Zog-43

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Zog-43
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July August 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:
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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 - Virtual Reality

Don Carson, NAR #11069

While gatherings and events are still being cancelled or postponed, the world is learning to adapt to some extent with the ongoing pandemic.

We are in the middle of a Virtual-NARAM contest and have already seen the NAR Town Hall, Manufacturers Forum, the Board of Trustees meeting as webinars! More people registered to attend these events than have participated in person in the past. Although we miss the camaraderie of the face to face meetings, the broad reach provided by videoconferencing is a success in its own right. This virtual presence may become a strength in the end.

Some good news is we are beginning to fly again! In small steps, we are developing processes we need to have in place so that our members and visitors can attend a launch safely. Please bear with us as we find our way.

In closing, I'd like to thank the LAC Newsletter Award judges for recognizing NARHAMS' team effort to produce a truly outstanding club newsletter. Over the years, NARHAMS has won the award 11 times, more than any other club. I'd also like to give a shout out to another great newsletter, "Total Impulse", edited by Buzz Nau for the Jackson Model Rocketry Club (JMRC) #620 and Huron Valley Rocket Society (HUVARS) #463 Sections, which received an Honorable Mention.

My thanks go out to everyone who contributes to make this a such a fine newsletter - the credit goes to you.

I hope you enjoy this issue.

As always,

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

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: We are always casting about for new launch site. This one is Rocket Lab's Launch Complex 1 in Mahia, New Zealand. Not too shabby.
Photo: Rocket Lab

Back cover: The business end of Rocket Lab's Electron reuseable launch vehicle. The first stage engines are 3D printed! Suppose you could find those files on Thingiverse?
Photo: Rocket Lab

ZOG ROYAL COURT
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We Held a Rocket Launch!

Krimgold Park Launch, July 2020

By Ed and Sarah Jackson

In July, after months of being quarantined in our houses, we were finally able to get the OK to resume launches. Unsure of how our newly minted COVID-19 launch procedure would go, we decided to host a test launch with a limited number of people at our alternate site of Krimgold Park. So on the hot and muggy Saturday of July 25, Alex, Sarah, and I set up on the Fields 2 & 3 (northern fields) on the mostly empty park with a dozen other NARHAMSters. We piloted our COVID-19 procedures as well as getting some COVID builds off the ground.

To start with, all fliers and spectators needed to wear masks (correctly!) unless they were stationed in their socially distanced prep area. For the most part, everyone successfully obliged. We only placed two to three rockets on the rack at a time to minimize clustering of people. We used cones and signs to direct people to keep them moving in a clockwise direction around the launch area. Flight cards were mostly electronic, with either the flyer or the check-in officer inputting the details into a Google Form. We periodically halted launching to disinfect the rack and rails.

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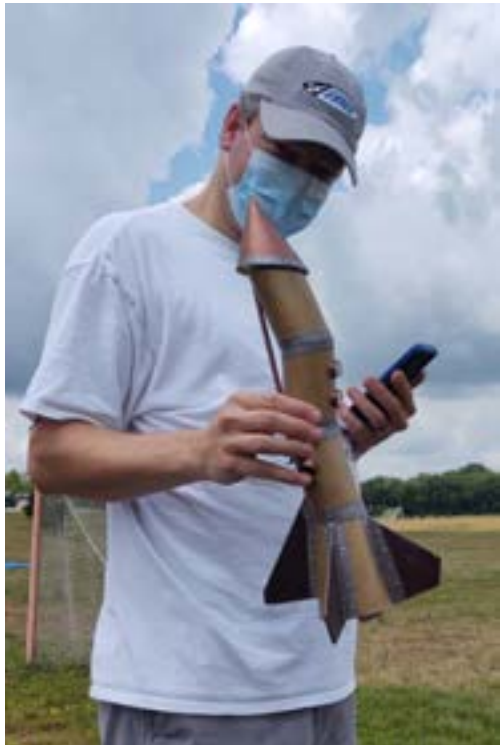
Aisha and her father discussing how rockets work.
Photo: S. Jackson



Tom Jackson's Spitfire painted in a steampunk fashion.
Photo: S. Jackson

Tom Jackson's Spitfire parachuting down.
Photo: S. Jackson

Bill Stec's Red Estes Space Twister and custom color-shifting painted Crossfire ISX practice soical distancing.
Photo: B. Stec

Krimgold Park Launch, Continued

Conditions were not ideal. It was hot. It was muggy. There was no shade as Krimgold is strict about no tents or canopies. We were wearing masks. Some of us got grumpy and tired. The start of the launch was a little rocky as we struggled to get the tablet to behave which we ultimately gave up on for the day. This will be something we need to have ready the day before the launch. We also failed to have a pre-flight safety meeting. Having a PA and tents for key personnel will be needed for a larger launch seeing as the sun wore most of us down as the day went on. For this launch we managed to keep things safe but a larger launch will require more enforcement of our COVID procedures. The last half of the launch we settled into a groove and things smoothed out as the pace slowed a bit.

The launching was fun, though, and we managed close to 60 flights. Jennifer Ash flew a few Virtual NARAM flights for her team, QFPB: 1/2A PD, 1/2A SD, and 1/2A HD. Her helicopter and parachute duration flights performed well, but the streamer duration unfortunately never left the pad and blew its nose cone off. Jennifer Ash made a little girl's (Aisha) day by providing an unpainted Baby Bertha for her to fly. Aisha then took the rocket home to hopefully fly with us another day.

Semroc Omega Cineroc.
Photo: M. Held

Bill's Estes Protostar on its second flight, on an C11-3.
Photo: B. Stec

Dave Lewis launches 2 F-engine rockets. An Aerotech Arcas with an F23-4FJ (thus the cool smoke) and a Sirius Eradicator with an F50-6T. Both rockets were recovered in perfect shape. Oddly, these were the first F-engines he has ever flown.
Photo: D. Lewis

Bill Stec's scratchbuilt Martian Congressional Republic Navy torpedo from the sci-fi series "The Expanse".
Photo: B. Stec

Marc Held's Dynasties Stonebreaker.
Photo: M. Held

Bill Stec's Vapor maiden flight suffered some damage, but is being repaired.
Photo: B. Stec

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Krimgold Park Launch, Continued

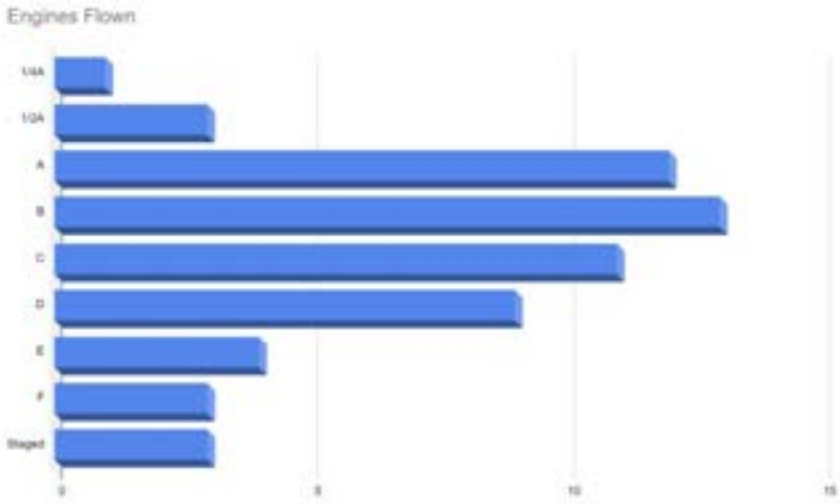
Mike Kelley kept things low key and flew quite a few scale models but we were able to get off some bigger F engines with the park to ourselves. Bill and Steven Stec took the award for the most flights launching most of their fleet twice.

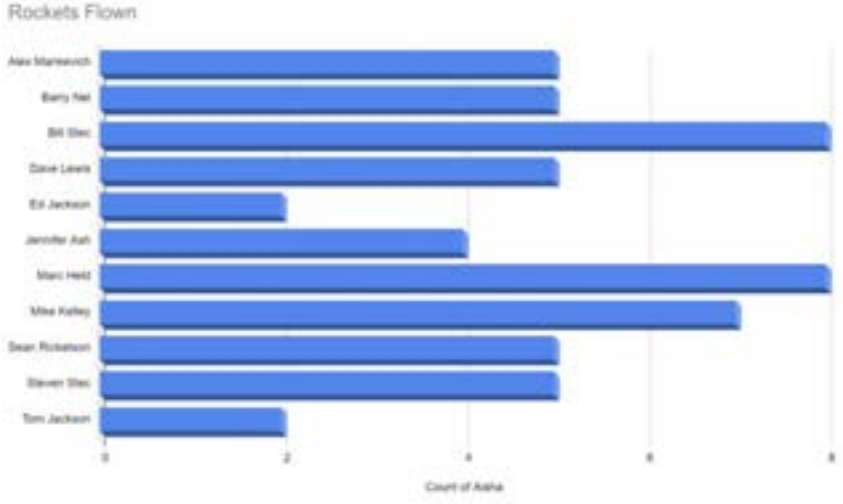
Almost everyone who showed up helped set up or break down on a day that ended up being far more stifling than what the weatherman predicted. This was our second launch at Krimgold and even though the park is mostly empty and has the same amount of space as Mt.Airy, the lack of PA and tents will continue to keep these launches to a lower volume. With that said, it will be a good spot to add a few TARC launches in February and March.

Note: A nice advantage of digital Flight Cards is the easy breakdown of Flight Data.

Tom and Ed Jackson preparing to fly, sporting the fashion of the times.
Photo: S. Jackson

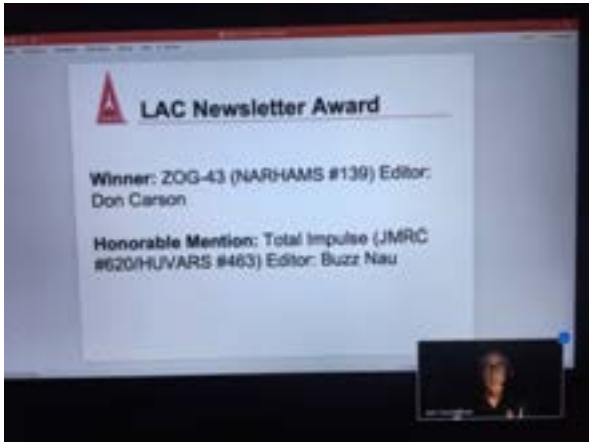
(L) Marc Held's Apogee Components Aspire.
Photo: M. Held





Announcements

So, this happened. At the NAR's Virtual Town Hall, President John Hochheimer announced that the Zog-43 had won the **LAC Newsletter Award**. Congratulations to NARHAMS for producing a nationally recognized award-winning newsletter for the 11th time. I'd like to add my grateful appreciation for the great support the club provides to their newsletter editor. - Don Carson



Virtually Everywhere

Virtual NARAM/2020

We are about halfway through the **Virtual-NARAM** launch window. The response has been great. There are plenty of unawarded spots, especially in the younger, A&B Divisions. In A&B, a simple 1/2A flight with a parachute or streamer would land you in the top 4 for that event, (which earns a cash prize). The only requirement is that you must be an NAR member. Learn all about it here.

World Space Modeling
Virtual Open Meet/2020

Based on the success of the Virtual-NARAM, the US is about to announce a **Virtual World Open Meet**! See the **Competiton Corner** for more details.

The NAR has decided to conduct this winter's National Convention online! A **Virtual NARCON.** Now people from across the country and the globe can attend. Watch for developing details.

ECRM Cancelled

Sadly, the club has had to cancel our once postponed annual contest, the East Coast Regional Meet. Another impact of the COVID-19 pandemic. Hopefully we will be back at it next Spring.

For those of you who need a real aerospace fix, the Smithsonian's **Steven F. Udvar-Hazy Center** has reopened. Call to check latest on hours and precaustions. Yay!

International Spotlight

Southern England Rocket Flyers…
the story of those who've chosen a life of SERFdom...

SOUTHERN ENGLAND ROCKET FLYERS – SERFs – is the most dynamic Model Rocketry-Space Modelling group in the UK and has been for two decades plus. Enter Personality Number 1 – John Harvey, SERFs founder. John has played a key role in so many good things in the development of UK Model Rocketry, following the introduction Estes products, through the efforts of the late Peter Mackenzie, in the late-1980s. John was key to the introduction of *Ammonium Perchlorate Composite Propellants* (APCP), for High Power Rocketry, a couple of years later. All this undertaken through liaison with the Health & Safety Executive and all made possible by the commitment of BMFA.

SERFs the Genesis.. What is it?!? ..a South of England model rocketry flying group, pure and simple. Founded in 1989, when the British Space Modelling Association (BSMA) needed to focus its attention on FAI international activity. *Cooperation* – not conflict – was the keyword and the flying group and sites accumulated over the last decade just handed across. Last decade?!? ...model rocketry accessories, specifically propellants, were technically not available 'til SERFs came on stream! However, the likes of Paul Clark – BSMA founder and Personality Number 2; John Wheddon, Alan Perry, John Pitfield, Nigel Parry-Jones, plus your scribe, magically acquired 'Stateside contacts and a surprising volume of Estes model rocketry motors, kits and accessories began to trickle into the UK. Legal?!? ..not as copper bottomed as now, but responsible initiative and opportunism is how we got things off the ground. BMFA and the 'Trade – notably *Ripmax* – were to play key roles later.

A Short History By Stuart Lodge

SERFs on the ground.. Model flying needs Flying Sites! Paul Clark's inspiration in 1980, returning home from the World Space Modelling Championships, at Lakehurst NJ-USA, was to form the BSMA. He had a friend, called Roger Partridge, based at Yatesbury in the county of Wiltshire and asked, "..can we come and fly rockets on your land?". Sequel, Manor Farm has provided flying fields for the past three decades! Another aside, is that during World War 2, a Hawker Hurricane RAF reserve base was set up here, with one of the personnel being one Arthur C.

Your scribe was proud to meet Scottish rocketry legend, Jown Stewart and shown here prepping a bird at a SERFs, at Yatesbury 1985.
Photo: S. Lodge

Mervyn Godfrey sets up his pride and joy at a SERFs' meet, at Yatesbury in 1985.
Photo: S. Lodge

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SERF, Continued

Clarke, science fiction author and rocket enthusiast!?! More rocketry was hosted at Kite Festivals at Brighton and Petworth, as well as Plumpton Model Show, but as numbers of both kite flyers and rocketeers began to burgeon, less populated sites were sought. This is remarkable, remembering that no hobby shop sources existed for model rocketry accessories, until much later. Displaying brilliant timing, John Harvey promptly delivered Hampshire-based farms at Itchen Stoke and Soldridge, on much the same terms as Yatesbury! ..SERFs now truly on the launch pad. Very recently, a super site at Avebury, adjacent to Yatesbury, has come online, so SERFs truly spoiled for choice. John Harvey has much to teach flying site coordinators, in other theatres of Model Flying… just the best!

SERFs 5-4-3-2-1...Start! Flying meetings are based on the BMFA Model Rocketry Safety Code, yet informal and a lot of fun…compulsory! What's flown? Estes & Quest kit rockets, own-designs, scale models, contest birds, mid-powers and the occasional High Powered Rocket. Jargon – most model rockets fly on low power blackpowder motors, typically by Estes and Quest, up to an Impulse level of 40 Newton seconds (Ns) – A to E power. Mid Powers are normally boosted by APCP propellants, 41-320Ns – F to H; High Power Rockets are bigger still and launched on >320Ns – H power plus.. And yes, Jargon breeds yet more jargon, but show up to a SERFs and you'll find an expert to clarify things… or go and read some books by an author with a name like mine! Basically, if you can imagine it, it's flown at SERFs rocketry meets. Traditional Radio Control model aircraft compete for airspace, these days. But no, there are no SAMs at SERFs…apart from a few *Society of Antique Modellers* members, that is!

(R) Keen group of enthusiasts around the table. Stuart Lodge wires up Paul Clark's Space Shuttle… Yatesbury 1985. *Photo: S. Lodge*

(L) Looks like a 'Superoc', but just another sports' rocket. Joh Stewart, paul Clark and Mervyn Godfrey all chip in. Yatesbury 1985. *Photo: S. Lodge*

SERFs the people.. The late Ron Moulton – Personality Number 3, is to be credited with letting SERFs fly at his Old Warden meetings in the early stages; the great man a long standing covert rocket enthusiast! Similarly, SERFs were saddened by the loss of BMFA's Roger Bedford, who had proffered comparable assistance over a long period. But most of all

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Paul Clark preps his inflatable Space Shuttle… good for landing on water, under the guidance of John Stewart. Yatesbury 1985. *Photo: S. Lodge*

SERF, Continued

it's about the membership and cooperation. John Harvey obviously, but lots of others too, Brian Best, Dave & Kay Tranter, Steve Parker, Verney & Ros Montague, Alan Perry, Chris Bishop, Gary Blinco, Bob Dyer – SERFs' webmaster. Yet more joined the team, notably Wit Lei, Pete Barratt, Dave Driver, John Ellins, Will Hartley, Rob House, Paul MacNeil, Rob O'Brien and Matt O'Brien, the latter two oft accused of being twins…but no!

In recent years, SERFs has been sponsored by *'Rockets and Things'*, run by Malcolm Jennings, ensuring supplies are always available onsite to members. A typical flying day will see the whole age spectrum on show, from kids to pensioners, both sexes too. Latterly, farm manager, Roger Partridge, has been granted SERFs' Honorary Life Membership, in the company of the legendary Astronomer Royal, Sir Patrick Moore. The latter even offered to host a SERFs flying day in his garden…a paucity of acreage, Safety Code tenets and commonsense prevailed and meant John Harvey had politely to decline..

SERFs and BMFA.. In 1997, BSMA and SERFs came formally back together to form the *British Space Modelling Alliance,* a specialist body within BMFA and performed a consultancy role for both domestic model rocketry – including many legal issues - and international contest activity. Team Trials for BMFA World Championship UK Teams have routinely taken place at the Yatesbury site. SERFs have directly contributed to the success of British FAI Space Modellers at World Cups and World & European Championships. The medal tally is now >100, putting the Space Modellers high up on BMFA's international medal pantheon.

Your scribe and domestic motor producer, John Pitfield, check out a rocket that's boosted on F36-5 motors…really spectacular.
Photo: S. Lodge

Paul Clark sets up his fabulous Ariane 1 at a Yatesbury meeting in 1985. John Stewart from Scotland looks on.
Photo: S. Lodge

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Paul Clark, the guy who started UK ModRocs, shows off an unusual device at a SERFs' meet at Yatesbury in 1985.
Photo: S. Lodge

Your scribe's Vertikal returns to mother earth, at a SERFs, at Itchen Stoke, in 1999.
Photo: S. Lodge

SERF, Continued

SERFs the future.. More of the same for sure. But *evolution* vital too, to ensure there is a future. Many model rocket enthusiasts like to fly RC 'park flyers', when conditions suit and to cut costs. The current economic climate has inflated the price of model rocketry supplies – motors, kits and launch gear – to unacceptable levels and it is to be hoped that this trend will reverse soon. Every year, key issues are discussed at the popular Annual Social, held at *The Bear Hotel*, in Marlborough.

SERFs the contact.. Want to know more and boost some birds?!? Get in touch with:

John Harvey
++44 (0)2380 552517
johnharvey1@onetel.com
www.serfs.org.uk

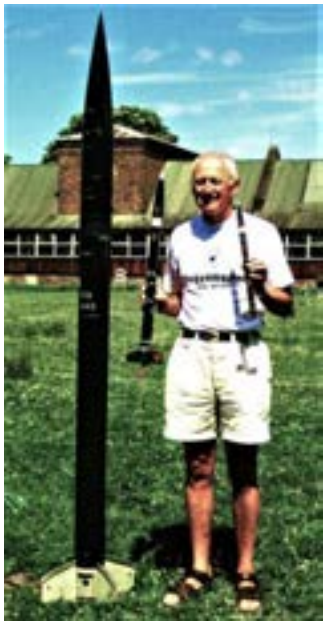
No excuse then, so *SERF* that net and get rocketing. SERFbored…never met one!

V-5-V Vertikal by Stuart Lodge, made its first test boosts at SERFs meetings in 1998.
Photo: S. Lodge

Estes' Jayhawk, by Stu Lodge, that's boosted a number of times at SERFs meets, around the south of England.
Photo: S. Lodge

UKAYRoC – it's all about the kids – really got going in the UK, by the efforts of SERFs' members. Really big now…this one was 2014s.
Photo: S. Lodge

BAJ Skua in re-entry mode at a SERFs in 1998…really spectacular frame.
Photo: S. Lodge



Your scribe at the Royal Gunpowder Mills, in SE England, during 2011, showing off his BAJ Skuas next to the 'Real Thing'.
Photo: S. Lodge

The Flight of the Hercules

By Dave Zuchero

Ignition and lift-off! The iconic Cold War Nike Hercules anti-aircraft missile streaks skyward from Nike Missile Base BA-79 outside of Baltimore. Had this been an actual alert and 50 years earlier, that missile, carrying a nuclear warhead, would have been targeted to intercept Soviet bombers loaded with nuclear bombs destined for Baltimore or Washington, DC. Lucky for all of us, it was only a scale model rocket.

Beautiful peaceful launch of Dave's Nike Hercules from the BA-79 Nike Base.
Photo: D. Zuchero

On June 13, 2020, amid the cornovirus pandemic, I had the opportunity to launch the first Nike Hercules ever fired from the Nike Missile base designated BA-79 in Granite, Maryland. The four black powder D motors ignited and the model lifted off from the original missile elevator doors, climbed to about 500 feet and returned safely to the base, a flight profile completely unlike the real thing. The recovery was kept within the confines of the base thanks to the use of a ChuteRelease. A small group of restoration volunteers was on hand to witness the launch.

Close-up of Dave's Nike Herc.
Photo: D. Zuchero

BA-79 was part of the Nike missile air defense system during the Cold War that surrounded many American cities with anti-aircraft missiles and provided a “Ring of Steel” against Soviet nuclear bombers

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Side Bar: Nike Missile System Background

BA-79, Granite, MD in the 1950's.

The Cold War during the 1960s was a very frightening time for those of us who lived through it. The constant threat of nuclear annihilation hung over the country. School children practiced “duck and cover,” ducking under their desks and covering their heads with their arms, as if that would somehow protect them from the effects of a nuclear explosion. People talked about building fall-out shelters in their backyards and you could even visit model shelters at your local shopping center. Before intercontinental ballistic missiles, the means of our destruction would be Soviet bombers dropping nuclear bombs on American cities. This was the stuff of nightmares for a kid growing up during that time.

To counteract this threat, the US built over 250 anti-aircraft surface-to-air missile bases around 40 Defense Areas throughout the continental US, Alaska and Hawaii. Our local Defense Area was the Washingon-Baltimore Defense area and included 19 bases that were supposed to shoot down bombers with SAMs before the plane could get to their targets to unleash their fury.

The missiles that were stationed at these sites were the Nike Ajax and Nike Hercules. The Nike Ajax, the first surface-to-air missile deployed at these bases, was developed in 1953 at Fort Meade,

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Nike Herc, Continued

attack. Today, BA-79 is the headquarters of the Maryland Wing of the Civil Air Patrol, which uses some of the old base buildings as their offices. Behind their office buildings the CAP inherited an entire Nike missile launch complex. CMSgt Tom Reed from the MD CAP is leading an all-volunteer group to preserve the deteriorating launch facility. So far they've fixed-up and repainted the warhead assembly building where the nuclear warheads were loaded into the Nike Hercules. I had the honor of prepping my rocket for flight inside this historic building.

Outside the volunteers have cleared years of weeds and brush off most of the cracked asphalt that surrounds the launch area. The launch site itself contains 6 underground magazines or "pits" where the missiles were stored and the launch teams manned their firing stations. Inside the pits are giant elevators that raised the missiles up to their firing position. I launched my scale Nike Hercules from one of the black and yellow striped elevators doors.

A popular model on many scales.
Photo: D. Zuchero

Over the ensuing years, these pits have filled up with rainwater and CMSgt Reed and his team have been pumping them out one-by-one. It's amazing and eerie to climb down into one of these dark and damp concrete pits just after they've been pumped out. It's like going back in time, walking through a maze of walls into the firing room and imagining the soldiers who sat here ready to defend the US in the face of an imminent nuclear holocaust.

I know you're all wondering, but no, there are no real Nike missiles left at BA-79. If any of you know where they can get one, please let me know! If you're interested in building a scale model, you can see an actual Nike Hercules just off of Route 175 near Ft. Meade.

If you'd like to help preserve this historic piece of Cold War history, please visit http://mdwg.cap.gov/index.php/nike-missile-site-restoration-project/

BA-79 Sidebar, Continued

Maryland. The missile consisted of a single solid fuel booster with a liquid fuel sustainer stage burning a hypergolic witches brew of JP-4/unsymmetrical dimethyl hydrazine and red fuming nitric acid, some extremely nasty and toxic chemicals. It has a range of just 30 miles.

Nike Herc in the pit.

Because of the concern that the Nike Ajax radar could not pick out single aircraft, the missile designers were concerned that the Ajax would not be able to approach and destroy a single aircraft in a formation. So the military planners said, "Why not stick a nuclear warhead on it and take out the entire flock of bombers!" And the Nike Hercules was born.

The Nike Hercules consisted of a booster section comprised of four solid rocket motors and the nuclear warhead-tipped sustainer section with a single solid rocket motor. It had range of 90 miles and a ceiling of 100,000 feet. The plan was to intercept a formation of Soviet bombers with a nuclear-tipped missile directly above populated cities! Sounds crazy now but these were desperate times! What's a little fallout when these Soviet bombers were en route to destroy our cities with their nuclear payload?

A Nike Hercules, launcher erect and in the firing position at BA-79, Granite MD.

With the development of the intercontinental ballistic missile, the threat of nuclear attack from bomber decreased and the military began to phase out the program during the 1960s. A few missile bases around strategically important areas remained active until 1974.

A Radio Controlled Alternative to the Jolly Logic Chute Release

By Alyssa Stenberg

This R&D project was focused on the creation of a remote-controlled alternative to the Jolly Logic Chute Release. The Chute Release is a recovery device release system that allows the user to set a height at which it releases the main recovery device after ejection, and is useful for easy recovery. However, it has a few flaws, including its size, weight, and the fact that it cannot be controlled by the user during flight. I wanted to create a device similar in function to the Chute Release but that is controlled by the user during flight, cheaper, and more customizable.

To accomplish this task I designed a basic concept of a board that used a rubber band system similar to the one used on the Chute Release. A receiver, battery, and servo was mounted onto the board and a rubber band was attached which would hold the parachute in place.

I created two working prototypes that throughout testing in multiple rockets and using multiple motors proved that they were successful. A third prototype was also attempted using a linear servo device, but was proved to be impractical for use as a recovery devise release system.

The Chute Release device is relatively simple and user-friendly, featuring only two buttons and an easy to understand light system. It has ten options for altitude, starting from 100 feet and moving in increments of 100 to a maximum deployment height at 1000 feet. It also includes a test function, allowing ground tests before flights. The device is attached to the shock cord so that it does not hold any shock cord tension, and the parachute is folded and held by the device by a simple pin and rubber band system.

Prototype One

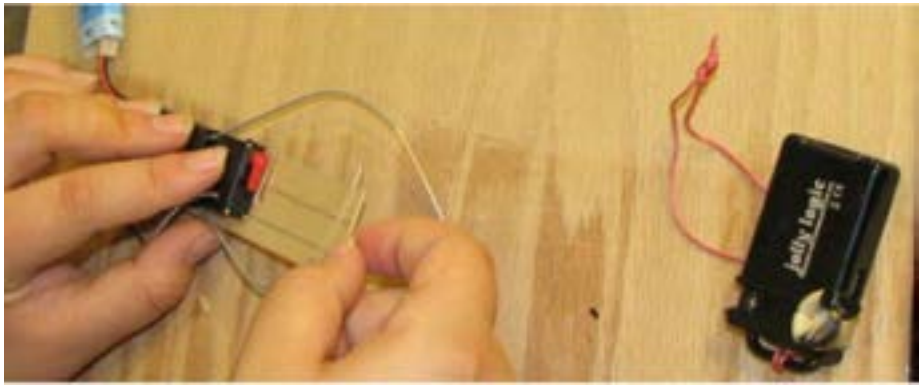
This was the first prototype I designed and created to be similar in concept to the Chute Release. I wanted to implement that same rubber band system but using parts often found in RC models. I decided that a simple servo release mechanism would work the best for this situation, in which the rubber band is hooked to a board, wrapped around the parachute to secure it, and hooked onto the servo arm in the launch position. A transmitter switch would control the servo so that during flight the transmitter switch would be flipped at the desired deployment altitude, moving the servo arm into the deploy position and releasing the rubber band, allowing the parachute to open.

For the purpose of parachute release, the range determines how far the model can go before the transmitter can no longer control the servo. Because of this, a receiver with a failsafe is necessary. When the rocket goes out of range of the transmitter, the receiver commands the servo to move to the setting of the transmitter when the receiver was bound to it, and when set to the launch position, prevents the parachute from opening prematurely. Then once the rocket comes back into range of the transmitter it can be controlled again.

I chose to use the AR6255 receiver with dual antennae, which has a range of about a mile or more and costs $40. The servo I chose to use was the Dymond brand D-47 servo, which runs on 8V and costs about $20. Based on the servo voltage requirement I decided to use a 100 mAh battery, which is a 7.4 V lipo that costs $10 and weighs 6.9 grams.

Continued next page

I arranged them on a g-10 board so that there was no wasted space but enough room so that the device could work properly. A slot was cut to give the servo arm room to swivel and holes were drilled for a shock cord attachment and for the receiver antennae. I used the landing gear channel for the servo and the landing gear switch on the transmitter for controlling the servo's two modes.



The final result was a device board that weighed 22.5 grams with the battery and could fit into a BT-60 body tube. The entire cost of the board was only about $70, almost half of what the Jolly Logic Chute Release costs.

I also decided to test my device in a BT-55 rocket, a size of model my device could fit into but the Jolly Logic Chute Release could not.

The board was attached to the shock cord so that it would not be subject to tension from ejection, and an altimeter was attached as well. After performing a few successful ground tests the model was fit for launch.

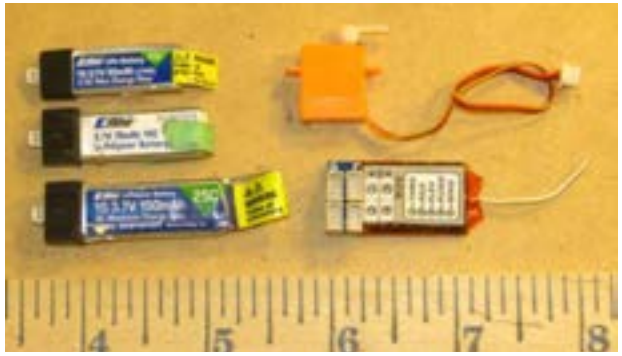
The preparation procedure was relatively efficient and simple. The model was prepped normally with wadding and an ejection plug. The parachute was packed and rolled so that it would fit onto the board, and then wrapped the rubber band around it and hooked it onto the servo in launch position. The battery was only powered on shortly before launch, as to prevent issues with the battery running out of charge mid-flight. It was important to make sure the transmitter switch was on the launch position before powering up the device so that it did not release the parachute upon starting up. Once the device and transmitter was powered up, the rest of the shock cord was placed into the model and then the device, making sure the shock cord would not be tangled with the device.

In order to prove that it worked at higher altitudes as well, I launched the model on a D-12 motor, the model flying to over 920 feet before starting its descent. The switch was activated when the model was around 150 feet off the ground and the parachute deployed perfectly, landing safely near the launch pad and proving the device worked at different altitudes.

Continued next page

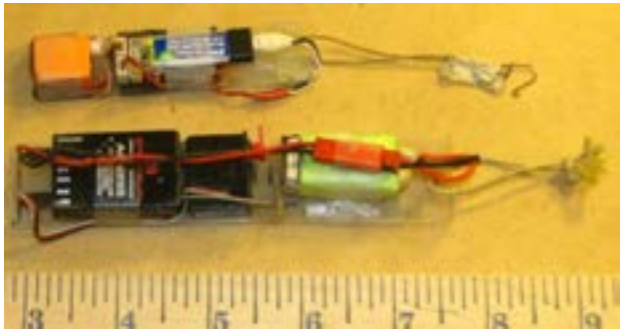
Prototype Two

Since the first prototype had been proven to be successful, I wanted to create another version that was almost identical in design to the first one but smaller, able to fit into rockets size BT-50 (24mm). I decided to use an Orange brand micro receiver which has one antenna and a smaller range of no more than 1000 feet. The servo I used was an Orange brand ultra-micro servo, a smaller, less powerful servo. The smallest possible battery I could have used was a 30 mAh, 3.7 V battery, but I decided to use a 150 mAh, 3.7 V battery instead to be sure that the battery lasted a full test session, whereas the 30 mAh battery would have only lasted a few flights.



Since this receiver did not have a landing gear channel, I used the elevator channel instead and reprogrammed the transmitter so that the landing gear switch worked on the elevator channel in the same two modes, “launch” mode and “deploy” mode.

I assembled them onto a g-10 board and created what was basically a scaled-down version of my first prototype.



The entire device only cost about $20, and with the battery I used (150 mAh), it weighed only 10.8 grams. If I had used the smallest battery possible, a 30 mAh, it would have weighed only 8.0 grams, and using a 70 mAh battery would have made it weigh 9.0 grams.
Insert 2nd proto assy and parts

Testing

Because the device was built for the purpose of being smaller, I wanted to use a rocket that was BT-50 in size that my first prototype could not fit into. I decided to use a 24mm Alpha model, slightly longer than normal. I used a 10 inch parachute for the board and a Mylar streamer similar to the one in the first prototype’s rocket. The second prototype was then attached to the shock cord in a similar manner to prototype one. After a few ground tests it was determined that the device worked properly, however because the servo used was a smaller and less powerful one, the tension in the rubber band was straining the servo and caused a buzzing sound whenever the servo was powered. While not a serious issue, the servo resisting the rubber band caused it to draw extra current from the battery, causing each flight to draw out a total of about 5 mAh.

The procedure for preparing the model for flight was very similar to the first model in that wadding and a plug was used. Then the parachute would be folded and packed so that it would fit onto the board and the rubber band would be wrapped around it to secure the recovery device in place. The device was only powered on and placed into the model shortly before flight. The transmitter switch was then activated once the model had descended to a point where it was reasonable to deploy the parachute.
Insert Bt-50 size model pic with author

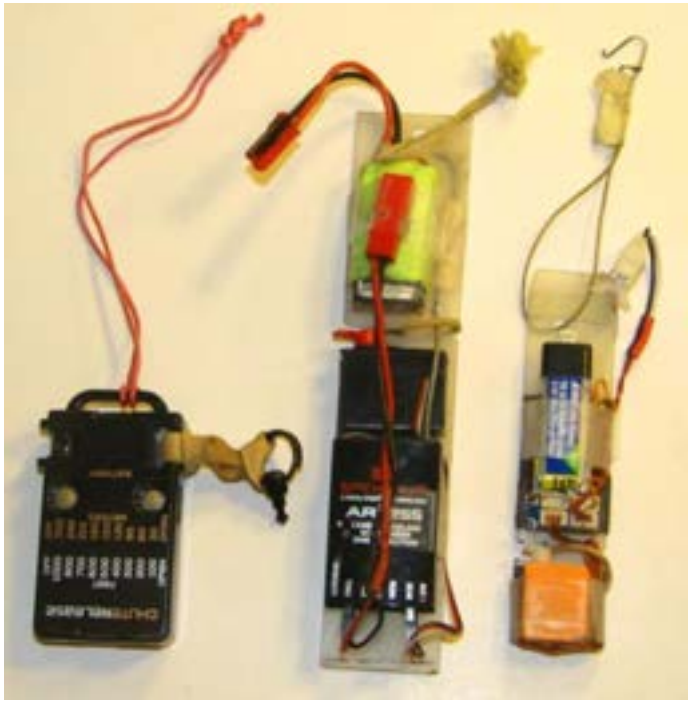
During testing, the parachute sometimes released and deployed at ejection. I found that there were two methods of fixing this problem. One, in which I simply reduced the slack between the device and the parachute, and the other solution in which I attach the device to an intersection connecting the parachute, the nose cone, and the body tube in a “Y” shape. Once I had applied the second solution to my prototype two rocket and tested my theory, the problem did not recurr.

It All Started, Continued

Conclusion

The concept of an RC parachute release board I presented here is one that is very flexible. It is a concept that can be tailored to the rocketeer's needs for a model, and is not limited to what I have done. Using the same base design, bigger servos or better receivers (with a failsafe) could be used to create a similar board that is fit for rockets that travel much higher. There are many possible combinations of receivers, servos, and batteries that all work best in specific situations.

Throughout my project I determined that it is very possible to build a device similar to the Chute Release in purpose but better in a multitude of ways. My device is directly controlled by the user while the Chute Release can only be pre-programmed, my devices all cost much less than the Jolly Logic device, mine can weigh less and be smaller in size, and mine can be customized to better fit specific needs with different combinations of receivers, servos, and batteries.



Editor's Note: This article was created, with permission of the author, from a longer, much more detailed R&D Report presented at NARAM-58. The original report is available to NAR members here.

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.

More Club Launches!

Two One-day NRC & Virtual-NARAM Launches, July 2020

By Don Carson

They weren't big. They weren't crowded. But, they were NARHAMS' NRC-sanctioned launches! They were also held way down south in Warren County, North Carolina.

NARHAMS hosted a couple of combined back-to-back NRC and Virtual-NARAM launches at the old Warren County Airport on July 28 and 29. Being a somewhat distant, mid-week affair, attendance was rather low. I was joined by Jim Filler and Jay Marsh for some great contest and sport flying.

The air was hot, humid and full of thermals. On Tuesday, we watched, and tracked on weather radar, some majestic thunderstorms passing to the distant north and south of us though much of the afternoon. Finally, at about 3 pm, a big one chased us off the field. It was just as well, we had had enough of the heat.

Between us, we put up 22 contest flights and another half dozen sport or test flights. The highlight of the two days of flying was Jim Filler's 1/2A Parachute Duration flight that we timed for 16 minutes and 50 seconds before losing sight of it. I also had

Jim Filler ready to launch his almost 17 minute PD flight.
Photo: D. Carson

Jay Marsh shows off his Sport Scale Mistral, a veteran of previous World Championship contests.
Photo: D. Carson

A Virtual-NARAM selfie.
Photo: D. Carson

Virtual NARAM/2020

Club launches, Continued

a 1/2A Boost Glider hook a thermal and fly up, up, and away. We lost that one after 3 minutes and 55 seconds.

With just the three of us attending, it was easy to practice social distancing, and wearing masks when we went off for lunch - no drama. We each used our own launch systems.

It was agreed that we need to do this again, and we will.

Jim got to maiden his E-powered Dynasoar rocket boosted glider. He had two great flights!
Photo: D. Carson

Jim preps his boost glider, to the left is Don's scissor/flop wing glider on it' piston launcher.
Photo: D. Carson

Jim preps his B Payload Altitude flight.
Photo: D. Carson

Jay preps his Kapton-body streamer duration model.
Photo: D. Carson

Jim show exemplary hydration skills in front of his flex wing model and Don's 1/2A Parachute model.
Photo: D. Carson

Summary of US Model Rocket Records

By O. Lee James III

Ten years ago, Terry White asked me to take over as Southwest Regional Contest Board Chairman. Now, Vern Richardson has graciously accepted that responsibility. It's been fun. I'll be concentrating on NAR records and, hopefully, actually competing.

I've updated all of the links on the NAR records page, https://www.nar.org/contest-flying/records/. Please inform your Contest Directors that a new records.dat file for ContestManager is available for download on the records page.

The BoT is meeting this weekend, so now is a good time to summarize.

The NAR Records Hall of Fame comprises 1,232 Certificates of Record. That is all of the records that were on the February, 1999, list and all that have been set since. Record setters can download and print their certificates.

The most recent flurry of record setting came from the Zurek clan; Bob, Amanda, and Rebecca. In June and July of this year, they set seven records and established three.

We are rocket scientists and our records database now reflects this. With the exception of the oldest records, the database now shows the NAR number and the full name of each record setter, uniquely identifying the record setter. When I took over the records, I added the time that the record was set to the data. Their is no reason that we should be limited to one record a day. Of course, the web list only shows the highest record, but all are listed in the Hall of Fame. To date, none have been set more than once on the same day, but with the success of the NRC and now with the virtual NARAM, the possibility for such an occurrence has increased.

Records set by Year (since 2000)

yr	yr1
2000	65
2001	78
2002	52
2003	50
2004	52
2005	44
2006	25
2007	49
2008	58
2009	45
2010	42
2011	37
2012	33
2013	58
2014	33
2015	42
2016	14
2017	35
2018	32
2019	22
2020	16

Records by Division

Div	# of Records
A	267
B	246
C	402
D	317

Top Ten Record Setters:

Holder	# of Records
Pod Bay Doors Team	39
Alyssa Stenberg	33
Chad Ring	32
The Flying I-Beam Kids Team	31
Emma Kristal	22
Chris Flanigan	22
Bruce Markielewski	22
Ariana Williams	20
Shaun Smith	20
Vern Richardson	18

O. Lee James is completing 10 years volunteering as the Southwest Region Contest Board Chair. He generated this summary as part of his parting message. Thanks for all your efforts supporting the NAR!

The Minotaur IV NROL 129 Launch

By Alex Mankevich

A classified mission for the U.S. National Reconnaissance Office was launched from pad 0B at the Mid-Atlantic Regional Spaceport on July 15, 2020. This clandestine mission was designated NROL-129 and was purported to be lofting four remote sensing payloads aboard a Northrop Grumman Minotaur IV rocket.

Unlike the Antares missions launched from Wallops Island to resupply the International Space Station, this mission received little fanfare leading up to its launch. The exact launch time had not been officially announced, but it was disclosed that the launch window opened at 9 a.m. EDT.

Northrop Grumman and the U.S. National Reconnaissance Office declined to invite the press and to offer a close-by, uninterrupted view of the rocket launching off the pad. This was a classified mission after all. Added to the equation was the COVID-19 pandemic situation, so NASA passed on the idea of gathering media representatives along with Northrop Grumman and US Space Force personnel for press conferences.

Your friendly neighborhood launch photographer was also concerned about the COVID-19 reality. A decision was made to avoid the expected crowds at the much-visited launch viewing sites that are situated within 3 to 5 miles of launch pad 0B. This photojournalist went south of the launch pad further down the Delmarva peninsula towards a boat launching ramp near the town of Accomac, Virginia. That decision worked out as planned. There was limited boating/fishing activity at this boat ramp and only two other rocket launch spectators in attendance.

The conspicuous white contrail from Minotaur IV fight became looped and distorted over time.
Photo: A. Mankevich

This was to be the Minotaur IV rocket's first flight from the Mid-Atlantic Regional Spaceport. The four-stages of the 78-feet-tall rocket are powered by solid-fueled motors. Unlike the liquid fueled engines which burn without much smoke, fire and brimstone, the solid rocket motors will leave a conspicuous contrail in their wake. I had a general idea of the direction from which the rocket would launch. However, I was somewhat off in my estimation in that the rocket actually took off more from a northerly orientation than I was anticipating.

All that was needed for a photograph of the rocket's flight was for clear skies, or so I thought. I had forgotten about the sun's position in the southeastern sky during the morning hours of the summer months. As luck would have it, the rocket took a path that was determined to intersect the blazing glare of the sun.

The flight of the Minotaur IV rocket took it directly into the blazing summer sun.
Photo: A. Mankevich

Overall, I was pleased with the outing. I was relatively isolated and I interacted with practically nobody. The weather cooperated and the heat, humidity and mosquitos were tolerable. I even got to hear the roar of the motor as the rocket arced high overhead.

The Tale of Two Patches

The NROL129 mission is represented by two launch patches featuring two warrior figures, one male and one female, working together to defend our nation's interests and deny our enemies sanctuary. The patches include the phrase "Our Time has Come," which symbolizes that these payloads will enable the NRO's continued support to both defense and intelligence operations in support of national security.

July Meeting Highlights
By Ed Pearson

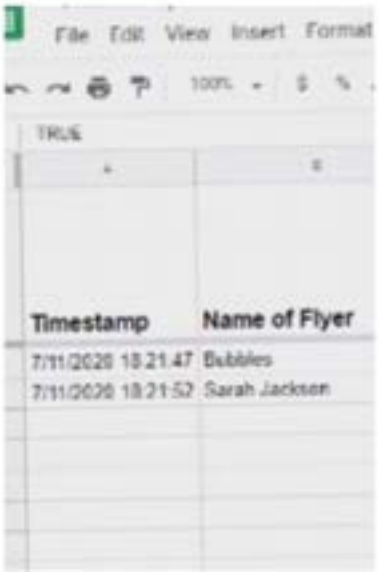
At NARHAMS July Cisco WebEx meeting (7/11, Cloud, USA), the club canceled our July Mt. Airy launch. We recognized the need to establish new protocols. And, we wanted to test any new procedures. Instead we decided to virtually hold a launch (following Saturday) with new rules followed by a private test launch, at our Carrol County site (possibly August 1). The goal is to resume Mt Airy launches in August using lesson learned from the virtual (shakeout) and private launches.

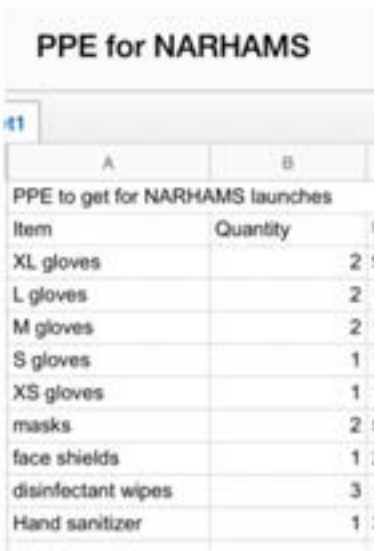
Ed Jackson displayed software for mobile data entry in lieu of hard copy park-launch-waivers and flight cards. The club voted for (acquiring) the PPE proposed by Sarah Jackson. Don Carson talked about the month-long virtual NARAM (second day status: one entry on day one and two more from NOVAAR's unpublicized launch prior to our meeting).

The club plans to continue virtual meetings; if we can get a larger better ventilated venue, the club may hold concurrent (hybrid) physical and virtual sessions.

A membership poll is to ensue on individual virus concerns rather than in a public discussion.

George Rachor attended from Oregon...online you can be at the mtgs without having to travel.





* As always, the club meeting minutes are posted on the NARHAMS website in the "Minutes" section, imagine that. *

June Meeting Highlights By Ed Pearson

The club held its monthly virtual meeting June 6. We did a COVID update (we're not flying yet), postponed the Rocket Run (keep Mosquitos once they are found) indefinitely, discussed this year RCP ballot proposals, and talked about a Virtual NARAM.

That taken care of we had our guest speaker: Everyone! A dozen members show-n-told their latest projects. One member showed off his Thumb Rocket; we then discussed how to get CA off your hand (i.e., carefully).

Ed Jackson, one of many who showed off stay-at-home builds.
Screen Captures: Tech Whiz E. Pearson

* As always, the club meeting minutes are posted on the NARHAMS website in the "Minutes" section, imagine that. *

Bits and Pieces

The Next 3 Months -

Are still a hot mess.
Check the Club website Calendar for the most current information.

A Little Fun From Bill Boublitz

While organizing material for an Apollo 6 article, I came across this photo. Club member Bruce Mitchell, provided some scale to the Saturn V. Bruce took this photo of his 1/100th Estes Saturn V in the background, with a scale diorama of a near 1/100th (NAR Member), model rocketeer launching a 1/100th scale model rocket. Not often we get this perspective.

More 43 Sightings

I had earlier shared the announcement of the Virtual NARAM on the NAR Facebook page onto the club's FB Page. I checked the club's FB page to see if anyone had posted a question or comment and noticed a few folks had seen it. - Don C

They were giving out free chili dogs at Hard Times Cafe recently. Diane's check number was 43, and she took a home a poodle (that's me; lordy I need a haircut). - Ole Ed

Welcome New/ Renewing Members

New

Russell Cosner, Dave Lewis, Barry Nel, Gerry Stephens, Arthur Willoughby

Renewals

Dick Stafford, Bill Stec, Faye Stec, Steven Stec, Eduardo Viega

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: *August COVID-19 Measures Update*

By Alex Mankevich, NARHAMS President

As the end of July 2020 approaches, we find that the federal and local governments have been relaxing COVID-19 restrictions regarding social gatherings and outdoors activities. This wholesale easing of restrictions seems contradictory to the current rise in the number of persons contracting this virus as well as an increase in the number of hospitalizations.

NARHAMS has been preparing for a future in which we launch model rockets under the COVID-19 realities. Many thanks go to Ed Jackson for creating the electronic versions of our flight card, launch registration and park waiver forms. Ed's efforts are designed to minimize the handling of actual paperwork at the safety check in station. Sarah Jackson has been spearheading the effort to procure the necessary COVID-19 antibacterial supplies and personal protective equipment that are so necessary in these times. We had discussed as a group a return-to-flight plan during business meetings earlier this year.

We performed a trial run of a virtual sport launch on Saturday July 18th during which we tested Ed Jackson's electronic forms and flight card. We arranged for then conducted a small-scale trial of a physical sport launch at Krimgold park on Saturday July 25 using the electronic forms and flight card. We also implemented several aspects of our return-to-flight plan at Krimgold.

Ed and Sarah Jackson running the launch operations. At Krimgold Park pop up shade shelters and Public Address systems are not allowed.
Photo: M. Held

It does not seem possible to realistically conduct a safe and secure COVID-19 launch with just a handful of dedicated, hard-working, and pioneering NARHAMSters in attendance.

Signage and social distancing at the pad.
Photo: B. Stec

We are still assessing the good, the bad and the ugly lessons learned during our Krimgold experience. However, it had already become apparent that in order for us to succeed at a sport launch under the COVID-19 realities we will (practically) require a "all hands-on deck" attendance of members. It does not seem possible to realistically conduct a safe and secure COVID-19 launch with just a handful of dedicated, hard-working, and pioneering NARHAMSters in attendance. This outlook is of course in contrast to the much-promulgated suggestions by health officials of maintaining social distancing and restricted attendance at events.

So, the section will have to conduct more discussions and planning as to how and when to proceed with a regularly scheduled and full-scale sport launch for some month in the future. Kindly share your inputs, suggestions, concerns, and experiences on dealing with COVID-19 so that the section can arrive at an agreeable plan in which we are comfortable and confident will provide the guidance for a safe launch the future.

Lanyard Checklist: *A Handy Aid At The Launch Pad*

By Mark Wise

If you haven't forgotten to set the onboard camera to record, failed to turn on the altimeter, or made any number of silly mistakes at the launch pad, particularly during a high-pressure situation like a certification attempt, your memory is better than mine!

After a couple of embarrassing incidents at the National Sport Launch in 2015, I decided to make a checklist that I could hang around my neck. I've found it helpful for mid-power and high-power flights, especially when onboard electronics are involved.

You can make your own checklist for about three dollars. First, print the text box below, making sure it's no wider than 102 mm (4 inches). Cut out the text box along the outline. (I use a metal straightedge and an X-Acto knife for a straighter cut than I can make with scissors.) Fold it in half, take it to your local Staples or FedEx Office, and ask them to laminate it for you. Some laminating sleeves come pre-punched, so that you won't have to punch a hole for the lanyard. Find a badge lanyard you like, clip the checklist to it, and you're ready to go.

My checklist accounts for a mid-power or high-power rocket with a Chute Release, an onboard camera, and a Jolly Logic Altimeter Three (hence the references to an altimeter app), although I've never flown all three at once. You can always create a checklist tailored to your needs.

I hope you find it useful!

Pre-launch checklist

- Pack parachute
- Tape shock cord
- Set Chute Release
- Install motor
- Safety Check/Pad Assignment
- Initialize altimeter
- Rocket on pad
- Initialize camera
- Install camera
- Open altimeter app, set to record
- Install igniter

Post-launch checklist

- Recover rocket
- Download altimeter data
- Shut off altimeter
- Shut off camera
- Close altimeter app
- Inspect rocket
- Rocket on pad
- Download video

Alex's New Card

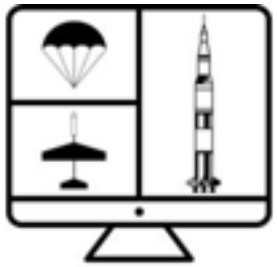
Competition Corner:

Virtual NARAM Update

Coming - Virtual World Contest!!!

Virtual NARAM Update and More!

By Don Carson



The Virtual-NARAM is going like gang busters! We are halfway through the launch window and we've had the Board of Trustees, Manufacturers Forum and the Town Hall meeting all via videoconferencing. To date, there are about 70 people registered and we have had 150 entries comprised of 227 flights!

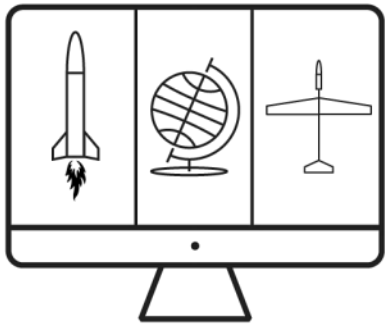
The launch window will remain open until 8/23, so there is still time to get your flights in. While this is an unofficial event, there are modest cash prizes for 1st-4th place in each event in each age Division. We are not combining age divisions for any reason. Currently, there are only 3 A Division and 2 B Division flyers registered! Our younger members could easily get on the winnings with some qualified flights. Most events use 1/2A motors and some are very simple – Parachute Duration and Streamer Duration. They could use rockets you already have. Complete info can be found here.

Virtual NARAM/2020

Inspired by the success of the Virtual NARAM, James Duffy and Mike Nowak are about to announce a similar event for international style competition. It will likely be called the World Space Modeling Virtual Open Meet 2020. We hope to have our fellow rocketeers from overseas and up north join in for some friendly competition.

Details are still being finalized but there is a draft website that includes most of the details (still subject to change). It will feature the international version of model rocket events. Like the Virtual-NARAM, the rules have been modified some to allow you to fly the events on your own, if you have to. Contact James at jduffy@mac.com and/or Mike at mikemnowak@gmail.com regarding questions about this event.

Keep and eye out for the formal announcement, any day now.



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 - Free Event

Cancelled

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

September 19, 2020
Old National Pike Park
Mount Airy, MD

Rocketry Festival 2021

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*
1/2A Flexwing
D SuperRoc Altitude w. altimeter
Sport Scale
Research & Development

Postponed to July 2021
National Warplane Museum
Geneseo, NY

For current info, go to
www.nar.org

REMOVE BEFORE FLIGHT
REMOVE BEFORE FLIGHT