ca	C/Ca	Ca	Ca/C	L/Ca/2K						
Styrofoam	Sp/C	A/H	Sp	A	L	L/A	A/Sp							
Foam	Sp	Sp	Sp	C	C	Sp								
Rubber	Ca/C	A/C	C	Ca	Ca									
Leather	F/Sp	F	2K	C/F										
Felt	A/H	F/H	H/F											
Fabric	A/H	F/H												
Paper	A/W													

- A** All-purpose-glue
- F** Fabric glue
- Sp** Spray adhesive
- H** Hot glue
- C** Contact adhesives
- L** Construction adhesive (Liquid Nails, Loctite)
- Ce** Ceramic glue
- Si** Silicone
- W** Wood glue
- Ca** Cyanoacrylate (super glue)
- 2K** Two-component adhesive

Make:
makezine.com

**Print and hang on the wall in your work area.
Check out Makezine.com for all kinds of cool projects, tips and other info.**

Courtesy of Make.com





Competition Corner: Contests and More Contests

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

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 multiple 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.

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
1/2 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 28

NASA 2016 Student Launch

Dozens of high-powered rockets lifted off, during NASA's 16th annual Student Launch Challenge, held near Marshall Space Flight Center in Huntsville, Alabama from April 13-16.

Nearly 50 middle and high school, college and university teams from 22 states competed in the challenge, demonstrating advanced aerospace and engineering skills related to real-world activities and programs on NASA's Journey to Mars. Teams spent the past eight months building and testing rockets designed to fly to an altitude of one mile, deploy an automated parachute system, and land safe enough for reuse, while other teams also designed scientific payloads for data collection during flight.

Preliminary winners for Student Launch were announced during an awards ceremony April 16, at the U.S. Space & Rocket Center in Huntsville, and hosted by Orbital ATK. The overall winners of Student Launch will be announced in early May, as the final calculations are still under review for accuracy.

Courtesy [NASA](#)



Team members from the University of North Dakota in Grand Forks, carry their rocket to the launch pad during the 16th annual Student Launch challenge, April 16, near NASA's Marshall Space Flight Center in Huntsville, Alabama.
Credits: NASA/MSFC/Tony Triolo



Liftoff of one of dozens of high-powered rockets during NASA's 16th annual Student Launch challenge, April 16.
Credits: NASA/MSFC/Charles Beason"



Lacrosse/V-2/Jupiter C Plastic Model Kit Bash

Photo: D. Carson

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 decal 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.



Attila of NARHAMS #2
by
Bruce Blackstone

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

Digitally restored, we bring you this blast from the past in it's original color, as the artist intended (minus some graffiti from vandals of the time).

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