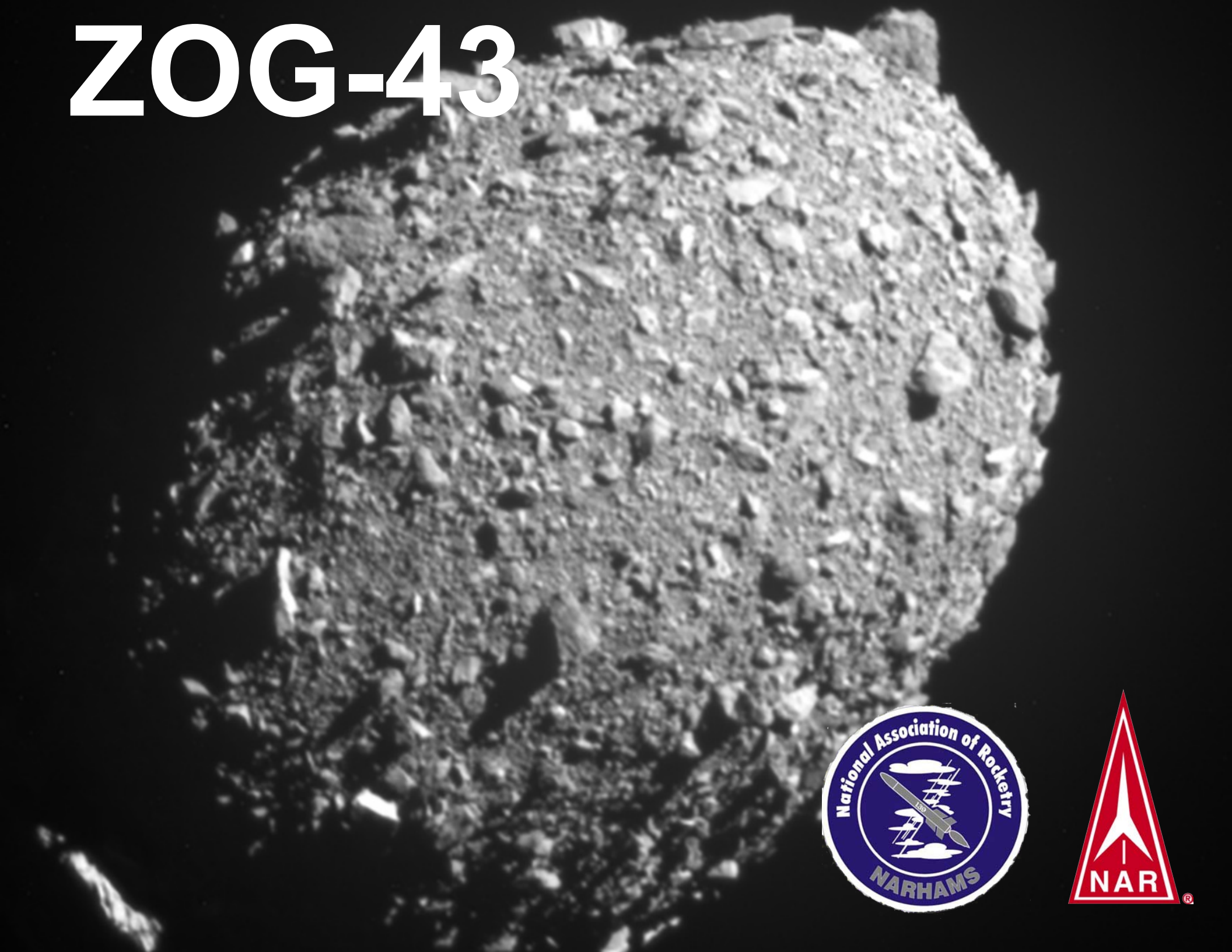
ZOG-43



Zog-43
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September/October 2022
Official NARHAMS Newsletter
Editor: Sarah Jackson

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 and at Old National Pike Regional park near Mt. Airy, 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- September/October 2022
Sarah Jackson, NAR 101372

Hello NARHAMSters!

This edition of the ZOG-43 features a decent amount of night launch material. We have pictures from the actual night launch in our launch reports. Two members also sent in pictures and descriptions of their night launch models. We have the John McCoy Night Launch every year. You can use the pictures and descriptions to come up with creative ideas for your future night launch models. I would love to see them!

We have another build article from John Brohm, and a summer trip report from me.

Next up, you'll be attending the Holiday Party Potluck and Raffle. I will not see you there, but I do hope you send in pictures and descriptions of how much fun you had at the raffle. Good luck!

Happy Flying!

Sarah

For questions, answers, opinions, files, photos, and more NARHAMS, join the NARHAMS Groups.io. Also checkout the Facebook group, and of course, the website at narhams.org.

Front: Asteroid moonlet Dimorphos as seen by the DART spacecraft 11 seconds before impact. DART's onboard DRACO imager captured this image from a distance of 42 miles (68 kilometers). This image was the last to contain all of Dimorphos in the field of view. Dimorphos is roughly 525 feet (160 meters) in length. *Credits: NASA/Johns Hopkins APL*

Back: September Night Launch range set up. *Photo Alex Mankevich*

ZOG ROYAL COURT
(NARHAMS OFFICERS)

ZOG (President) Alex Mankevich

VICE ZOG (Vice-President) Alan Williams

COLLECTOR OF THE ROYAL TAXES (Treasurer) Ed Jackson

KEEPER OF THE HOLY WORDS (Secretary) Brian Beard

COURT JESTER (Section Advisor) Jim Miers

REMINDER

Approval to launch model rockets within Frederick or Carroll County Parks must be obtained from the respective Division of Parks and Recreation in advance of the launch. Permission to launch at on Parks property is done through a permit process. Requests approved by the Parks are contingent upon factors such as the day of the launch, the location within the park, the number of expected participants and the nature of the equipment and supplies that are brought onto the launch range. In addition, model rocket launches occurring on Parks property are required to secure an insurance policy for the event.

Therefore, individuals launching model rockets from Parks property without a permit will violate a number of Parks restrictions and prohibitions. Please be aware that the NARHAMS permit will not cover flight activities unless you are flying with the club at one of its scheduled launches.

Powered/Remote Controlled Model Device Regulations (From Frederick County's Website)

Purpose: To protect park patrons from injury and/or property damage, that may be caused by operating an electric powered/remote controlled model: airplanes, gliders, helicopters, drones, cars, or boats in, over, or through Frederick County park property.

Procedure:
No person may operate any powered/remote controlled model: airplanes, gliders, helicopters, drones, cars, or boats in, over, or through a Frederick County Park, except for the following conditions:

Must be approved in advance by the Frederick County Parks and Recreation Division
Submit a Special Request Form
All requests must be limited to a specific day and time with the option of a rain or alternate date.
Note: Blanket requests for multiple dates will not be accepted so as to accommodate other park patrons or activities.Powered/remote controlled devices cannot be operated where non-participating park patrons are within one hundred feet of the device.
It is prohibited to fly any airborne device at night, flying over park patrons, or sporting events within the park.
All powered/remote controlled devices operations MUST be kept within Line of Sight (LOS), failure to do so is an FAA violation.
Powered/remote controlled devices must be launched from pre-designated areas within an approved park.
Powered/remote controlled devices cannot be launched in the direction of any occupied dwelling.
Powered/remote controlled devices cannot be launched when wind speeds exceed 19 mph.Powered/remote controlled devices landing offsite must not be retrieved without surrounding land owners permission.
Powered/remote controlled devices are limited to electric/battery power only.
Failure to abide by any or all of these regulations may result in the loss of launch privileges.The Parks and Recreation Division reserve the right to revoke a Special Request Permit to use a powered/remote controlled device for any reason if deemed in the best interest of the facility and Frederick County. Rules are subject to revision or change at any time.
Individuals wishing to operate a powered/remote controlled device must sign an approved release form, which agrees to hold Frederick County harmless.

Upcoming events

December 3rd	5:00-9:00 PM	Holiday Pot Luck Dinner and Raffle Refreshments: Everyone	Greenbelt Fire Department (ADA accessible), Greenbelt, MD
December 4th	1:00-2:00 PM	Goddard Public Launch	Greenbelt, MD
December 17th	12:00-4:00 PM	Sport Launch Theme: Open	Mt. Airy, MD

Meeting Highlights

At September's meeting (9/10/22), we had our annual election of officers…(see names at beginning of newsletter), and Ed Jackson demonstrated and tested launch-range lights for our evening activities.

Lights have three color modes; great for evening viewing and for range breakdown purposes.
And…

DJ brought the club dozens of unclaimed models from the Goddard launches, We plan to give them to youngsters who wish to participate in our public launches.
And…

Alex Mankevich brought six Estes Mosquitoes for next year's Rocket Run from the John McCoy collection. ***Reported by Ed Pearson***

Launch reports

Goddard Launch Report September 2022

By: Alex Mankevich – NARHAMS President

With apologies to Forrest Gump; holiday weekend launches at the Goddard Visitor Center are like a box of chocolate – you never know what you're going to get.

It was somewhat slow during the Sunday September 4, 2022 model rocket launch at the Goddard Visitor Center. There was a nice crowd at the VC, but there were far fewer modelers than usual. The weather was still hot and humid, and any thoughts of enjoying a cool autumn day were quickly dispelled.

Above: Michael Cochran puts model on rod while Tom Henderson hooks up clips on his parts model which Ed Jackson named 'delta' from its triangular fins. *Photo: Ed Pearson*

We are able to get by with a reduced range crew thanks to the slow holiday weekend turnout. Sarah Jackson was able to manage the safety check-in all by her lonesome. Mike Cochran and Thomas Henderson sufficiently handled the launch pad assistance. Thomas valiantly did the recovery pole duties. Alex Mankevich and Ole Ed Pearson addressed the model rocket build assistance. Ed Jackson did a fine job to keep up the launch excitement level with his color commentary. Sally Cook got busy with some photography of the day's events and its participants. There were no scout groups or other large groups in attendance. Another sign of slow activity was that Julie Saba and Shirley Ramos only awarded ten First Time Flyer certificates from the information desk inside the visitor center.

Left: Alex Mankevich (left) and Ole Ed Pearson (right) are looking relaxed and unstressed due to the slow day of launch activity. *Photo: Sally Cook*

Above: Ed Jackson doing launch and narration duty. Michael Cochran looks on. *Photo: Ed Pearson*

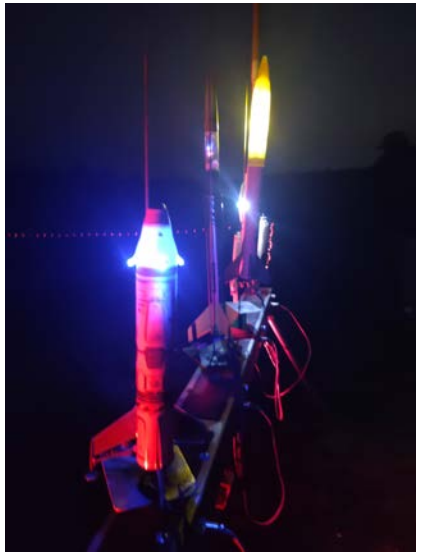
Since it was a slow day, we decided to give the spectators a demonstration thrill. DJ Emmanuel brought along his scale model of the new SLS moon rocket and Alex brought his scale model of an Atlas V. The real NASA SLS is attempting to get itself off the ground for an uncrewed mission around the moon and back. The Atlas V rocket will launch the Joint Polar Satellite System-2 (JPSS-2) mission in November. The JPSS-2 mission is the theme of the new Orbits Interweave sculpture in the Rocket Garden. DJ's SLS flew on a C6-3 motor and Alex's Atlas V flew on a B4-4 motor. Both flights were spectacular and both models were successfully recovered.

We tallied up about eight igniter wire misfires and DJ recovered about twelve rockets that went over the fence.

Left: We provided a demonstration launch of two real rockets that are currently in the news. At left is a scale model of NASA's SLS moon rocket provided by DJ Emmanuel (seen in the background). At right is a scale model of ULA's Delta V rocket provided by Alex Mankevich. Both models flew spectacularly to the delight of the crowd. *Photo: Alex Mankevich*

John McCoy Night Launch

In September, we launched night rockets. Look for specifics on some of the launch vehicles later in the build section of this newsletter.



Clockwise from top left: Ed Jackson's Starship Enterprise. *Photo: Eric & Thomas Henderson.*

Loading up the first rack. *Photo: Eric & Thomas Henderson.*

John McCoy watched over the launch. *Photo: Sarah Jackson.*

Twilight Launch. *Photo: Eric & Thomas Henderson.*

The Mav and others ready to launch. *Photo: Sarah Jackson.*

Ed Jackson's Retro Rebel on a QJet. *Photo: Eric & Thomas Henderson.*

Night rockets ready! *Photo: Sarah Jackson*

September Day Launch at Mt. Airy

Clockwise from top left: Jim Filler drove from Richmond to be our launch manager. *Photo: Alex Mankevich*

Mike Kelley's Cherokee. *Photo: Alex Mankevich*

Ed Jackson's ill-fated triple body tube night flyer. *Photo: Sarah Jackson*

Ed Jackson flew an A-boost glider as part of this year's NRC. The glider is decades old and built by dad Bill Jackson. *Photo: Ed Pearson*

Super Orbital Transport. Photo: *Eric & Thomas Henderson*

Spinner rocket on an ~F24. Photo: *Eric & Thomas Henderson*

October 2022 Launch (Where the Wind Blows)

By Edward Jackson

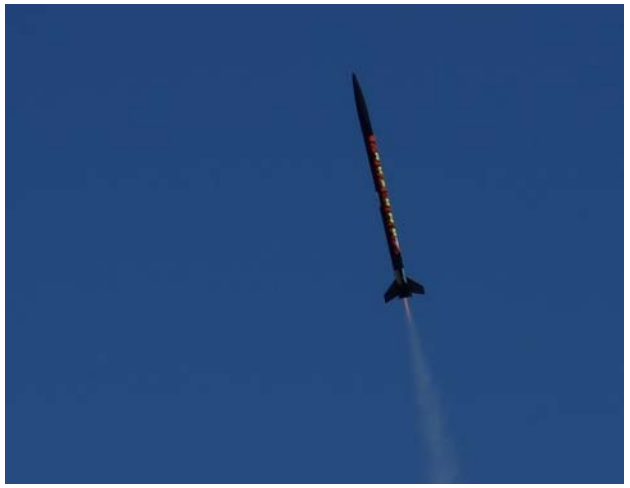
Above: Ed Jackson runs the range while Alex Mankevich checks in Tom Henderson's rocket. *Photo: Eric & Thomas Henderson*

The October launch was met with a very comfortable temperature of the low 70s, sunny and … breezy. The sun and temperature stayed constant while the breeze turned to enough of a wind later in the day to force us to take the tent down. Most flyers kept their rocket and engine choice to the low side to keep the flight from going too high. The brave souls who chose not to heed the check in desk's warning on the weather were many times rewarded with a long walk to the upper field or fishing their rocket from the rocket eating trees.

Left: A Saturn V. *Photo: Eric & Thomas Henderson*

The theme for this launch was the Holi festival on Diwali, also known as tracking powder day. Many flyers took packets of powder to experiment with a splash of color at the ejection charge. Some flyers even turned it into a science experiment seeing how the quantity of power affected the flight of their rocket. Brian Beard had the most impressive power display using his big Tuna rocket, Brian creating a sizable, colorful cloud then followed it up with a truly impressive 100 foot streamer deployment.

Despite the breezy conditions we had a fair turn out of both regulars and newbies. Many of our regulars flew a large variety of rockets with UFO style rockets proving very popular on the high wind day. One new rocketeer was not to be deterred having only one rocket and flew their Amazon a whopping 9 times. With an average of 600 feet per flight the rocket probably traveled a mile during the launch. Bill Stec took the medal for the most launches at 15 while Mike Kelly once again launched the largest rocket of the day with his G-Force on a G53. In all we launched just shy of 100 rockets with 98 total Flights and burned the equivalent of a J motor (calculation using simple motor increments)



Above: The well traveled Amazon. *Photo: Eric & Thomas Henderson*

Many thanks to the many NARHAMS members who helped setup, break down and manned the Check\RSO tables during this launch.

Right: Mike Kelley's G-Force on a G53-FJ. *Photo: Eric & Thomas Henderson*

Carl McLawhorn Memorial Flyoff X- Oct 22-23

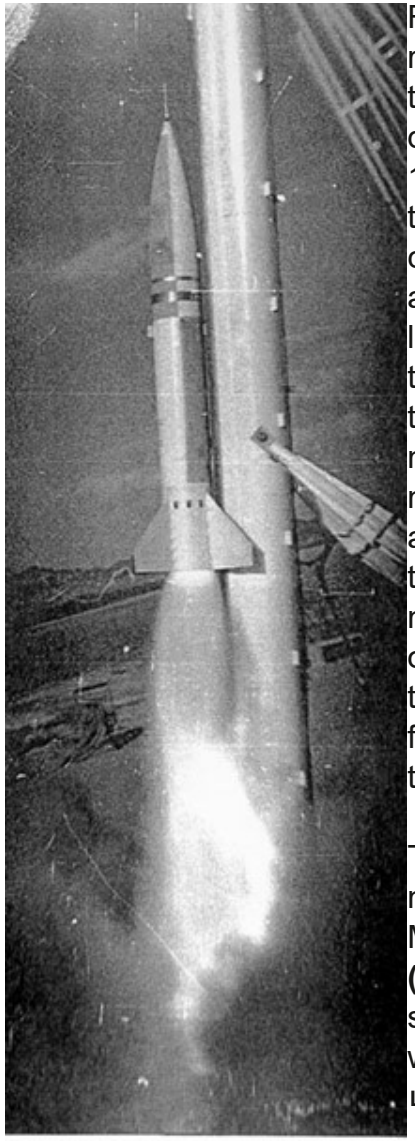
At this event, rocketeers flew contest flights for:
1/4A Parachute Duration
A Boost Glider
A Payload
E Egg Loft Duration
Classic Model

Several NARHAMSters attended, including Jim Filler, Jennifer Ash, and Don Carson. *All photos provided by Glenn Feveryear.*

Building Techniques

Building the Estes Doorknob

By John Brohm, NAR #78048



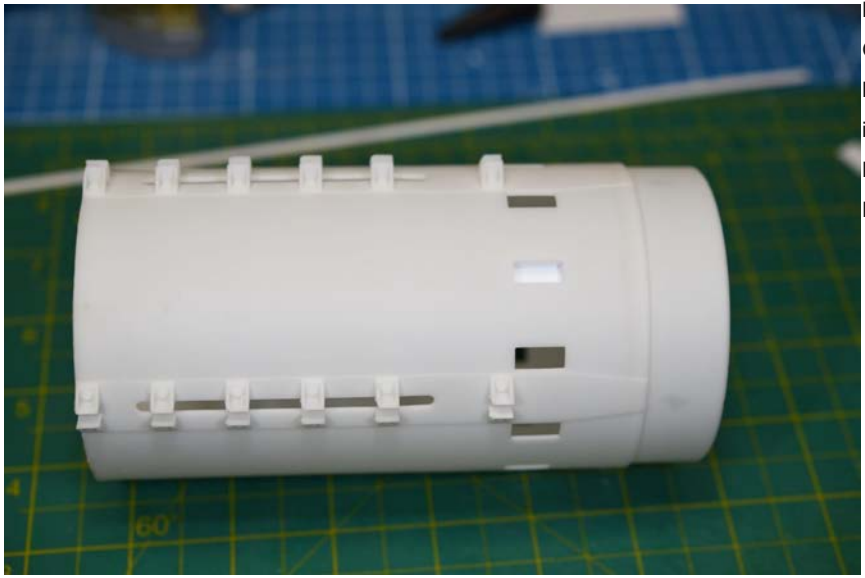
Recently, Estes developed and released a sport scale kit version of the Doorknob **(Ref 1)**, a prototype developed by Sandia Labs in the late 1950's. The prototype's purpose was to serve as a test vehicle that would carry instrumentation into the upper atmosphere to measure radiation levels following high altitude nuclear test explosions. Estes' kit is based on their 3" PSII airframe tubing, which makes for a nice sized sport scale model. Overall, it's quite a complete and high-quality kit, and built out of the box the kit produces a robust model capable of flying on a variety of 29 mm motors. I've had one of these kits lounging about in my shop for a while now, and so I thought I'd take a shot at it.

To supplement my build, I elected to make use of Mike Nowak's/Galactic Manufacturing's 3D printed fin can **(Ref 3)**. Incorporating this part brings some additional detail into the model, with the kit's faux fin attachment bracket decals being replaced by actual 3D fin mounting brackets. The fin can also includes twelve openings intended to represent the motor mounting bolt pockets that one sees in the prototype photo.

Left: Sandia Labs Doorknob *(Ref 2)*

The kit provides balsa fins, the leading edges of which can be rounded for just regular sport flying, or carefully sanded to replicate the leading-edge wedge found on the prototype fins. I discarded the kit fins in favor of built-up versions, knowing that in my case any attempt on my part to sand this tapered leading edge wedge feature would only gift me with disappointment. So built up fins it was.

Let's start with that Galactic Manufacturing fin can. Being resin-printed, the part comes almost ready to prime, needing just a bit of careful surface sanding with a medium grit to remove any remaining printing process artifacts. The following photo shows the part, and one can see I've also added a Styrene box to enclose one of the fin can mounting pockets, as per the prototype.



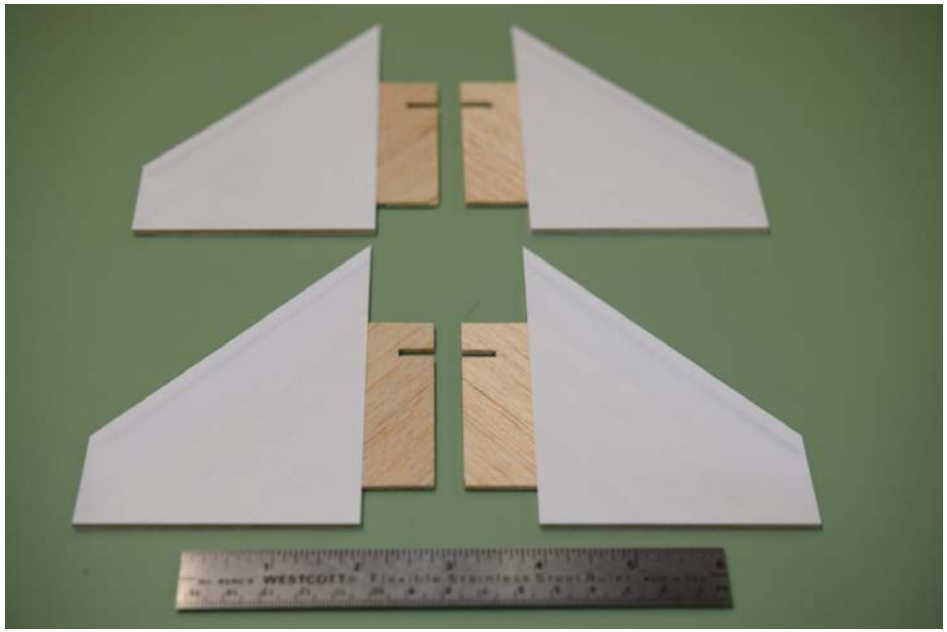
Left: Galactic Manufacturing Doorknob Fin Can

The fin can mounting pockets are crafted from pieces of sheet Styrene, as seen in the next photo.

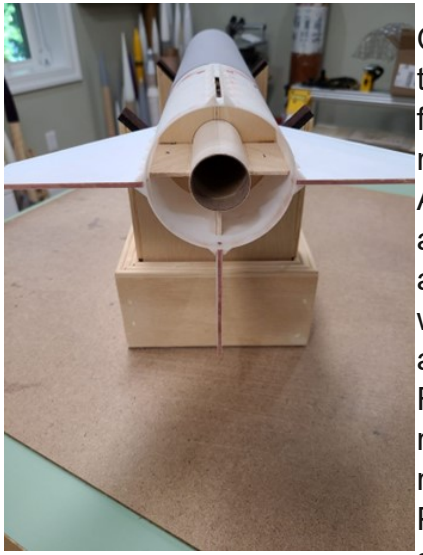
Above: Fin Can Mounting Pockets

Once crafted, the twelve pockets are glued in place inside the fin can with careful dashes of medium CA. I found CA accelerator to be a big help with this process.
For fins I started with appropriately sized 3/32” thick balsa fin cores which were then faced with 0.010” sheet Styrene. I made sure to size the cores so that the leading edges of the Styrene faces could be closed to form the leading edge wedge found on the prototype fins.

Next, I worked up the motor mount, carefully positioning Galactic Manufacturing’s 1/8” ply forward and mid centering rings in the correct locations. I left the aft centering off until I had the fins installed and internally filleted. The internal fillets stiffened these lightweight composite fins considerably.



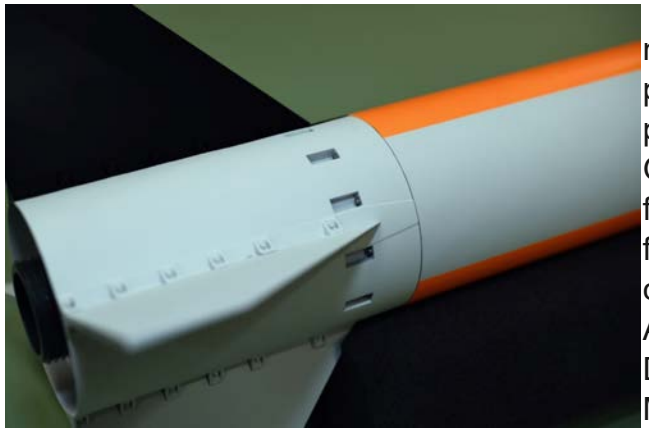
Above: Doorknob Built Up Fin Set



Above: Fin Dry Fit

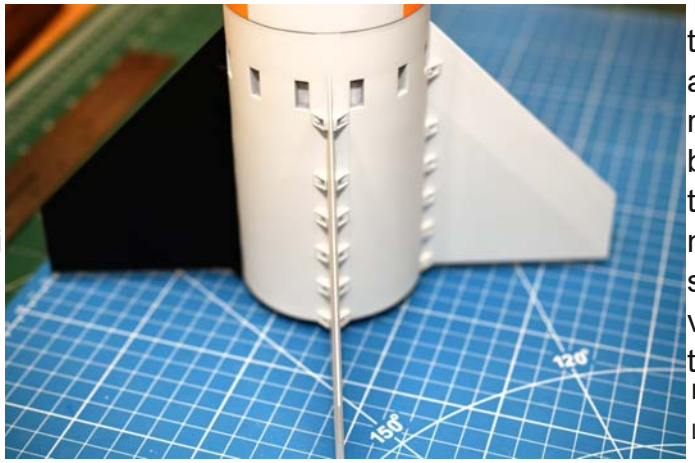
Once the internal fillets had cured, the aft centering ring was installed, followed by the 29 mm motor retainer.
A Kevlar shock cord anchor was added to the forward centering ring, and with this the fin can assembly was ready for finishing. The fin can assembly was primed with Rustoleum Automotive Primer, with remaining surface blemishes resolved with Bondo Glazing & Spot Putty. Once satisfied with the final surface, the assembly was sprayed with Dupli-Color Perfect Match Polar/ Arctic White lacquer. The black fin was realized with Dupli-Color Perfect

Match Polar/Arctic White lacquer. The black fin was realized with Dupli-Color Perfect Match Universal Black, with the whole assembly flat-coated with Testors Dullcote once the lacquer paint had cured. I then added a bolt head detail to each fin can mounting pocket to complete the assembly. The built-up fins delivered sharp leading edges, just what we would expect to see on the prototype.



Above: Fin Can Mounting Bolts

The airframe and nose were finished per our usual practice, with Bondo Glazing & Spot Putty filling the spirals followed by several coats of Rustoleum Automotive Primer. Dupli-Color Perfect Match Polar/Artic White provided the base coat, and the assembly was then masked to spray Tamiya Fluorescent Orange for the roll pattern. I had to mask the airframe assembly in successive steps to accommodate the shift in the roll pattern going from airframe to nose. Once the paint had cured, the assembly was over-sprayed with Testors Dullcote.



Left: Built Up Fin Leading Edge

The kit provides two mylar self-adhesive strips to represent the bare metal bands that encircle the nstrumentation section of the vehicle, and these too were applied.

Left: Instrumentation Section Bands

With this, the airframe was mated to the fin can, putting us in position to take a completed model photo.

Below: Completed Estes Doorknob

As can be seen in the photo, I eschewed the kit's black airframe joint decals, as I felt they were too wide to realistically represent this feature.

And there you have it, a semi-scale/Sport Scale Doorknob build. I found the Doorknob to be a fun, quick build that, with a just a bit of detailing, provided quite a nice stand-off scale result. A precision scale build is entirely possible with this kit should one choose to make the effort. Best wishes with your Doorknob build!

==

Ref 1: Pro Series II™ Doorknob - Estes Rockets

Ref 2: Gunter's Space Page https://space.skyrocket.de/doc_lau/doorknob-1.htm

Ref 3: Doorknob Scale Fin Can Scale Upgrade for Estes Kit| Galactic Manufacturing

Night Launch Models

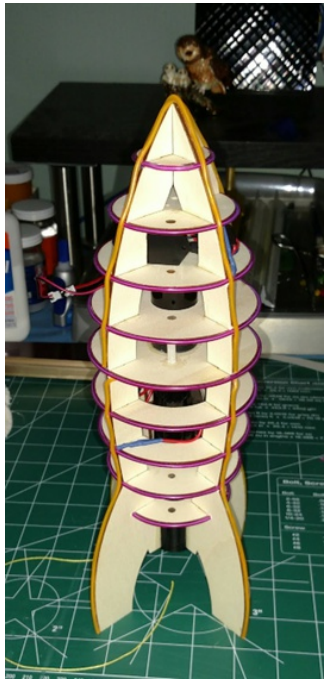
Alex Mankevich's Flashing Lights

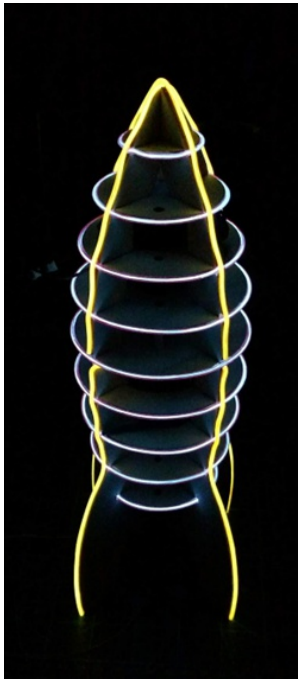
This model features two “Light Sticks” available at fine Dollar Stores everywhere. The Light Stick has three different modes for its flash pattern. The black electrical tape is an additional measure used to make sure that the six 357 cell batteries stay in place during the entire flight.

Edward Jackson's Retro Rebel Kit from Rocketarium

Lighting: Custom EL two color wire with a single high efficiency Driver transformer powered by a one 3V Lipo battery.

Other Notes: Power and transformer in Nose, Lower half goes dark when model separates. (Broken Shock cord became an issue last launch)

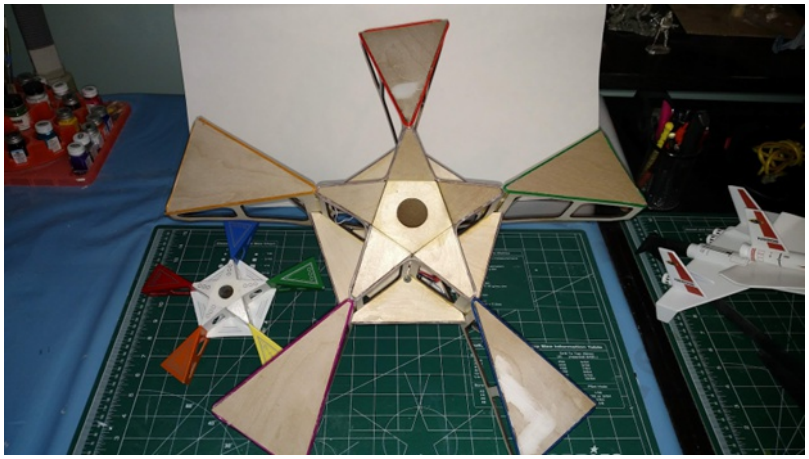


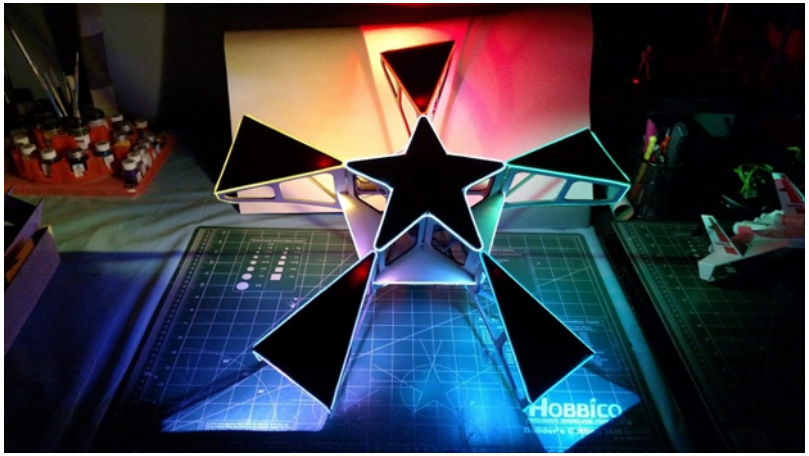


Ed Jackson's Upscaled Estes Quintastar (Quinta-Super-Star)

Lighting: Custom EL Wire and Bright LEDs. Two EL Drivers powered by a 3V Lipo Battery each. EL wire is on the outline of the models, bright LED are color matched using the sheathing from the EL are mounted underneath used to create the glow.

Other Notes: This model without lighting does not require a recovery but the extra weight of the lighting forces a parachute to be added.





Alex Mankevich's Tubular White

A white foam core is at the heart of this model. A plastic rod wrapped in white LED lights powered by cell batteries had been inserted inside the foam. The white nose cone is sufficiently translucent to pass a diffused white light. The light mode is continuous.

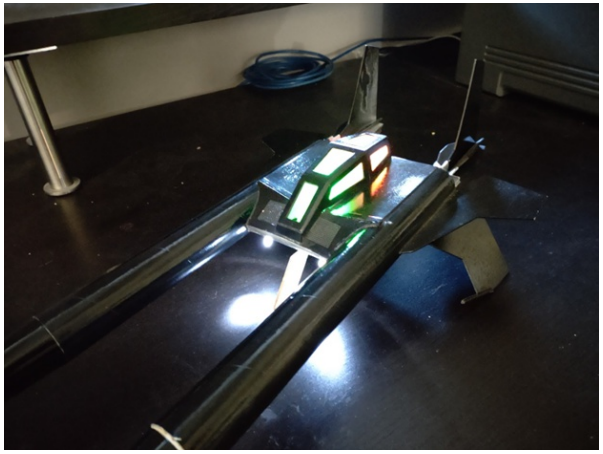
Alex Mankevich's Tri Lights

This model is a tube finned design to which three pillars of yellow plastic tubes had been attached. Under the black nose cones are white lights powered by cell batteries. The yellow plastic tubes are sufficiently translucent to pass a bright yellow light. The light mode is continuous.

Ed Jackson's Super BlackHawk (Upscale of OOP Estes Blackhawk)

Lighting: A minipro Arduino is used to sequence the following lights, two sets of 8 red LEDs in the “engine” set in a circular chase, 2 tri colored LED set to randomly strobe different colors to set in the clear cockpit, 2 sets of brite white leds as landing lights. Runs on a single 3v Lipo battery.

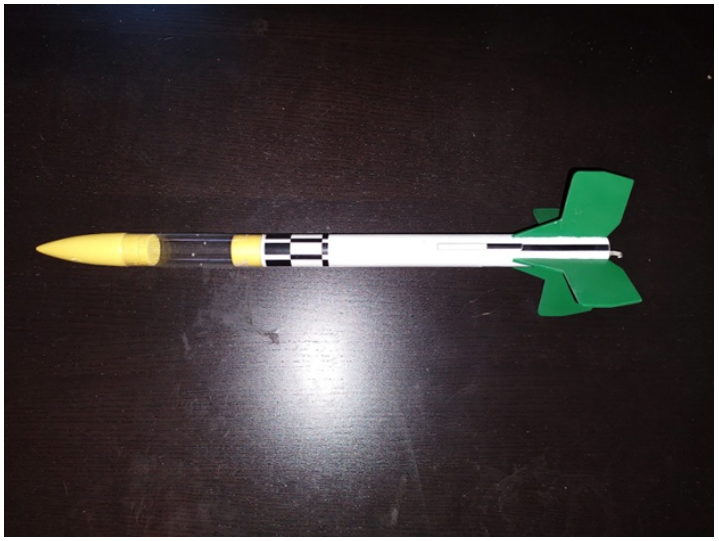
Other notes: Battery and Electronics are housed in the non-recover tube which balances the weight of the rocket better than the original design.

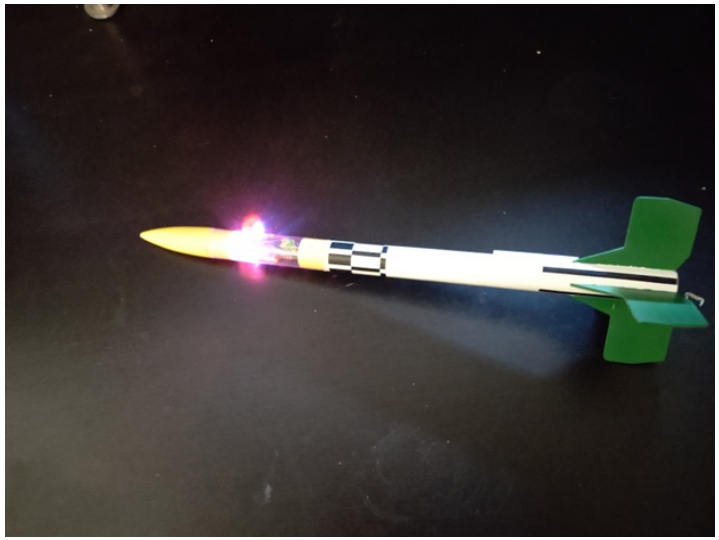


Ed Jackson's Estes Payloader

Lighting: A minipro Arduino is used to sequence 2 tri colored LED set to randomly strobe different colors.

Other notes: Uses the same Arduino program as the Super Blackhawks cockpit.





Alex Mankevich's Red Eye

True to its name, Red Eye is a rectangular bar of red LED lights that is designed to be attached to the handle bar of a bicycle. It has a flash mode and a continuous light mode.

Ed Jackson's Estes NCC1701 USS Enterprise (A little worse for wear)

Lighting: Four Bright LEDs placed in the traditional aircraft navigation locations on the saucer. A single tiny 3V lipo battery powers the lights.

Other notes: Additional weight added to the nose for stability.

What we did this summer

By Sarah Jackson

Your treasurer and editor took a trip to Dayton, OH over the summer. What's in Dayton, you may ask? Why, nothing other than the National Museum of the US Air Force of course. But I bet you already knew that. We spent one and a half days exploring the humongous four hangars full of history and wonder. We also met your new Secretary, Brian Beard, in the Research and Development Gallery. Small world, eh?

The first hangar included an exhibit on early flight, so the Wright brothers were obviously mentioned. However, College Park Airport and a young Hap Arnold were shown, too. Any NARHAMSter who has attended an in person meeting knows where the College Park Airport is. They also know that endearing yet dingy room in the Hap Arnold Building where we hold our meetings. (I'm not being mean, just realistic, about our room. It has its own charm!) The College Park Airport was set up in 1909. It's intended use was as a military demonstration site for the Wright brothers' planes. This makes it the world's oldest continuously operating airport. This is quite the place for NARHAMS to have their meetings. But who is Hap Arnold?

I didn't really know until I started writing this article. Henry Harley Arnold was a commanding general of the Army Air Forces (the predecessor to the Air Force) during World War II. He is the only person to hold the position of General of the Air Force, the only general to hold a five-star rank in the Air Force, and the only general to hold five-star ranks in two branches of military service (Air Force and Army). He started his aviation career at the Wright brothers' aviation school (in Dayton OH). After finishing flight school, he was sent to the College Park Airport to become one of the army's first flight instructors. He made many an aeronautical record while stationed there. Hap is obviously his nickname, as he always looked so happy. Pretty cool, guy all around.

The main reason we went to Dayton was to see Ed's favorite plane, the North American XB-70 Valkyrie. She was beautiful. Two were made, but only one survives. The intention was to be a high speed bomber (flying Mach 3), but other cheaper options (SAMs, ICBMs) turned out to be more popular.

Other notable exhibits were the presidential plane collection, the McDonnell XF-85 Goblin (so cute!), Apollo 15 and lots of cargo planes. It was a lot of information and a lot of things to see.