

ZOG-43

The official publication of NARHAMS

November / December 2023

Inside this issue:

November Goddard Launch Report	pg. 3
November Krimgold Launch Report	pg. 4
2023 NARHAMS Holiday Party	pg. 6
December Goddard Launch Report	pg. 8
Gassaway Tasmanian Devil Model	pg. 10
December Krimgold Launch Report	pg. 11
Real World Rocketry News	pg. 13
Solomon L1 Certification	pg. 14
Volpe L1 Certification	pg. 15
NARHAMS Section 139 News	pg. 16
National Association of Rocketry News	pg. 18
2024 NARHAMS Calendar of Events	pg. 19





Volume 45 ; Number 6
November / December 2023

Official Newsletter of NARHAMS model rocket club
Editor: Alex Mankevich
Associate Editor: Thomas Henderson

ZOG-43 is dedicated to providing current information about NARHAMS' activities, which includes outreaches, sport launches, competitions and club business. We aim to provide updates on model and real world rocketry, educational material, and including some entertaining information. We try to appeal to model rocketeers of all ages, abilities, and interest. We like to share the talents and accomplishments of our members.

ZOG-43 is published bimonthly and is available to all paid up members of NARHAMS. Club membership is open to all, dues are 10 cents per week. The content of ZOG-43 is copyrighted. Free and unlimited reproduction is granted with the proper credit to the author and/or ZOG-43.

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 or event photographs, send them to:

ZOG-43
4023 Forest Valley Road
Parkville, MD. 21234
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. and at Krimgold Park near Woodbine, 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:

We wrapped up another glorious calendar year for NARHAMS! We've got new leadership in place and we've inaugurated Krimgold Park as the site for our monthly sport launches. NARHAMS members Stoil Avramov and Jim Filler won medals at the World Spacemodeling Championships held this year in Texas. New equipment has been purchased for the Goddard launches. We've returned to events that were shuttered because of COVID such as STEAM Day at the Pax River Naval Air Museum and the International Observe the Moon Night.

Inside this issue you may enjoy the images from our festive holiday party. Take Alan's Gassaway Tasmanian Devil Helicopter Recovery Model article for a "spin". Get the inside scoop on Daniel Solomon's and John Volpe's High Power Level 1 certification flights. Learn about Santa Michael's visit to the December Goddard launch. Look for the 2024 NARHAMS Calendar of Events.

Remember, 'tis the season to be freezin'. Jack Frost is gonna want to nip on your nose. You could even end up walking in a winter wonderland. Be sure to bundle up in warm layers when launching your model rockets over the next couple of months.

Contributing to this issue:

Reporters:

Alex Mankevich, Alan Williams, Daniel Solomon, John Volpe, Edward Jackson, Thomas Henderson, Kevin Johnson.

Photographers:

Eric and Thomas Henderson, Ole Ed Pearson, Brian Beard, Sally Cook, Alex Mankevich, Daniel Solomon, Andrew Bean, John Volpe.

Covers Credits:

Front Cover: A Flying Colors model descends under a full parachute canopy during the November Goddard launch. Photo credit: Alex Mankevich.

Back Cover: A throwback image of James Miers serving as launch manager for the December 18, 2010 Sport Launch at Old National Pike Park. Note the snow on the launch range. Photo credit: Alex Mankevich.

ZOG ROYAL COURT (NARHAMS OFFICERS)

ZOG (President) Edward Jackson

VICE ZOG (Vice-President) Alan Williams

COLLECTOR OF THE ROYAL TAXES
(Treasurer) Sarah Jackson

KEEPER OF THE HOLY WORDS
(Secretary) Brian Beard

COURT JESTER
(Section Advisor) James Miers

Goddard Launch Report November 2023

Reported by: Alex Mankevich - ZOG-43 Editor

Contributing Reporters: Edward Jackson and Thomas Henderson.

November Goddard Launch By the Numbers:

Total Rockets Launched:	66
Adults in Attendance:	87
Youths in Attendance:	76
Total Visitors at VC:	163
First Time Flyer Certificates:	33



Thomas Henderson and Brian Beard take a break from check-in duties as things wind down. Photo credit: Thomas and Eric Henderson

It was a pleasant day outside in the NASA Goddard Visitor Center's Rocket Garden as we enjoyed blue sunny skies and temperatures more typical of October than November. A stiff breeze caused us to put probably a dozen rockets in the trees heading towards the Black Brant and Greenbelt Road, or on the Visitor Center roof.

We were missing a couple of our regular range crew members. Thomas Henderson joined Brian Beard at the Safety Check station to fill in for Sarah Jackson. Michael Cochran also could not attend, and his role as launch pad assistant was taken by four high school volunteers from the NASA Goddard intern program. It was good to have the interns, since Ole Ed Pearson and Alex Mankevich spent much of their day inside the Visitor Center helping numerous modelers construct and prepare their models for launch.

Three Goddard Championship flights were flown this month. As a result, we have some new names on the Goddard Championship Series 1/2A6-2 streamer duration leaderboard. Brian Beard put up a 12-second flight to claim first place in the adult division, while Luc Hutson, junior winner of this year's Apollo Contest, turned in an excellent 14-second time, putting him at the top of the junior leaderboard.

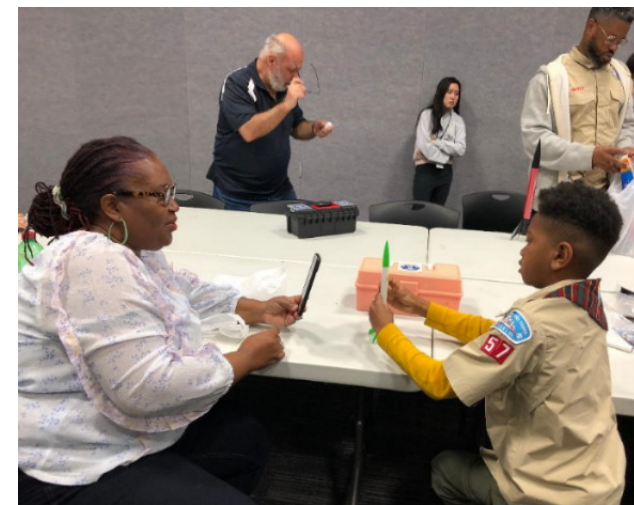


Ole Ed (far left) assists modelers to prepare their rockets. Photo by: Sally Cook

We had a few unusual models, including an Estes SLS scale model on a C6 and a Hi-Flier XL on a C5, both of which made for nice slow, majestic liftoffs. Rounding out the fleet were a spool-type pizza rocket, a Der Red Max, an Astrocam and at least one 3D-printed model.



NASA interns serving as Pad Assistants - (L to R behind the launch rack) Samuel Grooms, Alexis Booker, Jenny Nhan and Matthew Vuong. Photo credit: Alex Mankevich



Mom Pam snaps a picture of son Tru and his rocket. Tru built an Estes Bandit inside the visitor center and then flew it outside three times; he is a member of BSA Troop 57 from Glenarden, MD. Photo credit: Ole Ed Pearson

Reported by: Alex Mankevich - ZOG-43 Editor



The Naval Sea Cadet Corps ARC team launches their test flight on a F-25 motor. Image credit: Eric and Thomas Henderson



The Baltimore Polytechnic Institute ARC team sets their model on the away pad. Image credit: Alex Mankevich



An original design on a B4-4 dedicated to (the late) Bob Lussier and made from refurbished parts. Image credit: Ole Ed Pearson



The igniter wire and micro clips fall away as a Starhopper model takes flight. Photo credit: Alex Mankevich

It was another windy Fall Day for a sport launch at Krimgold Park. The club's anemometer confided in us that the wind speed kept fluctuating from the mid-teens to the low twenties. All that wind speed chilled the mid-50s temperature to feeling somewhat colder. On the positive side, we basically had the entire park to ourselves. The sparsely attended Park meant that the drifting rockets did not interfere with, or frighten away, other park visitors.

The four American Rocketry Challenge (ARC) teams that showed had marginal conditions under which to test fly their models. The Glenelg Country School ARC team showed up early but decided against flying in the wind. A team from The Baltimore Polytechnic Institute got in one test flight. An ARC team mentored by Michael Herman brought out an Estes Green Eggs Lofting rocket. Its one and only flight ended in a CATO. Alex Mankevich sympathetically lent them two of his rockets so that the team could get some model rocket flight experience. The Bill the Goat ARC team made three test flights using two F15 motors and one F25 motor.

Continued on next page ...



Mandy Solomon (L) and Sarah Jackson (R) bundle up against the bitter wind. Photo credit: Ole Ed Pearson

Krimgold Sport Launch Report November 2023 - continued

Not many NARHAMSters turned out for this launch. The weather forecast had been persistently advising that the winds would be high on launch day. Perhaps some members recalled the challenge that the high winds presented during the October Sport Launch. While the activity on the ground was moderate, the activity in the sky saw a couple of Cessnas and a solitary Bald Eagle that were spotted overheard.

Many members were able to launch three or four flights. Andrew Howard and Finley Weinstein each made four flights to lead the pack. We had two two-stage launches. Mike Kelley flew his Super Nova on a B6-0 to an A8-3, and Andrew Howard's Bertha Boosted went from a C6-0 to an A8-3. Seventeen flights were on A8 motors and five flights each flew on B4 and C6 motors. The rest of the motors ranged from 1/2A to F50. We totaled up 41 flights for the windy day and concluded around 1:15 pm.



Modelers enjoying the launch - Front row (L to R) Sanchit, Anish and Nilan. Back row (L to R) Mihir and Sachin. Photo credit: Alex Mankevich



Fabrice Derullieux shows a Quest Evader model he received second hand; it flew nicely. Photo credit: Ole Ed Pearson



The crowd, such as it was, watches the launch of one of Ole Ed's kitbashes. Photo credit: Eric and Thomas Henderson



Brian Beard (R) checks for pad availability before assigning a launch pad. Photo credit: Alex Mankevich



Fabrice Derullieux completes a flight card while Ole Ed Pearson (standing) checks for grammar and punctuation. Photo credit: Alex Mankevich



2023 Holiday Party



Tom Ha inspects the Khim Bittle competition rocket collection that was big part of the raffle. Photo credit: Alex Mankevich

It was definately a night for Rudolph! It was a foggy, dreary and dismal trip to the Greenbelt Volunteer Fire Department for NARHAMS' 2023 Holiday Party. But, upon arrival we were greeted with tables laden with food and row upon row of raffle prizes. We are all indebted to James Miers for arranging to book the venue and to set up the hall to accomodate our meal and raffle.

Oh, the food, food, food! There were mouth-watering meatballs, scrumptious salads, wonderful wraps, nourishing nuggets, versicolor vegetables and copious cornbread. Not to be outdone, there was a plethora of delightfully sinful desserts. Some reports state (abeit unconfirmed) that there was Who-pudding, Who-hash, and even the rare Who-roast-beast!

On the raffle prizes side, there was plenty of rocket kits and parts to get excited about. There were several rocket gliders and competition models that Fabrice Derullieux had scored from the Khim Bittle collection. There were skill level 3 and 4 kits and numerous body tubes from the late John McCoy collection. Several NARHAMSters contributed some of their stuff to the collection. Vice Zog Alan Williams once again ran the raffle, but this time he said that he thoroughly mixed up the tickets in the drawing bowl.

Ole Ed Pearson tallied up about 40 revelers. It was nice to see members that we don't normally see at our launches. Jim Filler came from deep down south in Virginia, and Tom and Maria Ha came down from Pennsylvania. Other members suchs as Mark Wise and Kevin Johnson turned up to celebrate.



A long view of the plethora of raffle prizes. Photo credit: Brian Beard



Ellen Fineran wears her Santa hat. Photo credit: Ole Ed Pearson



Kevin Johnson with his son Pau. Photo credit: Ole Ed Pearson



Jim Baird helps himself to the ample dessert selection. Photo credit: Alex Mankevich



Travelers from distant lands. Tom (left) and Maria (center) Ha travelled from PA and Jim Filler (R) travelled from VA to attend the Holiday Party. Photo credit: Alex Mankevich



Rachel Shafer (center) gets her raffle tickets from Vice Zog Alan Williams (right). Photo credit: Alex Mankevich



2023 Holiday Party

NARHAMS Holiday Party Tradition Shafer's Space Themed Cookies

We all look forward to seeing what the Shafer women had created as space-themed cookies. They've prepared cookies in the shapes of UFOs, astronauts, planets, stars, the moon, aliens, and space ships. The gingerbread is chewy and the frosting is sweet.



This year's exciting offering of delectable space-themed cookies. Photo credit: Brian Beard



Clever nose cones and fins have been affixed to these 2014 rocket cookies. Photo credit: Alex Mankevich



Gingerbread rockets from the 2014 Holiday Party. Photo credit: Alex Mankevich



(L to R) Rachel, Nataile and Tamyra enjoying the 2023 Holiday Party. Photo credit: Alex Mankevich



The cookie assortment from the 2018 Holiday Party. Photo credit: Alex Mankevich



NARHAMS Holiday Party Tradition Pearson Family Holiday Punch

The Pearson family holiday punch has been a much-anticipated treat at our Holiday Parties. It appears to start off as an elaborate concoction of several liquid ingredients. Then, ice and cut-up fruits are added to the red-colored mixture. You never really know what you will scoop up and pour into your drinking glass. It tastes fruity and sweet, and just right for the Holidays.



This year's Holiday Punch went quickly. Photo credit: Alex Mankevich



Jillian Pearson (L) assists Ole Ed (R) in preparing the 2014 vintage. Photo credit: Alex Mankevich



Ole Ed is brewing up something special as he prepares the 2018 vintage. Photo credit: Alex Mankevich

Goddard Launch Report
December 2023

Reported by: Alex Mankevich - ZOG-43 Editor

NASA intern Molly Dennis declared it a "crummy day" with gray, cloudy skies for the December Goddard launch. The rain chances actually diminished after 1:00 pm, but the skies remained a depressing gray. There was no wind to move away the gloomy clouds. President Edward Jackson opted to have us set pop-up tents for rain shelter, and to keep our fingers crossed that any rain would stay away.

The upside to the dark weather was that we were able to see the flames shoot out and the sparks fly once the motors ignited. No rockets needed to be retrieved from the space center property since none went over the fence. Most rockets landed near the vicinity of the launch rack since there was little wind.

Amanda Harvey, the Visitor Center Program Coordinator, arranged to have volunteers Molly Dennis and Afran Siddiqui to assist the range crew.

This launch accommodated a science project that launched different rocket fin designs using B6-4 motors. The altitude data was recorded using an altimeter.

The new NARHAMS 35 feet fiberglass recovery pole finally made its debut at Goddard. We removed a few parachutes and nose cones that had been hanging in the trees from previous launches.

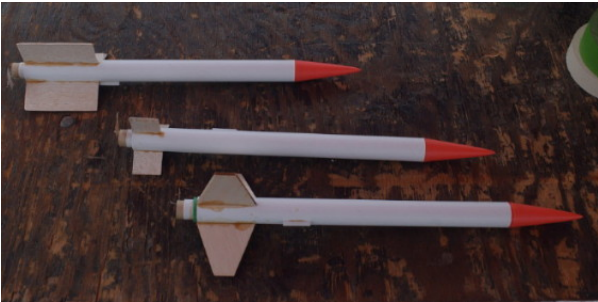
December Goddard Launch By the Numbers:

Total Rockets Launched:	45
Adults in Attendance:	58
Youths in Attendance:	40
Total Visitors at VC:	98
First Time Flyer Certificates:	9

Click the link below to view additional high resolution Goddard Launch photos:
<https://drive.google.com/drive/folders/1dpBZbno7g3RF09GWpr6fUpLE75ypIFhH?usp=sharing>



Sparks fly as the motor ignites on rail #1. The cloudy day provided the contrast needed to view the fiery detail. Photo credit: Alex Mankevich



These different fins shapes were tested as part of a science project. Photo credit: Alex Mankevich

Yes, Virginia, there is a Santa Michael.



Santa Michael comes once a year to the NASA Goddard Visitor Center launch on the first Sunday of December. He wears a smile, a beard, spectacles and a red cap with a white tassel on its end. His cheeks are rosy and his dimples are merry. He is friendly, kind, and a right jolly old elf.

Santa Michael helps people load their rockets on the launch pad.

If your igniter wire needs replacing, Santa Michael

will do so lively and quick, with a wink of his eye and a twist of his head.

Changing igniter wires is Santa Michael's big scene. But remember, Santa Michael only helps the **good** little boys and girls. So, don't be naughty, don't shout and don't pout. Most of all, don't go chasing after your rocket until all the rockets on the rack have launched.

Goddard Launch Report

December 2023 - continued



A model descends seemingly atop the Visitor Center's Delta rocket. Photo credit: Ole Ed Pearson



Thomas Henderson (R) assists Goddard Championship Series Junior Division leader Luc Hutson (L) load his streamer duration model. Photo credit: Eric and Thomas Henderson



NASA interns Molly Dennis (left) and Afran Siddiqui (center) observe Ole Ed Pearson (right) demonstrate the proper way to prepare a model rocket for flight. Photo credit: Alex Mankevich



Sarah Jackson (left) assists a young modeler. Photo credit: Alex Mankevich



The Goddard Range Crew in action. (L) to (R) Thomas Henderson, Ed Jackson (launch control), Santa Michael, Alex Mankevich (distant) and Afran Siddiqui. Photo credit: Eric and Thomas Henderson



Brian Beard (right) completes another safety check and sends the modelers off to the launch rack. Photo credit: Alex Mankevich

Goddard Championship Series Leader Board 2023/2024					
Junior Division			Senior Division		
Place	Name	Score	Place	Name	Score
1	Luc Hutson	14.39	1	Brian Beard	12.88
2	Kenneth Byrd	9.23	2	Thomas Henderson	9.58

The Gassaway Tasmanian Devil Helicopter Recovery Model

Reported by: Alan Williams - Vice-Zog

A few months back the hobby lost the great Alabama space modeler George Gassaway. For decades he was known for his broad impact in many aspects of the sport. He did everything from silly rocket cars to much admired complex scale models for the U.S. world spacemodeling teams. One of his greatest accomplishments was perfecting the first really practical Helicopter Duration rocket designs in the middle 1970's.

While dedicated to serious modeling projects, he had a fine appreciation for the stupid fun side of the sport. In remembrance of him, I would like to present his fabulous "Tasmanian Devil" no-moving-parts helicopter rocket design. It is buildable in a wide variety of sizes and power ranges and can be used to impress the crowds at demos, or startle the livestock in nearby fields, as you prefer.

As you will see in the drawing from the original Model Rocketeer magazine article the basic package looks much like a Mosquito with some changes. First, instead of fins, it sports a set of three rotor blades placed at the tail of the main body. They each have an asymmetrical thick airfoil the entire span of the blades. Each blade must also have the same cross section.

Second, the rotors present at about a fifteen degree sweep backwards. The rotors are mounted and supported by large triangular gussets mounted between the body tube and rotor centerlines. Ensure that each gusset's wood grain is parallel to the long (outer) edge. Make sure that the rotors are mounted to the gussets at least 2-3 degrees tilted to the airflow with all having exactly the same tilt. The most important part is that the rotor's airfoils are all facing towards the AFT end of the model (flat side facing towards the rocket's nose) and the rotor leading edges are all on the "up tilted side" of the blades.

One item to really chew over: the rotors and mounting gussets undergo large aerodynamic loads as the model climbs. Use strong high-quality wood for all parts and fillet the heck out of everything that's touching anything else! For smaller (size D and below) models, the yellow aliphatic "carpenter's" glues do well. Anything more powerful wants more robust adhesives. For such a simple looking rocket, that's a bunch of "ensures and "be careful to".s.. here.

So, what's up???!! While being spun up by the airflow, because of that rotor tilt and reversed blades, your Devil will be developing an almost insane amount of negative lift. The faster it goes, the more it spins; but the more it spins, the slower it goes. It therefore spits, snarls, and thrums while clawing upwards into the sky and low pressure develops aft of the spinning blades.

Hence the name, "The Tasmanian Devil"! Old Ed Pearson referred to my recent Devil flight at Krimgold as an "incredible waste of energy!" Why, thank you!

The general design will work in many sizes and power ranges. I have personally flown up to Estes D-12 powered examples and have seen up to "G" powered versions work well. You can use tape-friction or engine hooks to retain the motor. Note that the body has vent holes to let the motor gases escape at the end of the engine burn. (The Devil design is flown with either "booster" motors or ones with very short delay times.) I suggest stretching the body length as your motor weight increases, to help establish sufficient stability margin. For instance, my BT-50 sized "D" powered model was over one foot long.

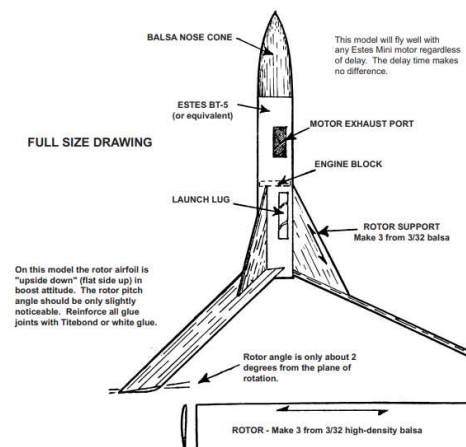
Flight prep is in the usual manner except that you want to angle it farther away from the spectators, so they won't panic and stampede. Finally, if it doesn't spin up on your first test flight (perhaps not enough angle on the blades), just stick an inch square double-sided masking tape spin tab on the trailing edge of each blade tip. They must all be the same size to work right.

Although the model is intended as a fun-fly design, like the "flying saucer" style rockets it could serve as a "flight points" entry in Helicopter Duration or Spot Landing events. In any case, George's strange design will almost guarantee some attention on the range. Thanks, George!

The Tasmanian Devil

A "No-Moving Parts" Helicopter Model
Design by George Gassaway Drawing by Tony Williams

The Tasmanian Devil is a fun sport model that boosts low and slow like the Estes Flying Saucer. During boost it goes into a fast rotation and as rotation speed builds, this model will actually slow down during boost. After burnout, the model immediately flips over and recovers by autorotation.
Construction is simple and straight forward. It is advisable to use high-density balsa for the rotors.
Though it is not very competitive, the Tasmanian Devil is legal for NAR competition. It might be a "foolproof" model for those of you who don't have the inclination to build the normal "complex" helicopter duration model.



Copyright 1986, 2002, National Association of Rocketry
Permission is granted for making limited personal copies for the purpose of building this model rocket.



Author Alan Williams (L) poses with an authentic Gassaway Tasmanian Devil Helicopter Recovery Model at the October Sport Launch at Krimgold Park. Eric Henderson (R) looks on. Photo credit: Alex Mankevich

Reported by: Alex Mankevich - ZOG-43 Editor

This launch wrapped up NARHAMS' first "full" season of launching at Krimgold Park. Many modelers got in several flights since the day was a somewhat mild mid-50s day with calm winds.

ARC teams were eager to get in some more test flights before the worst of the winter weather set in. The Bill the Goat Sea Cadets and the Glenelg Country School ARC teams each launched multiple flights.

Connor Lloyd conducted his 10th grade STEM project of testing rocket fin designs. His flights used Big Bertha rockets flying on B6-4 motors. Connor launched 19 flights and recorded their altitudes using an Estes AltTrak Altitude Tracker. Ethan Goldberg did a couple of FAI S6 flights practice flights using his own tower. Brain Beard made three flights of his Astrocam Carrier model whose payload bay included both the video device and an altimeter.

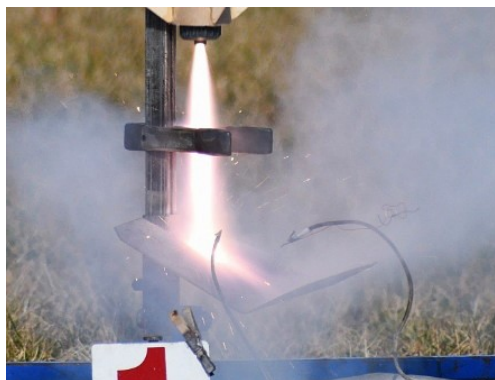
King Zog Edward Jackson registered this launch as a NRC event. Modelers Adlai Perry and Ethan Goldberg contested during the day.

Alex Mankevich provided some excitement as his holiday party-aquired Penetrator model did a C5 motor CATO on its second flight. The base of the rocket was completely destroyed.

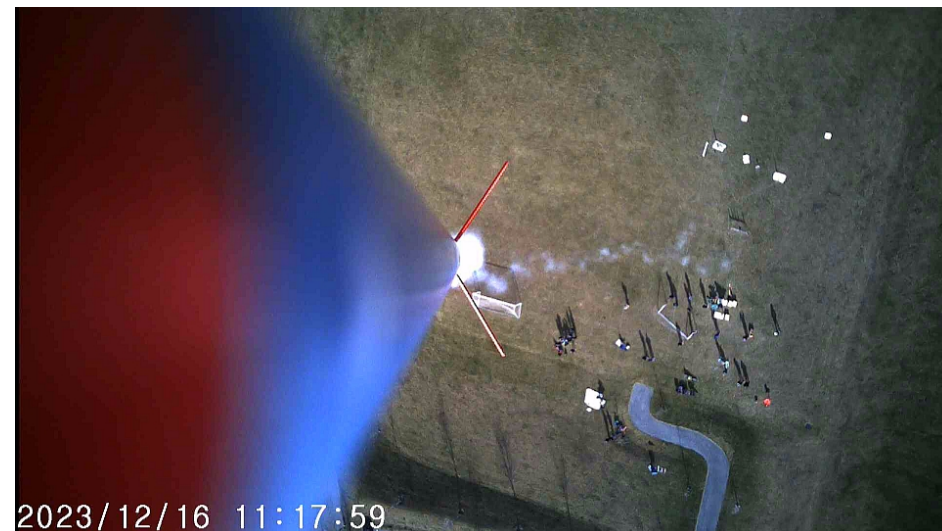
We rounded out the sport launch calendar year quite nicely with 101 flights on motors ranging from 1/8A to G76, for a total impulse range of 114.69 Newton-seconds.



Ethan Goldberg prepares an FAI S6 model (streamer duration on 1/4A and 1/2A3 engines) on his own tower. The model only weighs ten grams. An Estes Citation Patriot is in the foreground—a model of Tom Flynn. Photo credit: Ole Ed Pearson



Mayhem against the blast deflector as sparks, igniter wire, microclips and clothespin fly as an F67 motor ignites. Photo credit: Alex Mankevich



A still image of the Krimgold Park launch range from Brian Beard's Astrocam Carrier flight video. Photo credit: Brian Beard



Ed Jackson (L) and Daniel Solomon (R) let their parachutes billow in the wind. Photo credit: Alex Mankevich

Krimgold Sport Launch Report December 2023 - Continued



Rick Ruth brings home his Yellow & Black, Protostar and Goldie rockets. Photo credit: Alex Mankevich



Rob Edmonds connects his Tinsel Twinsee dual glider with decorative streamers. Photo credit: Eric and Thomas Henderson

Click the link below to view additional high resolution Krimgold Launch photos:
<https://drive.google.com/drive/folders/1CNyVcHkhizgDilUZeh17Dkv25kxAFtqS?usp=sharing>



Parts can be seen shedding off of the Spirit of Middletown model as the rocket climbed. Photo credit: Alex Mankevich

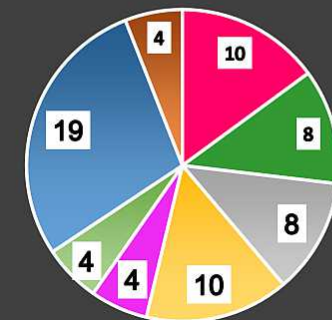


A final look at Alex Mankevich's model before its C5 motor CATO. Photo credit: Eric and Thomas Henderson



Mike Kelley sets his imposing Doorknob 4.0 rocket to fly on a F40 motor. Photo credit: Alex Mankevich

December Krimgold Launch Frequent Flyers



- Tom Flint
- Thomas Henderson
- Brian Beard
- Mike Kelley
- Rick Ruth
- Ole Ed Peason
- Connor Lloyd
- Nora Blagojevic



Thomas Henderson's Spirit of Middletown takes off on a G53 Blackjack motor. Photo credit: Eric and Thomas Henderson



The crew of Shenzhou-16, commander Jing Haipeng, flight engineer Zhu Yangzhu, and payload specialist Gui Haichao returned from Chinese space station Tiangong on Oct. 31. The Chinese crew landed safely, despite a parachute malfunction, after 153 days in space.

Virgin Galactic spaceplane VSS Unity completed mission Galactic-05 on Nov. 2. The crew were commander Mike Masucci, pilot Kelly Latimer, and instructor Colin Bennett, all Americans, while the passengers were Italian Ketty Maisonrouge and Americans Alan Stern and Kellie Gerardi.

SpaceX launched the second integrated flight test of their Starship fully reusable two-stage rocket on Nov. 18. The Superheavy booster exploded during the boost-back maneuver, while the Starship orbiter was destroyed by the flight termination system shortly before engine cutoff.

SpaceX also launched Dragon mission CRS-29 to the International Space Station on Nov. 10, mission Transporter-9 with 90 smallsats including the first satellites from Djibouti and Oman on Nov. 11, two communication satellites on Nov. 12, a South Korean reconnaissance satellite and 24 rideshare payloads including the first Irish satellite on Dec. 1, a military mission for Germany on Dec. 24, an X-37 for the US Space Force on a Falcon Heavy on Dec. 29, and twelve Starlink missions. Falcon 9 booster number 1058 completed its 19th launch and landing on the Starlink mission Dec. 23, although it was destroyed after landing when it tipped over during heavy weather on the drone ship.

China made eight launches of Long March 2, 3, 5, 7, and 11 rockets, carrying technology demonstrators, communications satellites, earth observation satellites, reconnaissance satellites, and, on Dec. 14, the third mission of China's reusable spaceplane, which is reportedly comparable to America's X-37B. China also launched a communications satellite from a sea launch platform on a Jielong-3 solid-fuel rocket on Dec. 5, and two weather satellites on Kuaizhou 1A rockets on Dec. 25 and 27.

Galactic Energy launched two earth observation satellites on a Ceres-1 rocket on Dec. 4, making their return to flight after a launch failure in September.

LandSpace launched three technology demonstrators on its Zhuque-2 smallsat launcher on Dec. 8, which thus became the first methalox-fueled rocket to orbit a payload. Zhuque-2 had reached orbit without a payload on a test flight in July after an unsuccessful first flight in Dec. 2022.

I-Space launched prototype reusable capsule DEAR-1 on its Hyperbola-1 solid-fuel rocket on Dec. 17. The mission was the first payload delivered to orbit by i-Space after a string of failures in 2021 and 2022 and a successful return-to-flight test with no payload in April.

North Korean space agency NATA, formerly NADA, reported that it had orbited a reconnaissance satellite, Malligyong-1, on a Chollima-1 hypergolic launch vehicle after failures in May and August.

Russia launched a reconnaissance satellite on Nov. 25, ISS supply ship Progress MS-25 on Dec. 1, a weather satellite on Dec. 16, another reconnaissance satellite on Dec. 21, and a military satellite on Dec. 27, all on Soyuz-2.1 rockets.

South Korea launched a technology demonstrator from a sea launch platform on a solid-fuel rocket on Dec. 4. The name of the rocket has not been officially announced.

Rocket Lab launched mission "The Moon God Awakens," carrying an earth observation satellite, on an Electron rocket from New Zealand on Dec. 15, making their return to flight after a failure in September.

Blue Origin's New Shepard rocket flew mission NS-24 on Dec. 19, making its return to flight after a failure on mission NS-23 in Sept. 2022. Neither mission carried astronauts.

Firefly Aerospace launched mission FLTA-004 "Fly the Lightning," a technology demonstrator for Lockheed Martin, on a Firefly Alpha rocket on Dec. 22.

Two Terrier Improved-Malemute sounding rockets were launched from Wallops Flight Facility on Nov. 15.

Upcoming in January, and February 2024:

January 8: First flight of the United Launch Alliance Vulcan Centaur, carrying the Astrobotic Peregrine lunar lander for NASA.

January 17: Axiom Space Crew Dragon mission Ax-3 launches on a Falcon 9 with Spanish-American commander Michael Lopez-Alegria, Italian pilot Walter Villadei, Turkish mission specialist Alper Gezeravci, and Swedish mission specialist Marcus Wandt.

January 29: A SpaceX Falcon 9 launches Cygnus station resupply ship S.S. Patricia "Patty" Hilliard Robertson on mission NG-20 for Northrop Grumman.

February 15: Roscosmos launches cargo ship Progress MS-25 on a Soyuz-2.1a.

February (TBD): SpaceX launches Crew Dragon mission Crew-8 to the ISS with commander Matthew Dominick, pilot Michael Barratt, and mission specialist Jeanette Epps, all Americans, and Russian mission specialist Alexander Grebenkin.



SpaceX Starship at the moment of hot-staging.
Image credit: SpaceX



High Power Rocketry L1 Certification - Daniel Solomon



Pre-flight hero pose. Photo credit: Andrew Bean

Starting off, I first bought the rocket, a LOC IV, back in July for my Junior Level 1. I finished building it that month and, if y'all remember, first launched it back in July 2023 on a G74. It later launched on G76s, G77s, F52s, and F67s.

The certification attempt was with NOVAAR at Great Meadow in The Plains, Virginia, on November 4th. The flyer of record and the person who administered the exam was Jasper Barnett. Jasper has level 3 certification and lent me a 29/180 hardware set for the certification flight. Steve Morris, a NOVAAR member and Level 2 certified, was the sole member of the certification team. I appreciate both of them so much for all they have done to help me.

The first launch attempt failed as there was a misfire or SNAFU of some sort. A faulty igniter was probably to blame. The second attempt was a resounding success, with the LOC IV flying to ~1500 feet and returning safely for a total flight time of ~90 seconds.



Early in the build process. Photo credit: Daniel Solomon



LOC IV on launch day before heading to NOVAAR. Photo credit: Daniel Solomon



Post-flight hero pose. Photo credit: Andrew Bean



High Power Rocketry L1 Certification - John Volpe



John Volpe. Photo credit: Alex Mankevich

So, I joined MDRA last summer to pursue Level 1 high power certification and attended their monthly launch on September 17th on the Eastern Shore with my father and daughters present.

I communicated with their high power team in advance to work out the details. With their assistance, I launched my repaired/modified Oriole Rocket (LOC Precision Hi-Tech PK-56) using an Aerotech 29mm H182R-14A DMS motor and a 36mm adapter. We used a delay tool to reduce the delay to 10 seconds as recommended by the L1 certifying director. They inspected the rocket beforehand and helped with the motor/igniter installation.

Flying an "H" motor is much different and more complex than anything we have done previously with "F" or "G" motors. The rocket weighed about 35 ounces at launch. The weather was nice with low winds and partly sunny conditions. I did not use any electronics on the flight but estimated the altitude at about 2500 feet beforehand using Rocksim software. The launch went very smooth with no issues, I believe the altitude was pretty accurate. It drifted about 500 feet away and was easily retrieved with no damage in a field. Naturally they had to inspect it before certification was approved. They issued a pin and temporary certification form which I submitted to the NAR for approval. The entire process was pretty easy and painless. Good weather conditions and helpful MDRA staff made it all possible.

We also enjoyed seeing another member, Adam from the TARC launches, also successfully completed a Level 1 launch right before mine. We went through the process together on-site, and I believe he built a home-made rocket with a camera and dual deployment on board for his launch. It was enjoyable for both of us to complete the process together at the same event. I am not sure what motor specs he had. I've included a few photos here as we were unable to record the launch by video.

I would certainly recommend using Rocksim and coordinating with high power teams for anyone interested in Level 1 launches. Careful motor decision-making with a strong rocket is essential.

Take care and on to big rocketry.



Touchdown after a successful Level 1 qualification flight at MDRA. Photo credit: John Volpe



Volpe's modified Oriole Rocket (LOC Precision Hi-Tech PK-56). Photo credit: John Volpe



Fin detail on Volpe's modified Oriole Rocket. Photo credit: Alex Mankevich



NARHAMS News

November Meeting Highlights

Each year we dedicate the November meeting as a planning meeting to schedule the NARHAMS events for the upcoming year. We also welcome members to volunteer to participate in the outreaches, launches and to bring refreshments to our meetings.

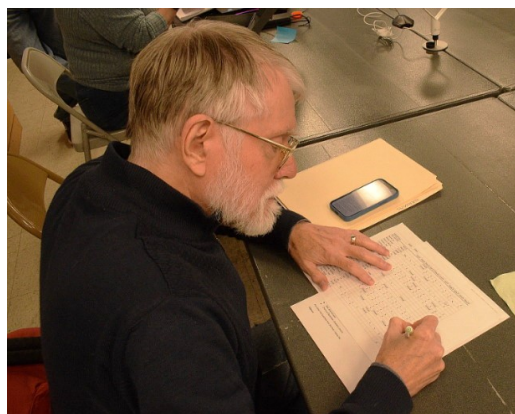
We tried a new approach to make the planning meeting go a bit faster and to get the calendar filled out quickly. King Zog used a computer program to track and post the themes, volunteers, refreshments and outreaches.

We were quite successful as we were able to mostly complete the 2024 calendar of events.

During the business meeting we reported on the outreaches for the past month. The included the - International Observe the Moon Night, the FIRE launch with Kevin Johnson and the Arbutus Elementary School launch with Thomas Bagg.



Pizza Party!! DJ Emmanuel kicks it into high gear. Photo credit: Alex Mankevich



Secretary Brian Beard makes sure that we have quorum to conduct an official business meeting. Photo credit: Alex Mankevich



The 2024 Event Planners load up on carbohydrates prior to engaging in the planning session. (L to R) Brian Beard, Sarah Jackson, Edward Jackson, Alan Williams and Jim Baird. Photo credit: Alex Mankevich

Keep us posted:

Tell us about your rocketry projects, builds, favorite flights, outreaches and certifications.

Of course, send us your photos of the NARHAMS events.

Email the ZOG-43 editor:
zog43editor@yahoo.com

Zog
43



Sally Cook (L) and DJ Emmanuel (R) seem pleased with the schedule of events chosen for 2024. Photo credit: Alex Mankevich

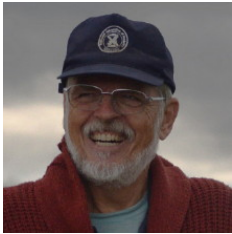


Vice Zog Alan Williams pays rapt attention to the proceedings. Photo credit: Alex Mankevich



NARHAMS News

NARHAMSters Achieving NAR Certification



James Miers achieved Level 2 certification in July 2023 by launching his rocket at Great Meadow.



John Volpe achieved Level 1 certification in September 2023 by launching his rocket at MDRA.



Daniel Solomon achieved Level 1 certification in Nov 2023 by launching his rocket at Great Meadow.

FIRE Rocketry STEM Program Launch

Reported by: Kevin Johnson.

October 28, 2023, NARHAMS supported a rocket launch at Capitol Technical University in Laurel, Maryland by Kevin Johnson making launch system 3 available. The launch was in support of the FIRE Rocketry STEM program run by Robin Houston. Members of the Rocketry 1 and 2 classes launched Apogee Avions that they built during meetings over the last couple of weeks.

Everyone was able to press the launch button on their first flights, and several students flew multiple times. They were able to see the difference between A and B powered rockets, and some even risked a C motor.

At the end of the day, about 30 flights were made, including a scale model demo, and a preview of their next model- an Estes Green Eggs and Ham.



Robin Houston. Photo by: Ole Ed Pearson

narhams@groups.io



NARHAMS uses Groups.io to update its members regarding its activities, meetings and launches. Launch cancellations or postponements will be announced in this group.

If you are already a member of narhams@groups.io, Log In to access the group. To start your membership in this group, go to <https://groups.io/g/narhams/join> and provide your email address. Then follow the instructions on the webpage.

NARHAMS Club Merchandise

Click the link below:

<https://www.cafepress.com/narhams>



NARHAMS has an online store for club merchandise. No more waiting for a group buy to get neat stuff for yourself. Show your pride in your club membership.

There is a huge variety of items. Shirts, hoodies, hats and more!

End your loved ones' gift shopping dilemma. Point them towards the CafePress link whenever you have an upcoming birthday, anniversary or holiday.



National Association of Rocketry (NAR) News

Virtual NARCON-2024 Online Rocketry Convention January 26 - 28, 2024

The NAR's fourth virtual NARCON is rapidly approaching and will be held January 26-28, 2024.

vNARCON is a tremendously affordable opportunity to learn from experts across the many disciplines of rocketry. Registrants can attend ManuFacts and hear first-hand about the latest products from company representatives. Throughout the event there will be opportunities to participate in social gatherings with your fellow rocketeers.

Your purchase of a ticket will admit you to ALL of three days including the keynote by Bashar Risk. Ticket holders will also have exclusive access for 90 days to ALL the recorded event content starting January 30.

The cost? Youngsters 15 years old and under are FREE. Individuals 16 years of age and older are \$25 and the Family fee (two or more family members) is \$45 for the entire weekend. Go to the vNARCON 2024 website to register beginning December 1st, 2023.

Click the below link to register:

<https://www.accelevents.com/e/vNARCON-2024>

NRC events for the 2023-2024 Contest Year and NARAM-65:

- 1/2A Helicopter Duration
- 1/2A Parachute Duration
- A Rocket/Glide
- B Streamer Duration
- B Payload Altitude
- B Eggloft Altitude

These events have been selected by the NAR Contest Board and the NARAM Contest Director per Sporting Code rule 13.1.3. The 2023-2024 Contest Year starts on August 2, 2023, and ends on the last day of NARAM. NRC flying ends June 30, 2024.

National Sport Launch West - 2024

**May 25 - 27, 2024
Alamosa, Colorado.
52K AGL Waiver!**

NARAM-65 / NAR Annual Meet

**August 3 - 9, 2024
Pueblo, Colorado**

NARHAMS Calendar of Events - 2024

Date(s)	Times:	Event:	Location:
Jan. 06	5:30 - 9:00 pm	Monthly Meeting Topic: Equipment Cleaning. Refreshments: The Jacksons.	College Park Airport
Jan. 07	1:00 - 2:00 pm	Goddard Public Launch	Greenbelt, MD.
Feb. 03	5:30 - 9:00 pm	Monthly Meeting Topic: Safety Review. Refreshments: Alex Mankevich	College Park Airport
Feb. 04	1:00 - 2:00 pm	Goddard Public Launch	Greenbelt, MD.
Feb. 17	10:00am-3:00pm	Krimgold Park Launch Theme - Odd Rocs Manager: The Jacksons	Woodbine, MD.
Feb. 25	9:00am - 4:00pm	STEAM Day Pax River Naval Air Museum	Leonardtown, MD.
Mar. 02	5:30 - 9:00 pm	Monthly Meeting Topic: Launch Manager Training Refreshments: Fabrice Derullieux	College Park Airport
Mar. 03	1:00 - 2:00 pm	Goddard Public Launch	Greenbelt, MD.
Mar. 16	9:00am - 3:00pm	Krimgold Park Launch Theme - Tracking Powder Manager: Fabrice Derullieux	Woodbine, MD.
Apl. 06	5:30 - 9:00 pm	Monthly Meeting Topic: Finalize Calendar Refreshments: Jim Baird.	College Park Airport
Apl. 07	1:00 - 2:00 pm	Goddard Public Launch	Greenbelt, MD.
Apl. 08	Various	Total Solar Eclipse	Texas to Maine
Apl. 12	6:00 - 7:00 pm	Wood Acres Space Night	Bethesda, MD.
Apl. 20	9:00am - 3:00pm	Krimgold Park Launch Theme - Rocket Run Managers: The Jacksons.	Woodbine, MD.
Apl. 21	12:00 - 4:00 pm	Rockville Science Day	Rockville, MD.
May 04	5:30 - 9:00 pm	Monthly Meeting Topic: Youth Engagement. Refreshments: Sally Cook/DJ Emmanuel	College Park Airport
May 05	1:00 - 2:00 pm	Goddard Public Launch	Greenbelt, MD.
May 18	9:00am - 3:00pm	Krimgold Park Launch Theme - Spot Landing Manager: Jim Baird.	Woodbine, MD.
June 01	5:30 - 9:00 pm	Monthly Meeting Topic: Level 1 Qualification Refreshments: James Miers	College Park Airport
June 02	1:00 - 2:00 pm	Goddard Public Launch	Greenbelt, MD.
June 22	9:00am - 3:00pm	Krimgold Park Launch Theme - Red, White & Blue Manager: Alex Mankevich	Woodbine, MD.

Date(s)	Times:	Event:	Location:
July 06	5:30 - 9:00 pm	Monthly Meeting Topic: NARHAMS Stats Refreshments: All - Summer Picnic	College Park Airport
July 07	1:00 - 2:00 pm	Goddard Public Launch	Greenbelt, MD.
July 20	9:00am - 3:00pm	Krimgold Park Launch Theme - Saucers Manager: James Miers	Woodbine, MD.
July 21	12:00 - 4:00 pm	Goddard Contest:	Greenbelt, MD.
Aug. 03	5:30 - 9:00 pm	Monthly Meeting Topic: General Build Refreshments: The Jacksons	College Park Airport
Aug. 04	1:00 - 2:00 pm	Goddard Public Launch	Greenbelt, MD.
Aug. 17	9:00am - 3:00pm	Krimgold Park Launch Theme - Gliders/Streamers Manager: Alex Mankevich	Woodbine, MD.
Sept. 01	1:00 - 2:00 pm	Goddard Public Launch	Greenbelt, MD.
Sept. 07	5:30 - 9:00 pm	Monthly Meeting Topic: ARC Review Refreshments: Jim Baird	College Park Airport
Sept. 14	6:00 - 9:00pm	International Observe the Moon Night NASA Goddard Visitor Center	Greenbelt, MD.
Sept. 21	9:00am - 3:00pm	Krimgold Park Launch Theme - Helicopters/Spin Manager: Jim Baird	Woodbine, MD.
Oct. 05	5:30 - 9:00 pm	Monthly Meeting Topic: Vertical Landings Refreshments: Sally Cook & DJ Emmanuel	College Park Airport
Oct. 06	1:00 - 2:00 pm	Goddard Public Launch	Greenbelt, MD.
Oct. 19	9:00am - 3:00pm	Krimgold Park Launch Theme - Cold War Battle Manager: Fabrice Derullieux	Woodbine, MD.
Nov. 02	5:30 - 9:00 pm	Monthly Meeting Topic: Planning 2025 Refreshments: Pizza Party	College Park Airport
Nov. 03	1:00 - 2:00 pm	Goddard Public Launch	Greenbelt, MD.
Nov. 16	9:00am - 3:00pm	Krimgold Park Launch Theme - Fixed Altitude Manager: TBD	Woodbine, MD.
Dec. 01	1:00 - 2:00 pm	Goddard Public Launch	Greenbelt, MD.
Dec. 07	5:30 - 9:00 pm	Monthly Meeting Topic: Holiday Party Refreshments: Everybody does Pot Luck	Greenbelt, MD.
Dec. 21	9:00am - 3:00pm	Krimgold Park Launch Theme - Paratroopers Manager: TBD	Woodbine, MD.



Goddard Championship Series



What: A year-long opportunity (contest) to achieve the longest flight duration of a model rocket using a 1/2 A6-2 model rocket motor and a streamer recovery device.

When: Year-Long Leaderboard. Season starts on the First Sunday of August to the First Sunday of July. The Goddard Championship Series winners are to be announced during the Goddard Contest on the third Sunday of July.

For: This event is open to the public and intended as an introduction to the National Association of Rocketry style of NRC competition. No NAR membership and no participation fee are required.

Where: All flights are done during the Goddard Rocket Launch on the first Sunday of every month at the NASA Goddard Visitor Center in Greenbelt, MD.

Event: 1/2 A Streamer Duration using a 18mm diameter motor (1/2 A6-2).

Registration: Contestants can register on any First Sunday launch for the Season at 12:30 pm before the normal Launch.

Awards: First, second and third for Junior and Senior divisions will be awarded a trophy.

Why: NARHAMS feels that competition is a great catalyst for rocketeers to improve their understanding of rocketry and increase their skills. We also hope this contest serves as a gateway for the contestant to explore rocketry competition further.

Rules and other information:

1) Each contestant or team must have their own rocket. No sharing of rockets is allowed (unless they are flying as a team). It is OK for a contestant to use more than one rocket.

[Click below for additional resources on a Streamer Duration event:](https://www.nar.org/contest-flying/competition-guide/duration-events/streamer-duration/)

<https://www.nar.org/contest-flying/competition-guide/duration-events/streamer-duration/>

Rules and other information - continued:

2) Rocket criteria: (A Wizard or Viking is a good model)

- a) Max Weight: 2.1 oz. (Maximum weight for a 1/2 A motor)
- b) Length: Between 10 in. and 24 in.
- c) Motor: 18mm diameter
- d) Fins: At least three (3) fins, with a length of at least 1.2 inches (measured from root to tip).
- e) Recovery: A single streamer with a loose end.
- f) The rocket must have the contestant's or team's name on the rocket in permanent ink.

3) Event Details: 1/2 A6-2 Streamer Duration - The rocket is timed from first movement to when the rocket stops its descent, hangs on an obstruction or goes out of sight. The rocket must stay in one piece including the motor.

- a) The rocket is disqualified if:
 - i) The flight is considered unsafe by the Range Safety Officer (RSO)
 - ii) The rocket comes down in more than one piece
 - iii) The motor is something other than an Estes 1/2 A6-2
 - iv) The rocket is found to be shared among multiple contestants

4) Timing will be performed by the Goddard Range Crew. The RSO has final say in determining a qualified flight.

5) The rocket must pass a pre-flight safety check and the contestant must alert the check-in officer that it is a contest flight.

6) Contestants 15 years or younger will fly in the Junior Division, contestants 16 years and older will fly in the Senior Division. Teams fly in the Division of the oldest member.

7) Rockets must fly during the normal Goddard First Sunday launch. This is a Leaderboard style event where the best score across the entire year determines the winner(s).

8) Registration for the Championship must be done before the launch. A 15 minutes contest orientation will be done prior to each launch.

9) Up to two (2) flights per Goddard Sunday launch will be allowed per contestant.

10) A contest flight card will be used to track all flights for the year and kept with the Check-In Station.

11) The contest champion will be determined by the longest single flight. Multiple flights are NOT cumulative, but will increase the flyer's chance for a longer flight and increase their understanding of the contest.

12) Decisions of the Contest Director, or RSO if the Contest Director is not on the field, are final.

