Zog-43

IN THIS ISSUE:

Arizona Cup 2020,
NARCON 2020,
Updating the Estes #1358 F-61 Starfighter - Part I,
Al Worden's Passing,
NARHAMS and COVID-19,
Launches, and more...

Mar/Apr 2020
Vol 42 No 2

Zog-43
Volume 42 Number 2
March/April 2020
Official NARHAMS Newsletter
Editor: Don Carson

ZOG-43 is dedicated to model rocketeers of all ages, abilities, and interest. We are committed to providing the most current, up-to-date information on model and real world rocketry, and to provide educational material, as well as, entertaining information.

ZOG-43 is published bi-monthly and is available to all paid up members of NARHAMS. Club membership is open to all, dues are 10 cent per week.

If you have any questions about ZOG-43, NARHAMS, subscriptions, or if you have any comment(s), correspondence, or if you'd like to submit an article, send them to:

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

About NARHAMS

The National Association of Rocketry Headquarters Astro Modeling Section, or NARHAMS, serves Baltimore, the state of Maryland., Washington, DC and the surrounding Metropolitan areas. The club is a section (#139) of the National Association of Rocketry (NAR).

We are the oldest continuously active model rocket club in the United States, first established as a high school club in 1963, changing our name to NARHAMS when chartered as a NAR section in 1965. NARHAMS is the only seven time winner of the NAR "Section of the Year" award (1997, 1998, 1999, 2001, 2004, 2006, and 2007).

NARHAMS members regularly fly their model rockets at NASA's Goddard Space Flight Center in Greenbelt Md 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 - The World Has Changed!

Don Carson, NAR #11069

The Corona Virus pandemic has spread to the United States and is impacting all of us. Many are staying home to slow the spread of the disease. Group gatherings are discouraged or banned. This affects our hobby greatly. Face-to-face club functions have been cancelled. NARHAMS is holding club meetings virtually online. In some places, individual launches can still happen. For the rest of us, if you are healthy, the silver lining is more build time!

Before the pandemic hit hard, the NAR held its convention NARCON in Tucson, AZ. Tucson is a beautiful area with a ton of interesting things to do. Leaving the airport I drove past the Air Force Boneyard - the final resting place for many of its old aircraft. It was an incredible sight! I had not signed up for a tour, but the next time I make it out there, I will.

My thanks go out to everyone who contributes to make this a such an outstanding newsletter - the credit goes to you. A special thanks goes out to John Brohm for his excellent build article.

I hope you enjoy this issue.

As always,

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

"The largest aircraft boneyard in the world" at Davis-Monthan AFB's began after World War II, and continues today. It goes on and on.
Photo: D. Carson

For questions, answers, opinions, files, photos, and more NARHAMS, join the NARHAMS Groups.io group. It is free, painless, no ads, and may just be the cure for the common cold. Also: Facebook if you are not parnoid about that sort of thing.

Front Cover: Matt Steele launches his S2/P entry at the Arizona Cup 2020 at the marvelous Tucson International Modelplex Park Association (TIMPA) field.
Photo: D. Carson

Back cover: To get to the Arizona Cup flying field you had to drive through the Saguaro National Park in the Sonoran desert. Forutnately, the flying field was flat with considerably fewer cacti.
Photo: D. Carson

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)
Sarah Jackson

COURT JESTER (Section Advisor) Jim Miers

NARCON 2020 - Something For Everyone!

By Don Carson, NAR# 11069

NARCON 2020 covered it all, from Low Power Rocketry to Intercontinental Ballistic Missiles, from sport flying to international competition, from design to construction to flying, from hobby electronics to satellites, there was more than enough to learn about your favorite subject and peak your curiosity for things unknown.

The NAR's annual convention, cleverly called NARCON, is a great way to get your rocketry fix in the midst of the winter doldrums. It is the NAR's only non-flying national event. At its core is a day of presentations and discussions on a wide variety of topics.

Added to these events is a manufacturer's forum where soon-to-be-released new products are often announced or even on display! The NAR Board of Trustees holds a meeting the Friday before(open to the membership) and NAR Prez, John Hochheimer, held a Town Hall meeting on Sunday morning.

NARCON is usually located near a point of interest for rocketry/aviation/space buffs with time for tours folded into the schedule.

NARCON 2020 was held in Tucson, AZ and there was a bonanza of of things to do and places to go. In addition to the incredible natural beauty of the Saguaro National Park in the Sonoran desert, there were tours of the U. of Az. Mirror Lab, where giant mirrors are made for a new generation of astronomical telescopes. Not only that, Tucson is home of the excellent Pima Air and Space Museum and the nearby Air Force "Boneyard" at Davis-Monthan AFB – the (mind boggling) largest aircraft boneyard in the world! If that weren't enough, a short drive out of town takes you to the only preserved (formerly) operational Titan II missile site!

Taking advantage of folks traveling to Tucson, Matt Steele and Mike Nowak scheduled the Arizona Cup, an FAI-Sanctioned World Cup Spacemodeling Competition for the Thursday and Friday before NARCON.

So much to do, so little time.

The view from the venue in Tucson, Arizona.
Photo: D. Carson

Lots of new products from manufaturers.
Photo: D. Carson

As great as all this was, NARCON 2020 almost did not happen. Scheduled for March 6-8, the concerns about the Corona Virus pandemic over seas were growing as rocketeers prepared, back in January and February, for their upcoming trip.

In the end, the NAR decided to proceed with the event, but offered refunds for anyone who chose not to attend. Few, if any, dropped out and the conference went ahead.

Wary attendees tended to refrain from shaking hands or hugging, and there was a lot of hand washing and sanitizer being used. That being said, the current "social distancing" techniques currently in place had not yet been suggested. We were sitting shoulder to shoulder, one behind the other, in typical convention style. Fortunately, I've heard no reports of the virus traced back to that event, whew!

Your Sport Rocketry magazine will have complete coverage of the events. I'll touch on parts I attended. Elsewhere in this issue you can find coverage of the AZ Cup.

Continued next page

Presentation Sessions

Six sessions were scheduled once an hour for 50 minutes through the day Saturday. Three presentations were made in different rooms during each Session. This meant you had to map out where needed to be to see each session of interest to you. Sometimes a particularly popular topic would be repeated, giving you a little flexibility, but this was rare. I sat in four complete presentations and dropped in and out of some others.

How to Win TARC

I sat in on this session as Trip Barber's presentation explained exactly how to win TARC. The audience was composed mostly of TARC mentors, but there were some TARC participant present. Trip outlined the keys to winning as drawn from the past winning teams. It is no secret, this presentation has been on the NAR TARC website for some years. Even so, he sees little evidence that many teams bother to learn from it. It all boils down to starting early, reducing the variables affecting your flight, flying often (at least 15 test flights) and testing systematically. This is good stuff for mentors to know and for teams to learn.

Trip Barber making the point that things can go bad, real bad.
Photo: D. Carson

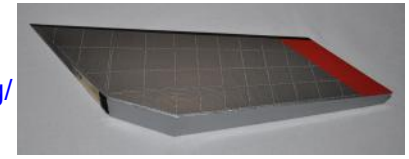
Safety in High Power Rocketry

Another presentation by Trip Barber. Trip provided an overview of the dangers involved in HPR, how to get permission to fly HPR, consideration for how to set up the range, pre-fllight inspection and operation of the range. He provided many great pointers for RSOs, who are last line of defense for safe flying. The whole package can be found on the NAR website here: https://www.nar.org/wp-content/uploads/2019/03/Safety-in-High-Power-Rocketry-2019.pdf It is well worth reviewing for HPR builder and RSO alike.

Continued next page

Secrets of World Class Scale Modeling

This session was led by four elite scale modelers, veterans of many US World Space Modelling Championship teams; Matt Steele, Chris Flanigan, Mike Nowak, and James Duffy. Each took a turn speaking with the others chiming in to augment the discussion.



James Duffy shows how he made the Little Joe 1 with thousands of rivets without going mad and a close up of one fin.
Photos: D. Carson

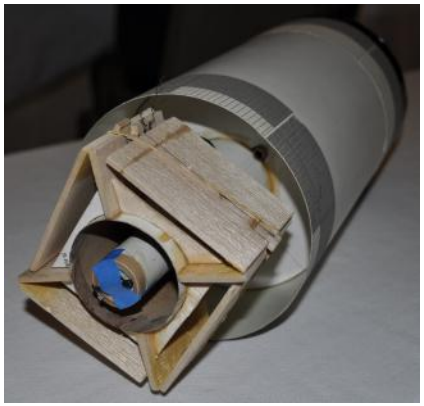
James led off and talked about how the most used and useful tool for him was Adobe Illustrator (or any drawing software that makes vector files, like the free Inkscape https://inkscape.org/release/inkscape-0.92.4/). He send drawings to a laser cutter to produce all manner of items, like parts, graphics, stencils and more. James pointed out that laser cutters can work on acrylic sheets with excellent results.

Mike Nowak talked about what kind of scale models tend to score best in international competition. He has seen that models of manned rockets do better than unmanned rockets. Satellite launch vehicles do better than sounding rockets, and multistage rockets do better than single stage rockets. Complexity is rewarded.

Chris Flanigan demos details of the 2nd stage of his Saturn IB.
Photo: D. Carson

Chris Flanigan recommends using a checklist for prepping complex models. He addressed many ways he uses to build large scale models lighter. F motors are the largest we can ship overseas so weight can become a premium on a bigger model. He recommends Gatorboard for many uses, like centering rings. It is very machinable and is available for

More Sessions



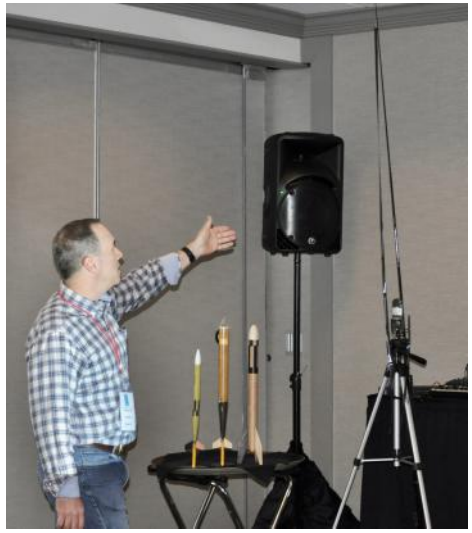
Micromark and many art supply stores. He also uses fiberglass sheet in 0.010” and 0.005” thicknesses. He passed around the upper stage of a Saturn IB scale model made from rolled 0.010” fiberglass sheet, uses pop out folding fins, and lightening holes in the centering rings.

Matt Steele, who flies Altitude and Scale Altitude competition, talked about how he can form a nosecone/ body/tail flange in one piece by pulling a heated sheet of styrene or PETG plastic down over a heated mandrel. This produces a very lightweight, super smooth model, perfect for Scale Altitude events. Removing the plastic from the form can be difficult. He suggests powdering the mandrel first and having a rough surface to help break the vacuum holding the plastic on. He sometimes molds in a small pin hole on the nose to blow air in to help get the plastic off the mandrel.

Upper and lower end views of Chris's Saturn IB 2nd stage.
Photos: D. Carson

Matt Steele covered super light Scale Altitude construction starting with the styrene or PETG forms through the painted body.
Photos: D. Carson

HOT AIR: Thermals, Lift, and When to Fly – Terrill Willard is a world-class competition rocketeer. He qualified for the US Team in duration events for each of the four World Championships. Terrill gave us a fascinating look into how to become proficient “at picking the good air” complete with models and field instrumentation.



Terrill points to an array of monitoring equipment.
Photo: D. Carson

The main theme throughout the presentation was that you can continue to improve your ability to sense the air around you anytime you are outside, not just when you are competing. He gave us tips and techniques for doing so.

We started off by learning about thermals, that what creates them is a difference in temperature between two areas of ground. The hotter surface heats the air above it, which expands (becoming less dense) and begins to rise. This create a thermal. Thermals can occur on both hot and cold days. He compared the air around us to a river or ocean with the current(wind) flowing past us as we stand on the bottom.

A trio of parachute duration models that can thermal away if you oick the right air.
Photo: D. Carson

Terrill suggests you figure out where the wind comes from when you first get to the field. You can get a prediction in advance by going to Weather.gov and Windalert.com. Look for the up-wind tripping points like cars/ trees /houses that can help a “bubble” of

Continued next page

Still More Great Sessions

warmer air separate from the ground and begin to rise as the wind carries it along towards you.

What you want to detect is changes in the air. Things like changes in temperature, wind direction, humidity and even smell can help you tell if you are in good air (lift) or bad air (sink). You can detect changes with your own natural senses, by observing nature's little indicators, and by using tools.

With practice, one can sense temperature and wind direction changes on their skin. Some folks wear shorts because they can detect the changes better on their legs! Warmer air indicates a thermal is passing by. A temporary decrease in wind speed can mean a thermal is approaching. An increase in wind speed can mean you just missed it, don't launch.

An inexpensive themometer can be attached to a pole on a tripod to monitor temperatures.
Photo: D. Carson

Nature provides some indicators for the observant. Birds circling overhead or near by mean lift, as does rising windblown dandelion seeds, cattail fluff, and small insects (as well as the small birds darting around feeding on them). Another indicator nature provides is your competitors. Watch what their models are doing, especially watch when the best competitors decide to fly.

Terrill showed us lots of options for manmade tools to help in the search for good air including: flags, streamer poles(made from long, collapsable Crappie fishing poles, 13' works, 20' is better, with a long thin mylar streamer atop (FAI Model Supply) or audio/VCR tape); temperature monitors that can be mounted up on tall poles; all the way up to the Kestrel electronic wind/temp/humidity monitor. Some folks use a simple child's bubble machine!

As for learning to pick and launch into thermals, he offered more gems.

- If at all possible, practice on field the day before. If you can't fly, at least go out and check out the field and the wind patterns.
- Use streamer poles for wind direction changes, not to indicate updraft. Use a Kestrel or the other indicators for lift.
- Take notes and keep a log for both competition and practice flying.
- Practice at ¼ or ½ power and with a smaller chute, you'll get more flying in and lose fewer models.
- Take video of flights. Take photos of failed flights and do a "post mortem." Slo-mo analysis of video can reveal failure modes.
- Lastly, don't repeat mistakes you've made, it is surprising how often he sees this done.

Overall, it was a great session, we could have used more time.

When it comes to streamer poles, the longer the better.
Photo: D. Carson

Continued next page

Manufacturer's Forum and Display

One highlight of NARCON is the Manufacturer's Forum and Display Room. Friday evening, each manufacturer was invited to provide an update on the company's status, plans, and new products. It is a great opportunity to find out what's coming. In conjunction, they can set up a display table to feature their newest wares. It is also a chance to interact with the folks who run the business. The Display Room remained open from Friday evening through Saturday. Here is a rundown of what I heard.

Aerotech- Gary Rosenfield and Dane Boles presented. Aerotech had their best year ever! They released the new 18 mm D motors and 3 or 4 new kits. Q-jets will be available with White Lightning propellant. They announced a number of high power motors including the most powerful single-use motor ever – the M5280 98mm!

Apogee - Tim Van Milligan announced that Apogee also had a great year. He let us know that, at long last, a new version RocSim will come out by end of March. He said it would be a free upgrade for those that had the last version. He also demo'ed a Sanding Tee developed specifically for rocketry users.

Estes- Bill Stine gave a great update on Estes activites. They had a whole table full of new stuff, about half of the new offerings are in the latest catalog, the others will be released in the second half of the year. Big news is a limited edition 1:100 scale Skylab version Saturn V. It will include a swappable Apollo 11 upper section so you get a "2 for 1." Expect it to be released around Thanksgiving, just in time for holiday wish lists everywhere and go for $99.99. Also, the Astrocam is coming back, this time with a digital video camera. It will feature an eyelet in the nose so it records looking down on descent, in addition to ascent. It will be released through Target stores as part of a launch set for $59. More good news is they have developed a new ATF compliant ~~igniter~~ starter. That made the crowd happy. In response to a question, he said there won't be a trade-in/exchange program for your old solar starters!

Aerotech's table of goodness.
Photo: D. Carson

Tim Van Milligan and Apogee's Sanding Tee.
Photo: D. Carson

Bill Stine showing off the new Estes Astrocam and Skylab Saturn V.
Photo: D. Carson

Estes had a whole bunch of new and unusual kits.
Photos: D. Carson

Continued next page

More Manufacturer's Forum and Display

Estes is expanding its retail marketing reach as Hobby Lobby is opening 50 stores a year with Estes inside. They expect to be in Michaels soon and in all Targets come Memorial Day. They will be back in Walmart in 2021 and expect more “strategic educators coming”?

On the motor/engine front, Estes expects to make 7.3 million rocket motors this year!!!! They are reintroducing the C5-3, and -0 motors. The machine that makes the 29mm motors (E16 & F15) has been changed and they should become more available. The E12’s are not currently being made because they are being changed, when they are reintroduced they will be “highly reliable.”

IMPLS Launch Systems – Owners Tom and Gloria Kindig have developed a pretty neat launch rack and controller that breaks down into self-contained packages. They expect to have products ready in March.

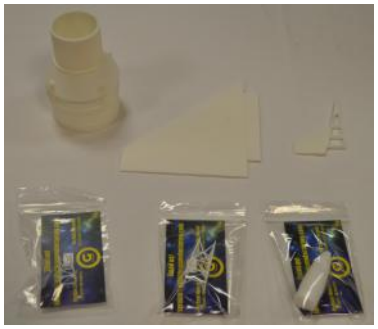
North Coast Rocketry (NCR) – Matt Steele introduced new parachutes for use with NCR kits and a nifty set of plastic sanding blocks used to produce nice consistent airfoils on fins ($19.95/set of 3). He showed two new kits, an incredible scale D4 Argo Javelin featuring finely detailed 3D printed components. Standing a good four feet high, it is a superb scale rocket and will set you back $450. He also showed off a super sweet F117 Stealth Fighter. It sports a vacuum formed shell, boosts on an E20-4, and returns with a circling glide recovery. An option for radio controlled glide may be in the works, but it looks like a doable DIY conversion. The F117 will be out in March and will go for $119.99. Why didn’t he offer it for $117? NCR also plans to release a kit of the NASA Space launch System (SLS) in late 2020.

Galactic Manufacturing *“Proudly Serving the Galaxy since 2018”* - Mike Nowak presented their line of products produced by 3D printing and laser cutters. Mike produced the detailed components for NCR’s D4 Argo Javelin and produces printed parts with unusually smooth surfaces. They have line of 3D printed tower lattices for Apollo Saturn models – no assembly required! Who doesn’t have a broken Apollo capsule tower that needs replacing? They were giving away nosecone samples – very lightweight and smooth, worth checking out.

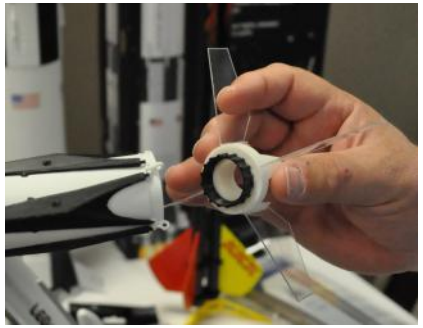
eRockets/SEMROC – Randy Boadway and Phil Queen featured the SEMROC Visitor, Jupiter-B, Stellar Arrow, and USS Andromeda kits. These unusual kits come with jigs to help with assembly. They also showed off some nice plywood disks with screw eye holes that convert a coupler tube into a solid coupler. With over 4800 items on hand, eRockets is sure to have what you need.

Matt Steele introduces some great new models.
Photos: D. Carson

IMPLS Launch Systems and their rack and controller.
Photo: D. Carson



Galactic Manufacturing 3D printed samples.
Photo: D. Carson



James Duffy checking out the clear fin unit on an undiscussed Space X model on the Estes table. Could be useful for other scale models.
Photo: D. Carson

Continued next page

Tour - Titan II Missle Museum

Don Carson NAR #11069

After the Sunday morning NAR Town Hall meeting, I met with Terrill Willard and we drove a ways outside Tucson to the Titan II Missile Museum. It is the only preserved Titan II missile complex in existence. There are some that have been converted to other uses – residences, stores, and the like.

We met up with other NARCON attendees there and began the tour. It starts with a short video describing what we were about to see, and what the role these kind weapons played in the decades following World War II. After the video, the tall folks had to grab a hard hat and we walked out to the entrance.

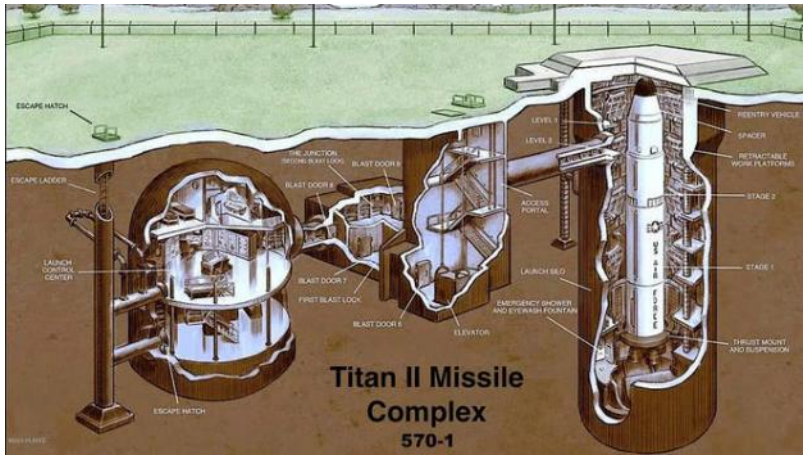


Diagram of a typical Titan II Missile complex.
Photo: USA Today

View of the closure door that rolls back to enable the missile to launch. The two huge concrete blocks in the red oval prevent the door from opening more than half way.
Photo: D. Carson

Looking up and down at an actual complete (unfueled) Titan II missile. One can see the closure door is half open in the top photo.
Photos: D. Carson

Continued next page

NARCON Tour, Continued

Our guide led us through a door and down several flights of stairs to a doorway 2 feet thick with a corresponding door of steel and concrete. It was the first of 2 similar blast doors protecting the silo interior. She explained the security systems in place when the complex was operational as well as a couple of features that allow the complex to be verified as no longer an active missile launching site.

First, the silo closure door is blocked from opening more than halfway, Second, a big hole was cut in the nose cone so that the USSR could verify there was no warhead hidden inside.

Once in the control room, the guide explained how a missile firing would be conducted. She asked for volunteers for one of the two launch controllers, Capt. Trip Barber was immediately pushed to the front. Trip followed the instructions and successfully completed the simulation. The world was safe again.

Long tunnels (hard hats required for some) connect the control center to the silo and crew quarters.
Photo: D. Carson

Payload heat shield.
Photo: D. Carson

Looking down from the top of the silo. The verification hole in nose cone is visible.
Photo: Arizona Highways Television

First stage Titan II engine.
Photo: D. Carson

In the gift shop, key chains made from actual Titan II missiles, pretty cool, not $95 cool, though.
Photo: D. Carson

Continued next page

NARCON Bits and Pieces

After a whole day of technical sessions, it was good to just kick back and chew that fat with old acquaintances.
Photo: D. Carson

The banquet featured a fabulous speaker, Bashar Rizk the OSIRIS-REx/OCAMS Instrument Scientist, who had the room entralled with the on-going asteroid sample return mission.
Photo: D. Carson

NASA Goddard Visitor Center
Model Rocket Contest

WHEN: **Sunday July 19, 2020 12 noon – 4pm**
(no rain date)

FOR: All Area Model Rocketeers

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

EVENTS: "Lunar" Spot Landing

COST: Free

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

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

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

WHY: This event is to commemorate the 51st Anniversary of the Apollo 11 Moon Landing. This STEM event also promotes Space Sciences among area students.

UNDER REVIEW
CHECK WEBSITE FOR ANY
CHANGE IN STATUS

Contest Rules

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

Contest Judging and Other Important Information

1. Modelers may launch their models one time.
2. A launch is a successful ignition of the engine. A flight is when the model rocket starts to move upward on the launch pad and until the model rocket finally stops its descent.
3. The object of the event is to determine whose flight comes closest to reaching the center of a circular 125'-diameter "Moon" marked on the ground.
4. If a model rocket lands on the "Moon," contestants must leave the model rocket undisturbed until the model rocket is measured.
5. Officials will measure all model rockets that land within the "Moon's" boundaries.
6. Measurement will be from the "Moon's" center to the tip of the model rocket's nosecone. The measurement becomes the contestant's score.
7. The person with the smallest measurement (i.e., closest to the "Moon" center) will be declared the winner. The next smallest score will be second place and so on.
8. The contest will be flown in two age divisions: one is for those 15 years and younger; the other is for those 16 years and older. Teams will be classified by the age of the oldest team members.
9. Decisions of the judges are final.
10. These contest Sundays have traditionally been some of the hottest days of the year, so be prepared. Also, please be prepared to have FUN!

Time Schedule

Visitor Center Hours for This Event	12 Noon to 4:00 p.m.
Contest Registration	12:00 p.m. to 2:30 p.m.
Opening Ceremony/Demo	12:30 p.m. to 12:45 p.m.
Contest (Flying Period)	12:45 p.m. to 2:45 p.m.
Awards Ceremonies	3:30 p.m. to 4:00 p.m.

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

Updating the Estes #1358 F-61 Starfighter - Part I

Article and Photos By
John Brohm, NAR #78048

Introduction

Patrolling the lower left corner of the Estes 1981 catalog centerfold is the F-61 Starfighter, one of several new kits Estes released that year. Confronting prospective invaders with an array of laser cannons and photon torpedoes, this futuristically inspired starfighter presented an imposing attitude in the catalog illustration.

Figure 1: Estes F-61 Starfighter, Estes 1981 Catalog, Lower Left.

The F-61's fighter jet look was an acquired appearance; the kit borrowed the clear plastic canopy and missile parts from the models in the Centuri Fighter Fleet. But apart from the various Centuri accoutrements, the balance of the kit was all classic Estes components. The model incorporated the unique Estes PNC-50CA nose cone, a part distinguished by a pair of cheek bulges located on opposite sides of the cone. This nose cone saw sparing use in the Estes line up, appearing in just three other kits (#1281 Alien Invader, #1343 Torellian Invader, and #1383 Hyperion), until a re-released version of the Alien Invader (#3003) was introduced in 2010. The F-61 sported a two-tone, gray and blue, paint scheme, and made use of a two-color decal and marking set, complimenting the two-tone livery.

Listed as a Skill Level 2 kit, the Starfighter presented a building experience that pushed the modeler, with two disparate sets of fins (prime and sub) to be properly applied and radially aligned, a challenging spray-paint scheme, and some large decals to lay without mishap. Ultimately the kit was a one-year wonder, its production trajectory entirely captured by the 1981 product year.

A Rare but Awkward Bird

The F-61 Starfighter is a model not often seen at the flying field, and one can imagine this is due in part to its relative rarity (in production for just one year), and the fact that one needs those clear plastic parts to execute an accurate build. A barrier indeed to the prospective Cloner.

That said, even if the special parts were readily available, one still might not make the F-61 one's leading cloning subject. One can fairly say the Starfighter is not the most graceful model, displaying none of the sleek lines or scale-like appearance its cousins from the Centuri Fighter Fleet possessed. Yet despite its somewhat gangly and angular appearance, the Starfighter does offer some interesting opportunities for enhancement. Over the course of two articles, I'd like to share with you the modifications that I chose to make to this old Classic Kit.

Build Objectives

While not intending to be overly sacrilegious, we'll nevertheless diverge from Classic Kit orthodoxy, and customize a few of the model's features. For starters, we'll do away with that two-tone livery and render the model in a single overall gray, as one would find on any modern fighter jet (e.g.: F-22, F-35, etc.). We'll add to the two-color marking scheme by introducing a third color (black) for the textual markings (and for few other detail markings), relegating the original red and blue to accent duty. We'll add some real engine louvers on the aft end of the model, and add a set of navigation lights to the aerodynamic surfaces. Finally, we'll perform some subtle surgery on that nose cone - its clear canopy begs for an actual cockpit, so with some careful rocket rhinoplasty we'll attempt to give the nose a modest facelift.

Build objectives set – *let's get started!*

Continued next page

Airframe

We begin by marking the motor mount tube for the location of the various surface appliances. I chose to work up my own marking template in TurboCad.

Photo 1: MMT Marking Guide.

As is our practice, the balsa fins were filled with a covering of Silkspan and three coats of Nitrate dope. Each pre-finished fin was then supported with a scrap of sheet Styrene of the appropriate thickness to ensure each fin pod (1/8" diameter wood dowel) was centered on its associated fin edge while the glue set.

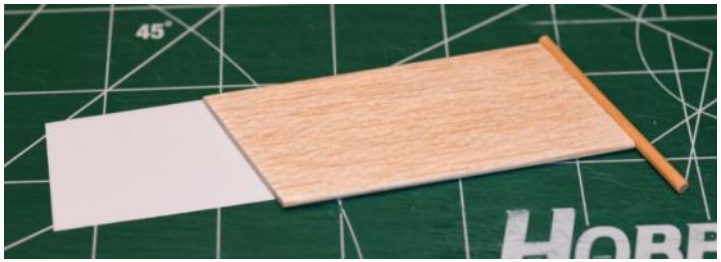


Photo 2: Gluing a Fin Pod.

The balance of the airframe's construction was as per the kit instructions, except for three details:

- I chose not to install the engine hook, as I felt its absence would yield a cleaner look to the aft end.

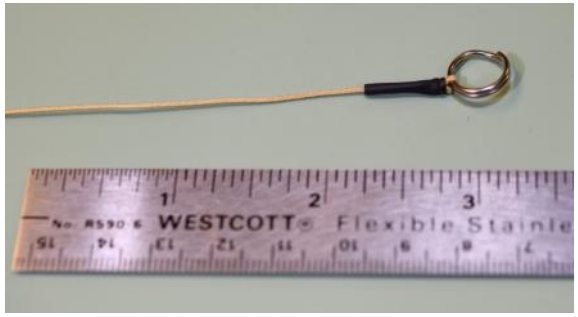


Photo 3: Shock cord anchor.

- I did away with the tri-fold shock cord mount, substituting instead a Kevlar anchor fastened to the forward ring that centers the motor tube in the main airframe. The anchor's working end was tidied up with a #7 split ring and a short length of heat shrink tubing. The actual 1/8" braided elastic shock cord will be fastened to the split ring.

- I also felt the Infra-Red Photon Torpedoes would look more realistic if they were offset from the airframe. So, I cut a pair of balsa strips 1/16" thick x 3/32" wide, and glued these in place at the appropriate locations.

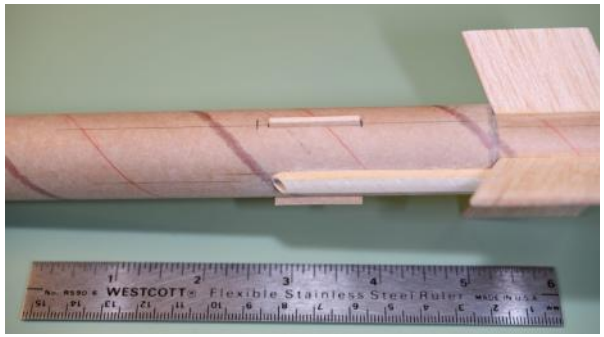


Photo 4: Photon Torpedo standoffs.

With the glue dry and the model sanded, off to the Paint Shop for some Rustoleum Automotive Primer. Once satisfied with the primer's finish, it was time to install those aft end engine louvers. But before we can do that, we first have to make them.

Engine Louvers

The louvers were crafted from pieces of 0.010" thick Styrene, 5/16" long x 3/32" wide, similar in size to the louver markings found on the kit's decal sheet.

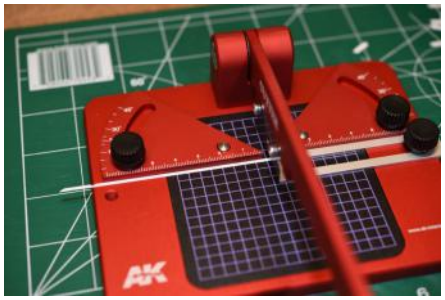


Photo 5: Cutting Louver Strips.

A triangular support piece was fixed to each end with the aid of Tamiya Extra Thin Cement.

Lather, Rinse, Repeat, and we have a set of louvers installed on the airframe. We'll do the same for the other side of the airframe as well.

Photo 6: Building a Louver.

Continued next page

F-61 Update, Continued

Some Squadron White Putty was applied to blend in the front and side edges of the louvers, and with some final primer we arrive at a nice, smooth finish. Time to revisit the Paint Shop.

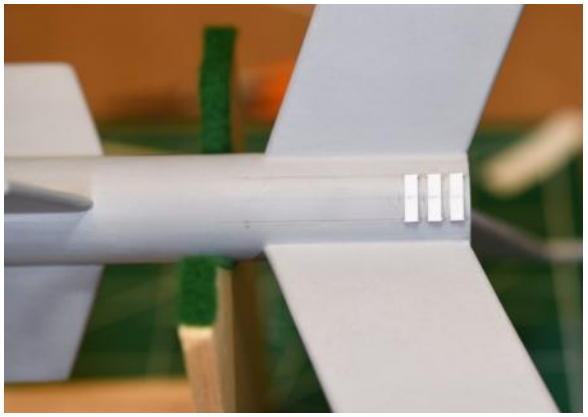


Photo 7: Louvers installed.

Paint

As we're striving for an overall "gray" finish, one might think this to be a good place to stop, except that I didn't feel primer gray was the Whiter Shade of Pale I was looking for. Instead, my finish choice was going to be Testor's Model Master Camouflage Gray #1933, the same color I had used on my Space Transporter America. Testor's Camouflage Gray is actually an old Pactra color that entered Testor's line up when Testor's acquired Pactra in the 1980's. Technically a Federal Standard color, FS 36622, Camouflage Gray provides a nice neutral background for the decals - the marking set I planned to use would be worked up from scratch and printed on clear decal stock with an HP laser printer. There being no white underlay for the decals, the model's base color needed to be something that wouldn't discolor the markings from underneath.

To get there, we first need a nice white base. Two coats of Dupli-Color Perfect Match Arctic White nicely mask the automotive primer, providing a blank canvas for the next painting step. Once cured, Camouflage Gray is applied. Once satisfied with the depth and finish of the Gray, an overcoat of Testor's Gloss #1961 prepares the surface to accept the markings.

Markings

Estes provided a two-color decal sheet with the kit, PN 37584. The decal sheet found in my kit was in good shape, and on sheet each marking appeared to be reasonably thin, with a generous clear film surround. Color depth was reasonably good, although there were a few markings (mainly the small textual markings) that were a bit mushed. No doubt this decal sheet could be used successfully were one intending to build a purely stock build.

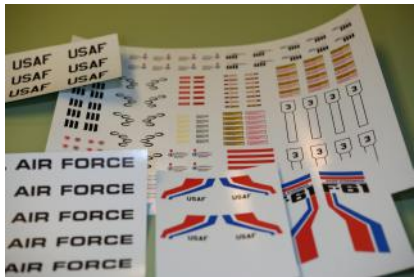
For my build, I still wished to evoke the F-61 marking scheme, but had already decided to move away from the two-color livery. So, I redrew the kit markings in TurboCad, adjusting the markings and colors in a few places to be more consistent with my build objectives. One marking I didn't bother with was the cockpit decal, as I wouldn't be using that decal in my build. I also took the opportunity to make some slight adjustments to the small textual markings, as some of these appeared to be inconsistent with standard fighter jet nomenclature.

Imagining for a moment that the models' designation was derived simply by transposing the numerals in "F-16", I did a quick Google search, and came across a very helpful external cockpit photo, as seen in Photo 9.

Photo 8: Original Kit Decal Sheet.

Photo 9: F-16A External Cockpit View.

I took this photo into consideration as I prepared my markings, and adjusted the decal text accordingly. Once the markings were dry, the airframe was overcoated with Testor's #1960 Lusterless Flat.



(R)Photo 10: New markings.

Continued next page

Photo 11: Airframe in it's new livery.

Up next, the ordnance.

Photo 12: Crushed torpedo

Infra-Red Photon Torpedoes

Unfortunately, one of the ST-41 torpedo tubes supplied in my kit was crushed.

A very close, but not quite perfect, replacement is eRockets BT-4 tubing. I found it to be just a slight hair oversize in OD, but very, very close. With a bit of prep work, we have a pair of torpedoes ready for finishing.

Photo 13: Torpedo tube, ready for finishing.

One will note the strip of masking tape on each torpedo. That tape will be pulled after final paint to reveal a bare strip that we'll use as our gluing surface. Some putty work was needed on the various seams to fill and blend things in.

Photo 14: Ready for Final Primer.

Each torpedo was then re-primed and then sprayed with Testors Olive Drab #1911. Once the color coat had cured, the torpedoes were sprayed with Testors Gloss Coat to prepare them for their markings.

Recalling that the Classic Kit paint scheme rendered the torpedoes in just plain Olive Drab, I thought I might make them pop a bit if I could work in a couple of yellow stripes; I added some service text for effect.

Photo 15: Finished Starfighter Photon Torpedoes.

The yellow stripes were taken from MicroScale's #91106 HO Scale 3" striping sheet; the service text was copied from an online photo, then prepared in MicroSoft Word. Once the markings were applied and had dried, each torpedo was overcoated with Testors #1960 Lusterless Flat, and set aside for final assembly. On to the Air-to-Air Missiles.

Air-to-Air Missiles

Each missile tube was fitted with a length of masking tape to protect the gluing surface from paint, and then primed. Spirals were filled with Squadron White Putty, sanded, then re-primed. Once cured, the missiles were sprayed with Dupli-Color Perfect Match Arctic White. Each fin unit was sprayed with Dupli-Color Perfect Match Cardinal Red, each missile nose cone sprayed with Testor's #2966 Bright Light Blue. Once the paint had cured, a couple of yellow stripes and some service text was applied for effect. Each missile was then overcoated with Testors #1960 Lusterless Flat, and set aside for final assembly.

Photo 16: Finished Air-To-Air Missiles.

Navigation Lights and Airframe Final Assembly

Thinking that the 1/8" diameter dowel fin pods looked somewhat barren, I thought I'd spruce them up a bit with some navigation lights.

Photo 17: Tamiya Clear Acrylics.

To create these, I used the dome ends from a set of 3 mm clear LEDs. Just about the perfect diameter. I chose clear LEDs, as while two of the domes would be tinted red and green, the third dome, the one to be located on the dorsal fin, would be clear, to represent one of the

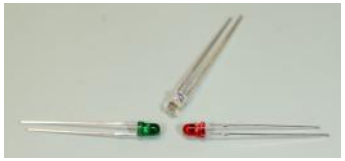


Photo 18: Tinted LEDs.

Continued next page

F-61 Update, Continued

landing lights. Tamiya's X-25 Clear Green and X-27 Clear Red acrylic were the perfect tinting agents.

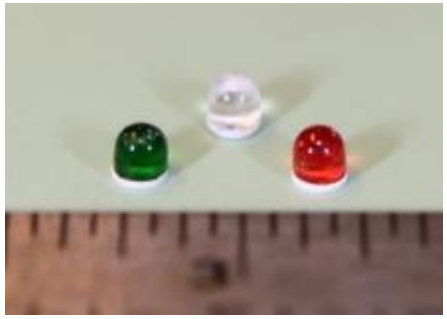


Photo 19: Navigation Lights.

Once the acrylic had dried, some careful sawing with a thin, fine toothed razor saw removed the domes from the LEDs. I placed the cut just in front of the semiconductor die.

Each dome was then backed by a white disc punched from a sheet of Styrene; each disc was glued in place with the aid of Tamiya Extra Thin Cement. The white disc helps with light reflection within the dome, and its back side provides the gluing surface to the airframe. With carefully placed dots of Weldwood Contact Cement, each landing and navigation light was installed.

Photo 20: Port Side Nav Light.

With the nav lights now firmly attached, we can turn our attention to the mounting of the ordnance. Weldwood Contact Cement is used for this task, taking care to avoid any contact with the painted surfaces. The advantage of contact cement in this application is the absence of any glue squeezing out the edges as the various appliances are pressed in place. It makes for a nice, clean installation.

Photo 21: Landing Lights Installed.

With this our airframe is now complete. In Part II, we'll tackle that cockpit.

Photo 22: Completed Airframe.

Big Announcement:
Rocket Run 2020!
At the April Sport Launch

PROBABLY POSTPONED
UNDER REVIEW
CHECK WEBSITE FOR ANY CHANGE IN STATUS

Description: At the April club launch a number of small, featherweight, tumble recovery models will be flown, and the club will provide these rockets.

Rocket Run 2020 participants will endeavor to recover these models and may keep retrieved models as prizes.

Rule: Participants must yield to the person closest to a model being recovered, i.e. no fighting over a model.

Why Rocket Run 2020: This is a fun club activity.

Participation: This activity is open to any student. A student is defined here as a full-time pupil of a home school, elementary school, middle school, junior high, high school or college.

Apollo 15 Astronaut Al Worden Dies at 88

By Alan Williams

Word has reached our fair shores that another American hero has passed.

Alfred M. Worden crossed our local event horizon during the night of March 17 at Sugarland, Texas. His family stated that he had been suffering the effects of a fall and lingering infection, and was in a long term care facility at the time. He was part of the less remembered but very productive last half of the Apollo program.

Al grew up on a farm in Jackson, Michigan, graduating from the Military Academy at West Point in 1955, then becoming an Air Force fighter pilot based right here at Andrews AFB. After graduating from the RAF Test Pilot Program at Farnborough, England, he was selected into the NASA Astronaut corps in 1966. After dedicated training he served in support of the Apollo 9 mission, then moved into the backup crew for Apollo 12.
He was named Command Module Pilot of the Mission 15 team, while his cohorts Commander David Scott and LM pilot Jim Irwin would do the landing and lunar surface work.

In a 67 hour visit Scott and Irwin would make four trips away from their landing site with the first Lunar Rover. Meanwhile, Worden orbited and did a wide range of remote sensing topography and chemistry experiments. He used an advanced suite of ITEK mapping cameras and sensors to expand our knowledge of our strange and wondrous sister. (A closely related camera system would provide similarly astounding images of our own world during 1973's Skylab orbital program.) All aspects of the mission proceeded as planned.

Continued next page

Portrait in his Apollo flight suit.
Photo: NASA

Command Module Pilot.
Photo: NASA

Moon bound - Apollo 15.
Photo: NASA

Solo spacewalk 196,000 miles from Earth.
Photo: NASA

Al Worden, Continued

After rendezvous and leaving lunar orbit, Worden performed a historic solo spacewalk. At a distance of 196,000 miles from Earth, he navigated aft on the Service Module and retrieved two 90 lb. camera film cassettes. The roughly half hour event went very well. Although I don't remember a big deal being made about it at the time, it proved that America's spacewalk methodology was finally mature. Worden's spacewalk altitude record still stands today.

In training.
Photo: NASA

Unfortunately the mission is also remembered for a small post-flight brouhaha concerning commercial sale of stamped envelopes the crew carried with them. It was nothing that hadn't quietly happened before, but some genius at headquarters decided to make a very public point. The crew returned the small college fund that they had set up for their kids, and have tried to forget the whole stupid thing. He transferred to NASA Ames before retiring in 1975. Both before and after his mission he visited the PBS program "Mr. Rogers Neighborhood" to explain what we were doing, and what spaceflight was like. He also wrote a children's book, poetry and a memoir to share his thoughts and revelations.

Home again.
Photo: NASA

An interesting guy. Remember him sometime, eh?

NARHAMS Club Merchandise

New Online Store for NARHAMS Merchandise:

https://www.cafepress.com/narhams

NARHAMS now has an online store for club mechandise. No more waiting for a group buy. Lots more choices of colors and styles. Plus, a huge variety of items, much more than we have ever had in the past.

Shirts, Hoodies, Hats, Mugs and more!

End your loved ones' gift shopping dilemma - leave this page open and circle this announcement.

Contact your editor before buying. He gets regular discounts or free shipping codes from Cafepress. Save your dollars for rocket motors.

February Meeting Highlights
By Ed Pearson

At the club's February meeting Kevin Johnson, James Miers, and Mark Wise led discussions on multi-staging and clustering. For business we discussed frogs; Alan Williams presented Alex Mankevich the annual For Rocketeers Of Greatness (FROG) award. Several of us (e.g., Don Carson, Jim Filler, Chris Kidwell, Sean Ricketson, Brad Grant) attended (remotely) via WebEx software and we discussed planning logistics. Estes Mosquitoes were handed out for the March craftsmanship contest and April's Rocket Run. We had a special guest— Misse Roura from Spain.

Top: Jim Miers talks on staging. Bottom: Alex Mankevich receives his FROG award from Alan Williams.
Photo: E. Pearson

Spacemodeler from Spain: Misse Roura.
Photo: E. Pearson

For Rocketeers Of Greatness (FROG) 2020 Award Citation
- Alex Mankevich -

Alex Mankevich has been NARHAMS president since 2012. He encourages all forms of model rocketry and focuses on public outreach activities (e.g., the NASA and club public launches, scout programs, Rockville Science Day workshops, GSFC SISTER build/launch sessions, science museum displays and workshops, and ad hoc model rocketry activities).

Alex regularly makes public presentations on model rocketry and historic rocket/space programs at the NASA Goddard Visitor Center and other venues.

Alex is an avid photographer of NASA/industry rockets launched at Wallops Island, Virginia, and their smaller versions at club launches and TARC. He uses his photographs and the articles he writes for the club newsletter (ZOG-43) to chronicle NARHAMS activities.

Alex encourages the involvement of others in model rocket contests, demonstrations, displays, presentations, and workshops while maintaining a management style that promotes others abilities, interests, and strengths, rather than seeking a self-spotlight.

Because of his fidelity to NARHAMS, his selflessness, promotion of the hobby, and seeing that jobs get done, NARHAMS gratefully presents the For Rocketeers Of Greatness award to Alex Mankevich, February 2020.

March Meeting Highlights By Ed Pearson & Jef Fineran

Our March meeting marked 55 years of NARHAMS being a NAR section. We learned of the Arizona Cup (March 3-5) and NARCON (also Arizona on March 6-8) via telecom from Don Carson and Kevin Johnson. Jim Filler (via telecom) told us about the NRC's rule revision comments period, and we talked about the passing of Frank Panek—founder of the Blue Ridge Rocketeers (WVa) and former NARHAMS member.

Members brought to the meeting Estes Mosquitoes for April's Rocket Run launch (a rocket version of an Easter Egg hunt). The models were judged for craftsmanship at the meeting and $55 in cash prizes awarded. Jim Miers (L) palms his overall prize winner and Zog Alex Mankevich holds a jar of the biting bugs. Other entries were submitted by Mike Cochran, Jim Filler, Jef Fineran, Ed Jackson, Sarah Jackson, Kevin Johnson, and Alex Mankevich.

Ole Ed judging Mosquitos.
Photo: J. Fineran

Bits and Pieces

The Next 3 Months

Date	Time	Event	Location
Apr 04	5:30 - 9 pm	**Monthly Meeting** Topic: Flex Wing Demo And Build (Jennifer Ash)	WebEx
Apr 05	1 - 2 pm	**Goddard Public Launch And Apollo 13 50th Anniversary Celebration– Launch cancelled, Apollo 13 Celebration may be postponed**	Greenbelt, MD
Apr 19	12 - 5 pm	**30th Rockville Science Day - Postponed To Fall 2020**	Rockville, MD
Apr 25	12 - 4 pm	**Sport Launch – New Date/Under Review** Theme: NRC Events Launch Managers: Jen Ash And Mark Wise	Mt. Airy, MD
May 02	5:30 - 9 pm	**Monthly Meeting – Under Review** Topic: Open Rocket / Rocksim Demo Refreshments: Open	WebEx/College Park, MD
May 03	1 - 2 pm	**Goddard Public Launch – Under Review**	Greenbelt, MD
May 16	8 am - 5 pm	**TARC Finals – Postponed to 2021**	The Plains, VA
May 16	12 - 4 pm	**Sport Launch – Under Review** Theme: Scifi Rockets Launch Managers: Jacksons	Mt. Airy, MD
May 22 - 25	9 am - 5 pm	**National Sport Launch 2019**	Alamosa, CA
Jun 6 - 7	9 am - 5 pm	**Can AM Cup – Under Review**	Muskegon, MI
Jun 06	5:30 - 9 pm	**Monthly Meeting – Under Review** Topic: Guest Speaker Refreshments: Open	WebEx/College Park, MD
Jun 07	1 - 2 pm	**Goddard Public Launch – Under Review**	Greenbelt, MD
Jun 20 - 21	9 am - 5 pm	**ECRM-47 Contest – Under Review** Events: 1/2A PD, 1/2A HD, 1/2a Altitude, 1/4A FW, OSL Launch Manager: Jim Filler	Mt. Airy, MD

Check Website For Any Changes/Updates in Event Status

43 Sightings

"Was getting my oil changed and glanced over to the adjacent bay. Of course this is what I saw on the car next to me,"
Ole Ed.

Photo: E. Pearson

Welcome New/ Renewing Members

New

James Anderson, Celeb Ford, Joe Ford, Lucas Ford, Thomas Goudreau, Erik Hill

Renewals

Michael Cochran, Ed Jackson, Sarah Jackson, Alex Mankevich, Jim Miers, Ed Pearson, Alan Williams

Not Reading Your Own Copy of the Zog-43?
Join NARHAMS and have your own copy emailed to you hot off the press. Only $5/ year! Click here.

From the Zog: *NARHAMS Copes with COVID-19*

By Alex Mankevich, NARHAMS President

Throughout January 2020 we had become increasingly aware of the global spread of Coronavirus and its seemingly inevitable impact in Maryland. We conducted our monthly model rocket launches at the NASA Goddard Visitor Center for the first three months of 2020. We conducted our sport launch at Old National Pike Park on February 15th. We exhibited a static display at the Patuxent River Naval Air Museum on February 29th just as the public was earnestly focusing upon the possible adverse impact of this disease. Most of these events generated the large social gatherings that could prompt the person-to-person spread of COVID-19.

Following President Trump's address to the nation on March 11th, most federal government entities issued announcements of their facility closings and activity cancellations. The State of Maryland followed the President's address by ordering school closings. County governments then followed suit regarding the closure of their properties and facilities to social gatherings.

Around the middle of March announcements directly affecting the launch activities of NARHAMS began to kick in. The Goddard Visitor Center alerted us that NASA had cancelled all their scheduled events through March 31st. The prohibition against large gatherings stood against conducting the TARC qualification schedule and the TARC finals. Ultimately, the NAR and the Aerospace Industries Association (AIA) postponed the 2020 TARC finals to 2021.

NARHAMS Secretary Sarah Jackson got in contact with the Frederick County Parks and Recreation to get a handle on their potential shutdown of our Old National Pike Park sport launches. Initially, they permitted open air activities that were restricted to gatherings less than 250 people. That changed when social gatherings were to be restricted to 50 people. Finally, Maryland Governor Hogan restricted gatherings to 10 people or less. Since emergency orders issued by the Governor carry the full force of the law, NARHAMS cancelled all its March sport launches.

Then the Rockville Science Center announced that there were postponing their 2020 Rockville Science Day, formerly scheduled for April 19, to a later date in the summer or fall of 2020.

No question about it, rockets draw a crowd, like this one at a Goddard Open House in 2015.
Photo: A. Mankevich

NARHAMS continues to monitor the announcement of the federal, state and local responses to the coronavirus disease 2019 (COVID-19). The Maryland law restricting gatherings to 10 people or less and the general restriction of unnecessary travel goes against assembling for our monthly business meetings. Normally, our meetings involve addressing our plans and personnel assignments for our upcoming activities. The cancellation and postponements of virtually all of our launches and activities rendered our meetings somewhat moot. We have still listed June's ECRM on our calendar, however July's Apollo Contest is listed as cancelled. Your NARHAMS officers will continue to monitor the announcements of the federal, state and local authorities in regard to COVID-19. We will amend or reschedule our activities in accordance to law and to the advice of our nation's leading health officials.

The March 2020 Goddard Report: Where Did They All Come From?

By Alex Mankevich

NARHAMS successfully conducted its third consecutive Goddard launch this year on March 01, 2020. I mention this because for the rain-soaked 2019 we had to wait until the July-August-September months to accomplish three consecutive Goddard launches.

The weather generally cooperated for this launch. The sky was sunny and the temperatures climbed into the upper 50's. The wind was somewhat less cooperative. The breeze was steady all day long. Ted Cochran was kept busy all afternoon with treed rocket recovery.

Girl Scout Troop #2153 watch one of their models fly and descend along with Firing Officer Ed Jackson.
Photo: A. Mankevich

The large crowd was somewhat unexpected. We were surprised to find ourselves experiencing April and May numbers of flyers. Michael Cochran mentioned that wave after wave of groups piled into the auditorium to construct and to prepare their models for flight. The peanut gallery along the rope line was huge. The line of flyers in the queue for safety check was long. The pack of flyers "on deck" by the Javelin's nose cone was crowded. Cub Scout Pack #1537 out of Falls Church, Virginia and Girl Scout Troop #2153 out of Central Maryland contributed to the number of flyers.

Rockets pointed everywhere!
Photo: S. Ricketson

Ed Jackson (left) and Michael Cochran (right) were kept busy with launching and performing igniter wire replacements.
Photo: A. Mankevich

Sarah Jackson flew solo (for the most part) at the Safety Check station. Sarah managed a huge crowd while performing the safety checks and launch pad assignments. Ted helped Sarah out from time to time. Pad assistant Alex Mankevich stayed at the launch control with Ed Jackson who performed the

Continued next page

March Goddard Launch, Continued

narration and Firing Officer duties. Michael joined Alex and Ed at launch control later in the day.

Following the launch and as the final rocket decorated the trees surrounding the Visitor Center, we tallied up our numbers. We launched 100 flights and managed 30 igniter wire misfires. Thirty-three First Time Flyer certificates were awarded. Shirley Ramos reported that she recorded 154 visitors for the day.

Postscript dated 03/29/2020: The March 2020 Goddard launch may have been the last for a while due to the COVID-19 pandemic. NASA Goddard announced through its Office of Communication that it closed its Visitor Centers at Greenbelt and at the Wallops Flight Facility beginning Friday, March 13th. This announcement prompted NARHAMS to list all the remaining Goddard launches for 2020 as cancelled. Our Apollo 13 commemoration also at Goddard had been postponed for later in 2020, but no new date had yet been set.

Hook up those clips and another rack ready to launch.
Photo: S. Ricketson

Michael Cochran manages the chaos of the model rocket flight preparation inside the auditorium.
Photo: A. Mankevich

We had 154 visitors counted at the Visitor Center. The queues were huge at the Safety Check line and at the "on deck" station.
Photo: A. Mankevich

Coast and ejection caught by Sean Ricketson.
Photo: S. Ricketson

Ted Cochran (left) and Ed Jackson (right) monitor a Helios model rocket as it lifts off the launch rack.
Photo: A. Mankevich

February 2020 Goddard Launch Report

By Ed Pearson

Every model rocket Sunday RSO Ed Jackson has flights dedicated to deceased club members who have served our rocket program (i.e., Herb Desind and Richard Crisco). This model's flight was dedicated to Herb—who passed almost 30 years ago.
See next article for a look back at Herb D.
Photo: E. Pearson

Continued next page

The rocketeers gather and there were plenty of them.
Photo: E. Pearson

(L) What's up?
Photo: E. Pearson

Everyone has great fun AND the trees are always waiting.
Photo: E. Pearson

(R) When a rack empties the RSO "releases the hounds." The modelers then run pell mell to recover their flown treasures.
Photo: E. Pearson

Sarah Jackson led Safety checkin.
Photo: E. Pearson

Goddard launch, Continued

Michael Cochran seemed everywhere: helping rocketeers get their flights ready; helping Sarah with safety checkin; helping load models onto the rack; and re-prepping misfired models.
Photo: E. Pearson

NOVAAR's Will Marchant came out with four kids and a small fleet of Quest Micro-Maxxes. Here he loads/flies a Spacefighter. (This may be the first time the Micro Maxxes have flown at the Goddard launches).
Photo: E. Pearson

(R) Quiet before the storm: Range crew poses for camera ere the day's activities commence. L-R: Sarah Jackson, Ed Jackson, Mike Cochran, Alex Mankevich..
Photo: E. Pearson

Remembering Herb Desind

By Scott Pierce

Photos: Scott Pearce

Herb found himself unable to turn the Cineroc on so Scott drove his car up to assist. From Ole Ed: The cringe pose Herb affects is very Herb who turned on his cameras, stepped back, and up they went. European chic?

Photo of Herb with an Omega taken about 8 miles from Mt. St. Helens late June 1981.

The tall rocket was mine, The Road Dog. 15 motor cluster 6 x D12-7 + 9 x C6-7, about the mid-70s.

(L) Don't know who owned the glider or who is standing near Herb taking pictures.

(R) The photo of the top of herbs head was taken using an Astrocam manually just as a camera for fun (1980 summer).

Competition Corner:

Arizona Cup 2020 Report

Contest Dates Up In The Air

Arizona Cup 2020

By Don Carson NAR#11069

The Arizona Cup has become the kick off event for the World Spacemodelling competition community who follow the regular calendar for their competition year. Meet organizer Matt Steele and Contest Director Mike Nowak scheduled the event the two days before NARCON near Tucson, AZ. It drew 13 competitors from Canada and the US, up from last year.

Steve Kristal's S2/P rocket.
Photo: D. Carson

The contest was flown on the Southern Arizona Rocketry Association's (SARA) club launch site. It was a fantastic setting; flat, flat, flat with gorgeous mountains in the distance. It was, however, absent any facilities except a Porta-potti. It was totally a bring-your-own affair, not a problem for FAI competitors, who typically travel with all the equipment they need.

The mlti-round events were S4A (A Rocket Glider), S6A(A Parachute Duration), S9A (A Helicopter Duration), S2/P(similar to a TARC type event), and S8E/P (E RC Rocket Glider with a time limit and spot landing requirements!). The launch was also registered as an NRC

Continued next page

Upcoming FAI-style Contests - *Check with Organizers for Updates*

FIRE - Open International Meet - March 26-28, see https://www.nar.org/site/f-i-r-e-cup-2020/ *Postponed to the October time frame*

CanAm Cup - June 26-28, 2020, Muskegon, MI. Contact Mike Nowak (mikemnowak@gmail.com) *Under Review!*

NARAM-associated North Coast Cup - June 24-26, 2020, Geneseo, NY

East Coast Regional Meet-47

Events:

All NRC Events can be flown
Plus
1/2A Parachute Duration*
1/2A Helicopter Duration*
1/2A Altitude w. altimeter*
1/4A Flexwing Duration**
Open Spot Prize Event

*National Rocketry Competition event
**Similar to a NARAM event
***Other NARAM event

June 20-21, 2020
Old National Pike Park
Mount Airy, MD

UNDER REVIEW
CHECK WEBSITE FOR ANY CHANGE IN STATUS

Rocketry Festival 2020

NARAM-62 Events:

1/2A Parachute Duration*
1/2A Streamer Duration*
1/2A Helicopter Duration*
1/2A Altitude w. altimeter*
1/2A Boost Glider*
B Payload Altitude w. altimeter*
A Flexwing
D SuperRoc Altitude w. altimeter
Sport Scale
Research & Development

July 25 - 31, 2020
National Warplane Museum
Geneseo, NY

For current info, go to
www.nar.org

AZ Cup, Continued

event, so there were some flying that, as well as, a record attempt(and set) by Chris Flanigan in G SuperRoc Altitude. Well done, Chris!

There were some unusual aspects to the motor management for this event. We had to use Estes motors, so no motor testing was required - a plus. The organizers provided the motors, which was nice for those of us who traveled by air - another plus. All the A-engine events were flown with 1/2A motors. This certainly made it easier to retrieve our models, but would make it more difficult to achieve a "max" score in any round - both pluses, in my book. Flying 1/2A's also gave us a choice of a 2 or 4 second delay - a plus over choosing between an A3-4T or an A10-3T. Lastly, it allowed us to practice with the motors we would use in competition - no downside here. Since we were all pulling from the same motor pool, it made no difference that the Estes motors are not full power nor were as light as their European counterparts.

Conditions were beautiful at the start. It got windier as the day went on. By the time the 3rd round of the events started, the wind was howling. The CD rightly shut the flying down. After a delay, it was judged that conditions were not going to get better, so they called it a day. The winds increased overnight and there was no flying on Friday. Unfortunately, that meant that the RC Rocket Glider event did not get flown at all.

US Team member Becky Zurek, being the only Junior flying in the Cup, flew with the seniors and acquitted herself very well, taking a 2nd and 3rd place. Complete contest results can be found on CupNavigator.com.

The AZ Cup was a fun and challenging contest, good practice for US Team members, Team member aspirants, and a few newbies to the events as well. The atmosphere was very collegial with good sportsmanship all round.

Mike Nowak launches his S2/P rocket.
Photo: D. Carson

A Streamer model caught on the fence.
Photo: D. Carson

Matt Steele measures Chris Flanigan's G SuperRoc record setting entry.
Photo: D. Carson

Taras Tataryn's S2/P at ignition.
Photo: D. Carson

Mark Bundick launched NRC entries all day long.
Photo: D. Carson

Peter Cook watches Fritz Gnass check the egg in S2/P.
Photo: D. Carson