20G-43

IN THIS ISSUE: Maryland's Majestic Mounted Missiles, TARC, LDRS-36, Rockville Science Day, Launch Reports, and More...

May/Jun 2017
Vol 39 Number 3

Zog-43
Volume 39 Number 3
May/June 2017
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 - New Feature Debut!

Don Carson, NAR #11069

I am excited to introduce a new feature for the Zog-43. For years, I've have been frustrated with having to reduce the resolution of most photos in the Zog-43 in order to keep the newsletter a reasonable size file.

In Alex Mankevich's article, *Maryland's Majestic Mounted Missiles And Where to Find Them*, we faced the challenge of including all the views and details he captured of real rockets and missiles to be found throughout the state of Maryland. Each section of the article has a clickable link to a photo album containing the original resolution photos plus, in many cases, additional images of that vehicle.

I hope you find this feature useful. I expect to expand the use of these linked albums to augment future articles.

As always, thanks to all of you who contribute to our club newsletter. You make it happen.

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

For questions, answers, opinions, files, photos, and more NARHAMS, join the NARHAMS Yahoo group. 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: Jim Miers recruited a minion to help at the October Sport Launch in Mt. Airy, MD.
Photo: D. Carson

Back cover: ESA's Light launcher, Vega VV09 carrying Sentinel-2B in its mobile gantry, at Europe's Spaceport in Kourou, French Guiana, on 6 March 2017.
Photo: ESA–Stephane Corvaja, 2017

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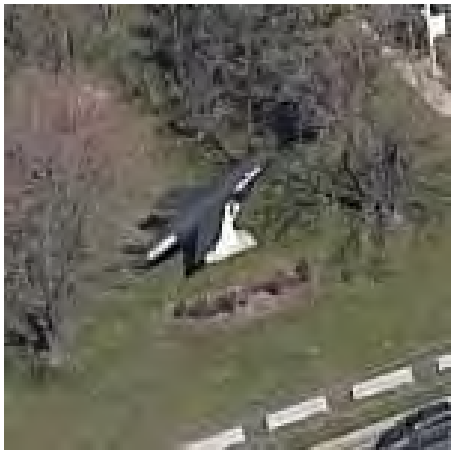
Maryland's Majestic Mounted Missiles
And Where to Find Them

Text and Photos (except as noted) by
Alex Mankevich
NARHAMS President

Tired of caressing cardboard body tubes? No longer getting a bang out of balsa? Not getting pleased about pawing plastic? How about getting up close and personal with some real rockets? How about satisfying your urge to experience the tingle the solid aluminum on your fingertips? We're talking real rockets, baby!

A prime reason for undertaking an inventory of rockets and missiles on display in Maryland is the more or less recent relocation or removal of some of the existing displays. One missile no longer on display is the *Regulus* missile which had been visible from Powder Mill Road on the grounds of the U.S. Army's Adelphi Laboratory Center located in Adelphi, Maryland.



Old image of Regulus missile that is no longer on display.
Photo: Virtualglobetrotting.com

The U.S. Army Ordnance Museum located at the Aberdeen Proving Ground (APG) and its outdoor display had for decades been a prime location for viewing several rockets and missiles. Some of the missiles known to be on display at one time or another were the *A-4/V-2, Nike Ajax, Nike Hercules, MGM-5 Corporal, Pershing* and *EMW Wasserfall* missiles. The U.S. Army Ordnance Museum has been relocated to Fort Lee outside Petersburg, Virginia as a result of the 2005 Base Relocation and Closure (BRAC) Act. The Public Affairs Office at APG had been contacted regarding the current status of their former missiles and they confirmed that all the missiles had been removed by 2015. The displays are destined for the U.S. Army Center for Military History. Currently, the exhibits are in a warehouse in Alabama pending restoration.

So, before any more missiles and rockets become lost for public viewing, we've put the miles on the odometer, we've visited the sites and we've snapped the photos. We're presenting you with the real deals you can visit right here in Maryland.

Maryland has a rich history in real world rocketry. *Nike* missile batteries had been set on Maryland soil during the cold war era. Ft. George E. Meade was a center for *Nike* missile battery operations. The rockets on display in Maryland consist of both indoor exhibits as well as outdoor displays. Practically all of the venues can be visited at no entrance cost and at no parking fee. The notable exception is the Patuxent River Naval Air Museum which charges a modest cost for admittance. The daily parking garage at the Thurgood Marshall Airport will cost you a few dollars to visit the airport's observation gallery.

The rockets on display in Maryland fall into a number of venues. The most common venue is the gate guardian display at a Veterans of Foreign Wars (VFW) or an American Legion post. Missiles and rockets can be found as exhibits at some Maryland museums and visitor centers. Another type of venue for rocket display is a military site and/or military museum. Then again, there are the independent sites that don't actually fall into any defined category.

Continued next page

MMMM, continued

Rocket Garden – Sounding Rockets
Mount: Various
Goddard Space Flight Center – Visitor Center
ICESat Road, Greenbelt, MD

Aerolab/ARC Argo D-4 Javelin

Delta

The Goddard Visitor Center is home to Maryland's premier rocket garden and features the tallest rocket on display in Maryland. We mean of course the big, white 100 foot tall *Delta* rocket. The *Delta* is accompanied by *Aerolab/ARC Argo D-4 Javelin, Black Brant VIII, IRIS, and Nike-Tomahawk* rockets, making this site the largest, most concentrated display of rockets in the Maryland. You can walk practically up to and completely around all these rockets. The most recent re-painting of most of the rockets was done in 2015. Don't forget to see the reproduction of Robert Goddard's rocket by the front entrance door inside the visitor center. Numerous information placards provide all the essential information about each rocket. Free parking is available. A gift shop and restrooms are located on the premises. No entrance fee is charge. An excellent write-up by Alan Williams detailing these rockets can be accessed at the visitor center's website at http://www.nasa.gov/centers/goddard/visitor/exhibits/rocket_garden.html

Click for link to high res versions of GSFC photos

IRIS

Nike-Tomahawk

Black Brandt VII

Continued next page

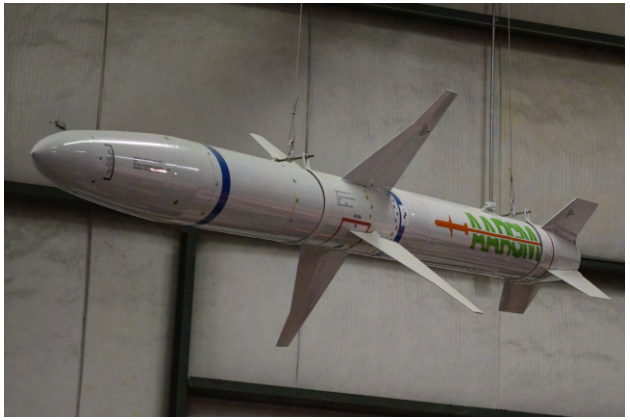
AGM-88E AARGM, AIM-9X-2 and Sidewinder Missiles
Mount: Various
Patuxent River Naval Air Museum and Visitor Center
22156 Three Notch Road, Lexington Park, MD

Click for link to high res versions of these and more Pax River photos

On the face of it, a visit to this museum would appear to be all about aircraft and aviation sub-systems. However, its collection includes missiles, both inside the museum and outside on the grounds. It's not necessary to enter the air station to gain access to the museum. Parking is available in the Visitor Center's ample lot. A gift shop and restrooms are located on the premises. A small entrance fee is charged. A rocket-related bonus at this site is its impressively-sized model of the Space Shuttle *Discovery*.

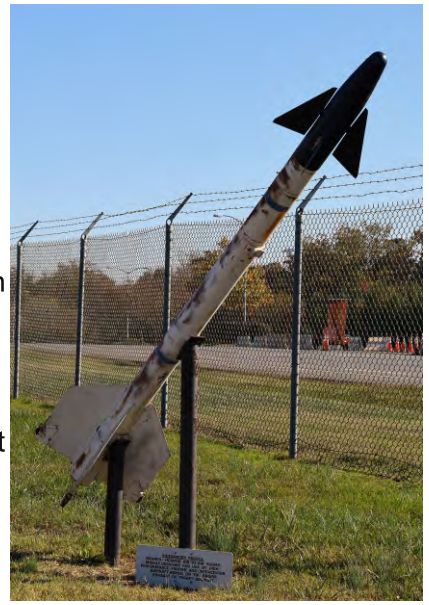
AIM-9X-2

The *AIM-9X-2* missile is located in the hanger-like new gallery at the far end from the information desk. Its positioning under the *X-35C* aircraft restricts the viewing angles of this missile. Its lateral mount affords the viewer a good look at one side from nose to tail. The surface condition is excellent. An interesting feature is that you can peer inside the glass dome nose window to view some of the seeker components and electronics.



AGM-88E

An early version of the *Sidewinder* missile is located outside near the fence line bordering Buse Road which leads to the military base. You can get up close and personal with this missile. Sadly, weathering has taken its toll on this missile. Even in its rusted state, you can get a good look at the notched rollerons located on the trailing edge of the tail fins. The black-painted steering canards (upper fins) are in good enough condition to view how the canard deflects along its hinge line. A small placard is located at the missile's base.



Sidewinder

A visit to the museum's older building will reward you with a look at an *AGM-88E* missile. This display is suspended from the ceiling and its positioning doesn't permit you to view the missile's base. Its surface condition is excellent and its color appear vibrant even from your vantage point from the floor.

The *AGM-88E AARGM* is a medium-range air-to-ground missile. The missile has a length of 164 inches and a diameter of 10 inches.

Continued next page

Matador

Click for link to high res versions of these and more Matador photos

TM-61/MGM-1 Matador missile
Mount: transport trailer
Harry L. Cooper - VFW Post 160 Hall
2597 Dorsey Rd, (Rt. 176 & Traffic Drive) Glen Burnie, MD

This site is located near BWI-Marshall airport. This *Matador* missile is situated near the building. The hulking display is over 39 feet long and has a wing span exceeding 28 feet. The missile's 4.5 foot diameter can be appreciated when standing next to this display.

The missile is painted gray and is peeling in many places. The missile is not on a launch rail. Instead it is mounted on a transport trailer which sadly has flat tires. Practically no stenciling is can be seen on the missile. However, the rivets and access panels are evident. Parking is available behind the post's building. A sidewalk takes you to the missile. You are able to walk 360 degrees around this exhibit. No information placard is present. The *Matador* was a surface-to-surface tactical missile that carried either a conventional or nuclear warhead. A solid fuel booster motor launched the missile, and the flight was sustained by a turbojet-powered engine.

Click for link to high res versions of these and more Nike-Ajax photos

Nike Ajax missile
Mount: launcher
Webster B. Harrison American Legion Post #26
Route 144 Westbound, Exit #3 off I-70 in Hancock, MD

A *Nike Ajax* missile and booster are on display in front of this American Legion Post. The 34 foot long, patriotically-themed missile is on a rail launcher and is situated on a slight hill surrounded by well-maintained shrubbery. Despite being situated on a slight hill, you can walk a 360 degree circuit around this missile. You can get very close to the base fins. This display affords a good look at the junction between the booster and *Ajax*. The missile suffers from peeling paint and its metal has seen better days. The launcher is in appreciably better condition than the missile.

Parking is available across the street at the entrance to the Western Maryland Rail Trail. No information placard is present. Legion members remember this missile being at its current location for decades.

Nike Ajax

Continued next page

Nike Hercules and Nike Ajax missiles
Mount: Launcher
Fort George E. Meade, Maryland
Route 175 (Annapolis Road) and 20th Street in Fort Meade, MD

A *Nike Hercules* missile on its rail launcher is visible when traveling south on route 175 in front of the old Missile Master System building. You may not be able to spot this missile from the road If you're traveling north on route 175. Parking is available off of 20th Street. An information placard located near the fence (look for the boulders) provides background on the role of the *Nike* missile batteries during the Cold War era.

Nike Hercules

The 41 foot long missile and its launcher are both in good condition. This is one of the few Maryland missiles whose white and olive drab color scheme is close to authentic for its operational era. Only a little of the paint is peeling. You can walk 360 degrees around this exhibit. Its positioning on the launcher allows you to get a good look at the four nozzle cluster on the booster. Viewing the missile's details towards the nose cone is problematic.

A *Nike Ajax* missile is located in front of the Fort George G. Meade Museum. However, same day visits to the museum may not be possible for non-Department of Defense (DoD) ID cardholders. Those who are not DoD affiliated personnel must have a valid purpose for entering the installation. Visiting the museum is no longer a valid reason for access to Fort Meade. At a minimum, visitors should be prepared to present two forms of identification with one being a driver's license if operating a motor vehicle when entering the installation.

Click for link to high res versions of these and more Nike-Hercules photos

It was a *Nike Ajax* missile that gained notoriety on April 14, 1955 when its booster accidentally ignited at the W-25 site on Ft. George G. Meade. The missile quickly became aerodynamically unsound and broke up in mid-air. Missile fragments and propellants fell on the Baltimore-Washington expressway causing a fire. This incident is one of the few in which a missile had been accidentally launched on U.S. soil.

Continued next page

Nike Ajax missile
Mount: base
American Legion Cascade Post 239
14418 MacAfee Hill Road in Cascade, MD

Click for link to high res versions of these and more Nike-Ajax photos

A 21 foot tall *Nike Ajax* missile without its booster is on display at this venue located near the Pennsylvania line. The place has a small town, Norman Rockwell, God Bless America type of feel. The rocket is mounted literally next to the road and the building. You are advised to exercise caution when viewing this missile and stay aware of your proximity to the road. You can get very up close and personal and even wrap your arms around this display. Its "All American" paint scheme may turn off some missile aficionados. This artistic choice is compensated by the fact that the painting has preserved the metal in excellent condition for an outdoor display. All the bolts, rivets, ports and seams are clearly observed. No information placard is present. Parking is available in the Post's parking lot.

Nike-Ajax

Polaris

Bat Missile
Mount: Lateral
NIST Museum
100 Bureau Drive, Gaithersburg, MD


Bat Missile

The *Bat* missile is currently displayed in the lobby of the National Institute of Standards and Technology (NIST) Museum. The *Bat* missile is the first fully automated guided missile employed in combat. NIST developed the radar guidance system for this World War II-era weapon. The NIST campus is not open to the public. Access to the NIST campus to use the Museum is granted on a case by case basis. Provide your name, address, phone number, citizenship, position, affiliation, detailed reason for access request, and desired access date and time to: library@nist.gov

Click for link to high res versions of the Bat photo

UGM 27-C Polaris missile
Mount: base pedestal
Paul E. Garber Facility - Smithsonian National Air and Space Museum
3904 Old Silver Hill Road Suitland, MD

A *UGM 27-C Polaris* missile is mounted at one corner of the parking lot of the Paul E. Garber Facility of the Smithsonian National Air and Space Museum. A barbed wire-topped fence surrounds this missile, prohibiting you from getting up close and personal. The proximity of the missile to the fence line causes the fencing to obstruct photos taken from the "Polaris" side of the missile. Parking is available just before the security gate across from the missile. There is no information placard. The two-staged missile measures 32 feet in height. Even from your viewing distance, the missile's 4.5 foot diameter appears massive. The white painted metal show rust in places, but overall the paint job is true to its original scheme and remains in good condition. Look for the cluster of four nozzles at the missile's base.

Click for link to high res versions of these and more Polaris photos

Continued next page

The "RM Rocket" - Nike Ajax Missile
Mount: Flying Pedestal
Roy Lester Stadium - Richard Montgomery High School
250 Richard Montgomery Drive in Rockville, MD

Click for link to high res versions of these and more RM Rocket photos

Nike-Ajax

A *Nike Ajax* missile measuring 21 feet long and 12 inches in diameter is mounted in a dynamic pose at the entrance to Roy Lester Stadium. This rocket is surrounded by a grove of trees, most of which are pine trees, so a visit during the winter will not significantly improve its viewing. The rocket is on a hill, so that walking up to its base in wet or icy conditions would be ill-advised. The missile is artistically painted in the school colors of black and gold. An information placard located near the football field's goal post provides details regarding the missile's dimensions and the choice of the missile as the school's mascot. Parking is available at the entrance to the stadium.

Missing fins and dents in the metal of the *Nike Ajax* are apparent even from the ground level. Extraneous metal used to mount the *Nike Ajax* missile is a bit distracting. An article written by Mr. Hines, RM Social Studies Teacher is available at: http://www.montgomeryschoolsmd.org/schools/rmhs/aboutus/rocket.aspx

Terrier-Improved Orion Sounding Rocket
Mount: Base Pedestal
The BWI Marshall Airport Observation Gallery

Click for link to high res versions of these and more Terrier-Improved Orion photos

Terrier-Improved Orion

This sounding rocket is located at the confluence of the B and C concourses. The base of the rocket is available for viewing at all times during which the airport is open. The upper level of the Observation Gallery is open to visitors from 6:00 AM to 9:00 PM daily. Both levels are located prior to the security checkpoint. Parking is available at the nearby Hourly Parking garage.

The 28-foot tall, two-stage *Terrier-Improved Orion* sounding rocket is another "up close and personal" display in Maryland. You can reach out and touch the base of the rocket and get a good look at the difference in fins shapes attached to the booster and upper stage. This venue allows you to get a 360 degree view of the upper stage from the upper level of the gallery. The information placard at the base of the rocket lists more about the Wallops Flight Facility and rocket facts than provides details about the rocket on display. The paint scheme is the Maryland state flag colors and emblems. The condition of the metal and all its rivets, screws and bolts are in prime condition.

A bonus feature of this venue is that you can ride the glass-walled elevator and look to the right to view the whole length of the rocket during your ascent. This is one of the few vertically mounted rockets in Maryland at which you can get a good look at the detail of the upper stage. The experiment module hatches can be seen just below the base of the nose cone. The Gallery's upper level also displays models of rockets and airplanes related to Maryland's aviation history.

Congrats to Brad Lowekamp - Successful Level 1 High Power Certification

Text and Photos By Jef Fineran

Brad Lowekamp achieved his successful Level 1 High Power certification on April 8, at LDRS 36, held at Higgs farm on the Eastern Shore in Price, Md. The flight was a textbook performance of a beautifully built *LOC IV*, using an Aerotech 38mm H123-8, to about 1,500 feet, with no damage on recovery. Brad also used a Jolly Logic chute release, which worked perfectly, with main deployment at 400 ft. His certification was done by Jef Fineran.

May 2017 Goddard Launch Report

By: Alex Manchvich
NARHAMS President

A model rocket launch can mean many different things to different people. Sometimes it's about achieving personal goals. Sometimes it's about doing well during a competition. Sometimes it's the excitement of the loud whoosh and the cloud of smoke that comes with a launch. Sometimes it's about re-creating a realistic launch using a scale model. And, sometimes girls just wanna have fun.

Astronaut ready for blast off.
Photo: E. Jackson

Alex and Mike did retrieve this model.
Photo: E. Pearson

Such was the case with the May 2017 Goddard launch. The Girl Scouts showed in force and easily muscled in on the boys. The girls came prepared to launch and even brought along their own videographer to record the event. Another group in attendance was the Baltimore County Police Explorer Post 9901. They were a group of about six modelers all dressed as young police cadets. Ole Ed had a chance to catch up with Mr. Herman Hines. Mr. Hines ran the model rocket programs at Goddard in the 1990s and worked with Ole Ed in 1969 at NASA.

Initially, your friendly neighborhood Goddard range crew thought that we would have a rare slow day. At fifteen minutes before the start of the launch the line at the check-in station was practically non-existent. That all changed after Alex went in search of Ole Ed and found him inside the Visitor Center's auditorium with scores of people assembling and prepping their model rockets. Alex, and later Mike Cochran, stayed inside to also assist the builders. Soon afterwards, Ed Jackson went looking for his missing range crew and found us all inside helping the modelers. Mr. Jackson was ready to start the launch activity, so we all sauntered outside to our usual range assignments.

Bill Boublitz doing safety checkin.
Photo: E. Pearson

Debbie and John Jesen flew models at Goddard. Debbie first flew here thirty years ago.
Photo: E. Pearson

Continued next page

GSFC Visitors Center Launch, Continued

Bill Boublitz manned the safety check station. Mike Cochran took up his post as pad assistant. Alex also helped out at the launch pad until recovery pole duties took him away. Ed Jackson performed the firing officer and launch narration duties.

A steady, predictable wind in its usual direction helped us to recover most of the flights. Only one rocket ended up in the parking lot below the launch range. A few rockets made it onto the Visitor Center roof. A security guard was later called in to recover the rockets that had landed up there. We ended up with a total of 69 flights.

Ed Jackson RSO/Firing officer, Narrator.
Photo: E. Pearson

Old Ed (left) and Herman Hines. Herman ran model rocket pgms at Goddard in the 1990s and worked with Ed in 1969 at NASA.
Photo: E. Pearson

Top--Members of Police Explorer Post 9901 of Baltimore load a rack. Bottom (left) Mike Cochran aids at rack; (right) Alex Mankevich doing same.
Photo: E. Pearson

Wind monitor at the firing panel. The "Madagascar" penguins are actually binoculars.
Photo: E. Pearson

Rockets at NASA.
Photo: E. Pearson

Meeting Hightlights

April

Photos from April's club meeting in College Park, Md. Clockwise from left- Brad Lowekamp (L) and Jef Fineran discuss attending LDRS; the club discusses business; and Maria Ha's crocheted Afgan.
Text and Photo: E. Pearson

May

May Fly-It Take-it build session. Tom Ha started the Fly-it take it program for NARAM 50 as a way to get kids and adults who had never flown a rocket involved in rocketry. The program has been a hit at NARAMs since then. We dedicate the May pre-meeting session as a build for this event. The difference this year is that the Ha's are relocating, and the rocket kits and build material were packed and moved to Indiana in March. BUT thanks to Scott Branche who donated a box of kits and parts we were able to build 15 rockets at the meeting. Thank you Scott!!
Text and Photo: Maria Ha

Meanwhile John and Mary McCoy led a build it session for BSA scout leaders planning a July Camperall in Virginia.
Text and Photo: E. Pearson

May 2017 Mt. Airy Launch Report

By: Alex Manchvich
NARHAMS President

Ed Jackson ready to load his Cirrus Breeze rocket glider.
Photo: A. Mankevich

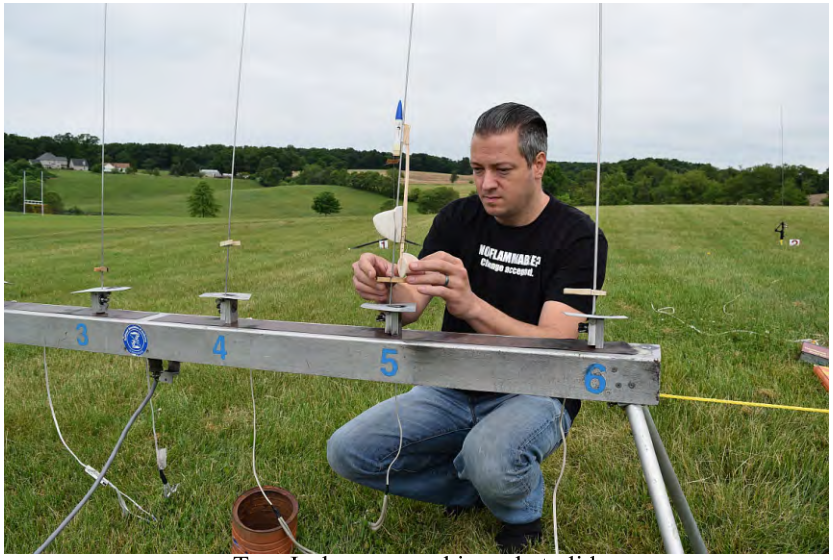
Mike Kelley's Argo D4.
Photo: A. Mankevich

One week after the cold, misty and muddy TARC launch NARHAMS conducted its monthly sport launch at Old National Pike Park near Mt. Airy, Maryland. Although the day remained cloudy throughout the launch, no precipitation fell and the field's grass dried out as the day progressed. The grass upslope from the range head is now nearly waist high, making it difficult to locate rockets landing in it.

We had set up two racks of launch rails as well as three away pads. We also set up the pop-up tent over the firing station as a precaution against any rain that might have fallen or to shelter from any sun that might have broken out. Neither was the case as the day wore on. The winds stayed light and mostly from the north. The away pad activity was curtailed when soccer games were taking place on the far soccer field. We debuted the new yellow nylon range perimeter rope to replace our worn luminescent rope.

The theme for this launch was Armed Forces Rockets and members were encouraged to fly their scale models of military missiles. Alex Mankevich and Mike Kelley got the day started early by launching their *SLCM Tomahawks* on B4 motors. Other military model were Mike Kelley's *Standard ARM, Argo D-4,* and *AMRAAM*, Bruce Mitchells' *Lil Grunt*, Ed Jackson's *Bullpup*, John McCoy's micro-sized *Sidewinder* and Alex's *Pegasus*.

Ed and Tom Jackson warmed up to ECRM with test flights of their duration and glider models. Ed dialed into his streamer recovery model. His 'perpetually hovering' model eventually made into to the trees near the pavilion by the parking lot. Ed says that he's yet to perfect this model. Watch out for Ed at ECRM!



Tom Jackson preps his rocket glider.
Photo: A. Mankevich

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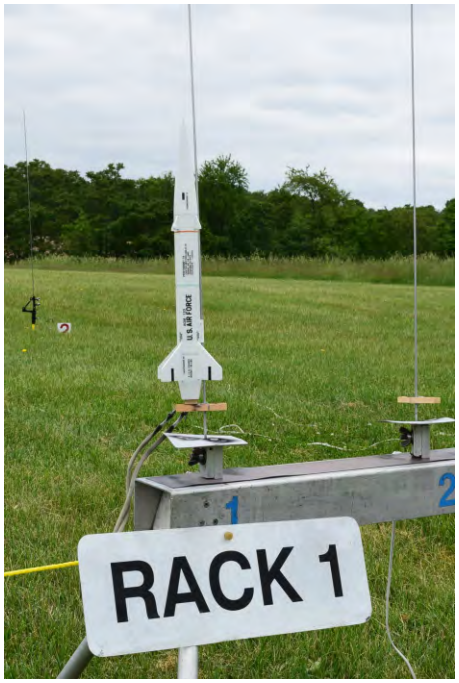
May Mt. Airy Launch, Cont.

The launch opened to the public at noon. The Bethesda-Chevy Chase CAP squadron was the major group for this launch. Their mission was to fly both single stage and two-stage models all on B4, B6 and C6 motors. They recorded just short of 25 flights. We also handed out nine NAR first-time flyer certificates to squadron members.

Christine Yorks model.
Photo: E. Pearson

At a NARHAMS launch help is always given to those who need it. Ed and Sarah Jackson and Mike Kelley had earlier helped with the equipment transport and range set-up. Sarah and Bill Boublitz took turns at the range head by performing safety checks and rail assignments. Alan Williams relieved Alex at the microphone and launch controller.

Bruce Mitchell and his models.
Photo: E. Pearson

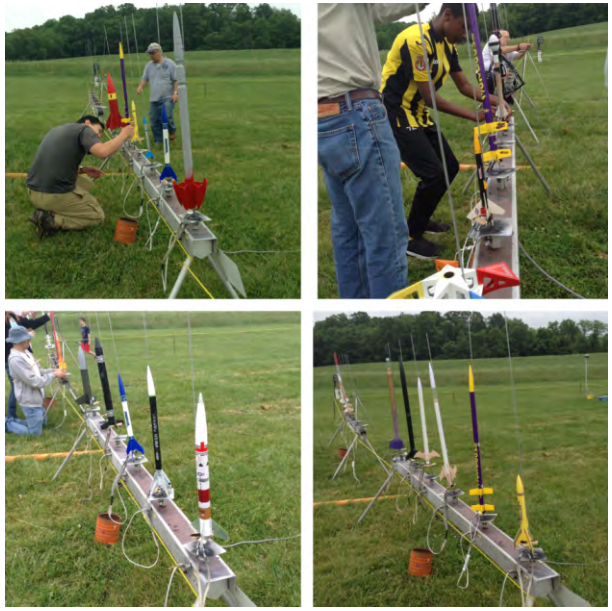


Ed Jackson's Bullppup.
Photo: A. Mankevich

Bill Boublitz continued his NARTREK achievements. Bill successfully flew his parachute and streamer duration flights with Ed Jackson officiating as the NAR witness to his flights. Christina York (known on the flight card as 'Yorkie') muscled in on the action with four flights of her own. The Stephens family continued their quest for egg lofting excellence with flights of their *Egg-Elevator* on a B6 motor.

A breakdown of the flight activity is as follows:

Total Flights	106
Armed Forces Themed	10
Two-Staged	14
Away Pads	08



Loading up the racks.
Photo: E. Pearson

Rockets in the air.
Photo: E. Pearson

Outreach: NARHAMS at the 2017 Rockville Science Day

By: Ole Ed Pearson and Alex Manchvich

Two Eds at the launch rack.
Photo: A. Mankevich

Ole Ed assisted the Alpha III builders.
Photo: A. Mankevich

NARHAMS supported the 28th annual Rockville Consortium of Science's (RCS) Science Day at the Rockville campus of Montgomery College. Science Day commemorates Earth Day by providing science group displays to thousands of visitors. Science Day this year was held on Sunday, April 23rd. There were 98 exhibitors, including a prize winning 4H Aerospace Group of Montgomery County and costumed volunteers representing the Museum of Science Fiction.

NARHAMS set up a build it/fly it program and has done so for each of Science Day's 28 years. This year's NARHAMS team included Raul Pena, Ed and Sarah Jackson, Alex Mankevich and Alan Williams. Returning for this event for the umpteenth time was Ole Ed Pearson. The Rockville Consortium of Science's (RCS) provided us with three dozen *Alpha III* kits, along with A8-3 motors and recovery wadding.

Before the build session started, we found some time to take in some of the other displays spread across the campus. While visiting the exhibits we found many friends of the club also presenting displays at this event. Paul Croarkin (NARHAMSter of the early 1970s and current member) was there with his son Roary and daughter Shannon--both alums of previous Rockville build sessions. Scott Branche of the club staffed an exhibit for HobbyWorks. NARHAMSter alum Dr. Tom Rackers staffed three Science Day exhibits.

NARHAMS was assigned to the teachers' lounge for our build session. Ed Jackson set up outside the room to welcome our visitors. Ed kept busy answering visitor questions, handing out literature, showing off rockets, conducting a raffle for admittance to one of our two build it sessions, and being a guard to thwart classroom interruptions.

Inside, Raul, Ed Jackson and Alex had set up a table of the model rockets we had brought along for display. These models included a huge *Patriot*, a *Mars Lander*, a *Saturn IB*, and a Christmas ornament conversion. Raul Pena led the build sessions, skillfully using his *Super*

Continued next page

Alex was confused over which end the nose cone goes in.
Photo: E. Pearson

Outreach, Continued

Alpha III model as a demonstration prop. Club members Sarah Jackson, Alex Mankevich, and Alan Williams circulated among the tables of builders to guide the youngsters. After each session we checked the finished models, making repairs if needed, and prepped them for launch.

Club members, Sarah Jackson, Alex Mankevich, and Alan Williams, circulated and helped youngsters.
Photo: E. Pearson

Raul Pena lead the narration during the build sessions. NARHAMSters in the background keeping busy.
Photo: A. Mankevich

As the second session ended, Alex went to the launch site (college's athletic field) to set up the launch system. He was soon joined by two of Explorer Post 1010 members scouts Joshua Vazquez (junior at Magruder High) and Mayilan Thanigni (sophomore at Wooten High), and Alan Williams. Mayilan's TARC team made the fly off finals this year. His mentor is Bob Ekman, president of the RCS board of directors. Alan served as PA announcer and firing officer. Alex conducted the flyers to the launch rack and served as RSO. Both Eds took turns assisting the flyers at the launch pad.

Raul took a short break and joined his wife, Clara, and daughter, Fiorella, to watch the launch.
Photo: E. Pearson

A prize winning 4H aerospace group of Montgomery County and costumed volunteers representing the Museum of Science Fiction, you pick which is which.
Photo: E. Pearson

We missed two of our long-time Explorer Post 1010 volunteers from the past few years. Samatha Steckel and Joe Camobreco were not on hand to assist this year.

While Alan, Alex et al. got ready to launch, Raul took a break and joined his wife, Clara, and daughter, Fiorella, to watch. His respite was short lived though, as he volunteered to retrieve a couple of lost models and later help to break down the launch range.

The weather was ideal, a clearing sky with little wind. Our launch went for an hour. The participants were able to keep their models and some very happy children went home that day. All the Alpha III models flew well with just a few models failing to fully deploy their ‘chutes. The NARHAMSters departed satisfied they had served well on this long-running program.

A Rare Encounter

Ex-NARHAMS' Greg Kennedy in the crowd viewing area at this year's TARC.
Photo: E. Pearson

Night Launch History Data Needed!

John McCoy is updating the Night Launch Tech-Tip. He is in particular need of any photos and accounts for night launches for the years 1999, 2000, 2005 (the 1st of two night launches that year 05-14-2005), 2006, 2007, 2009, & 2011. These years there was little or no coverage in the Zog.

His personal flight log & photo gallerys have some information on several of the missing years but his files are mostly detailed flight data for his rockets, general weather info and observations.

Any and all insights, memories, photos or captions of these unreported Zog-43 years will be greatly appreciated. Please pass the along to John at: mrcluster@yahoo.com.

From the National Sport Launch

"This is what happens when you (with 50 years rocketry experience) drag race your wife, the novice."

Dave Lewicki
Phoenix, AZ

From the Zog, Alex Mankevich:
Sarah and Ed Jackson Take the Reigns

A good organization needs continuity and people willing to commit time and effort to make the organization function. By mid 2017, the gradual Ha family departure had created vacancies in critical NARHAMS officer positions. Fortunately for NARHAMS, Sarah and Ed Jackson decided to 'give back' to sport rocketry by becoming even more involved. Sarah was voted in as Secretary at the February 2017 meeting and Ed was voted in as Treasurer at the May 2017 meeting. Their volunteerism means that NARHAMS won't have to suffer through a period in which someone had to serve in an acting capacity until the position was officially filled.

Ed Jackson at the control panel at the Goddard Launch in August 2016.
Photo: A. Mankevich

I had first noted Ed and Sarah a few years back as they became familiar faces at the Goddard launches. They had impressive rockets that stood out from the usual 'Easy to Assemble' kits that can be purchased at the Goddard Gift Shop. Ed quickly gained notoriety by showing up with the classic model rockets from days gone by. He would casually drop comments such as 'this model is at least 20 years old'. Ed also casually mentioned that he got to meet Apollo moonwalker Buzz Aldrin at a Goddard Contest back when Ed was a youngster.

Christina York and Sarah Jackson performing Safety Check at the Goddard Launch in March 2017.
Photo: A. Mankevich

Ed Jackson tells Richard Crisco how great Alex is. Richard laughs.
Photo: A. Mankevich

Ed and Sarah graduated from flying at Goddard to becoming regular members of the Goddard Range Crew during the spring of 2016. They both stepped up at a critical time following the passing away of Goddard Crew legend Richard Crisco. When Alex was scheduled to miss a Goddard launch due to a scheduling conflict in August 2016, Ed stepped up to the microphone and launch controller. Ed's debut was impressive and he has since then been regularly performing as the firing offer and launch narrator.

The James Webb Space Telescope photobombs Sarah and Ed during April 2017.
Photo: A. Mankevich

Sarah and Ed have devoted their time to numerous NAR and NARHAMS outreach events in recent years. They served as TARC Finals range crew volunteers in 2016 and helped with the Apollo Contest that year as well. Ed helped with the July 2016 Higher Ground Financial client appreciation launch. Sarah and Ed have helped with the build and fly session at the 2017 Rockville Science Day. They were both at NARCON 2017 in Centerville, Virginia during February.
Please take a moment to thank both Sarah and Ed for their willingness to serve.

April 2017 Mt. Airy Launch

By: Jim Miers
Launch Manager

This launch had everything. NARHAMS members, family, guests, neighbors and friends. Cub Scouts and TARC flyers. Fifty or more flyers in all logged about 130 flights, motor impulse from 1/8A through G.

Winds were not ideal, but the rains held off and temperatures were mild and we got some sunshine in the afternoon, so in all a pleasant day to spend outdoors.

And the usual athletic teams all took the holiday off, so we had the park mostly to ourselves, a rare occurrence in Spring, but the mid-power flyers were happy to take advantage.

It was Easter weekend, and consistent with the season, our theme was Easter egg lofting. Several of our members, including Ed and Sarah Jackson flew models consistent with the theme.

Lots of kids on the range that day!
Photo: J. Miers

Mike Ratel with V-2 (on a D12-7, too long a delay, but it flew and recovered safely)
Photo: J. Miers

Sarah Jackson preps an Easter egg lofter
Photo: J. Miers

Tom Jackson (and other members of the Jackson clan) flew a Red Max series of various calibers.
Photo: J. Miers

Mary McCoy and cub scouts. The girl to the right was another of the high school team members with a B egg loft model.
Photo: J. Miers

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April Sport Launch, Continued

We again played host to a local high school rocketry team, also flying egg loft models with respect to advancing their TARC skills, but which fitted neatly with our launch theme.

In the early afternoon about eighteen cub scouts along with friends of their Pack showed up; a decent size group, visible and enthusiastic presence but not overwhelming. They brought popular kits, *Alphas* and *Gnomes* and such, and put in about fifty quite respectable flights, mostly on A and B motors, and were all duly impressed on how high a small model like a *Gnome* can fly on even an A10. Despite a few models hanging up in the trees, the kids all seemed to have had a great day of it. (And thanks to several NARHAMS members, including Mark Wise and Mary McCoy for taking time to help the kids get their models set up and in the air.)

And, as always, my thanks to everybody from the club who turned up and made the launch a success, but especially to Mark Wise and to Sarah and Ed Jackson, for coming early and staying late and helping with all the work of setting up and taking down and assisting Cub Scouts and such.

A happy Tyjah Bolton shows her flown egg. Bryce, Tyjah and Charis had six egg flights total and only one cracked egg.
Photo: E. Pearson

Guests at the launch brought a variety models.
Photo: J. Miers

Ed Jackson and niece Christina flew a pair of Black Hawks.
Photo: J. Miers

Vicky McCoy with Quest Nike Smoke scale model (her first flight, too) flew on B6.
Photo: J. Miers

Christina York (L) with her Super Big Bertha, and Sarah Jackson & her Baby Bertha.
Photo: E. Pearson

Large Dangerous Rocket Ships (LDRS-36)!

A Visit to the Other Side

Photos and text by Ole Ed Pearson

The Large Dangerous Rocket Ships (according to my wife's visit to a Web site--I remember the S used to stand for Shoot) was held on the Higgs farm, Price, MD, April 6-9, 2017.

It rained April 6 (Thurs) and there was no launch. Winds were too strong on April 7 (Fri) for a launch. Weather was okay for April 8&9 (Sat &Sun).

They permitted flights up to O class. The biggest I saw was Chris Pearson's L-powered model, see the collage on the right.

Launching went to 6pm. On Saturday evening a banquet was held for participants in Easton, MD. Chris received a lifetime achievement award from Tripoli. On Sunday, the launches began anew.

NARHAMSters seen Saturday: (top-L-R) Jef Fineran, Bill Boublitz, Bruce Mitchell (friend of club), Brad Lowekamp, Doug Frost.
(bottom L-R) Mark Wise, Rob Edmonds, Mike Ratel.

This fellow made an oversized root beer bottle rocket.

Upscale Sprint.

A thorough check-in process.

April 2017 Goddard Launch Report - *Spring Time in the Rocket Garden*

By: Alex Mankevich
NARHAMS President

April 2017 was a pleasant month for a launch at the NASA Goddard Visitor Center. The previous month's launch was winter-like. The launch day in April was sunny and warm. Polo shirts were adequate, not the down jackets which were necessary for the March launch.

Ed Jackson does the safety briefing.
Photo: A. Mankevich

NARHAMS had a full crew on hand for the April launch. Sarah and Ed Jackson, Mike and Ian Cochran, Bill Boublitz, Ed Pearson and Alex Mankevich were all healthy and willing to pool their abilities to safely and efficiently get the public's rockets onto the launch pad and into the air. Sarah and Bill kept things moving along with the safety checks, pad assignments and on-field repairs. Ed Jackson took up his station at the launch control and microphone. Mike excelled at pad assistance and igniter wire replacements. Ian expertly fished rockets out of the trees using the rocket recovery pole. Ed Pearson did the event photography. Alex struggled to control the parents from running after the inbound rockets.

Several scout groups took advantage of the pleasant day. Girl Scout troops #613 and #1670 of Baltimore and launched their Estes Aerospace rockets. Cub Scout pack #209 of Odenton flew their *Gnomes*. Other scout packs in attendance were pack Cub Scout pack #111 of Crofton and Cub Scout

"You might be my big sister, but I am gonna get to that rocket first!"
Photo: E. Pearson

(L) Michael Cochran helped at the rack; (R) He also fixed misfires while the launching went on.
Photo: E. Pearson

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April Goddard Launch, Continued

Mike and Ed do pad assist.
Photo: A. Mankevich

Anatomy of one of the seventy-plus flights: (Clockwise from top left) boost, drift, descent, landing.
Photo: E. Pearson

pack #1040 of Bowie. We also had for the second month running, a group of American Institute of Aeronautics and Astronautics (AIAA) engineers from the University of Maryland flying their *Alphas*. We weren't surprised that the parking lot was overflowing with vehicles. Once again, the line of fliers waiting for pad assignments stretched back to the *Apollo* capsule. A sizable peanut gallery hugged the perimeter line to view the awesome launches. Everything went very well except for a couple of rockets that parachuted into the tall trees and a helicopter that twice buzzed the air space over the launch rack.

We launched a total of 79 flights and awarded 25 new First Time Flyer certificates. As a bonus, Ole Ed scored a kind donation of three rockets for our loaner program.

Following the launch, DJ Emmanuel the Operations Manager of the Visitor Center, took our range crew over to the NASA Goddard building #29 to see the *James Webb Space Telescope* being assembled prior to its October 2018 scheduled launch. That was an unexpected treat.

Alex Mankevich managed the assigned queues. Here he talks with Raul Pena (R) from the club.
Photo: E. Pearson

SpaceX model.
Photo: A. Mankevich

Bits and Pieces

Upcoming Meeting Presentation Topics:

June 3	Open
July 1	Summer Picnic
August 5	Open Building Session

Upcoming Launch Themes:

June 17-18	ECRM-44 and Sport Launch
July 15	Open
August 19	Open

Welcome New/Renewing Members

New Members

Bradley Lowekamp, Bill Perigo, Daniel and Aaron Bilow, Jared Haworth, Thomas Slabach

Renewals

Mike Ratel, Dave O'Bryan, David Zucheros

Announcements

Congrats, Stoil!

In his other life, Stoil Avramov is a US Junior National Champion RC Glider pilot. Way to go, young man!

More NARHAMS TARC Volunteers Chris Kidwell, Jim Filler, and Maria Ha

Photo: E. Pearson

March 2017 Mt Airy Launch Report

Maria Ha, Launch Manager

What a difference a week made! The March launch was postponed a week due to a late season snow storm. The field was dry and firm. Unfortunately, the delay meant that Tom Ha was not there to be launch manager with Maria. Mike Kelly had the gear out of the storage unit by the time Maria, Ed and Sarah arrived. We handed the equipment to Ed to place in his truck and moved off to the field. More help arrived at the field and soon we were ready to start launching.

Club members launched from 10-noon. At noon the scouts arrived, and after a safety talk by Ed and Sarah they started flying. There were over 150 flights for the day with 70 of them credited to the scouts, and their families. At the end of the day, everyone helped clean equipment and pack it back up. Thanks for all the support!

The engine count was: 2 -1/4 A, 62 – ½ A, 10 A, 26 B, 19 C, 16 D, 10 E, 8 F and 3 G. there were 3 cluster fights and 1 2-stage.

Ed Jackson's gonna make the catch.
Photo: S. Jackson

Things are looking up!
Photo: E. Pearson

Ole Ed and Maira selfie time.
Photo: S. Jackson

Bob Ekman's Explorer Post showed up to practice for TARC.
Photo: E. Pearson

Mike Ratel worked a night shift and then stayed all day to launch. That's dedication.
Photo: E. Pearson

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Rob Edmonds practiced R/C control on his electric-motor glider...motor to boost and then he'd kill the engine.
Photo: E. Pearson

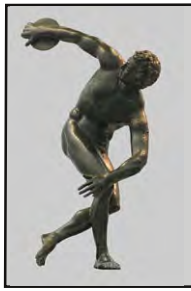
The Scouts are here.
Photo: S. Jackson

The Intercepter's flight.
Photo: E. Pearson

Brad Lowekamp and his Estes Scion.
Photo: E. Pearson

The Shafer twins, recipients of NAR scholarships and on their college's honor role, practiced R/C, made rip stock parachutes to sell ($15 and $20, depending on num/Kevlar shroud lines--tamyra4h@gmail.com) and were innovative with payload compartments.
Photo: E. Pearson

Ed launched this one with Maria et al watching.
Photo: E. Pearson



Competition Corner:
Lower Price for FAI Stamp

Cost Reduction of FAI Aeromodelling License

Jay Marsh

The proposal to reduce the cost of an FAI Aeromodelling license was approved.

Effective April 1, 2017 the following rates apply:
Adult $75.00 (reduced $25)
Junior $50.00 (reduced $50 - sold at cost)

To purchase from the AMA please contact:
Colleen Pierce
800-435-9262 X 252
cpierce@modelaircraft.org mailto:cpierce@modelaircraft.org

Regardless of where you purchase your FAI Aeromodelling license (AMA or NAA), you have to be a current member of the AMA. The license is valid for 12 months ending the last day of the month in which it was purchased. Just to be clear, FAI licenses are required for participation in any FAI sanctioned event but are not required for participation in US team selection events. The CanAm Cup, Capital Cup and EU Championship are all FAI sanctioned events.

Further reductions are possible in the future but the NAA has more control over this than the AMA at this point.

If you have any questions or comments, please don't hesitate to contact me.

East Coast Regional Meet

The 44th running of ECRM will be held on June 17-18, 2017 at the Old National Park, Mt Airy, MD. The events will be:

1/2A Streamer Duration
Correction: B Eggloft Altitude (altimeter)
Open Spot Landing
Random Duration
Classic Model
1/2A Rocket Glider

NARAM-59 Competition and Sport Launch

Events:
Open Spot Landing
C altitude (tracked)
B Super-roc Altitude (altimeter)
C Payload Altitude (altimeter)
B Eggloft Altitude (tracked)
G Helicopter Duration C and T divisions
D Helicopter Duration A and B divisions
C Flex-wing Duration
Scale
Concept Scale
Research & Development

Jul 29 - Aug 4
Muskegon, MI

They are also planning an FAI World Cup Event, along with high power and other fun events

For current info, go to
www.nar.org

Team America Rocketry Competition - *The TARC You Don't See*

By Ed Pearson

At the Team America finals, NARHAMS is one of two primary sections supporting TARC (NOVAAR, the primary), and more than 25% of the longest serving volunteers (i.e., 15-year veterans) are NARHAMSters.

Contest duties are specific and spread sometimes acres apart, so to volunteers, it is no surprise they only hear about other activities. This article sheds some light on the other areas you don't see, and for those who have never attended, well you get the opportunity to see it all—even if we don't go into the specifics as TARC being a national year-long middle/high school engineering competition, now beginning its 16th year, for designing, building and flying an egg-and-altimeter rocket that meets annual changing configuration and performance requirements.

Rocket Building Competition (Briefing, basic Tools and Builders).
Photo: E. Pearson

This is based on observations of the 2017 TARC finals, May 12 at Manasses' Metz Middle School and May 13 at Great Meadow, The Plains, Virginia.

On the Friday preceding TARC, volunteers set up the range at Great Meadow during the day and attend a staff meeting led by contest director Trip Barber that evening in a local school's auditorium. What volunteers only glimpse is a second orientation session led by AIA and NAR reps, a film by past TARC alum, encouraging talks by those working in aerospace (often TARC alum), a full briefing for the contest (not just the duty parts), group registrations (we are in the staff orientation at the time), shipped-engine pickups, and sign-ups for some of the other TARC competitions.

Rocket Building Competition (Briefing, basic Tools and Builders).
Photo: E. Pearson

Launch of Corona del Sol's High model (from Tempe, AZ).
Photo: E. Pearson

Saturday sees the contest early at Great Meadow. This includes the Rocket Building Competition held up the hill from the ranges under a big white tent. Teams signed up for 75-minute time slots the night before at registrations, NAR volunteer Carl Furling gives a short intro to each group ('If you're going to paint it, do your spraying outside and away from the tent,' for example) and then directs groups to tables where basic tools are supplied; and bags of identical parts. Kit-bashing ensues with $500 on the line each for craftsmanship and creativity (sponsored by Lockheed and Estes). Judging is done by NARHAMS' Alan Williams and company—more on them later.

Nearby in another tent is the balsa glider (Plane Building) competition. Teams received build times at Friday's registration. Teams are given basic tools and sheets of balsa and have to build a flying model. A runway used to fly models and measure distances is set up adjacent the tent's veranda and teams vie—for $500—to go the longest tossed distance. In the afternoon building/flying is opened to the public. NARHAMS' Tom and Johanna Bagg do the measuring/recording with AIA meet-cohosts assisting. A visiting, non-competing Ukrainian team bested the

Continued next page

TARC, Continued

winning American entry, and an individual boy's entry put both to shame with a non-competition entry that almost went twice what the US and Ukrainian teams achieved. Thales, USA sponsors the competition.

Between the two competition-building tents is a photo booth—an industry logo-ed backdrop where teams get their picture taken. The area is also for the AIA co-host to pick the winner in the Best Dressed Team Competition. The winning team receives a plaque at the award's ceremony.

Nearby is the exhibit tent, where military, government, industry, and organizational reps have tables, displays and answer questions. For example the NAR had Keith Vinyard and Jay Marsh there to answer questions about the NAR and FAI rocket competition. This area is about as far from the ranges as the TARC setup goes, up on the hill, and this writer had not visited it once in the first ten years of TARC.

There are three buildings at TARC. The Announcing Pagoda (tiered level reviewing stand) of which everyone is familiar. That's where NARHAMS' James Duffy does the meet's booming public-address narration assisted by NARHAMS' Mark Wise, so the little said here is sufficient. The Summer House you've glimpsed on the hill above the ranges is where VIPs and invited guests gather, and then there is the Spring House closer to the main road running by Great Meadow.

Spring House is the venue for the Team Presentation Competition. (Prior to TARC, teams compete for the opportunity to give short (six-minute) presentations on their design, flights, working together and lessons learned at the finals. Fifteen teams are chosen and notified prior to TARC finals). Presentation sign-up slots and presentations turn-in occur Friday night at meet registration. At Spring House, teams give their

Some of the completed models.
Photo: E. Pearson

The Prep Area showing prep tent, team getting their model ready, egg issuance area, and officials checking a returned flight.
Photo: E. Pearson

talks and are given two-minutes to answer questions. NARHAMS' Kevin Johnson leads a judging team which evaluates teams' poise, familiarity with subject, organization, use of visual aids, and use of time. The first place winner garners $500 and a plaque; second $300, and there is $200 third place prize.

There are other unseen competitions at TARC, some certainly the teams know about but do not have a venue to go to, and these are Special Awards (other than the aforementioned AIA-judged Best Dressed Team Competition). Roving judges headed by NARHAMS' Alan Williams go through prep and launch areas looking for the team best exemplifying the Spirit of TARC, the rocket with the Best Rocket Craftsmanship, and the model offering the Most Innovative Approach to Mission.

There are even more unseen TARC competition awards, incidentally. The Engineering Notebook [a written design configuration-management capture], Outstanding Team Advisor [e.g., teacher], and the Outstanding Mentor [e.g., NAR helper], are judged prior to TARC by AIA. The Team Outreach Award [i.e., civic and publicity programs] is partially determined prior to TARC—with the team with a non-qualifying [775' altitude in 41-43 seconds] score but the best of the non-qualifiers' public outreach being invited to TARC as the 101st team, and the best team outreach overall being given the prize. Prizes vary for these awards from recognition to a $500 prize.

Other areas you may be more familiar with, but are mentioned for inclusion: the result board at the corner of the viewing area, or the information and sales area tents outside the Students Only prep-area entrance – with the NARTS sales table staffed by NARHAMS' Maria Ha.

Continued next page

TARC, Continued

The Student Only Prep Area includes a prepping tent, an egg issue area, tents for pre-flight check-ins, egg/altimeter returns, result calculations (NARHAMS' Chris Kidwell) and the center for runners.

Then there are the three ranges staffed by the RSOs, assistants, LCOs (e.g., NARHAMS' Jennifer Ash for 15 years on the Goddard range), flight card managers (e.g., NARHAMS' Jim Filler), pad managers (to help with equipment and assist teams), and timers (e.g., NARHAMSters Stoil Avramov, Esther Johnson, Jim Miers, and Alex Mankevich). Two of the ranges (Goddard and Stine) are side by side and alternate, i.e., one loads while the other launches. The third range, for high powered rocketry demonstrations, is set further away and used three times—once for opening ceremonies, once after the teams have flown once, and the last time after flyoffs—the HPR demos are used the latter two times as time-fillers while results are finalized.

Timers (Esther Johnson in foreground).
Photo: E. Pearson

Everybody helping plays a part in making TARC continuously successful, but not all of us can go to the finals and when we do, we do not see everything. I hope this has filled in some gaps and shows how we work together.

A high power rocket making its way to the HPR range.
Photo: E. Pearson

NASA Goddard Visitor Center Model Rocket Contest

WHEN: **Sunday July 16, 2017 12 noon – 4pm**
(no rain date)

FOR: All Area Model Rocketeers

WHERE: **NASA/Goddard Visitor Center, Greenbelt, Maryland**
(I-95 Exit 22A, Baltimore-Washington Parkway Exit for Route 193 East; then follow signs to Visitor Center on ICE Sat Road)

EVENT: "Lunar" Spot Landing

COST: Free

REGISTRATION: Register at the launch site on the day of the launch

SPONSORS: This contest hosted by the NASA Goddard Visitor Center and conducted by the National Association of Rocketry Headquarters Astro Modeling Section (NARHAMS). Assistance has been received from the Maryland Space Business Roundtable and model rocket companies.

AWARDS: First through third place trophies and model rocket kits for each event have been donated.

WHY: This event is to commemorate the 48th Anniversary of the Apollo 11 Moon Landing, and promote interest in Space Sciences among area students.

Contest Rules

1. The contest is open to all model rocketeers.
2. Contestants must follow the National Association of Rocketry (NAR) Safety Code
3. Modelers must provide their own model rockets, wadding, engines, igniters, and prepping tools. The Space Center will provide the launch equipment suitable for 1/8" and 3/16" diameter straws (launch lugs).
4. In each event, contestants may fly either as an individual or as part of one team. Entry into both team and individual competition is not permitted.
5. Model rockets must use a single (NAR classification and safety certified) engine for each flight. "D" class engines or greater are prohibited.
6. Total weight of the model rocket with engine must be less than four ounces.
7. Model rockets must pass a preflight safety, engine and weight inspection at the launch site prior to launch.
8. Model rockets must land safely and must use either streamers or parachutes or gyrocopter-type devices for their recovery.
9. Model rockets must not separate into two or more unattached parts during flight.

Contest Judging and Other Important Information

1. Modelers may launch their models one time.
2. A launch is a successful ignition of the engine. A flight is when the model rocket starts to move upward on the launch pad and until the model rocket finally stops its descent.
3. The object of the event is to determine whose flight comes closest to reaching the center of a circular 150'-diameter "Moon" marked on the ground.
4. If a model rocket lands on the "Moon," contestants must leave the model rocket undisturbed until the model rocket is measured.
5. Officials will measure all model rockets that land within the "Moon's" boundaries.
6. Measurement will be from the "Moon's" center to the tip of the model rocket's nosecone. The measurement becomes the contestant's score.
7. The person with the smallest measurement (i.e., closest to the "Moon" center) will be declared the winner. The next smallest score will be second place and so on.
8. The contest will be flown in two age divisions: one is for those 15 years and younger; the other is for those 16 years and older. Teams will be classified by the age of the oldest team members.
9. Decisions of the judges are final.
10. These contest Sundays have traditionally been some of the hottest days of the year, so be prepared. Also, please be prepared to have FUN!

Time Schedule

Visitor Center Hours for This Event	12 Noon to 4:00 p.m.
Contest Registration	12:30 p.m. to 2:30 p.m.
Contest (Flying Period)	1:00 p.m. to 3:00 p.m.
Awards Ceremonies	3:30 p.m. to 4:00 p.m.

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