

ZOG-43



Zog-43
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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.

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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- November/December 2022 Sarah Jackson, NAR 101372

Hello NARHAMSters!

This month I learned how to create shapes with text boxes. Check out the caption on page 5! And how to link text frames so I don't have to copy from one text frame to another. Awesome! One of my next goals is to figure out how to place photos more evenly arranged. Right now the photos are pretty haphazardly placed where I can fit them, but I would like to get a more uniform look. We shall see.

Note the upcoming events on the calendar. We have two outreach activities if you'd like to volunteer: Pax River STEAM day and Rockville Science Day. We'll have a build activity for Rockville Science Day, followed by flying the freshly built Alpha IIIs. We could use a few hands who are good with exacto knives, glue, and prepping rockets for flight. Pax River STEAM day will be mostly model show offs and general rocketry talking. If you have fun or unique models to show, or time to tell to give out some good model rocketry info, feel free to join us! Check with Alex Mankevich for details.

And! The SLS flew. It actually flew. Read George Crombie's narration of watching it lift off.

Happy Flying!

For questions, answers, opinions, files, photos, and more NARHAMS, join the [NARHAMS Groups.io](http://narhams.org). Also checkout the [Facebook](#) group, and of course, the website at narhams.org.

Front: What's up doc? Rocketeers and NARHAMSters watch a rocket launch at the November Goddard launch. *Photo: Ed Pearson*

Back: NASA's Space Launch System rocket carrying the Orion spacecraft launches on the Artemis I flight test, Wednesday, Nov. 16, 2022, from Launch Complex 39B at NASA's Kennedy Space Center in Florida. SLS and Orion launched at 1:47am ET from Launch Pad 39B at the Kennedy Space Center. *Photo: Bill Ingalls/NASA*

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

The NARHAMS award

For Rocketeers Of Greatness (FROG)

Presented to

TOM BEACH

As the editor of Sport Rocketry since 1996, Tom has devoted uncounted hours to producing hobby rocketry's only magazine. He has overseen the transition from a black-and-white format to full color and doubled the size of the magazine. He has kept Sport Rocketry's content relevant to its readers, adding articles on high power rocketry, national and international events, and technical content.

He has personally authored more than 200 articles including kit reviews, book reviews, event coverage, and an Editor's Note for every issue. His plans for the Little Joe II and Gemini-Titan II are considered to be among the finest available.

Tom is deserving of this award for his many accomplishments and his dedication to the rocketry hobby. He continues to "Pay Forward" as editor, Section Advisor, and R&D judge. His tireless efforts and outstanding accomplishments set an example to all rocketeers.

Presented 2022 by a grateful club,
NARHAMS, NAR Section #139

The NARHAMS award

For Rocketeers Of Greatness (FROG)

Presented to

ED and SARAH JACKSON

Ed and Sarah Jackson have been indispensable as the backbone of NARHAMS' continuing operations. They frequently serve as launch managers and perform equipment transport and launch range set-ups. They perform several outreaches and complete numerous projects which add capability and assets to the Section

During the Covid pandemic, they initiated on-line and paperless formats for our flight cards and park waivers and they were instrumental in setting up the webinar sessions for our monthly meetings

Sarah has served as our Secretary and Safety Check-in Officer at the Goddard launches. Sarah had been our primary liaison with the counties' Parks Departments. She now has serves as Editor of the ZOG-43 newsletter.

Ed serves as our Treasurer and as Firing Officer at the Goddard launches. He designed the give-away items for the Apollo Contest at the 50th anniversary of the first moon landing. Ed instituted both the CafePress site for Section merchandise and our Groups IO website. He usually researches and purchases the new and replacement equipment needed by our Section.

Presented 2022 by a grateful club,
NARHAMS, NAR Section #139

Upcoming events

Date	Time	Event	Location
February 18th	12:00-4:00 PM	Sport Launch Theme: Presidents Lofting Launch Manager: Alex Mankevich	Mt. Airy, MD
March 4th	5:30-9:00 PM	Monthly Meeting Topic: Range Safety, Mosquitos Judging Results Refreshments: Sarah and Ed Jackson	College Park, MD
March 5th	1:00-3:00 PM	Goddard Launch	Greenbelt, MD
March 11th	10:00 AM - 3:00 PM	STEAM Day Outreach	Pax River Naval Air Station
March 18th	12:00-4:00 PM	Sport Launch Theme: open Launch Manager: open	Mt. Airy, MD
April 1st	5:30-9:00 PM	Monthly Meeting Topic: open Refreshments: Jim Baird	College Park, MD
April 2nd	1:00-3:00 PM	Goddard Launch- Rocket Run #1	Greenbelt, MD
April 15th	12:00-4:00 PM	Sport Launch Theme: Rocket Run #2 Launch Manager: Jim Baird	Mt. Airy, MD
April 23rd	12:00-4:00 PM	Rockville Science Day - Montgomery College	Rockville, MD

Launch reports

November Goddard Launch



Left: Scale model of a Mercury Redstone lifts off.
Above: Predethan, a GSFC intern/volunteer helps a mom and daughter get their gold Crayola rocket set up. NARHAMS had five volunteer helpers provided by the Visitor Center.
Below: The waiting line for safety checkout and rail assignments. Staff counted 169 people in attendance. *All photos: Ed Pearson*

Top Left: Herman Hines (L) and Jayden with Jayden's Mongoose—one of several giveaway models NARHAMS provided. Herman and Ole Ed worked together at Goddard in the late 1960s.
Top Right: Range Safety Officer Ed Jackson points to a spectator with the message, "pay attention."
Bottom Left: Head of the checkin line. Brian Beard and Sarah Jackson inspected models, performed minor repairs, gave out rail assignments and formed queue lines for the launch rack.



Bottom Right: Mike Cochran helped with hookups and misfires. Here he reams out a clogged (glue inside) launch lug. *All photos: Ed Pearson*





Top row from left to right: A camouflaged Der Red Max touches down; Bu displays his Estes Hi-Flyer, painted to resemble a road traffic cone. Bu and family haven't been seen at Goddard or Mt Airy since COVID's outbreak; Launch of an Estes Flying Colors model. Visitor Center staff wrote out 37 new-flyer certificates; Club member Mike Ratel brought out a model to fly AND a big old Honest John model to give away. It was added to the center's stash.

Bottom row from left to right: Kurt Erler preps his Blue Origin model inside the Visitor Center. Kurt is the STEM coordinator for Cub Pack 858 of Severna Park, Maryland. The pack was there at Goddard with beaucoup models; A purple Crayola descends. *All photos: Ed Pearson*

November Mt. Airy Launch

Photographed and Narrated by Ed Pearson



Mt Airy Deja Vu- We arrived to November's Mt. Airy launch, and I thought, "Wow, this is impressive. It's cold, here's a lot of people, and I recognize no one!"



Ed Jackson was range safety, firing officer and narrator—just as he does at Goddard. (That's an airplane-like model, powered by a A10-3T).



Then Diane said, "Isn't that Tom?" Sure enough, Tom Henderson walked by with an armful of models.

People queued to load up. At the front of the line was Brian Beard doing safety checks and rail assignments—just as he does at Goddard's launches.

Sarah Jackson later spelled Brian at checkin. Again reprising her role at the Goddard launches.



Doggone. Were we at Goddard? Alex Mankevich, too, reprised his Goddard role, helping folks hook up their models.



Jim Miers positioned near a PA speaker. He helped with misfires and the rack's balky rail-6 position.

Diane noted people really had fun. The children didn't seem to mind the cold (low 40s). Some kids even rolled around on the ground or romped in the winter wheat looking for models.



This photo doesn't do justice to the thigh high winter wheat—more silver colored than amber waves of grain. The wheat was adjacent the launch area. BTW, it seemed spooky seeing returning rocketeers suddenly appear with their models.



Upon reflection, it seemed like Goddard launches deja vu. The kids were not the only ones who enjoyed the flights; am guessing Diane and I are kids, too, in heart.

December Goddard Launch

Notes by Ed Pearson

Alex's presentation today on the Apollo 17 mission was outstanding. I learned a lot. Thank you.

We had 42 flights overall spread over nine racks. The first five racks were full and sparser on the last four.

Here is misfire datum.

Rack 1 had 1 misfire.

Rack 2 had 2 misfires.

Rack 3 had 3 misfires.

Rack 4 had 1 misfire.

Rack 5 had 3 misfires.

Rack 6 (with only 3 models) had 2 misfires.

Rack 7 (with 3 models) had no misfires.

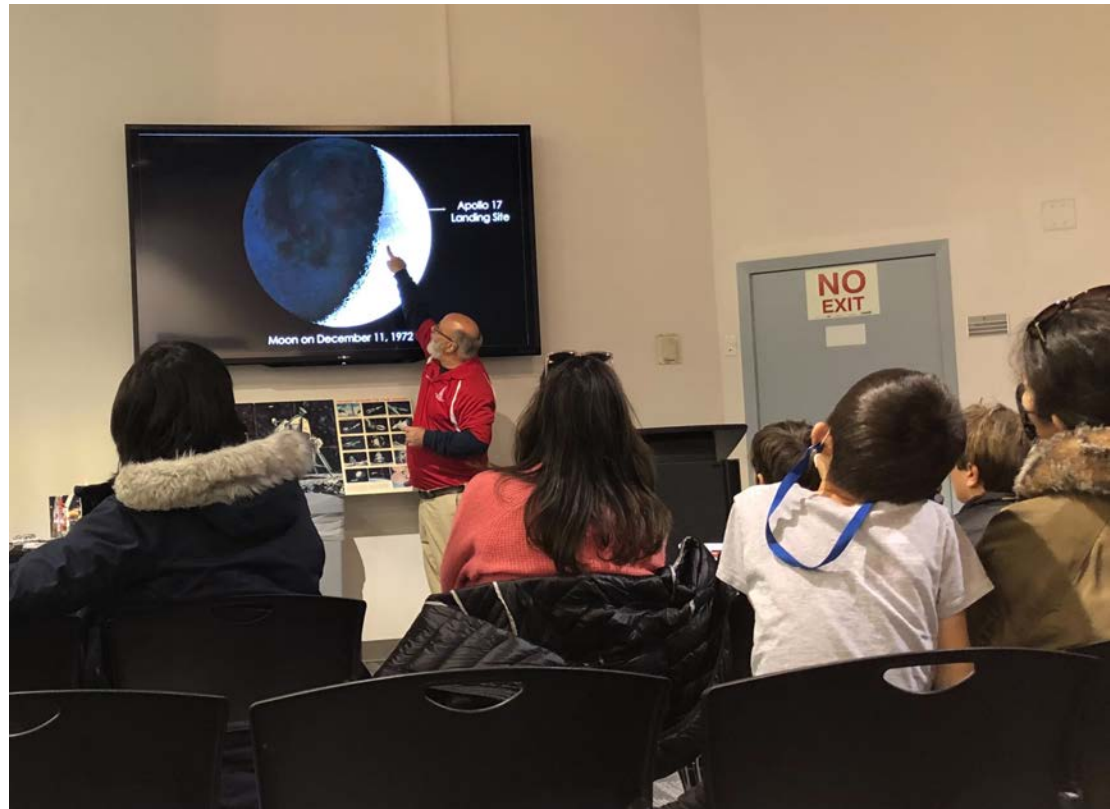
Rack 8 (with 4 models) had 1 misfire.

Rack 9 (with 2 models) had no misfires.

This totals to 13 initial misfires—I believe earlier I counted 12. That's pretty close to 1/3 of initial attempts to launch, were failures.

Am suspecting the misfires were due to a marginally charged battery. The meter showed 9 volts—nominally when I used to do launches, the meter showed 12-14V.

Did note some got off if I held the button down longer than I normally do; i.e., a slow burn ignition. Also noted that when models misfired, the continuity light still glowed as if clips were



Above: Alex Mankevich gives a presentation to NASA Goddard visitors about the Apollo 17 mission. Photo: Ed Pearson

touching on many of the misfires. Don't have a handle on the proportions as I didn't note that detail, so this an anecdotal note.

Recommend the batteries get fully charged ere we try again in Feb.

Did note we had four rockets land in trees. Three we could use the pole to get them back. One could not be recovered.

Did not recall any models going over the fence into the main base proper.

We had one anomaly- a blow through Cato. We had one under-powered model. No safety issue with either flight occurred.

We had four HS helpers. I only caught first names. They were: Gautam, Raphel, Rohaan, and Zarielle.



December 2022 Goddard Report

**Alex Mankevich –
NARHAMS President**

NARHAMS ended the 2022 calendar year First Sunday model rocket launches at the NASA Goddard Visitor Center on a high note. This was a poignant launch in that this was the final launch of the year that saw the return of the launches to Goddard. The launches were suspended starting in April 2020 due to

Left: Adlai Perry had a neat little Conquest of Space model. *Photo: Ed Pearson*

Below: Mike Ratel (left) and Mike Cochran (right) provided the expert pad assistance. Ed Pearson (distance) is seen at the launch controller. *Photo: Alex Mankevich*

the COVID pandemic. The Visitor Center re-opened for launches in June 2022. Since the October 2022 launch was rained out, NARHAMS actually conducted five launches during 2022 for what could be described as a “return to glory”.

The December launch was a “two-fer” day in that we hosted an Apollo 17 commemoration along with the regular First Sunday launch. Apollo 17 was the final lunar landing mission of the Apollo era that had taken place in December 1972. NARHAMS set up two tables that displayed photos, textbooks and models of the Apollo missions. We also displayed the Saturn V liftoff photos of the six Apollo missions that successfully landed on and returned from the moon. Saturn V scale models were provided by Buff Fairchild and Andrew Perry. Mike Ratel produced a paper model of the Saturn V rocket. Jennifer Ash offered her paper model of the Lunar Excursion Module or LEM. Alex Mankevich prepared the color photos of the astronauts on the lunar surface.

At the end of the day Alex did a PowerPoint presentation prepared by Staci L. Tiedeken, the Outreach Coordinator of NASA’s Solar System

Exploration Division. This presentation highlighted the science conducted on the lunar surface and collected by the orbiting Command/Service modules.

We were just a bit short-handed on staff for this launch. Thomas Henderson did the safety check and rail assignment duties. Mike Cochran and Mike Ratel did the pad assistance duties. DJ Emmanuel did the recovery pole operations. Alex helped wherever he was needed.

Let’s see. Did I get everybody? No, wait! I forgot to mention the Firing Officer. This responsibility was magnanimously performed by none other than Ole Ed Pearson. Ole Ed had originally intended to do about 30 minutes of launch control and color commentary. As it turned out, Ole Ed was in rare form and was keen to perform this duty for the entire launch. Having Ole Ed behind the mic meant that we were nostalgically treated to some of his memorable lines from the past such as “rocket on pad two – what will it do?”

Naturally, we had some off-nominal results. Four rockets landed in the trees. Three were able to be retrieved by the recovery pole,



however one could not be recovered. DJ Emmanuel did most of the tree recovery duties. Flights which ended up as mishaps were happily limited. We had one anomaly - a blow-through CATO. We also witnessed one under-powered model. No safety issues had occurred with either flight.

Our tally was 42 rockets launched from nine racks – not all of which were fully occupied by the six rails. We had set up an away pad using the ¼ inch rod for a Saturn V demo launch. One visitor made good use of this as his models were flown using their ¼ inch launch lug.

The next Goddard launch will have to wait until February 2023. The first Sunday in January 2023 is New Year's Day, so the Visitor Center will be closed for that holiday.



Above: Mike Cochran had prepared poster sized images of the six Apollo missions that successfully landed on and returned from the moon. Alex Mankevich proudly poses with the images. *Photo: DJ Emmanuel*



Above: Alex Mankevich discusses the circumstances surrounding the Apollo 17 lunar landing crew finding orange soil during their final EVA. *Photo: Sally Cook*



Above Right: Thomas Henderson (left) performed the safety check-in and launch rail assignments. *Photo: Alex Mankevich*

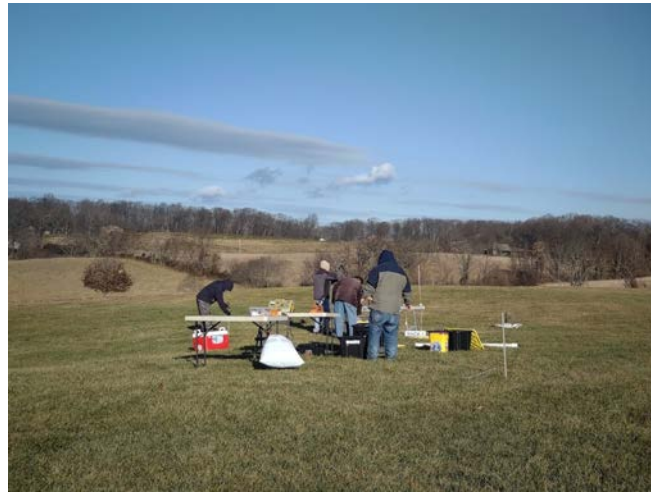
Left: DJ Emmanuel did the primary retrieval pole duties to recover the rockets landing in the trees. *Photo: Alex Mankevich*

Right: Mike Ratel brings in his display model Saturn V. *Photo: Ed Pearson*



December Mt. Airy Launch

December's Mt. Airy launch was not well attended, though Jim Miers did help several TARC teams practice for their qualifying flights. Other than that, it was cold and slightly windy. The park ranger stopped by for a friendly chat (and stood outside in the cold for over an hour with just a simple short sleeved uniform shirt to protect him from the cold).



Clockwise from bottom left: John Volpe's F-powered model roars skyward. The park was ours, not a creature was stirring; only ourselves. *Photo: Ed Pearson*

Alex Mankevich looks out over the field of dreams. It was a temperate 42 degrees, but with wind factor, it felt to be 6 Kelvin. *Photo: Ed Pearson*

Minimal range set up. *Photo: Sarah Jackson*

Sam, our newest member, and mom, flew an Astro-Cam movie rocket. *Photo: Ed Pearson*

Daniel Solomon's fashion statement read, "Bah Humbug." *Photo: Ed Pearson*

Ed Jackson pushed buttons. *Photo: Ed Pearson*



Antares NG-18 Launch

A photo journey by Alex Mankevich



Left: The rectangular Mobile Clean Room (MCR) is attached to the horizontal Antares 230+ rocket's fairing at the right side of this image. The MCR is used as a clean and temperature-controlled environment in which to perform a final load of time-critical cargo at twenty-four hours before lift-off. The top of the fairing pops off and technicians can access the pressurized cargo module of the Cygnus spacecraft. After the final load is completed the Antares rocket is rotated back to vertical on the launch pad.



Above: One of the adverse outcomes of the war in the Ukraine is that Northrop Grumman will no longer be able to access rocket components manufactured in the Ukraine and in Russia. Northrop Grumman had the foresight to order the key rocket components prior to the start of the war, thus components necessary for the NG-17, NG-18 and NG-19 missions were at Wallops Island before the start of the war. Seen here is therefore the final Antares 230+ rocket destined for the NG-19 mission, which is about 30% complete. Northrop Grumman had teamed up with Firefly to create the next iteration of the Antares rocket which will be designed the Antares 330 model.



Left: The 139 feet tall Antares 230+ rocket is vertical on the Mid-Atlantic Regional Spaceport's (MARS) launch pad OA. This launch pad is used for liquid fueled medium class orbital rockets. Adjacent to the rocket is the 307 feet tall water tower used for water deluge and acoustical suppression.



Left: The Antares NG-18 mission was launched at 5:32 a.m. during the pre-dawn darkness of November 07, 2022. Lift-off occurred at the end of the five minutes launch window. The fog which was present during the launch contributed to a halo effect seen in this image.



Above: Bill Boublitz (center) poses in front of the olive-green colored Castor 30XL second stage of the Antares rocket. This is the view inside the Horizontal Integration Facility (HIF) which is located approximately one mile North of launch pad OA. Alan Williams is seen at left (in NARHAMS sweatshirt) conversing with a Northrop Grumman technician in the blue lab coat.



Above: A night launch can be dramatically captured by a streak shot which is taken using an exposure of several seconds. This is the view of the distant MARS launch pad OA as seen from the media site. In the foreground are the viewing bleachers and reception tent. The brilliance of the Antares rocket's twin RD-181 engines lit up the cloud-covered sky.

Right: Liftoff! Photo: DJ Emmanuel



Above: Alan Williams (left) and Bill Boublitz (right) sought the truth during the NG-18 mission's pre-launch press conference held in the auditorium at the NASA Wallops Island Visitor Center. Alan questioned the panel regarding the likelihood of viewing the "space jellyfish" caused by luminescent particles included in the rocket engine's exhaust plume. The rising or setting sun reflects off the rocket's exhaust plume creating an eerie glowing halo effect with takes on an amorphous shape. Several people from up and down the East Coast had posted images on social media of the Antares' "space jellyfish" for this mission. *Image credit: NASA TV.*



Artemis I

Narrated by George Crombie

In the early hours of November 16th 2022 my wife and I were privileged to watch the launch of the mighty SLS rocket from just a handful of miles away. This was a once in a lifetime experience we will remember for the rest of our lives. Here's how it worked out where we were fortunate enough to see the launch.

November 15, 2022 was our wedding anniversary. Because of COVID we had been unable to do anything fun for our last couple of anniversaries. Since easing of restrictions, we decided to go on a short trip. Being rocket aficionados, we decided to fly down to Orlando to see the sights and visit the Kennedy Space Center. As a result of the SLS launch being delayed multiple times, the final date fell to the exact time we would be down there.

We checked into our hotel on the afternoon of the 15th, then scoped out some nearby places where we'd be able to view the launch, near the hotel. We had a nice anniversary dinner, got a few hours nap then woke up and had 17 minutes until the rocket was set to go off. They had a hold at ten minutes so they could fix some technical problems.

That gave my wife and I a few extra minutes to park and run to the beach with our cameras. The beach was quite crowded by this time. I set up my tripod and angled my camera toward the flashing emergency vehicles in the distance.

All of us on the beach were avidly watching our mobile devices following the NASA live-stream launch countdown. A little over a minute before the T-0 I started the video recording. It was a good thing I started recording early as there was a significant lag in the live-stream and the rocket seemed to take off early.

The Northern horizon began to glow as though the sun were rising. Moments later the rocket rose into view above the horizon. The rocket blazed with an incredibly bright yellow-white flame.

A hush fell over the crowd as the giant booster slowly and majestically rose into the sky. Soon it began arcing over the Atlantic. We could hear the low rumble and crackle of the engines, even at our distance. The incredibly bright flaming exhaust of the solid rocket boosters was plainly visible as the rocket soared into the night sky.

By this time the crowd was cheering, clapping and chanting, "Go, go, go!"

As it climbed into the inky darkness, we could see the moon hanging in the background. A couple of minutes into the flight I saw the solid rocket boosters separate and begin their long fall back to the ocean. By this time Artemis was just another bright star in the sky.



All of the observers on the beach packed up and headed back to their vehicles. We returned to the hotel room and watched the NASA station for another half an hour before exhaustion took over and we fell into bed.

Left: George Crombie on the beach in the moonlight. Unfortunately, his still pictures were all overexposed. However, see the back page of this issue to see the NASA photo of the launch. *Photo: George Crombie*

The Annual NARHAMS Holiday Party and Raffle

As shown by Ed Pearson



Above: Some of the holiday party goers—(L-R) Mark Wise, Tom Ha, Maria Ha, Scott Branche and friend Selena, and John Larson.

The NARHAMS annual holiday was held at the Greenbelt (Md) Volunteer Fire Department, December 3.

People came to share company, break bread at the potluck dinner, and win valuable prizes (read this to mean: get rid-of/ redistribute some of your accumulated stuff!).

Right: Kelly Pearson and son Aaron prepare the club's traditional holiday punch.



Right: Jim Baird opens a soda before the traditional club holiday punch was ready.



Right: Mike Cochran brought peanut butter cookies as a dessert.

Left: Mark Wise mulls over the food selection—spread over three tables.

Below left: A separate table held yummys (desserts) people brought in. Everything was pot luck.

Below right: Holiday space-themed cookies of Natalie and Rachel Shafer.





Above: Speaking of tradition, a NARHAMS party usually has pizza (from Ledo's). Ellen and Jef Fineran brought boxes to the fete.

Below: Six tables held the raffle prizes. If your ticket was drawn, you got to choose your gift.



Above: Brian Beard (L) and Jim Miers do word puzzles prior to the raffle drawings. You can see some of the prize bounty behind them.

Below: DJ Emmanuel gives the party a thumbs up; fiancé Sally Cook smiles with approval.



Far Above: Zog Alex Mankevich (L) mixes up the drawing tickets, while Vice Zog and ticket meister Alan Williams reads off a winning ticket number.

Above: Daniel Solomon chooses his prize and shares thoughts with Mark Wise.



Above: NAR trustees Mark Wise (L) and Kevin Johnson.

Above: (L-R) Robert Edmonds (of northern Va); Chris, Maria and Tom Ha (of Pa).
Below Right: The Shafer's: John, Rachel, Natalie, and Tamyra.



Top: Ward Webster and Jen Ash. Ward's sweater was a hit.
Center: Closeup of John Larson's snazzy sneakers (by Converse).
Bottom: Worse (best?) hat (no, the worse) goes to Ole Ed. *Photo: Kelly Pearson*
Right: Fabrice Derullieux digs into the pizza stash.





Clockwise from bottom left: Adlai prepares to go home with his goodies. (I don't know what his mom thinks when he comes in with all his bounty. Hopefully he makes it easier by giving her the lava lamp).
 From L-R: John Larson, Adlai Perry, Bruce Canino, and Andrew Perry. (Bruce traveled from NJ to the party—he wasn't the only out-of-stater there; there were [at least] five others!)
 Jim Filler drove up from Richmond to attend.
 Tom Ha walks out with some of his haul. (It was comparable with Maria's stuff).
 Mike Ratel brought mmmm chicken.



Thus ends photos from the annual NARHAMS holiday party.

Building Techniques

Cloning the Estes #0817 AERO-HI

By John Brohm, NAR #78048

Introduction

Joining the Estes Mini-Brute family in 1973, the AERO-HI was a mini-engine model rocket that sported a scale-like sounding rocket appearance. The kit enjoyed a two-year run, exiting production following the 1974 product season.

I felt the AERO-HI would make a nice mini addition to my sounding rocket fleet, so I decided to take a shot at cloning the model. As we'll see, "clone" is, perhaps, a bit strong, as the build finds us deviating from the kit instructions in several places. That said, we'll find that taking these

Estes #0817 AERO-HI

Photo from: [Ninfinger](#)

[Productions: 1973 Estes](#)

[Catalog](#)

deviations will help simplify the finishing process.

So with this, allow me to share with you my interpretation of this diminutive model – let's get started.

Construction

To begin we'll need some documentation, and happily this can be found on Scott Hansen's Ye Olde Rocket Plans website here: [Estes Aero-Hi #0817](#).

With some BT-20 prep work and a BMS-supplied BNC-20N nose cone, the makings of the model were in hand.

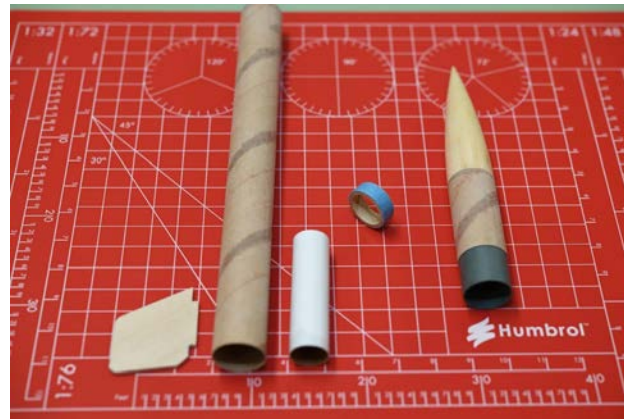


Photo 1: Basic Parts Set

While the kit instructions call for a BT-20B (8.65" long) airframe, I chose instead to separate the

payload section (1.5") from the airframe, thus moving the separation point further aft.

This would make finishing a little easier in the later steps, especially since I didn't have the decal set for the model. The payload band seen in the catalog illustration is a decal; for my clone this band will be painted.

The instructions call for 1/16" thick balsa fins; for my clone, I chose to fashion these from 1/16" basswood. So, with some cutting, sanding, SilkSpan and three coats of Nitrate dope, a native fin set appeared.

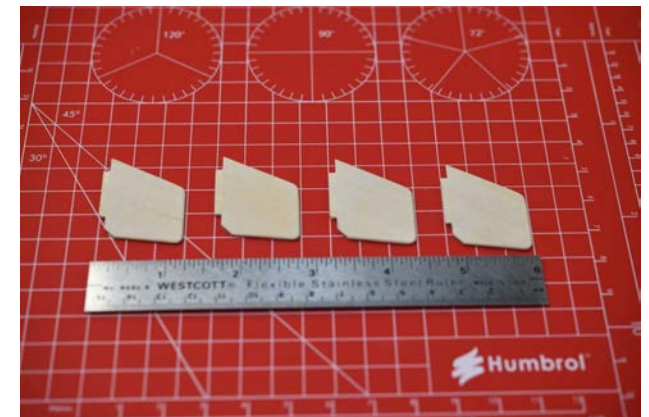


Photo 2: Fin Set

One will note I've cut the fins with a TTW tab, something not called for in the instructions. Instead of surface mounting the fins with glue fillets, I'll install

the fins with these tabs. This approach permits me to finish the parts separately – no fiddly fin fillets to mask on this petite fusée. The finished painted fins will be installed once the airframe is painted, decaled, and fully cured.

The motor mount was constructed with a pair of rings spaced to capture the fin tabs. These narrow fin tab rings were created by splitting a normal AR-520 ring in half with a thin, fine-toothed razor saw. I chose not to add the engine hook; friction fitting a mini motor should be just fine for this model.



Photo 3: Split Ring

Fin slots were cut in the airframe and then the MMT was installed.

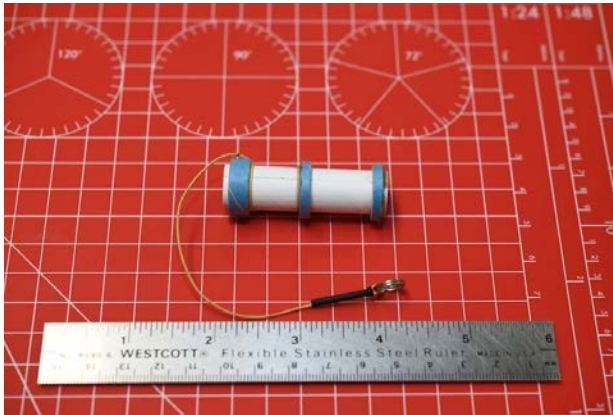


Photo 4: Finished MMT

I also chose to drop the launch lug; I'll fly this model from our BT-20



Photo 5: Airframe Fin Slots

tower. That just left the conduit raceway to install.

While pondering the launch lug and conduit, I noticed an interesting point about their location. The assembly drawing in the instructions, as well as the airframe marking guide, show these features located

90 degrees apart on the airframe. Yet the catalog illustration and the kit face card show them 180 degrees apart. Since I was only going to add the conduit, this puzzling parts placement point was moot.

For the conduit I used a length of Evergreen #244 1/8" Styrene half round strip. Not an exact match for the kit's balsa part, but its use would mean the finishing process would go easier. With a judicious line of Weldwood Contact Cement the conduit was set in place.

The nose cone was finished with Brodak Sanding Sealer, and with this, the parts were punted to the Paint Shop for primer.



Photo 6: Conduit Applied

Finishing

Each subassembly was primed with Rustoleum #20818 Automotive Primer and allowed to fully cure. For painting, we'll make use of an airbrush, given the size of this little model.

The airframe, nose cone, payload section and three of the fins were airbrushed with GSI's Mr. Color #1 White. The fourth fin was

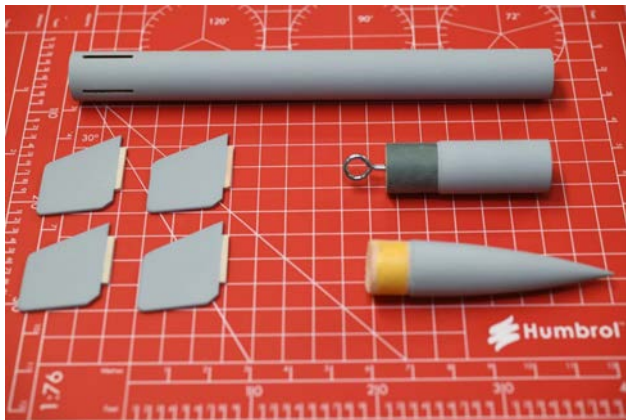


Photo 7: Primed Subassemblies

airbrushed with GSI's Mr. Color #2 Black. Once the airframe's white paint had cured, it was then over sprayed with Mr. Color #59 Orange.

Going with an orange airframe was a clear departure from the instructions, as they call

for the airframe to be painted Red. I ignored this suggestion, preferring instead the more orange-tinged look the catalog illustration presents. For me, the shape of the model and the orange-ish livery conjured memories of the old Model Missiles Aerobee-Hi, and who knows? Perhaps Estes' Aero-Hi was a nod to this iconic relic of the past. So, orange it was.



Photo 8: Model Missiles Inc Aerobee-Hi, circa 1958

Photo from: [National Air and Space Museum](https://www.nasa.gov/air-space/aerobee)

Returning to the payload section, the black instrumentation band was masked with Tamiya tape and airbrushed with Mr. Color #2 Black.

I found an exact match for the "AERO-HI" decal font, which allowed me to reproduce this marking in MicroSoft Word. A pair of

these markings was printed with an HP LaserJet printer on Bare Metals Foil's Expert's Choice decal film, and then set in

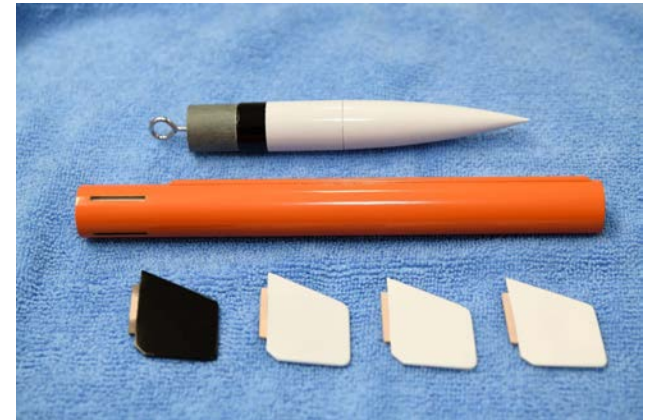


Photo 9: Painted Parts

place with MicroScale's Micro Set decal setting solution. Once dry, the nose cone was permanently installed, and the entire payload/nose cone section was airbrushed with GSI's GX100 Super Clear III clear coat. Once the clear coat had cured, the two silver bands were masked and airbrushed with AK Interactive's Xtreme Metal #481 Polished Aluminum.

Finding a match for the black fin's "R-9" markings proved to be more daunting, so I opted for the letters and numbers found on MicroScale's #90051 Block Gothic



Photo 10: Finished Payload Section



Photo 11: Ready for Assembly



Photo 12: Fin Mounting Flange

Photo 13: Fin Flanges Installed

were replaced with Micro Set decal setting solution.

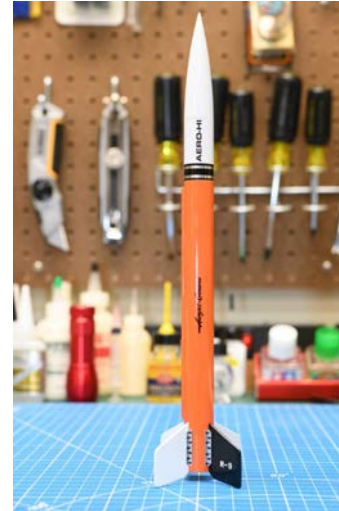
For the airframe's marking I substituted an Aerojet logo for the suggested Estes logo. Yet another deviation from the kit, but I felt with the subject. The airframe and fins were then individually airbrushed with GSI's GX100 Super Clear III clear coat and then set side to cure.

Once ready, the fins were installed with a few dabs of epoxy.

Not having the kit on hand meant that I didn't have the decals representing the fin

Rather than attempt to reproduce these markings, I chose instead to craft an actual set of fin mounting flanges, sourced from lengths of 0.015" thick Styrene strip.

These were airbrushed with GSI's Mr. Finishing Surfacer 1500 Black and then over sprayed with AK Interactive's Xtreme Metal #479 Aluminum. Once the paint was dry, a set of fin mounting bolt heads was applied in the appropriate places on each flange with tiny dots of MIG Ultra Glue. Once complete, each fin flange was set in place, also with a dash of MIG Ultra Glue.

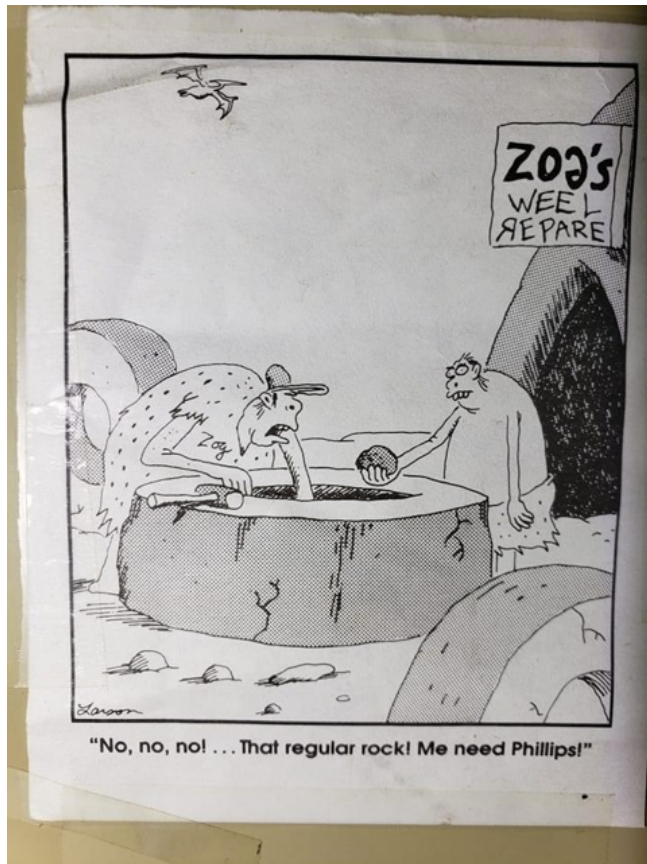


With this, our kinda-clone of the Estes AERO-HI was complete.

Photo 14: AERO-HI Complete

ZOG Sightings

Two ZOG sightings were submitted by Don Carson this month. The first has been around a while, but Gary Larson is always a fun read. The second... The second I think is too suspicious. Don took two flights to get home on his latest trip on Southwest Airlines. His boarding number for both flights? A 43. I think he paid extra for those seats, honestly.



Close Southwest		
GATE	GROUP	POSITION
104	A	43

Close Southwest		
GATE	GROUP	POSITION
B5	A	43

