MODEL AVIATION

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- Facebook | **@modelaircraftmuseum** — View photos, videos, and more of the museum collections.
- Facebook Group | **I Fly AMA** — Find exclusive digital content from member workshops and the flying field.
- Instagram | **@amamodelaviation** — Discover what's new from AMA and other industry influencers.
- YouTube | **modelaircraft** — Explore product reviews and watch your favorite AMA shows.
- Podcast | ***The AMA Podcast*** — Dive into captivating stories from model aviation experts.

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ON THE COVER

In this issue, Bob Benjamin continues his instruction on building a Keil Kraft Ajax Free Flight model. He shares insight on what is required to take this model from a box of wood parts to a flyable model.

Learn more starting on page 28.

PHOTO BY JOHN BRISTOW.

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TEN WAYS AMA IS SERVING YOU AMID COVID-19

By Chad Budreau, AMA Executive Director | chadb@modelaircraft.org

THANK YOU FOR supporting AMA and the model aviation hobby while we comply with temporary social distancing guidelines and local mandates to help slow the spread of COVID-19. Amid these restrictions, the hobby has found new ways to remain as alive as ever.

Members are giving donations, sharing stories online of new projects, and hosting virtual fun-flys. We are also welcoming back many returning members who are dusting off their transmitters. This hobby has proven to be a great outlet during these challenging times!

Although many AMA staff members continue to work remotely, we remain committed to supporting our members and growing the hobby. The staff is spending countless hours modifying procedures to sustain services and launch new programs. You can have any club, insurance, or membership issue addressed by contacting staff at their regular work email or phone extension.

I cannot express enough how much gratitude and pride I have in the staff for being nimble and committed to this hobby. Please be sure to thank them! Allow me to brag on them in this column as I randomly highlight 10 services AMA initiated to grow the hobby during the COVID-19 pandemic. I could easily expand this list, but I can only squeeze so many words on a page.

1. Separate But Together: Members showed overwhelming support as they made donations to help other members affected by COVID-19 through this AMA Foundation initiative. Learn more at www.modelaircraft.org/together.
2. *Model Aviation* and *Park Pilot*: You have access to select PDF issues of both publications for free online at www.ModelAviation.com/digital and www.the ParkPilot.org/digital. Enjoy these extra reading materials or share them with someone who might be getting back into the hobby.
3. Helping Hobby Shops: As are many of you, I am looking forward to shopping at my local hobby shop again. To ensure that these valuable resources survive, we have been offering guidance to hobby shops for everything from social media tips to navigating through the federal Coronavirus Aid, Relief, and Economic Security (CARES) Act.
4. Find a New Job: Take advantage of a new and free AMA service to find a hobby-related job at https://careers.modelaircraft.org.
5. Online Media: In addition to *AMA Air*, the *AMA Podcast*, and social media, you can access more information and connect with members in new ways. Watch members share videos and tutorials on our Facebook group page I FLY AMA.
6. AMA Education: For kids of all ages, we have compiled some quick model aviation projects to do at home at http://amaflightschool.org/quickprojects.
7. Training: We're conducting new ways to engage, train, and support our army of volunteer leaders and members with live-streams, webinars, and tutorials.
8. Executive Council: The Executive Council continues to work with the AMA staff to grow the hobby, including converting the April 25 quarterly face-to-face meeting to a virtual meeting.
9. Sanctioned Events: We're waving all fees and costs associated with reprocessing sanctions regardless of date, to later this year. This includes reissuing any insurance certificates and replacing sanctioned event ads in *Model Aviation*'s "Sanctioned Event Calendar." Find updated event listings at www.modelaircraft.org/event-calendar.
10. National Model Aviation Museum: We have made enhancements so that you can take a virtual tour from home and see what's new in our collection. You can also see the museum's digital collection online for free at www.modelaircraft.org/museum/visit/virtual-museum-tour.

We are extremely grateful to our members, donors, employees, and leaders for their patience, feedback, and support. AMA will continue to be vigilant in our efforts to provide you with updates and member services.

Be safe!

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NOSTALGIA MIGHT PROVIDE THE COMFORT THAT WE NEED RIGHT NOW

Jay Smith, Executive Editor | jays@modelaircraft.org

NOSTALGIA IS DEFINED as "a sentimental longing or wistful affection for the past, typically for a period or place with happy personal associations." It was for those reasons that roughly two months ago, I purchased an Atari 2600 game system and a handful of games. I couldn't have imagined, back in February when I made my purchase, the positive impact it would have as I look for ways to entertain myself while being stuck at home.

I hadn't played Yars' Revenge, River Raid, Pitfall, or Space Invaders on the Atari in more than 30 years, and it brought me back to a simpler time, with social distancing-free memories surrounded by friends who were looking to compete in a four-player game of Warlords.

I hope right now that participating in model aviation is having the same effect on many, and who knows, it might even bring others who haven't experienced the joys of aeromodeling since their childhood back into the fold—much like I and my Atari.

As I was thinking about writing this column, I came across an article on CNN titled, "The long lost hobbies people around the world are revisiting during the coronavirus pandemic," by Fernando Alfonso III. In the article, clinical psychologist Dr. Jeff Gardere stated, "In this time of uncertainty and instability, and a world and existence we no longer recognize, people need an anchor to familiarity and what once brought them comfort, stability, safety, and happiness."

I think building or repairing an airplane, helicopter, or drone can be a great outlet if you have extra time on your hands. If you don't have a project to work on or repair, be sure visit at www.ModelAviation.com and www.theParkPilot.org for many free plans that you can download. I would love to hear what projects you are working on.

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Control Line and Other Nats History

Digital & web: Read about the first 50 years of the Nats at www.ModelAviation.com/nats-fifty-years.

Quick Building Projects

AMA Education Director Kyle Jaracz and his team have come up with some quick building projects that can be made from the comfort of your home. You can find the projects at www.amaflightschool.org/quickprojects. Kyle posted videos of building some of them on AMA's Facebook page.

Here are some comments made by our Facebook followers about Kyle's P-47 paper airplane build video, which can be found at www.facebook.com/modelaviation:

Nataliya Berezhna: Hi! This is cool! I just sent the link to my son. He is an AMA member and he loves creating airplanes.

Daren Hudson: Build it and they will come!

Darren R. Hoehne: Alene's tacky glue works well on paper as well. I've done card stock models for almost 10 years. CA also works.

Dragan Sebastian: Good job!

Brett Steier: So cool!

Dane de Avioane: Nice, very instructive for our young "cadets" from AEROMODELE TIMISOARA.

Shane Loder: Going to share this with friend's kids who like planes.

Ronnie Espolt: I will try one with Tacky Glue. May be a little easier with kids.

AMA ADVOCACY CONTINUES THROUGH THE COVID-19 PANDEMIC

By Tyler Dobbs, Government Affairs director | tylerd@modelaircraft.org

BECAUSE OF COVID-19 restrictions, the Government Affairs team has been working remotely to continue its advocacy efforts. The safety of our staff, members, and community is AMA's top priority and unfortunately, COVID-19 has affected and delayed certain ongoing projects.

The FAA has temporarily put Safety Risk Management (SRM) panels on hold until further notice; however, we are continuing altitude limitation conversations with the FAA's Air Traffic Operations, Flight Standards, and UAS Integration Offices. Before the COVID-19 stay-at-home guidelines were issued, two additional SRM panels were successfully conducted and two clubs were able to show that safety risks could be mitigated to an acceptable level up to their requested altitudes.

We continue working with the FAA to update the priority list for AMA clubs in controlled airspace that would like to go through the SRM process. In addition to altitude requests through the SRM process, AMA has also been successful in negotiating a few requested altitude limits outside of this process.

The Government Affairs team would like to thank District XI Associate Vice President Rick Crow, who has been instrumental in assisting a number of clubs through the SRM process in his district.

In our discussions with the FAA, we are also exploring options for an altitude waiver process for fixed sites in Class G (uncontrolled) airspace. We were told by the FAA that this proposed waiver process is being reviewed by its legal department, so we hope to have updates for our members in the future.

AMA continues to fight against the FAA's Remote ID proposal. We have continued our meetings with industry leaders, including EAA, Google, and AOPA, to come together as one voice and discuss a sensible, inclusive approach to the Remote ID rulemaking.

On March 12, 2020, the FAA released a Request for Information (RFI) to seek input regarding Low Altitude Manned Aviator Participation in UAS Remote Identification. The RFI calls on operators of manned aircraft who operate at low altitudes to comment on how their operations would be impacted by Remote ID and to see how they can receive and use the network or broadcast UAS Remote ID information.

The FAA also wants to engage low-altitude manned aviators and others who are interested in exploring how UAS Remote ID can improve safety and reduce collision risk between UAS and manned aircraft at low altitudes.

AMA will continue working with its allies to achieve the best possible outcome regarding Remote ID. In addition to coordinating with industry leaders, we will also resume meetings with members of Congress as soon as possible after the country's travel restrictions are removed and social distancing is no longer required. Rest assured that we will remain engaged virtually until this time.

Please continue to monitor www.modelaircraft.org, AMA social media, and the AMA Government Affairs blog for updates on these and other issues.

THE ORIGINAL RC SOCIAL MEDIA SITE

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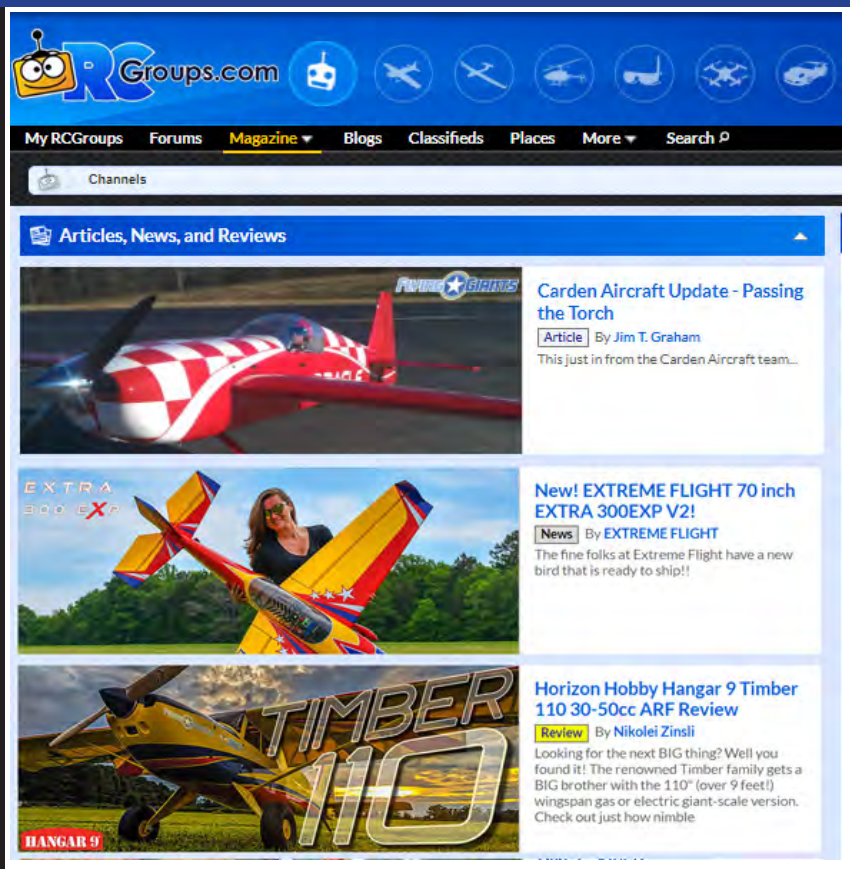

Words from our members...

"Global reach, new product announcements. It's like being at the field, when you can't." - *Bell47G2*

"Of all the 'social media' sites and information available, I have learned that I get more of the straight scoop on RC Groups than anywhere else." - *J. Branaum*

"I can't imagine this hobby without RCG! Thanks to all the members for your insight and knowledge, you have all helped me." - *Shadow-D*

"This is by far, the BEST R/C site I have ever seen, and used. I have learned much, tried to pass on my experience, bought and sold airplanes and equipment here, made friends." - *Steve Merrill*

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New Products that are ***Worth a Closer Look***

HITEC RDX2 MINI AC BALANCE CHARGER

MINI IS DEFINITELY the proper word to describe this charger. It's roughly the size of a small desk clock and certainly won't take up much real estate. Inside of the box you will find the charger, AC cord, two T-type charge leads, and the manual.

The charger has a warning label that must be removed to use the device and "Danger Will Robinson" from *Lost in Space* came to mind as I read it. It warned not to charge batteries unattended and mentioned things such as fire and explosion. Those who have been in the hobby awhile know that the best way to describe LiPos is using another quote: "With great power comes great responsibility." Read the manual first and double-check or even triple-check your charge settings.

The charger uses built-in balance plugs instead of the typical balance boards, which helps keep things compact. The included charge leads connect via XT60 plugs to the charger, and the other end has connectors that will work with Deans Ultra-type plugs. If your batteries use any other type of plug, you'll need to make an adapter.

The two-port charger allows the user to charge two batteries simultaneously, regardless of chemistry or capacity. In testing the charger, I was able to charge a 3S 2,200 mAh and a 4S 3,000 battery at 1C. It has Balance, Standard, Fast, and Storage Modes for all lithium battery chemistries and can store up to 10 different battery memory profiles. It should also be noted that this charger is whisper quiet, which is a plus.

Selecting different settings and parameters is easy, and the LCD screen provides all of the information needed. The BATT/PROG Stop button stops the progress of the current action or cycles back to the previous step or screen. The DEC button scrolls through available menus or decreases parameter values. The INC button scrolls forward through available menus or increases parameter values. The ENTER Start button confirms selections and starts the charge process.

A red LED light indicates which charge port parameters are being displayed, and the button between the two indicators switches between them. During the charge process, you can view parameters for each port, such as individual cell voltages. After the charge process begins, the LCD screen displays the current charge percentage of both ports, which is handy at a glance.

A nice added feature to this charger is that it will also provide the resistance of lithium batteries, which is helpful in determining the overall health of the battery. You can see the pack's resistance as well as that of each cell.

The $79.99 Hitec RDX2 Mini AC Balance Charger is a nice option for those who don't use packs larger than 4S and appreciate a small, inexpensive, easy-to-use charger.

At a Glance

Specifications

AC input: 100 to 240 volts AC
Charge power: 100 watts (2 x 50 watts)
Charge current range: 0.1 to 5.0 amps
Discharge power: N/A
Current drain for LiPo battery balancing: 300 mA per cell
NiCd/NiMH battery cell count: Six to eight cells
LiPo/LiHV/LiFe/Li-Ion cell count: Two to four cells
Pb battery voltage: 6 to 12 volts
Dimensions: 3.5 x 3.9 x 5.0 inches
Weight: 1.1 pounds

SOURCES:

Hitec RCD
(858) 748-6948

https://hitecrcd.com/products/chargers/acdc-chargers/rdx2-mini/product

New Products from the **Modeler's Mall**

Wing It Program Short Kit @ $24.99-$29.99 + S&H from Aspect Aviation

Email: aspectav5429@yahoo.com (Use"Wing It Plans" in the subject line); eBay: https://ebay.to/2IG5GMe

Take award-winning modelers, mix in the desire to promote aeromodeling, add a dose of competition experience and a laser cutter, and you have the Wing It program.

Throughout the last few years, John Hoover, of Aspect Aviation, has encouraged modelers to explore different design and flight envelopes. Each project has been based upon certain needs and needed to perform specific flight maneuvers. Multiple clubs have been involved, including the Pontiac Miniature Aircraft and the Skymasters R/C clubs in Michigan.

This experience morphed into Wing It. A reasonably sized, typically built-wing short-kit (laser-cut ribs only) was developed with either a flat-bottom or symmetrical airfoil. Mark Freeland of Retro RC provided the laser cutting.

The maximum wingspan allowed in competition is 70 inches; there is no minimum wingspan, but all of the ribs must be used and the airfoil cannot be modified. The aircraft planform is up to the builder. Multiple wing kits for biplanes, triplanes, etc., have resulted in flying wings, trainer types, biplanes, canards, sort-of-scale World War I and World War II aircraft, and even a functional flying swing-wing. Fuselages and tail feathers have been made of sheet stock, stick construction, and foam. Electric motors or glow, gas, two-stroke, four-stroke, or turbine engines can be used for power. Only the builder's ideas limit what can be created.

Static judging is accomplished anonymously by the competitors on a scale of one (low) to five (high) in two categories: Fit and Finish, and Uniqueness of Design. There is also a People's Choice Award to encourage spectator participation. Specific flight requirements include a carrier landing, spot landing, speed, and a bomb drop.

A free set of Wing It plans is available from Aspect Aviation by sending an email. John welcomes questions at the same email address. Wing It short kits can be purchased from Aspect Aviation on eBay by searching for "Wing It Contest" or by visiting the link listed in the contact information.

UMX Ultrix BNF Basic 342mm @ $119.99 + S&H from Horizon Hobby

4105 Fieldstone Rd., Champaign IL 61822;
Tel.: (800) 338-4639;
Website: www.horizonhobby.com/content/e-flite-rc

The UMX Ultrix BNF Basic, with its unique, new design, delivers a flight experience unlike any other—especially for models in the Ultra Micro eXtreme (UMX) class! This twin, brushless motor-powered delta-wing airplane excels at smooth sport flying, basic aerobatics, and even aggressive 3D, all in the same flight!

With an extremely durable, lightweight, fully molded EPP foam airframe, differential thrust on the Ultrix adds yaw control for the ability to perform flat spins and other maneuvers. AS3X technology provides unmatched stability and a locked-in feel for smoother flight performance, while the optional-use SAFE Select flight envelope protection makes flight easier for less-experienced pilots.

Fully factory-assembled and ready to fly, the Ultrix BNF Basic requires a full-range, five-plus-channel Spektrum DSMX/DSM2-compatible transmitter, a 1S 3.7-volt 500 mAh LiPo with JST connector, and a compatible LiPo charger. An optional LED light kit for improved visibility during daylight conditions or to fly after dark is sold separately.

FPV Whoop Racing Starter Kit @ $129.99 + S&H from BetaFPV

Email: support@betafpv.com;
Website: www.betafpv.com

The FPV Whoop Racing Starter Kit from BetaFPV is for anyone who is looking to get into FPV Whoop racing! Everything needed to start is in one box as a complete bundle.

Two combo kits are available. One is ready to fly—just power it up and fly. The other is an unassembled drone so that beginners can assemble it themselves without the need to solder.

Custom hardware and software for entry-level pilots is included, such as a more-durable airframe and a LiteRadio transmitter. The drone is agile enough to fly indoors, but strong enough to fly outside. Featuring two flight modes, it comes with simple USB-chargeable batteries and spare parts for easy repairs.

The new Beta65S Lite drone comes with a Silverware firmware-powered BETAFPV Lite brushed flight controller that is fully tuned by BetaFPV and doesn't need any additional configuration, making it simpler and more affordable. The drone is controlled via a Bayang-protocol radio transmitter.

The 5.8-gram video goggles are designed for beginners with an easy-to-set-up, one-button auto search channel. With built-in batteries, it charges via a USB cable and is good for 1 hour of use when fully charged.

The package includes the drone; transmitter; goggles; a reconstruction kit with extra propellers, motors, screwdriver, and tools; two 300 mAh 1S 30C LiPo batteries; a USB charger; and a 1S battery voltage tester.

BOB VIOLETT, FOUNDER OF BVM JETS, PASSES AWAY

AN AMA MODEL AVIATION Hall of Fame member and the founder of a model jet company has passed away.

Robert "Bob" Violett, 78, an AMA Life Member, died March 21, 2020, in Winter Springs, Florida. He founded Bob Violett Models (BVM) in 1981 while he was a full-scale commercial pilot for Eastern Airlines.

Born in Washington, D.C., Bob grew up in College Park, Maryland. After high school, he attended the University of Maryland then enlisted in the U.S. Navy in 1963. He served as a jet carrier pilot, flying the F-8 Crusader and A-4 Skyhawk during the Vietnam War. For his service, he was awarded the Distinguished Flying Cross, Air Medal with Gold and Silver Stars, Navy Commendation Medal with Gold Star, National Defense Medal, and the Vietnam Service Medal. After being honorably discharged from the Navy, he began working for Eastern Airlines.

The first aircraft that he produced for BVM Jets was the Sport Shark, a ducted-fan model. That aircraft was followed by the Viper, Aggressor, and a scale F-86. Bob sold the company in 2016.

In addition to his military honors, Bob was a three-time RC Pylon Racing world champion and a two-time winner of the Mr. Top Gun award. He was inducted into the AMA Model Aviation Hall of Fame in 1996.

Bob is survived by his wife of 58 years, Patricia; three daughters; two sons-in-law; two sisters; and three grandchildren.

AMA Thanks Its Lifetime Supporters!

The Academy of Model Aeronautics recently welcomed Life Member Derek Workman, Brigham City UT. For information about becoming a Life Member, contact AMA Headquarters at (800) 435-9262.

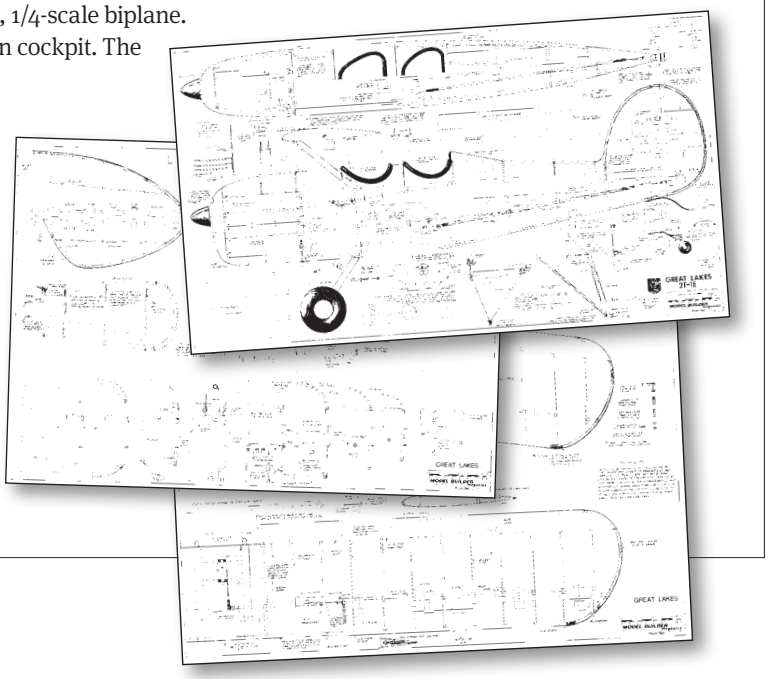
—AMA Membership department

Highly Detailed Great Lakes 2T-1E

AMA PLANS SERVICE houses all plans formerly sold through *Model Builder* magazine, Bill Northrop's Plan Service, and the *Scratch Builder's Almanac*. There are roughly 18,000 plans in the AMA Plans Service collection.

The Great Lakes 2T-1E is an 80-inch, highly detailed, 1/4-scale biplane. Designed by Frank Comyns, it features a two-seat open cockpit. The plans are printed on three sheets.

You can order plans for the Great Lakes 2T-1E, plans number 3821, for $38 plus shipping and handling by calling AMA Plans Service at (800) 435-9262, extension 507, or via email at planservice@modelaircraft.org.



History Preserved

THE INTERCEPTOR, A SMALLER TARGET DRONE

By Michael Smith
National Model Aviation Museum director

WITH THE RECENT DONATION of the MQM-170A and MQM-170C target drone aircraft by Griffon Aerospace, National Model Aviation Museum volunteers have been busy rearranging models in the museum's Miniature Aircraft at Work gallery. Although these aircraft are large, a smaller model that was also used as a target drone is easily overlooked: the Interceptor.

The model was developed by Jim Walker and mimicked the lines of the "new" P-39 Airacobra. In 1939, he introduced the folding-wing catapult glider at the New York Toy & Hobby Fair, and his American Junior Aircraft company was quickly selling them across the country.

When World War II broke out, most aeromodeling companies shifted from models to items for the war effort. Jim's company, however, was able to do both because the Interceptor had been tasked to help train antiaircraft gunners.

The story goes that an Army major recognized the benefits of the airplanes and bought hundreds for the antiaircraft training

headquarters in Texas. Orders for thousands followed, and quickly, they were not only soaring over US soldiers and sailors, but soldiers from allied countries as well.

To improve training, Jim developed a special catapult that would launch the models higher, reaching an altitude of 300 feet with glides reported to last 30 minutes. This scalelike effect duplicated a full-scale aircraft flying at 1,500 feet and traveling at 300 mph.

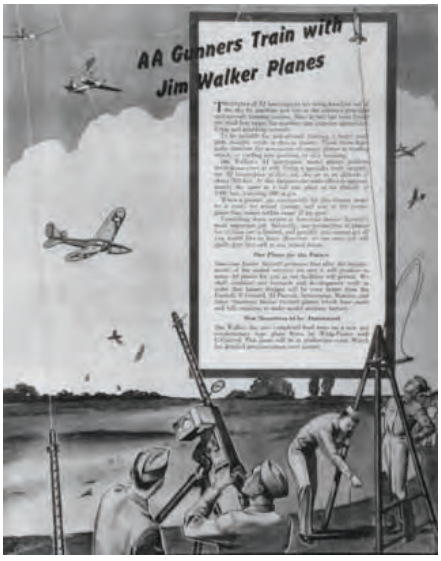
Before launch, models could be adjusted to glide straight, circle, or dive, simulating the maneuvers of enemy airplanes in low-level attacks. This provided a great moving target for the ground-based gunners as they learned the art of leading a target.

After the war, the model was retired and replaced with the 404, a design that followed the lines of new fighter jets but retained the folding-wing feature.

In addition to the Interceptor, Jim's company provided its famous Fireball to the U.S. Navy during the war. Painted bright orange, this model was converted from Control Line to Free Flight and launched for target practice by ships' gunners.

Another more obscure project was Jim's RC drone, one of which survives at the Evergreen Aviation & Space Museum in McMinnville, Oregon. Unlike the target drone developed by fellow modeler Reginald Denny, trainees reportedly used a camera instead of bullets to "shoot" the model. The image would show where "bullets" would have hit the airplane.

Later, the drone pulled a target sleeve—a large lightweight fabric tube—that gunners would practice shooting with live ammunition. If damaged, the model had a parachute that would safely return it to the ground.



If you have any information about this drone, please contact the museum at museum@modelaircraft.org.

To read more about Jim, check out his AMA History Project Biography at www.modelaircraft.org/sites/default/files/files/walkernevillesejimmyjim.pdf. His patent for the Interceptor can be viewed at https://patents.google.com/patent/US2221012A/en?inventor=Nevilles+E+Walker.

Plans for the Interceptor are available for purchase from the AMA Plans Service by calling (800) 435-9262, ext. 507. Two plans are available: numbers 29322 and 32787.

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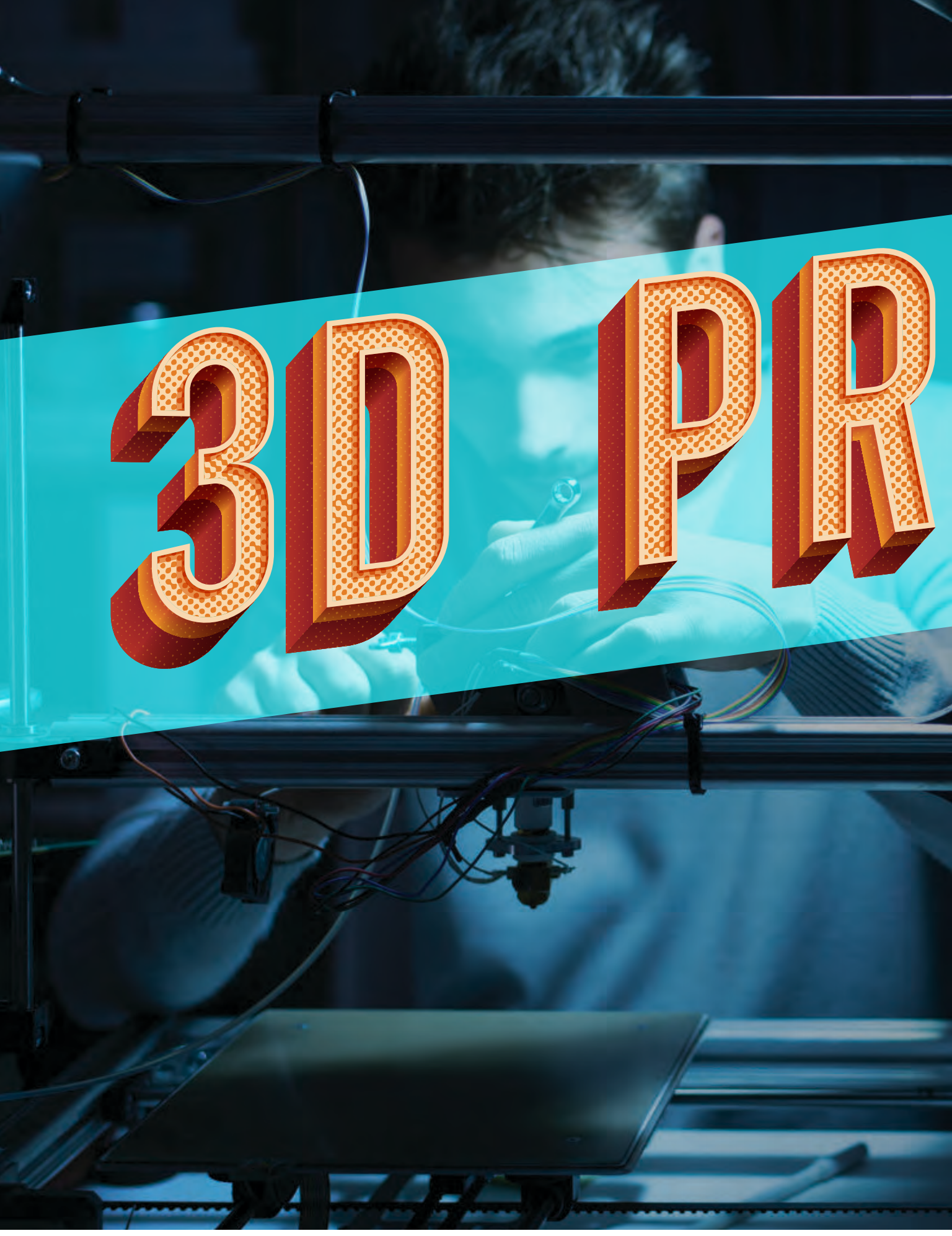

3D PR

INTING

An alternative approach to fixing airplanes

By Oliver Heinen
Photos by the author
o.heinen@icloud.com

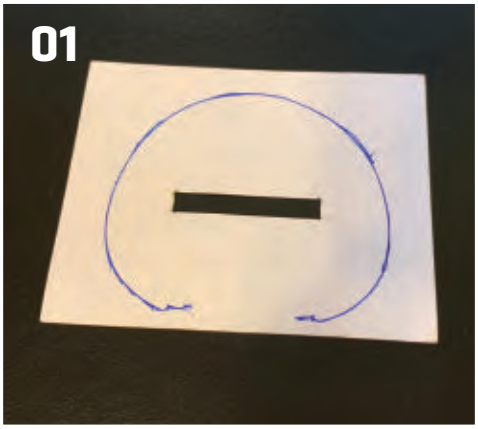
Several weeks ago, on a nice day with a nasty crosswind, I had an unfortunate crash with my Viper jet. I somehow maneuvered it down onto the runway (aka landing), and the brakes were already applied when it had an disasterous encounter with the runway fence. The good news was that the fence worked as intended.

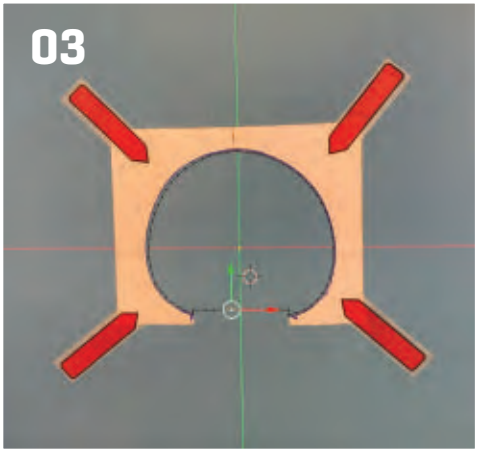
One of the wing halves had some internal damage, but nothing that couldn't be fixed with a healthy dose of Gorilla Glue; however, more importantly, the nose of the Viper jet had been crushed up to its first former.

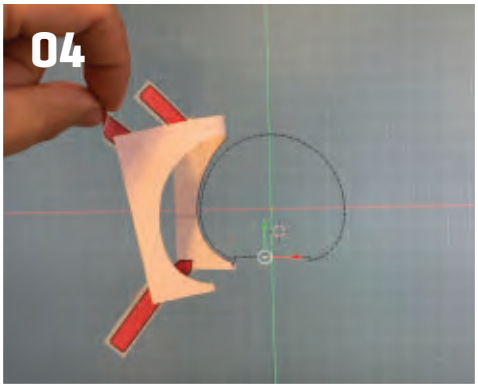
The fuselage is made out of a single fiberglass piece from the nose tip to the tail end, and as with every good airplane that you have had for some time, it's no longer made and there are no spare parts available.

The classic approach to fixing this kind of problem is to create a new nose cone by sanding down a Styrofoam or balsa block by hand, in an endless effort to eventually create something that hopefully, somehow, resembles the original shape. After that, you spend lengthy time creating a negative mold form to laminate the new part into that mold. The entire process typically involves a significant mess of sanding dust, fiberglass debris, and epoxy in all kinds of states all over the place—including on your best pair of jeans and beloved T-shirt.

Having that in mind, I decided to try another way that worked pretty well. I admit that you need to have some affinity to computers and software to go this route. If Microsoft Excel is a complex, witch-like thing from a distant future then you are better off with the traditional messy way to straighten things out.







Creating a 3D Nose Cone

My solution was to create a computer 3D model of the nose cone then simply print it using a 3D printer. The biggest challenge is to create the 3D model. After you have the 3D model, you can print as many parts as you want.

Did you make a major mistake when painting it? Press the print button and a few hours later, you have a new one. Will you have the same accident again in a year from now? Hit the print button and a few hours later, you'll have a new one. You get the point.

Creating a 3D model on a computer that is supposed to seamlessly fit onto an existing, real-world object is not easy. It is even more difficult if the object involves complex shapes, such as the curvature of a fuselage that is neither a perfect circle, a straight line, nor anything close to it. This is how I did it:

Carefully cut off the destroyed nose cone at the former, preserving as much as possible of the crushed nose (see Photo 01).

Hold a sheet of paper against the now-flat front end of the fuselage and mark the outer shape of the fuselage with a pen (see Photo 02).

Using a good pair of scissors, cut out the inner part of the shape and attach some Post-it flags to the edges (see Photo 03).

Fix this onto your computer monitor and create the inside shape (the outside shape of your fuselage former) using a 3D modeling software of your choice (see Photo 04).

This leaves you with the first important milestone in creating the 3D model. You have the base shape of the nose cone that needs to go onto the fuselage. Now, here is the catch: Choosing and using the right 3D software is a topic of its own that brings quite a bit of complexity. If you are not computer savvy and you have never done anything similar, this is the point where you are better off with the traditional, messy repair method.

3D software, similar to nearly all software, comes in two flavors: open source (at no cost) and commercial software. Good, commercial 3D software is anything but cheap. Professional 3D software, such as what is used in the auto and airplane industries, can easily cost thousands or tens of thousands of dollars in license fees every year, which is why I went with the more accessible open-source approach.

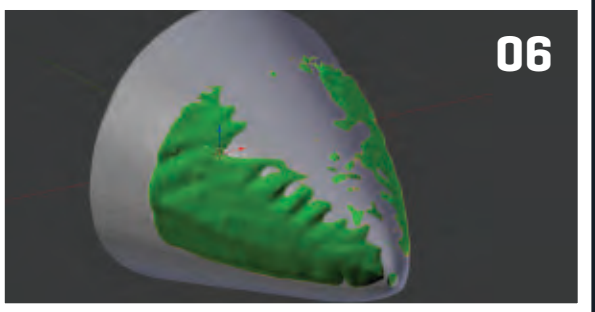
I am a big fan of OpenSCAD and I use it for almost everything. It lets you create complex, functional parts, as long as the geometry can be described in a mathematical way; however, in the case of this nose cone, my software of choice is Blender because I do not have any reasonable mathematical description of the shape.

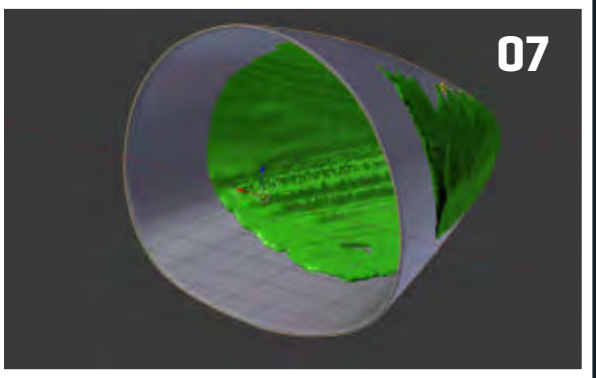
Blender is a professional-level tool that lets you create and render 3D scenes, cut

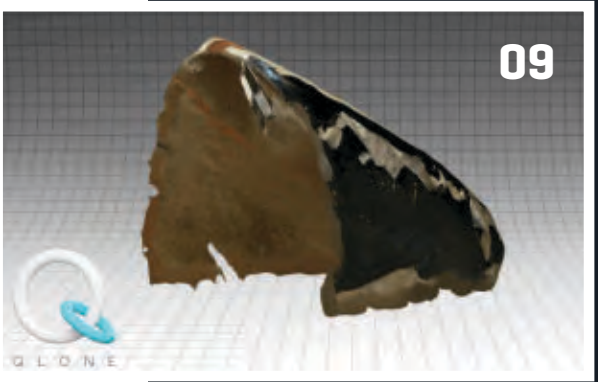
and render movies, etc. Blender has been used in some professional movies, and I also use it to create my YouTube videos; however, all of the functionality comes at the price of a pretty complex user interface. If you are using Blender for the first time, expect to spend several hours watching tutorials on YouTube before achieving anything meaningful.

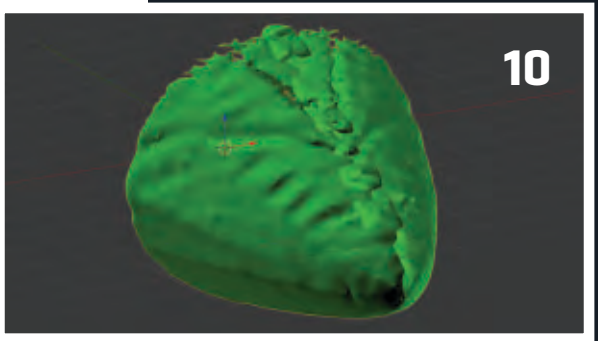
You cannot teach quantum mechanics using the vocabulary of a 3-year-old, and you will never find software that lets you do complex things with an easy user interface (unless it is specifically built to do only one specific, complex thing and nothing else).

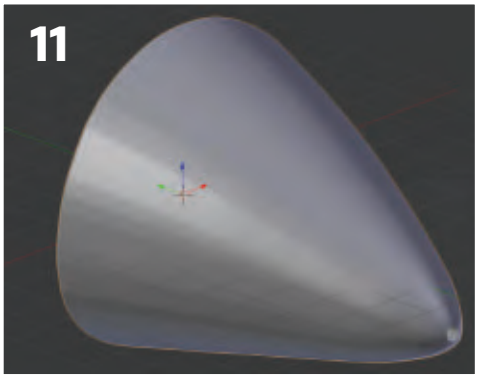
The next challenge is to create a 3D model of the new nose cone by extruding the base shape step by step (I used 2 mm increments) and shrink the shape with every step so that it ends in the nose tip at the right distance from the base. It also has to be done in a way that the curvature of the cone resembles the curvature of the fuselage.

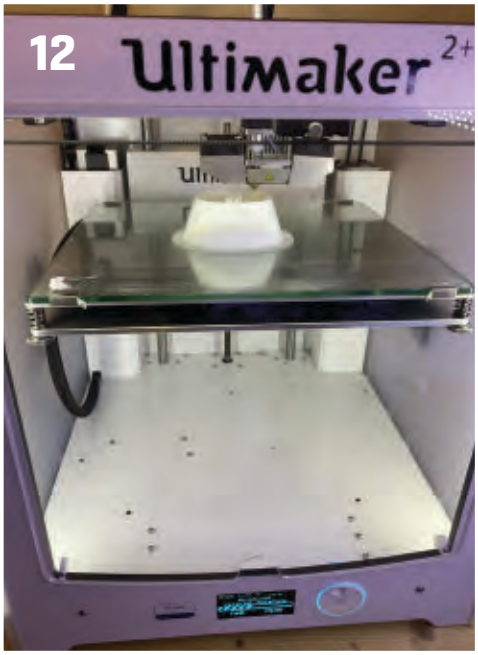


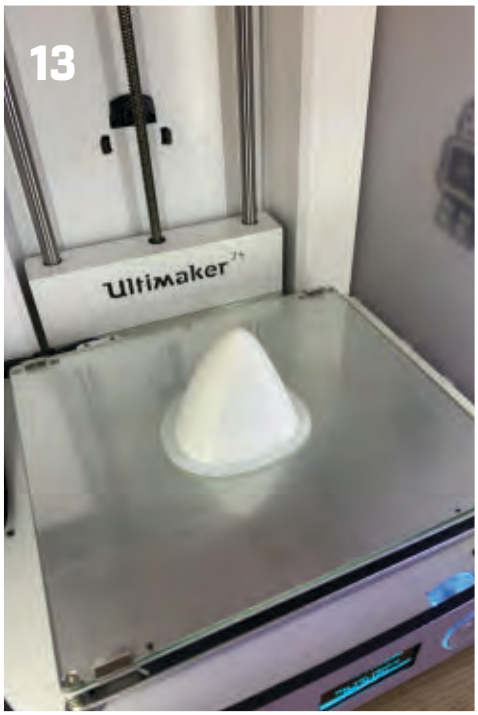












Trying to do this without any guidance will never be successful. You will spend days, and it will still not be close to what you really need. The solution is to 3D scan whatever is left of the original nose cone and use this information as a design guide. I was lucky because I retrieved two helpful pieces from the debris—one half of the front end of the nose cone and a part of the cone's rear end.

The included picture shows the two parts together with the result of this entire exercise—the new 3D-printed and partially painted nose cone (see Photo 05).

Using the iPhone app Qlone, I did a 3D scan of the front half nose cone part. The app is a free download in the Apple store (and on Android). You can play around with it for free, but you have to pay to export files and actually use them. (The app also has an interesting augmented-reality feature that lets you put a 3D-scanned object in a room as it would be in real world.)

I was quite surprised at how well the scanning works using an app on an iPhone camera to reconstruct a 3D object. This task usually requires complex laser-scanner tools. This is the scanned 3D model of the old nose cone (see Photos 06 and 07).

Now that you have this, you can export the 3D-scanned file of the old nose cone as an .stl file and import it into Blender. In Blender, you can create a copy of the half cone (so that you have two of them), mirror one of them along the center plane, and put both halves together to create a 3D model of the original nose cone's front end (see Photo 08).

This already looks promising; however, the scanned model of the old broken nose is not good enough to directly print it. You can use it to 3D model a new nose cone by using the old scanned cone as a guide for achieving the right curvature and shape.

Measuring the height of the other part (the partial ring) from the old nose cone, you know how far away to place the 3D-scanned front end of the nose cone from the base that you created using the cutout paper on the computer screen. After that, it is fairly straightforward to model a new nose cone around the old one.

This process takes 1 or 2 hours, but it does not involve any magic. The next two pictures show the newly modeled nose cone together with the 3D-scanned old cone (green), and the third picture shows only the new 3D model (see Photos 09, 10, and 11).

At this point, all of the heavy lifting is done and you have a proper 3D model of the part in the computer. What now follows is the regular process of 3D printing—exporting the model to the slicer software of choice and printing it (see Photos 12 and 13).

The Finished Product

Now that you have the nose cone in your hands, you can print as many of them as you like at the

push of a button. The first print likely won't fit perfectly, and you will need to go back to your 3D model and make minor tweaks. I had to print three cones before I got it right.

The only two things left to do are to paint the nose cone and glue it onto the airframe. I did not have the original reddish-brown paint, so I decided to change the color scheme slightly. I only needed black and white.

The pictures show the result, including a comparison of the old cone fragment to the new one (old one put on top of the new one; see Photos 14 through 19).

Conclusion

So, what's the bottom line? If you are already into 3D printing then using a simple 3D scanner app on your smartphone can be a powerful tool with which to create spare parts in a matter of hours. You can print them as often as you like with almost no additional efforts. If you are not into computers, I don't recommend trying it. It will likely cause you a lot of frustration.

Thinking ahead, the next time I build a new airplane, I will probably 3D scan all of the parts before constructing the airplane so that I have the 3D information of the new parts in case I need them. This is work that can save a lot of time—and potentially money—later.

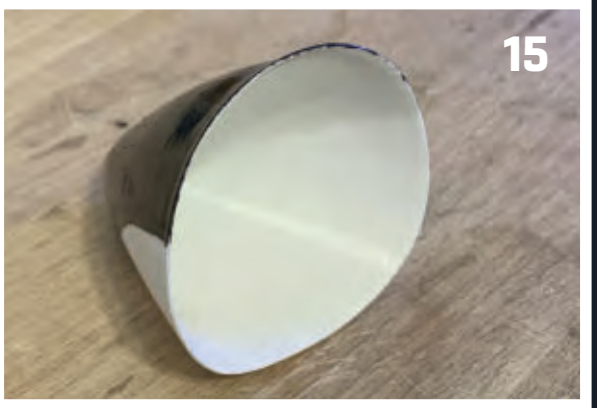
SOURCES:

Gorilla Glue
(800) 966-3458
www.gorillatough.com

OpenSCAD
www.openscad.org

Blender
www.blender.org

Qlone
www.qlone.pro



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COMMON QUESTIONS

Hitec RCD's Mike Mayberry shares his servo knowledge

By Jay Smith | jays@modelaircraft.org

Photo Courtesy of Hitec RCD

Mike Mayberry provides technical support to Hitec RCD customers and fields a lot of questions. To help readers with servo selection for projects, following are answers to some common questions that he receives.

Analog Vs. Digital

Analog servos refresh the servo motor at 50 times per second, while digital [servos] refresh at 300 times per second. This allows digital servos to hold their position much better and develop torque much sooner in the travel curve, making them more responsive and precise.

You can test this by pushing against the horn at neutral. The analog servos can be defeated with pressure, while the digital servos won't budge. Digital servos will also have a tighter deadband.

Deadband relates to how the servo reacts to a control signal and its internal position change. The wider the deadband, the slower the servo reacts to a change from a control signal or its internal position loop. This is why servos with a tight deadband of less than 1 microsecond sometimes seem jittery. The slightest change makes it try to correct. On the upside, a tight deadband increases response and correction.

Digital servos can have as low as a sub-1-microsecond deadband where analog servos have on average a 6- to 8-microsecond deadband. The final difference to note is the response time.

With some radio systems, where the receiver and transmitters have low latency (how fast the signal is transmitted to the receiver before the servos start to move), digital servos are required because they can keep up with this fast response time. Analog servos cannot keep up, will act erratic, and can burn up. Digital servos can draw more current than their analog counterparts, but the difference is not significant.

Metal Gear Vs. Nylon Gear

Metal-geared servos should be used in situations where more durability is needed. Most high-powered digital servos will only come in a metal-gear variant. When in doubt, use metal gears. Nylon-geared servos do have better wear characteristics.

High Voltage Vs. Standard Voltage

High-voltage servos can handle battery packs up to 8.4 volts—typically a fully charged LiPo pack—where standard voltage servos are good up to roughly 6.75 volts, which is a fully charged five-cell NiMH pack at 1.35 volts per cell. Note that all servos, unless specifically stated for 4.8-volt (four-cell) usage only, can be powered with a two-cell, 6.6-volt LiFe [battery] pack.

Also note that any servo can be used with lower voltage, such as a four-cell NiMH [battery], but the performance will be reduced. You should always use the highest voltage that the servo is rated for in order to achieve maximum performance. Servo specifications are always rated at the nominal voltage of the battery it can use in order to compare apples to apples.

This does not indicate the maximum, just the pack size. Batteries are always expected to be fully charged, so although standard voltage lists 6 volts—that is a five-cell pack or 1.2 volts nominal cells that can charge to 1.35 volts or 6.75 volts. The same holds true for the high-voltage, 7.4-volt rating. This would be the nominal voltage of a 3.7-volt, two-cell LiPo [battery], which charges to a 4.2-volt or 8.4-volt total. There is no need to use a regulator if the rating matches or is below the nominal voltage of the pack that is used.

Speed Vs. Torque

Many servos come in two or even three varieties of the same servo where the only difference is the gear ratio, which dictates how fast the servo is and how much torque it has. In most cases, the one with the highest torque is still plenty fast for most applications.

One other thing to remember is that faster servos with less torque can be bogged down if there is too much load, so in a high-energy situation, they will be less responsive. Applications where speed is preferable over torque would include helicopters, where lightning-fast response is needed, and lightweight on-road and off-road cars. Heavier trucks, 1/8- size off-road buggies, and large-scale aircraft are always better off using a servo with more torque.

Always remember that there is no such thing as too much torque!

SOURCES:

Hitec RCD USA, Inc.
(858) 748-6948
www.hitecrcd.com

Build a FREE FLIGHT Model

Learn the techniques to build a Keil Kraft Ajax kit

By Bob Benjamin
Photos by the author
bob@rcmodel.com

Bob Benjamin continues where he left off in the May issue, building the Keil Kraft Ajax kit that is available from Retro RC.

In the last issue we finished with a good look at the Keil Kraft Ajax fuselage fully framed up, with only the nose block, wing dowels, and a few other details left to work on.

Here's a peek at where we are going in this installment. Here the author is holding the finished balsa structure of the Kiel Kraft Ajax, with the flying surfaces rubber banded in place, all ready for a classic tissue covering. This one is going to be different from previous dope-and-tissue projects that you might be familiar with because I will use Eze Dope. Before we are ready for that, though, there is a lot of balsa building left to do. Let's get busy.

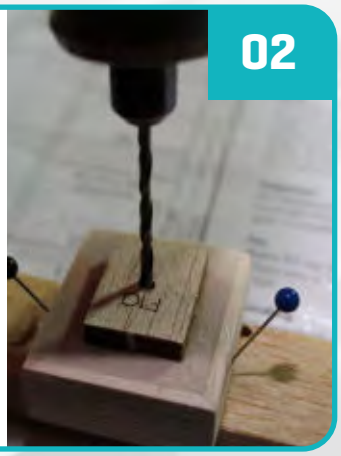
01

Not everything fits exactly right on the first try. Perhaps the balsa nose block in the kit was cut too narrow, or I might have built the nose assembly a bit wider than it was intended to be. In any event, we have to fix what would otherwise end up as a sloppy fit.

Cutting a new, slightly larger nose block from a fresh piece of balsa is a good idea if you have some extra material on hand. You can also save an undersize part such as this by laminating on some scrap balsa from the kit that matches the original part as closely as possible. I got some "fix-it" pieces of 3/32 balsa sheet from the laser-cut parts sheet scrap.

02

I used a sanding block to clean up the edges of those patches then centered the kit-standard, laser-cut F-10 former on the corrected nose block and attached it with Roket Hot CA glue. I marked the center of the nose assembly on F-10 and drilled it to accept the brass tube prop shaft bushing.



03

The brass tube fit through that hole like this before I cut off a short section to match the depth of the nose block. The kit includes a turned hardwood nose button/prop shaft bearing, which you'll get to see later.

I'm adding the brass tube bushing because when basic rubber-powered models such as the Ajax last for any length of time (which I intend for this one to do), those metal-on-wood prop shaft fittings get worn, sloppy, and hard to accurately adjust.

04

The brass tube is inside of the nose block where you can't see it for now. With the F-10 former centered on the adjusted nose block, the whole assembly centers itself on the front of the fuselage at F-1 like this. Now you can see why I took the time to make it fit correctly. Otherwise you would notice any error that crept in.

05

With the F-10 former glued securely in place, you can depend on the nose block assembly to stay in place and in alignment while using a medium, 120-grit sanding block to shape the block to match the rest of the fuselage.

06

You can set the fuselage aside for now and start working on the horizontal and vertical tail surfaces. Following the suggested construction sequence, I have assembled the laser-cut vertical fin outline parts R-1, R-2, and R-3 at the bottom and added the 3/32-inch square balsa leading and trailing edges (LEs and TEs), along with the center spar.

The ribs are cut from the same 3/32 square balsa stock and should fit the rest of the structure as precisely as possible. You can see here how we are using the very sharp point of a #11 blade to score the 3/32 square strip just deeply enough to mark it.

Don't try to finish an unsupported cut like this. Mark the material, move it to a firm working surface, and finish the cut there.

07

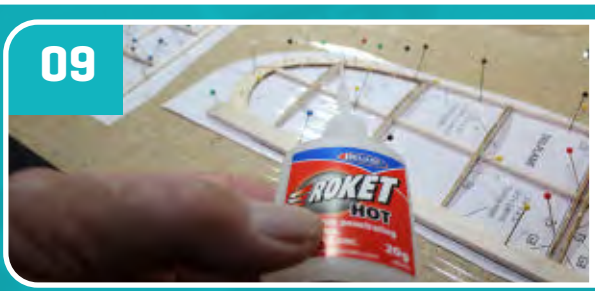
Tiny, lightweight parts such as this rib section can be fussy to assemble. Gentle pressure on the tip of your #11 blade will hold the part firmly enough for easy insertion into the surrounding structure. Forceps, tweezers, or skilled fingertips are alternate tools for this job.

08

Here is the horizontal stabilizer (called a tailplane in this British kit). LEs and TEs, spar, and the wingtip outline are pinned in place over the plans as was done with the vertical fin. The tailplane is not flat like the fin but it uses shaped laser-cut ribs to define an airfoil section.

Start installing these at the center with two identical ribs spaced only far enough apart to provide an exact slip fit for the bottom of the R-3 fin. I used pins to locate every part precisely before applying any adhesive.

09

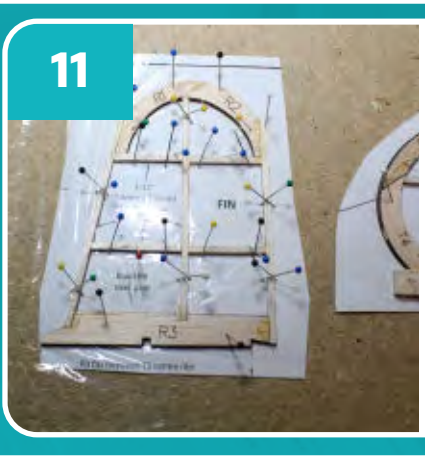


The part looks like this. Using Roket Hot CA means that every joint is going to bond in a few seconds. It also means that you can bond every joint in place without having to move anything to apply adhesive. The advantage of using this technique is that you can bond the assembly without disturbing any of the alignments you just set up.

10

This is the complete horizontal stabilizer, still pinned in place over the plans, before trimming the TE to match the wingtip outline or doing any sanding.

11



This is the vertical fin/rudder assembly at the same stage of construction. R-3 at the bottom will fit between the two center ribs that you can see in the previous photo.

12

The Keil Kraft Ajax wing consists of a flat center section panel and two outboard panels that are cut at an angle to each root rib to establish the correct dihedral. That dihedral is determined by the end/outer rib at each end of the center section. This is the laser-cut dihedral template pinned in place to set the left end rib at the correct angle.

The rest of the wing center section ribs are assembled in place over the plans, perpendicular to the building surface, using the spar as a reference to align them. The LEs and TEs then go into place.

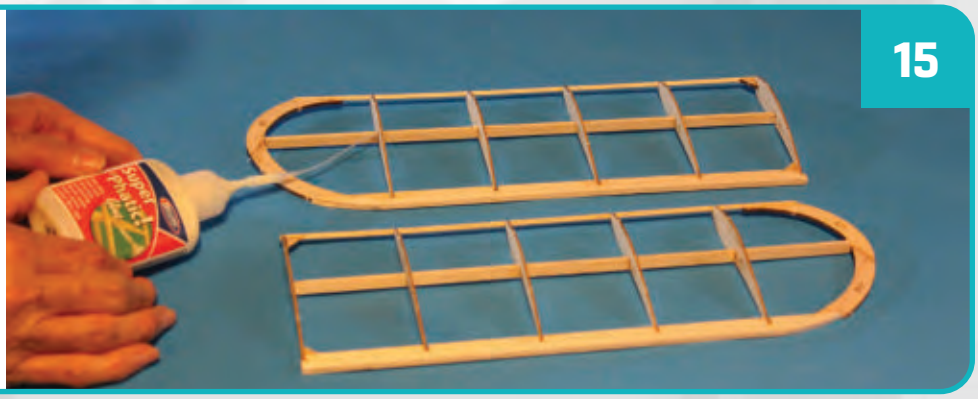
These need to line up with the front and rear ends of each rib without bending or leaving gaps. If they don't, this is a good place to stop and make things fit. When all of these wing parts line up, it's time to use instant-setting Roket Hot to keep it all together, without disturbing the alignment now that it's right.

13

This is the right outer wing panel partially dry-fitted in place. You can see the assembled center section above it.

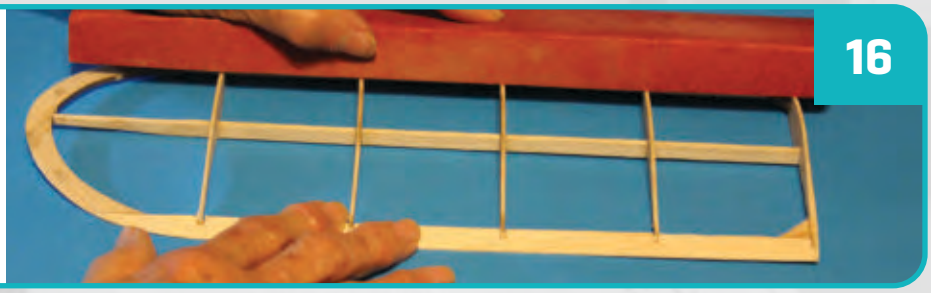
14

In this picture, the two outer wing panels have been glued securely and removed from the plans so that you can get a clear view of them. You can use Deluxe Materials Super Phatic glue in place of Roket Hot for all of the construction we have done so far. It will not set instantly and will give you plenty of time to adjust the parts after you apply the adhesive. Both methods work; choose which works best for you.



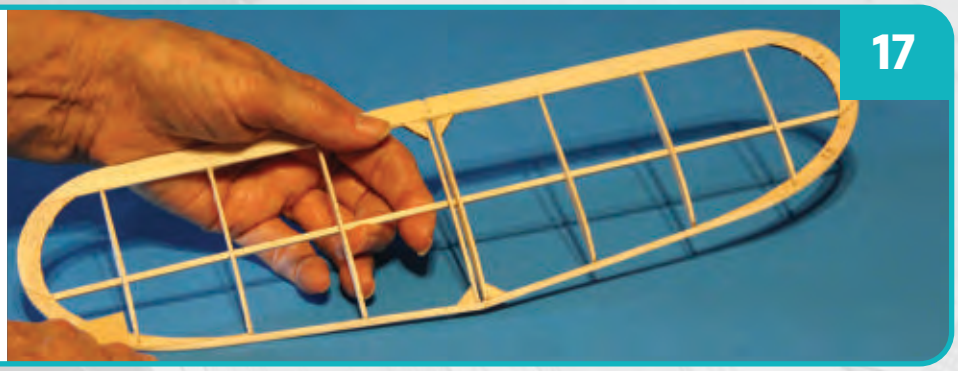
15

To accurately round and taper the LEs and TEs and to blend the ribs into the surface shape that they define, you need a sanding block. This one is set up with 120-grit sandpaper, which is just coarse enough to cut those balsa edges cleanly without pressing hard enough to break something. When you apply enough force to shape balsa this way, always support the structure as firmly as you can.



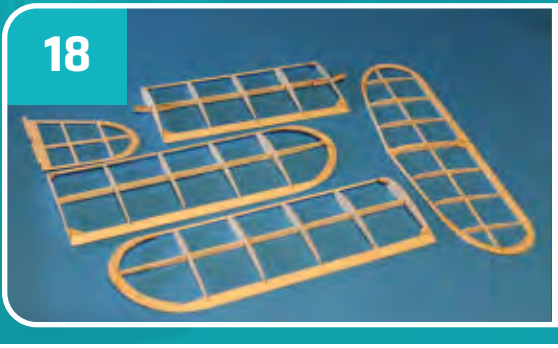
16

After the structural shape (in this case, the airfoil section) is defined, using a handheld sheet of finer-grit sandpaper (320 grit) gives you a better feel for fine finishing.



17

18



Now the various sections of the flying surfaces should be as smooth and even as you can get them. Wait to join the wing panels until after this step has been completed. It's easier to reach all the way to the edges before they become corners.

19

Using Deluxe Materials Speed Epoxy (4-minute set) is what the kit instructions recommend. The epoxy adhesive will bridge/fill any minor gaps that you can't sand away without removing too much balsa. This works because, unlike aliphatic resin glue, the cured epoxy provides structural strength on its own. It makes sense to use it on critical assemblies such as this.

As long as you are careful to use only enough to wet the entire joint, the tiny weight gain is okay. Note that this joint is going to be assembled with the center section flat on the building board, the dihedral angle gauge placed according to the plans and the joint clamped with a couple of clothespins.

20

When the epoxy had cured, I removed the clothespins and the fully assembled three-panel wing looked like this. Using a full sheet of sandpaper (this is 100 grit) attached to the working surface is an excellent way to true-up any places where those TEs might not match perfectly.

21

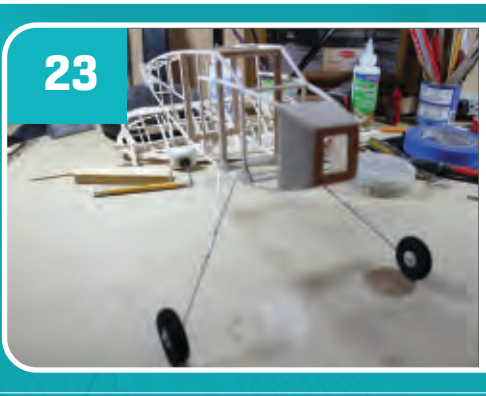
The Keil Kraft kit includes several prebent wire parts that are assembled to make up the landing gear (that's "undercarriage" in British plans). What's happening here is that you have assembled the upper ends of those struts into the precut holes and plastic bearing tubes, precisely aligned the assembly, and secured it all with plenty of masking tape.

With that done, wrap the lower, side-by-side wire joint with the thin copper wire from the kit. This is another of those places where all of the care you put into neat work will be there for the world to see.

22

One careful soldering job later, with all of the tape removed, those joints looked like this.

23



With the neat-looking, lightweight foam wheels supplied in the kit slipped into place, the landing gear assembly looks like this. This model is getting nearly ready for some tissue covering, which I will address in the final article.

SOURCES:

Bob Benjamin's Master's Workshop
www.rcmodel.com

Deluxe Materials
www.deluxematerials.co.uk

Retro RC
(248) 212-9666
www.retrorc.us.com

Ripmax
www.ripmax.com

In the air, the E-flite P-51D Mustang presents and flies like a full-scale Mustang. Having the retractable tail wheel further enhances the illusion that you could be looking at the "real thing." Photo courtesy of Horizon Hobby.

WATCH A VIDEO ONLINE!

Access additional content by visiting www.ModelAviation.com/bonuscontent.

HORIZON HOBBY'S MIGHTIEST FOAM MUSTANG YET

E-flite P-51D Mustang 1.5m BNF Basic With Smart Technology

By Jay Smith and Ryan Ramsey | jays@modelaircraft.org; raramsey331@hotmail.com
Photos by Jay Smith

THE E-FLITE 1.5M P-51D MUSTANG with AS3X, SAFE Select, and Smart Technology is a must-have model for any electric-powered Mustang enthusiast. The Lou IV paint scheme is an interesting choice and is surrounded by a healthy debate as to what the "real" colors are in the dark sections. E-flite chose to replicate the modern-day air show version of this beauty that depicts the dark areas in an easy-on-the-eyes shade of blue.

Scale purists and aviation historians tend to agree that the color is a mix of olive drab and a British deep green or insignia blue. This scheme is modeled after the full-scale aircraft of Col. Thomas Christian, who was the commanding officer of the 361st Fighter Group, 8th Air Force. He flew escort missions in the European Theater of Operations and was shot down by German forces.

This P-51D truly is the mightiest Mustang yet in the E-flite lineup, with all of the cool onboard technology and a high-performance 6S power system. A 4650 460 Kv brushless outrunner and 100-amp Avian ESC spin the massive 15.5 x 11 four-blade propeller. A removable battery tray

At a Glance

Specifications

Type: Semiscale foam electric
Skill level: Intermediate/advanced
Completion level: BNF/PNP
Propeller size: 15.5 x 11 four-blade
Wingspan: 59 inches
Length: 52 inches
Flying weight: 7.5 to 8 pounds
Power system: 100-amp Avian Smart ESC
Motor: 4650 460 Kv brushless
Battery recommended: 6S 5,000 mAh LiPo
Flight time: 5 to 7 minutes
Price: BNF $499; PNP $459

Pluses

- BNF includes AS3X with SAFE Select.
- Quick assembly with no glue required.
- Onboard telemetry.
- Extra scale details, including a retractable tail wheel and lights.
- Suspension struts.
- Removable outer wing panels.

Minuses

- Wing screws can be challenging to get started.
- Wheels are hard.

Manufacturer/Distributor

Horizon Hobby
(800) 338-4639
www.horizonhobby.com

makes swapping out batteries—anything from a 3,200 to 7,000 mAh LiPo—a breeze.

I used the 5,000 mAh Smart 30C 6S battery in the videos that were shot. The three-piece wing also lends a tremendous amount of ease to the transportation aspect. The outer panels are removable, leaving the aircraft up on its gear for easy transport and handling.

There's no glue needed for the assembly. In fact, there are only six screws on the model's airframe assembly. All of the linkages and control horns are preinstalled, with the exception of one for the rudder. The linkages are ball links, which make for a locked-in, precise feel to the controls.

You could even be done assembling this beautiful aircraft before the battery has charged. Having onboard telemetry without the use of any external modules is one of the coolest surprises I could have imagined. Simply scroll right from your Spektrum transmitter's main screen and you can begin to access real-time flight-pack voltages, temperature readings, and more.

You can also dig deeper and set alarms to alert you when your system has reached certain parameters. On my first flight, I had not yet set anything. I had a low-battery warning alert sound and I quickly landed the airplane. My alarm was set to a 4.1-volt-age-per-cell warning, but I still had plenty of life left in the pack.

I set the warning to go off at a more-useful 3.6 volts. The lowest number allowed is 3.3. Many of you know that low-voltage cutoff begins at roughly 3.7 volts. You should keep in mind the sag and spike that happen to a battery throughout the range of a model's normal flight. For me, 3.6 sets a buffer with a little headroom.

It's definitely nice to have enough power for a go-around. The amount of technology that is available right out of the box is unbelievable. It's possible to ween yourself off of a flight timer and instead use real-time telemetry readings when you're comfortable.

The Plug-N-Play (PNP) version comes with a 100-amp Avian ESC. The BNF Basic version comes with the new Spektrum AR637TA receiver. To fully utilize the onboard telemetry, make sure that your Spektrum radio has the updated firmware installed. It's super easy to do. I did it to my DX9 so that I could take full advantage of the technology.

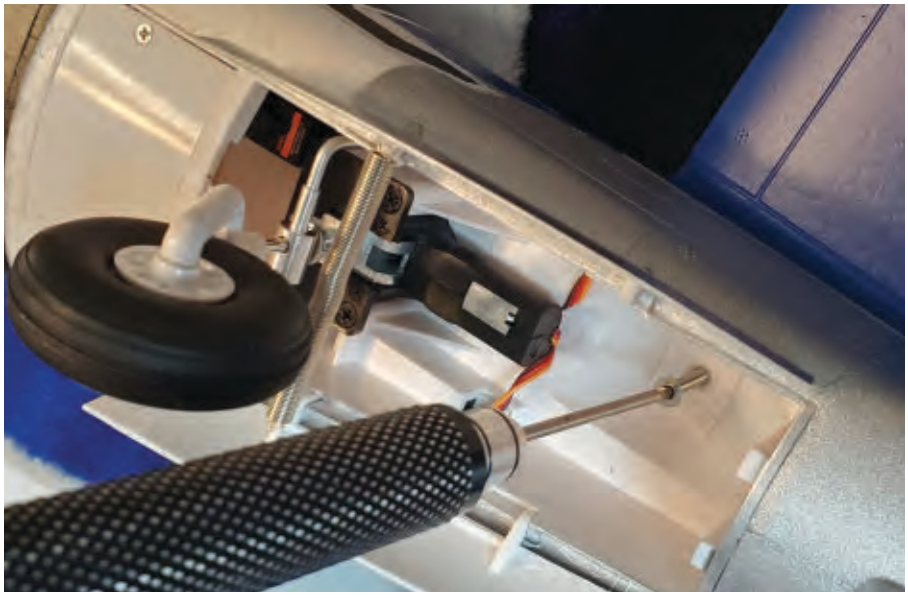
There are many extra scalelike details that I don't want to forget to mention. The scale panel lines and rivet detail really set this model off. Even the fabric-covered control surfaces are well replicated. It's easy to see that the trim tab on the rudder is made to look like metal, while the rudder itself emulates fabric.

It is top-notch all the way, with navigation lights, a scale propeller, and diamond-treaded tires on scale-looking suspension struts with ball bearings to keep it smooth. There are many great additions designed into the Mustang.

The well-detailed Mustang comes out of the box with a high level of completion and requires only minor assembly.

The belly scoop allows air through and is dressed to the nines with a plastic-molded leading edge for scale accuracy, as well as the screen that you'd see on a full-scale Mustang. The exhaust stacks allow the powerplant to breathe, which I have always thought was a cool, and sometimes necessary, modification.

There are many Mustangs out there, but if you want to upgrade your fleet or want to acquire the best one yet that is full of all of today's modern innovations, the E-flite P-51D Mustang is the one. With SAFE Select, this aircraft is even accessible to modelers who otherwise wouldn't have been ready for it. I would not recommend this as a first or second airplane, but it could easily be someone's first or second warbird model if he or she can successfully and consistently fly and land other types of aircraft models.



The retractable tail wheel with gear door is a nice addition. One of the three horizontal stabilizer screws is hidden inside and is a fine touch.

Flying

Let's discuss flying this beauty. The E-flite 59-inch wingspan P-51D Mustang on 6S power is a beast. With the large 15.5 x 11 propeller up front, you know it's going to be awesome. Pilots who aren't up on their stick-and-rudder game or who are not well-versed at tail-draggers will appreciate the SAFE Select option. SAFE can be selected via a switch of your choosing.

There are minor differences on how you bind the aircraft that will allow you to choose whether or not SAFE is available. If you bind without SAFE, you will still have the AS3X stabilization enabled. AS3X helps smooth out bumps and minimize the wind's effects, making the aircraft fly and feel like a much larger model. AS3X is a little helper that you can hardly tell is there. SAFE Select is designed to help much more and it is obvious to experienced fliers that it is there.

Servo and lighting connections simply plug in when attaching the wing's center section to the fuselage. The scoop is also nicely done.

Now that you have a basic idea of what the onboard stabilization options are, you can take off. I only used AS3X and had a typical tail-dragger warbird experience. You really have to be mindful of your right rudder when getting this performance machine ready to roll. Keeping the tail planted helps keep your Mustang tracking straight. After you are up to speed, make sure you relax your elevator's back pressure or it will be up in a hurry.

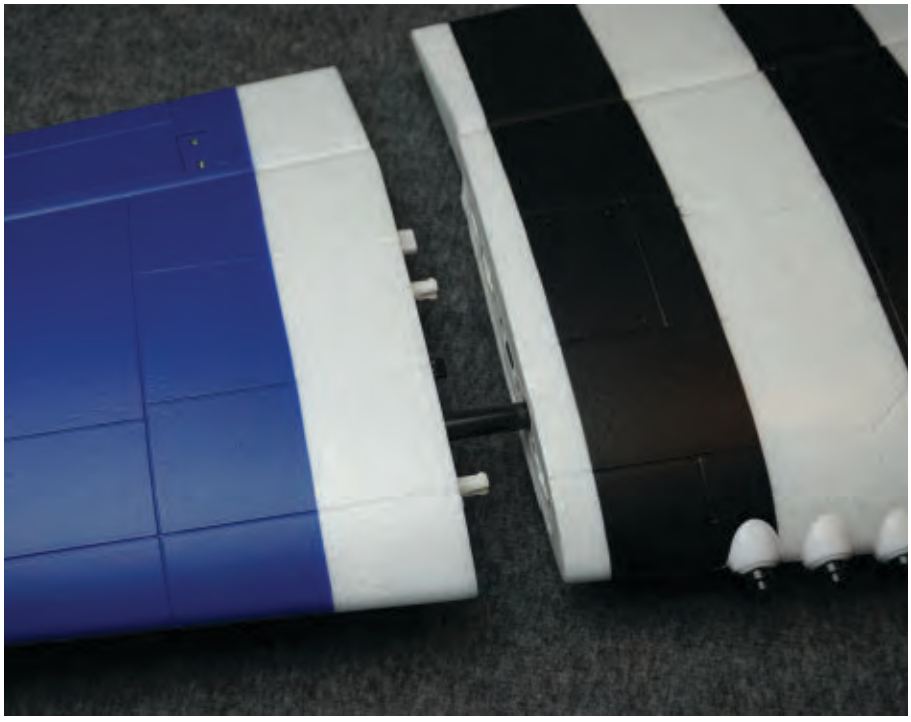
Had I used SAFE on my takeoffs, they would have looked much better. I set up the P-51D according to the manual and generally enjoyed the low-rate settings for full-scale, warbird-type flight maneuvers.

When I wanted to tighten the radius of my loops and quicken my rolls, the high-rate settings were just right. Its presence in the air and its vertical performance are breathtaking. The aircraft presents well with its highly visible livery. This Mustang has rock-solid performance and great speed from the 6S powerplant.

Its flight envelope further impressed me. The Mustang's slow flight is remarkable, and when you drop full flaps and crawl by, it's hard to believe what you're seeing. The sound of this beauty at full speed is something amazing. It sounds mean, but in a good way. It is fun to rip the Mustang around and super sweet to

The semiscale, four-blade propeller requires only minor assembly and is worth the effort. Locknuts slide into molded cavities on the back to keep them in place.

Behold a larger battery/radio tray that those who have larger hands will appreciate. The removable battery tray can accommodate 6S LiPo battery packs from 3,200 to 7,000 mAh.



The unique, three-piece wing includes a center section with main gear, plus outer panels that securely snap into place without fasteners. This allows the Mustang to stay on its wheels during storage and transport.

savor when you make a slow pass.

I flew with the recommended 6S 5,000 mAh Smart battery and had a great time. Landing the Mustang takes a fly-it-down approach. I allowed myself to get too slow on a couple of my approaches and bounced it around slightly. By the way, the landing gear is tough (don't ask me how I know).

After my first not-so-good landings, I calmed down and better managed the speed. The Mustang likes to be flown down and wants a two-wheel landing. I actually added a few clicks of down-elevator to increase the predictability of my approach. It settled out of the descent and made my landings and touch-and-gos look much better.

Conclusion

As the day went on, I had even more fun. This is the best foam Mustang I have ever flown—and I have flown them all! Out of the box, you can tell right away that this is not a typical Mustang. It is the mightiest, most definitive foam P-51

The main gear features sequenced doors and scalelike, shock-absorbing struts for operation from a variety of surfaces, including grass.

Mustang on the market today.

In the hand, it's solid. The landing gear is tough and up to the task. The retractable tail wheel and other cool features put it up a notch on scale fidelity. On grass, takeoffs and landings are uneventful. It's great to see the scalelike suspension struts in action, smoothing out the takeoffs and landings.

Every time that I have transported the Horizon Hobby E-flite P-51D Mustang, I have been glad that I could take the outer wing panels off and transport it on its gear, making it easy to load and unload and allowing more room in my vehicle to carry other airplanes to the flying field.

Check out videos of this model at Pilot Ryan Media on YouTube. You will find an assembly video, shakedown flight video, and a flight review video. If you have any questions or comments, you can leave them under the videos in the comment section.

SOURCES:

Spektrum
(800) 338-4639
www.spektrumrc.com

Pilot Ryan Media
www.youtube.com/channel/UC0yB3b3vok2g4fWzSdepZXg

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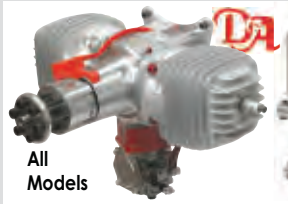

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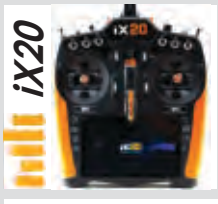

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The author has flown the F-18 from a grass field where it needed roughly a 300-foot takeoff run. On pavement, the F-18 can be airborne within 100 feet.

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FLY AN EYE-CATCHING MARINE JET

Horizon Hobby E-flite F-18 Hornet 80mm EDF BNF Basic with AS3X and SAFE Select

By Fitz Walker | flying_fitz@yahoo.com
Photos by Lee Ray and the author

RC MODELS OF THE F-18 HORNET are not new. In fact, it is arguably one of the more commonly modeled jets in recent times, which is no surprise. The F-18 has been in service since the early 1980s, used by a multitude of countries, and has been the jet of choice for the U.S. Navy's Blue Angels aerobatics team for more than 30 years.

Despite the prototype losing to the F-16 in early U.S. Air Force competitions, it has become the Navy's premiere fighter/attack aircraft.

E-flite's new 80 mm electric ducted-fan (EDF) model is not just another F-18 because it seeks to bring some unique flavors to the company's version of this venerable fighter.

I pulled all of the pieces from the tightly packed box. The painted finish of the EPO foam is nicely done, and all of the decals are preapplied. The paint scheme features the colorful vertical fins of Marine Squadron 242, based in Iwakuni, Japan, and provides good contrast to the overall Ghost Gray paint scheme.

There are some impressive details in the molding with panel lines, antennae, cockpit instruments, and various stenciling, not to mention a generous load of weapon stores and fuel tanks. Most of these items are optional, except for a couple of small missiles that are permanently attached to the bottom of the fuselage. Non-glossy decals are a nice touch that add to the realism.

All 10 servos are preinstalled and feature metal gears for durability. Motivating thrust is via an 80 mm, 12-blade EDF mated to a 3270-size, 2,000 Kv inrunner motor. A screwed-in hatch on the bottom of the fuselage provides access to the

Removable weapons and drop tanks give the model character in the air.

motor and fan unit for maintenance. The supplied 100-amp ESC should provide plenty of overhead for aggressive flying.

Assembly

Assembly starts with the horizontal stabilators, which are held in place with a retaining collar on each pivot shaft and a clever, manually adjustable servo pin-in-slot mechanism. The vertical stabilizers slide into a recess on top of the fuselage and are held in place with a pair of machine screws. I found those screws to be slightly difficult to install until I made sure the fins were pressed firmly into place.

The wing halves are affixed in a similar manner. Slide them firmly into place before screwing them in. Take care to make sure that the flap and aileron servo wires are not pinched in the process.

The wingtip and underwing armaments use keyed brackets that make installation and removal simple. Merely insert and slide all of the stores into place. Red and green LED navigation lights are embedded in the wingtips as well.

Total assembly of the F-18 is extremely quick. If it takes you more than an hour, then I would be surprised.

What really stands out with this model is the mostly metal landing gear. E-flite has done a good job of balancing the distinctive looks and articulation of the full-scale F-18's undercarriage, while somewhat simplifying it for practicality in a small model. I spent several minutes just admiring the "nice legs" on the kit.

The electric retracts feature sequencing, servo-controlled nose doors, and spring-loaded main gear doors. There is even a simulated nose gear rear actuator strut that telescopes when the gear is raised and lowered. Except for the lack of doors to cover the main wheels, the entire setup is surprisingly accurate to the full-scale aircraft.

The BNF version I reviewed includes the Spektrum AR636 AS3X stabilized receiver with SAFE Select features. Using Spektrum's transmitter setup guide, I programmed my Spektrum DX8 G2 transmitter according to the recommendations provided in the manual. Nearly all of the current and past lines of Spektrum radios are referenced in the setup instructions.

I had no issue obtaining the correct center of gravity (CG) with a 6S 5,000 mAh LiPo battery pack. In fact, I found the battery area in the fuselage quite cavernous, with ample room for battery positioning. A push-button latch provides a solid locking mechanism while still making it easy to remove the battery hatch.

The hatch is the entire cockpit section and features a single pilot bust (I guess the reconnaissance systems officer was taking the day off), dashboard detail, and what looks to be a small vent hole—presumably to keep the insides from overheating in the summer sun.

Flying

My first flight attempt had a rough start, both literally and figuratively, when I decided to visit my photographer's home field instead of my own. His flying field is

short-cut grass, which is in stark contrast to my field's paved runway. One question that comes up often is how a particular EDF will do on grassy fields, so I thought it would make a good comparison with my normal, pampered flying site.

I failed to properly guesstimate how long the takeoff run would be in the grass and ended up overrunning the runway's threshold into tall grass on my first failed takeoff attempt. As it turned out, I had made several known and unknown errors. Besides grossly underestimating the takeoff distance in grass, I did not use partial flaps, used low rates on the elevator, and also used the most forward CG location.

After restarting the takeoff run at the far end of the runway instead of the middle (why didn't I think of that before?), I was able to get the F-18 successfully in the

Only a few parts need to be assembled for flight.

The battery area in the F-18 is roomy and allows for a range of battery sizes and CG locations.

At a Glance

Specifications

Model type: EDF jet
Skill level: Intermediate/advanced
Wingspan: 38.6 inches
Length: 53.1 inches
Flying weight: 7 pounds; 6.75 pounds with less armament
Power system: 3270 2,000 Kv brushless inrunner motor (included); 100-amp ESC (included); 80 mm 12-blade V2 ducted fan (included)
Battery: 6S 4,000 to 8,000 mAh 30C LiPo
Construction: EPO foam
Servos: A450/A333/A333R submicro analog 13-gram metal gear (included)
Radio: Spektrum DX8 G2
Receiver: Six-channel Spektrum AR636
Price: $469.99

Pluses

- Extremely quick assembly.
- Great scalelike looks and features.
- Easy flying.

Minuses

- Grass takeoffs can be a bit long.

Manufacturer/Distributer

Horizon Hobby/E-flite
(800) 338-4639
www.horizonhobby.com

air after a run of 300 feet or so. Note that subsequent flights off of a paved runway showed that the F-18 takeoff run took roughly 100 feet.

Like most EDFs, it's best to give the model a few moments to get on step immediately after liftoff, but when it was up to speed, the F-18 handled nicely. The default control throws were well balanced, and my first few laps around the field were spent making sure all of the trims were set. Definitely pay attention to the up-trim offset recommended in the manual because it is certainly needed.

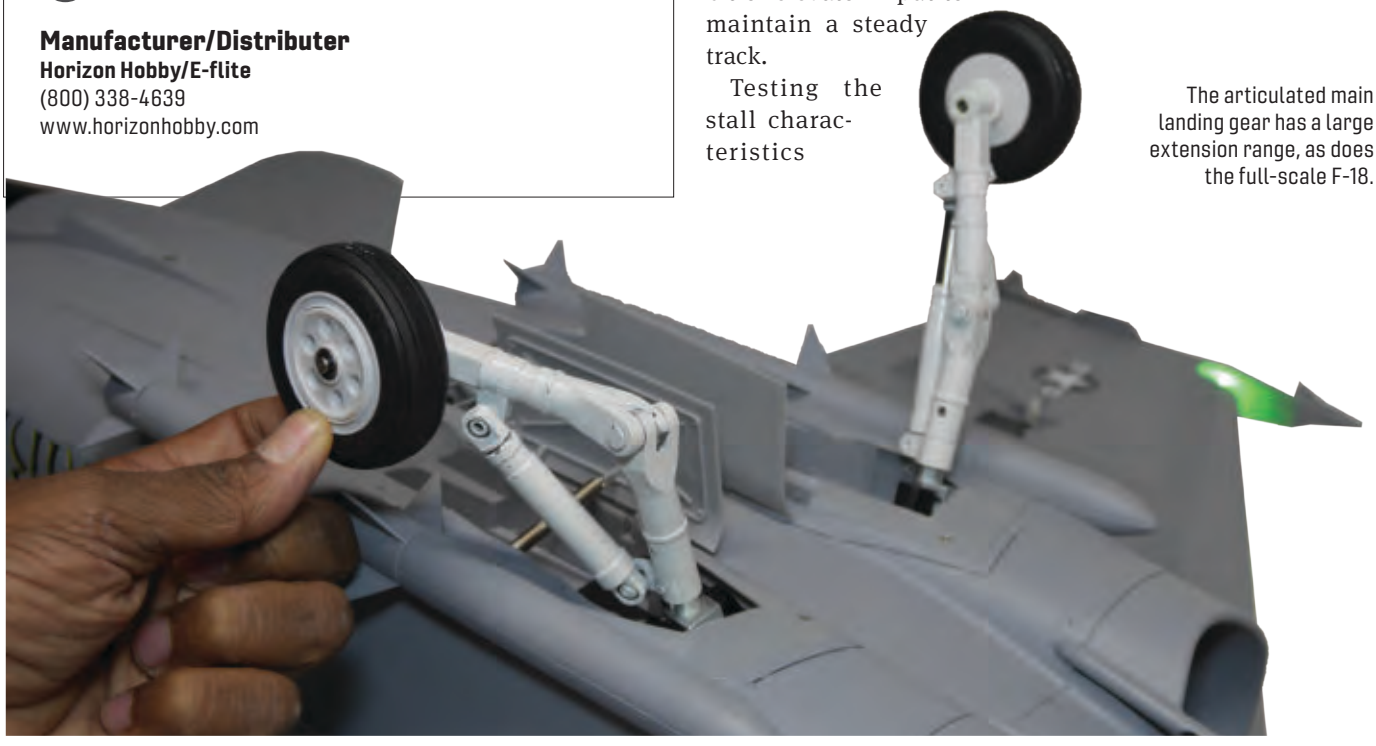
I found the high-rate aileron throws quite nice with a quick, but not twitchy, roll rate, although the low rates were just fine and probably what most will want to try first. As I previously mentioned, the elevator low-rate setting is not optimal for grassy takeoff runs. In fact, I eventually increased the maximum throws to 20 mm instead of the recommended 16 mm.

Cruising speed is quick, but not blistering fast, with maximum speeds topping out at roughly 90 mph. The 12-blade fan produces a nice whooshing sound that is pleasant to listen to as it flies by. The model felt solid in the air, and I was quite comfortable zooming around and performing aerobatics and large loops at 2/3 power.

Even with the increased elevator throw and the CG pushed back to the rearward limit, I could really jerk the F-18 around with impunity and didn't worry about the model doing anything unexpected. Inverted flying needed only a moderate amount of down-elevator compensation.

Vertical power is good, but not unlimited. Zooms from level flight go up approximately 500 feet before its speed bleeds off to zero. One of my vertical climbs to stall resulted in an entertaining semispin at the top, from which I quickly recovered. It will perform knife-edge flight fairly well, but there is some rudder-pitch coupling, so you will need to compensate with a bit of elevator input to maintain a steady track.

Testing the stall characteristics



The articulated main landing gear has a large extension range, as does the full-scale F-18.

Scalelike, articulated landing gear does a great job of absorbing bumpy landings.

(starting high, of course) showed a benign response to a lack of sustainable airspeed, with only a small amount of wing rocking. There was no tendency to snap or aggressively fall off to one side or the other. This is not a model to be afraid of because I really couldn't find any bad habits.

I generally preferred landing with partial flaps because that setting provides good lift-to-drag ratio. Full flaps allow a slightly steeper and slower approach but seem to wash out the elevator control somewhat at flare to touchdown.

The flap-to-elevator mixing recommended in the manual was mostly unneeded, and I ultimately eliminated most of it. Regardless of the flap setting, I found it best to keep a bit of power in through final approach and only fully cut the power just before the flair and touchdown. The articulated landing gear worked great and seemed to prevent excessive bouncing upon landing.

The model felt solid in the air, and I was quite comfortable zooming around and performing aerobatics and large loops at 2/3 power.

Out of curiosity, I tested the SAFE mode option in flight. I've found that many people like to use this stabilization mode with their jets because of its built-in self-leveling and angle limits. SAFE mode worked fine the first time I tried it. I didn't experience any issues or trim changes.

The preset bank angle limit was adequate to perform reasonable diameter turns. Elevator response was also fine throughout the whole flight envelope.

Using the recommended 5,000 mAh LiPo battery, I normally got approximately 4-minute flights with enough reserve for a go-around or two.

I should mention flying with the full weapons and fuel tanks load. Besides looking cool, they seemed to minimally affect the flight performance. Speed and the ability to perform aerobatics remained mostly unchanged, although there was a noticeable reduction in vertical performance. They did, however, give the F-18 quite a bit of character in the air. I always flew with the wingtip missiles on because no F-18 looks right without them.

Conclusion

The E-flite F-18 Hornet 80mm F-18 is an easy-flying model for a moderately experienced flier. It has great presence in the air. Ground tracking is stable and responsive on both grass and pavement.

Its refined finish and attractive features are bound to attract attention at the field. The stock power system provides good power and speed, while allowing for a variety of battery sizes.

E-flite's rendition of the venerable F-18 Hornet is sure to please any fan.

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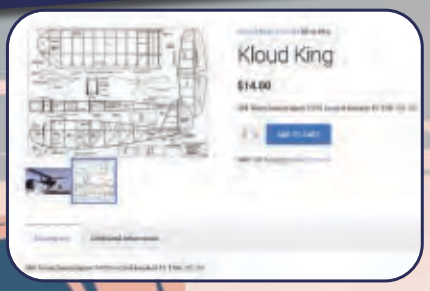

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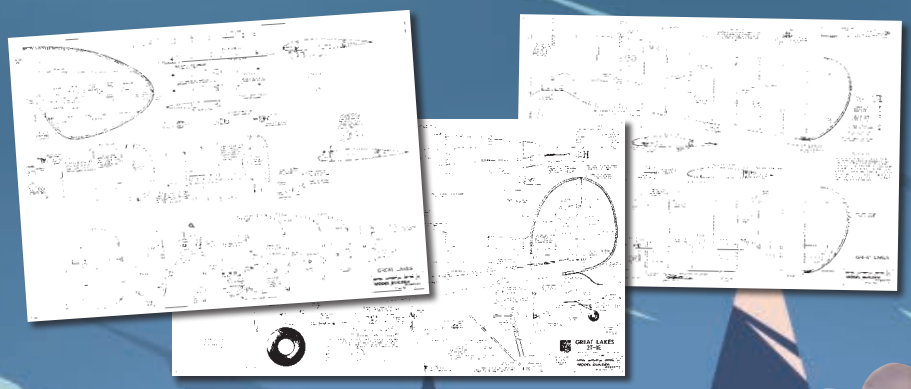

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UTILIZE THE GEAR YOU MIGHT ALREADY HAVE

Old School Model Works Mambo

By Terry Dunn | terrydunn74@gmail.com
Photos by the author

THE E-FLITE APPRENTICE is a popular trainer model because of its slow, stable flying traits. It has been used to help teach countless pilots the basics of RC flying. After they earn their wings, however, those same rookie pilots are often eager to step up to a model with more speed and maneuverability. That doesn't mean that their Apprentice has to sit in a corner and collect dust—well, not all of it anyway.

This is where the Mambo from Old School Model Works comes in. It is a sport model that is designed to use all of the power system and radio components from an Apprentice. Scavenging the gear from an Apprentice and placing it in the Mambo results in a model with much greater potential for airborne excitement.

Pilots can expand their flying proficiency, as well as their building skills, with this airplane. Similar to the other flying machines in the Old School Model Works catalog, the Mambo is offered as a laser-cut balsa kit. First-time builders need not worry. The Mambo was designed with fledgling modelers in mind.

The Mambo kit includes balsa and plywood components, prebent landing gear, a hardware package, rolled plans, and a printed instruction manual. A full list of additional required items and tools is provided in the manual. If you have an unused Apprentice hanging from the rafters, you already have the necessary power system and radio gear that you will need to outfit a Mambo. It even utilizes the trainer's motor mount and main wheels.

Of course, you do not have to part-out an Apprentice to build the Mambo. You are free to install your favorite brand of four-channel receiver and mini servos. For propulsion, nearly any 250- to 400-watt power system will work fine. You can even use a .15- to .30-size nitro engine!

Building the Mambo

A kit for beginners deserves to be seen through the eyes of someone new to the hobby, so I passed the kit to my friend, Mark Gustas. He caught the RC bug approximately a year ago, and his affliction appears to be incurable. Mark is the type of eager, motivated newcomer who keeps the hobby alive and interesting for the rest of us.

In addition to giving Mark the kit, I offered to help him if he hit any trouble spots along the way. He returned two weeks later with the Mambo completely framed up and ready for covering. He did an excellent job of putting the aircraft together.

Mark relayed that he was particularly impressed by the quality of the kit's balsa and the overall clarity of the instruction manual. Although he never asked me for help during the build, he did confess to a few head-scratchers that he was able to sort out on his own.

He had trouble installing the kit-supplied CA hinges on the tail feathers. The stabilizers and control surfaces are made by laminating two pieces of balsa.

Creating slots for the hinges required Mark to cut entirely within the glue joint where the top and bottom laminations meet, which wasn't easy to do. After a few false starts, he ditched the supplied CA hinges and switched to Robart Manufacturing hinge points.

Another area that slowed Mark down was installing the rudder and elevator pushrods. He used Du-Bro Lazer Rods, which worked perfectly. His issue was that the manual did not provide specific guidance for mounting any type of pushrods. It took some time to figure out an acceptable configuration.

One final hiccup that Mark mentioned regarded the optional canopy. The included vacuum-formed piece is a nice accent on the finished model, especially with the decorative internal framework. His concern was that the canopy must be split into front and rear segments. Doing so required some precise cutting, fitting, and gluing that might be challenging for some new builders to handle.

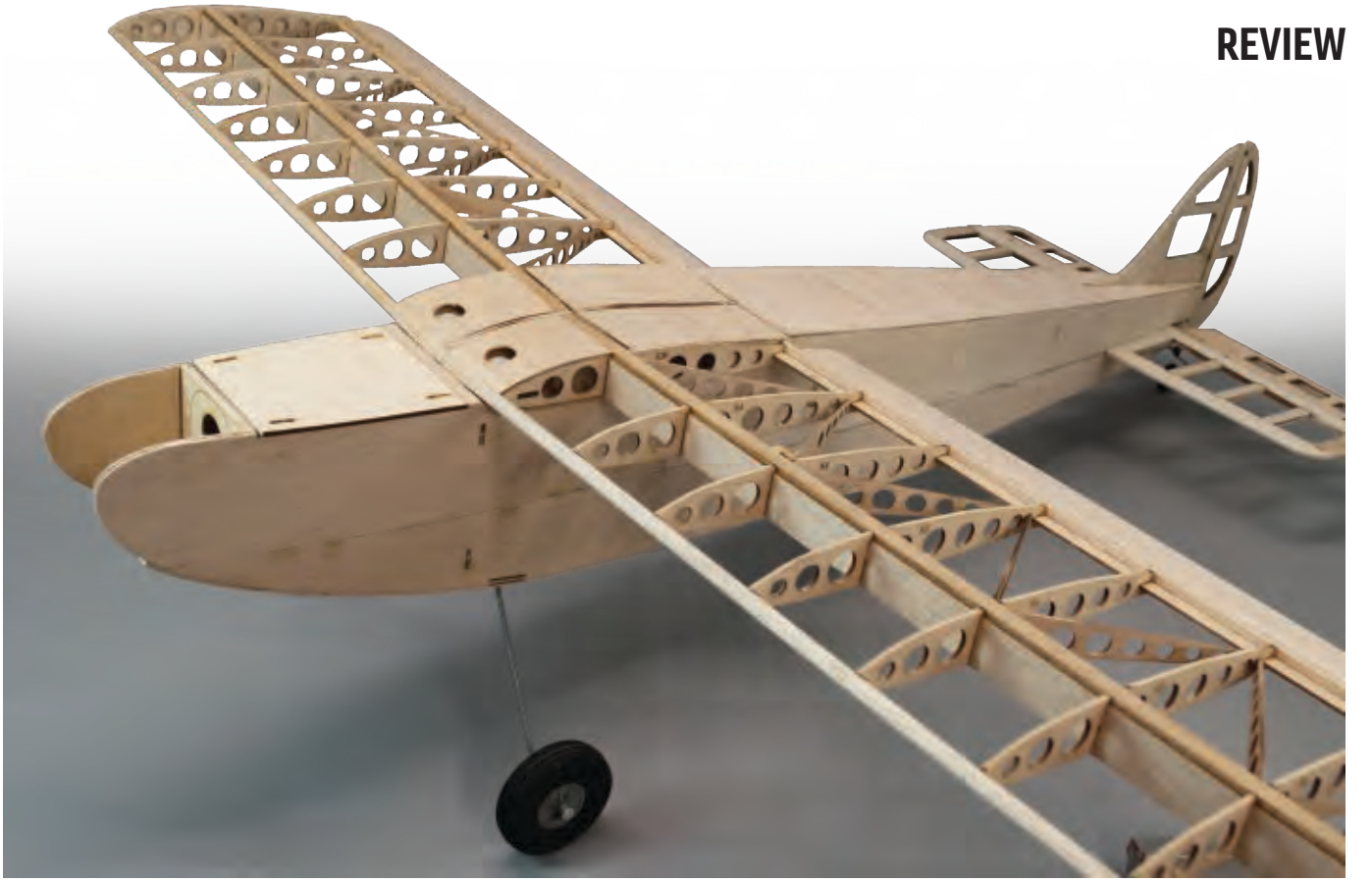
Mark took the Mambo back to his workshop with a selection of covering materials. He downloaded three-view drawings from the Old School Model Works website to sketch out ideas for the color scheme. He knew that he wanted to show off the Mambo's unique wing ribs, so he sealed and painted a section of ribs in each wing half. He then covered those areas with clear, iron-on film. The rest of the Mambo received flat black covering with gold accents.

All of the lettering and shark's teeth graphics are made with iron-on covering that Mark cut with a Cricut cutting machine. The completed model is quite stunning.

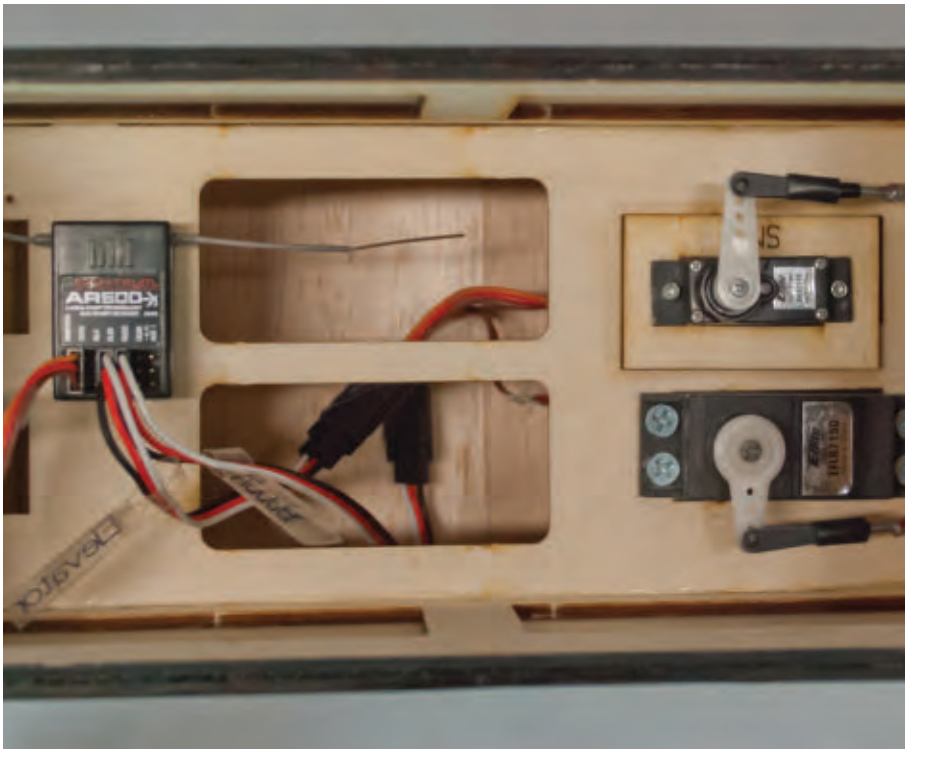
My sessions with Mark before and after he applied covering allowed us to discuss a few different topics to expand his modeling knowledge. For instance, he originally had the elevator and rudder set with excessively large hinge gaps. I relayed the potential pitfalls of such gaps and offered a few strategies to correct the Mambo.

Although the Mambo can be built (and built well) by a relatively new hobbyist, I think the overall experience and the end product can benefit from a little coaching by a mentor. The manual can't possibly cover all of the variables that a rookie might encounter. A small, corrective nudge can create a positive impact. At this rate, it will not be long before Mark is advising me!

The Mambo kit includes laser-cut components, full-size plans, and a selection of hardware.



With excellent instructions and a simple structure, the Mambo is intended for less-experienced builders.



The radio bay has ample room for the receiver and servos from an E-flite Apprentice S, 15e, or STS.

What About SAFE?

The electronics used in Mark's Mambo were pulled from a first-generation Apprentice. Modern variants of the Apprentice are equipped with receivers that have SAFE Select flight stabilization.

Although a SAFE-equipped receiver can certainly be transplanted into the Mambo, doing so requires greater attention than using a typical "dumb" receiver. If you wish to keep SAFE active, you must ensure that the receiver is mounted correctly and that all of the servos react in the proper direction. You might also choose to adjust the gyro gains or disable stabilization completely.

Adjustments can be made to the SAFE system with Spektrum's programming app and a programming cable (part SPMA3065) or Bluetooth interface (part SPMBT1000). Because Mark did not use a SAFE-equipped receiver, we have no specific setup advice to offer.

More Power!

The stock power system for the Apprentice includes an 840 Kv brushless motor, 30-amp ESC, 11 x 8 propeller, and a three-cell 3,200 mAh LiPo battery. This setup produces approximately 250 watts of power. That would be sufficient to fly the Mambo with a respectable amount of zip, but there is headroom to safely produce significantly more power.

The easiest way to get additional power

At a Glance

Specifications

Model type: Glow- or electric-powered laser-cut kit
Skill level: Beginner to intermediate
Minimal flying area: Club field
Wingspan: 44 inches
Wing area: 365 square inches (2.5 square feet)
Wing loading: 19.6 ounces per square foot
Wing cube loading: 12.3
Length: 39 inches
Flying weight: 49.7 ounces (3.1 pounds)
Radio: Spektrum DX9 2.4 GHz transmitter; Spektrum AR600 receiver; three E-flite EFLR7140 digital mini servos; one E-flite EFLR7150 standard servo
Power system: E-flite 840 Kv brushless motor; APC 12 x 8E propeller; E-flite 30-amp ESC; Glacier 3S 3,300 mAh 30C LiPo battery
Power output: 29 amps; 342 watts
Power loading: 110 watts per pound
Components needed to complete: power system, radio gear, pushrods, wheels, shop tools, glues, covering
Flight duration: 8-plus minutes
Price: $145.95

Pluses

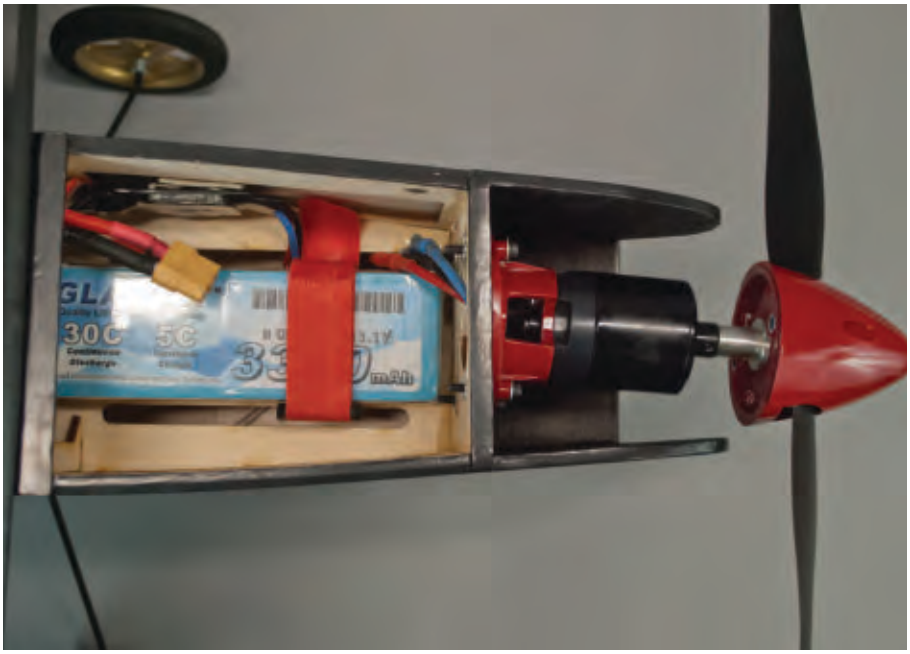
- Uses E-flite Apprentice parts.
- Great balsa.
- Sporty performance.

Minuses

- Some challenging build areas.

Manufacturer/Distributor

Old School Model Works
(513) 755-7494
www.oldschoolmodelworks.com



The stock power system from an Apprentice works well in the Mambo, but more power can be coaxed from it.

Splitting the canopy into separate front and rear sections requires a few additional steps and turned out nice.

is a simple propeller swap. Mark and I experimented with several propellers. Our best results came with an APC 12 x 8E propeller that boosted the power output to 342 watts at 29 amps. It's a nice setup for the Mambo.

It is also possible to upgrade to a four-cell battery with careful propeller selection. Our tests with an APC 11 x 7E propeller and a four-cell 3,300 mAh LiPo produced 399 watts at 28 amps. The additional 57 watts above our three-cell setup are noticeable in flight.

If you decide to experiment with

nonstock propellers and/or batteries, make sure that you take measurements on the ground. Results can vary with your local conditions. You don't want your first indication of an over-propped motor to be a toasted ESC.

Flying the Mambo

With wide-track main gear and a steerable tail wheel, ground handling poses no problems. I think the Mambo will make a good first tail-dragger aircraft for many pilots. There's no need to be dainty with the throttle on takeoff. A smooth and relatively quick transition to full throttle results in a rapid, straight departure with little rudder correction necessary.

Using the 12 x 8 APC propeller, the Mambo is capable of strong climbouts. With that noted, this airplane is certainly not overpowered. The model's top speed is a few notches above an Apprentice. The Mambo settles into a comfortable groove at 1/2 to 3/4 throttle. It flies at a moderate speed with smooth, positive control response.

Turns look best when they are coordinated with rudder. That should encourage new pilots to loosen up those left thumbs! You can also set up an aileron-rudder mix to do the work for you. I configured a mix in Mark's Spektrum DX9 transmitter. It's fun to engage the mix for relaxing, lazy circuits with the Mambo.

The suggested center of gravity location has been working well. Stalls are gentle and predictable. In fact, you really have to throw the sticks around to coax the Mambo into a spin.

Although the Mambo is no RC Aerobatics aircraft, it is fun to toss around through basic aerobatics. Rolls are surprisingly quick, but not quite axial. Loops are stress free. Inverted flight is also in this model's repertoire.

We noticed that Mark's Mambo requires different pitch trim at various throttle settings. The manual recommends using washers to remove some of the downthrust built into the Apprentice's motor mount. I suspect that making this suggested thrustline adjustment will cure the trim issue.

Flying with the four-cell battery setup provides a nice performance boost. Climbs are brisker, and top speed creeps up a bit as well. It's like adding a dash of spice, but frankly, if you can't have fun flying the Mambo on three cells, you're just not trying.

Final Approach

The Old School Model Works Mambo was designed to be an ideal second airplane. It is not, however, limited to newer pilots. The Mambo can be enjoyed by anyone who is looking for an introduction to sport airplane performance and the joys of traditional balsa building. I love the fact that it makes use of electric components that might otherwise go unused and forgotten.

Remember this: Old trainer models never die; they just get cannibalized to equip sportier new airplanes.

SOURCES:

E-flite
(800) 338-4639
www.horizonhobby.com

Spektrum
(800) 338-4639
www.spektrumrc.com

Cricut
(877) 727-4288
www.cricut.com

Robart Manufacturing
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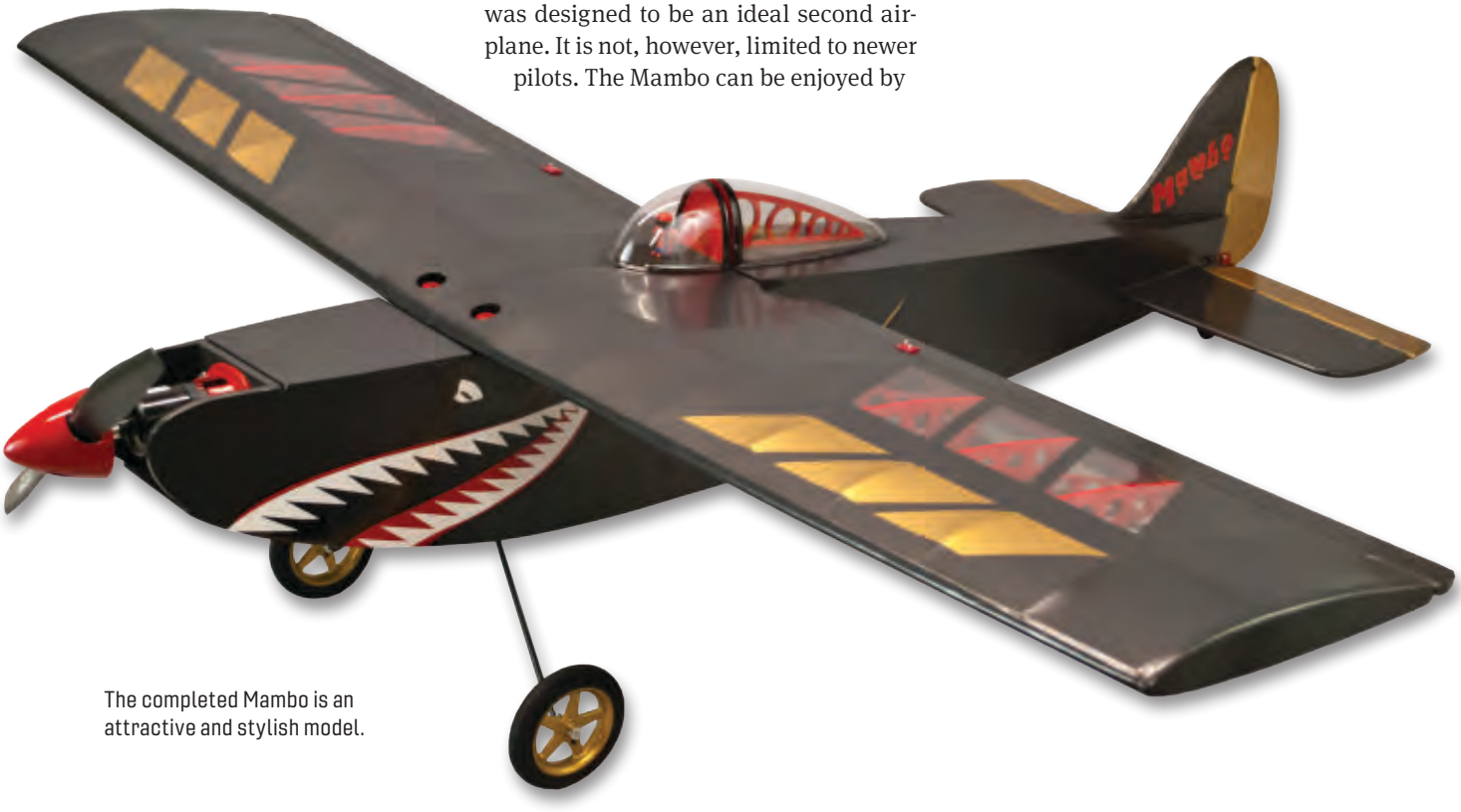

The completed Mambo is an attractive and stylish model.

Interested in sharing your handiwork? Visit *www.ModelAviation.com* for submission guidelines.

P-63 Kingcobra

John Lane (Northville, Michigan; email: jrlane@wowway.com) built his P-63 Kingcobra from Mark Rittinger's construction article and plans that were in the January 2014 *Model Aviation*.

The P-63 has a balsa-sheeted, one-piece foam wing, a balsa and plywood fuselage, and a canopy from Mark. The 770 Kv motor and ESC were salvaged from one airplane, and the electric retracts from another. The P-63 was originally hand-launched or cart-launched, but John converted it to use retracts for the looks and the ease of takeoff.

The airplane weighs approximately 6 pounds and uses a four-cell battery pack. It is MonoKote covered with blue tape line accents.

Low Boy

Edward Larsen's (Romulus, Michigan; email: eclarsen81@gmail.com) Low Boy was designed by his father, Jim Larsen, in 1974 during an evening hangar session in his basement shop with a small group of friends. The goal was to build a .15- to .19-size airplane that was easy on the wallet, builder friendly, and easy to fly.

The aircraft has a 38-inch wingspan with a wing area of 354 square inches. This is Edward's fourth Low Boy. He modified/updated it for electric power, using a 2835-5 Leopard motor swinging a 9 x 4.5 MR propeller, Hobbywing 40-amp ESC, and 2,200 mAh LiPo battery. "I typically fly it at 1/2 to 3/4 throttle and get an easy 9-minute flight," Edward wrote. "I only wish Dad was still around to fly it," he reminisced. "He'd have a grin from ear to ear."

Extreme Flight Edge 540

Mike Jenkins (Covington, Georgia; email: jenkinsfamily@gmail.com) sent in a photo of his 8-year-old son, Will, with his favorite airplane, an 88-inch Extreme Flight Edge 540 that is powered by a Desert Aircraft DA-60 engine and controlled by a Spektrum radio.

Will, a third-generation RC pilot in the Jenkins family (41 years and counting), has been flying since he was 4 years old. He soloed at age 5. Mike wrote, "We fly at our local field (Friendly Flyers in Jersey, Georgia); however, his favorite place to fly is, of course, Triple Tree Aerodrome in Woodruff, South Carolina."

Mike stated that the Edge 540 is Will's second gas-powered aircraft. He soloed it in summer 2019. "His favorite type of flying is 3D, though he has plans to compete in IMAC [International Miniature Aerobatic Club] in the future.

"Thank you for your interest in Will, as he and other young people like him are the future of our hobby," Mike wrote.

Sig Four-Star 40s

Russell Voorhees (Townsend, Montana; email: rvaircrafters@mt.net) poses with the two Sig Four-Star 40s that he completed in recent months.

The kits were purchased at his local flying club's silent auction. The one on the left is powered by an O.S. .70 four-stroke engine, and the blue one is powered by a .40 two-stroke engine. Both have 60-inch wingspans and are supported by Spektrum radio gear and Sullivan glow drivers.

Russell wrote, "All that is needed is some warm weather for flying."

Piper J-3 Cub

Bob Dochterman (Cincinnati, Ohio; email: born.to.fly@fuse.net) flies a full-scale Piper J-3 Cub and a model J-3 Cub—sometimes both on one day!

The model is a Hangar 9 1/4-scale J-3 with a DLE-20RA rear-exhaust engine. The factory decals were removed and Bob added the markings of his full-scale aircraft.

The full-scale Cub is flown at the Butler County Airport in Hamilton, Ohio. Bob stated that the model flies very much like the full-scale version, including the takeoff and landing habits.

Texas Twins

Approximately 20 years ago, before ARFs, a company called Texas Twins made three sizes of twin-engine aircraft kits. George Lumpkins (Katy, Texas; email: golumpk@swbell.net) bought the big one, a 96-inch wingspan twin, and two SuperTigre 60 engines.

George sold it to a fellow club member who placed it in a storage barn for the next 15 years. In talking to the club member one day, the airplane came up in conversation and a deal was struck. "It seems MonoKote in Houston humidity is not good for 20 years," George quipped. He stripped it down and re-covered it, removing the engines and installing E-flite Power 46 motors, E-flite 80-amp ESCs, APC 14 x 10 propellers, and four wide Scorpion 4,200 mAh LiPo batteries in parallel per motor. He also brought the Spring Air retracts back to life.

"It is huge and has working flaps," George wrote. "[It's] really impressive in the air. How did I get into this mess?"

Great Planes Big Stik 40-50

Steve Martin (Alvin, Texas; email: themartinsix@yahoo.com) stated that he enjoys looking at other modelers' unique airplane designs. His own unique design started with a Great Planes Big Stik 40-50. "I rescued it from a salvage lot of items that were donated to the Alvin RC Club," he noted.

The engine was seized, while the wing and horizontal stabilizer were broken and the covering needed replaced. "Honestly, the plane was probably going to be trashed, but I loved the lines and I always wanted an Ugly Stik." Steve fixed the airframe, replaced the radio gear and servos, put in a used O.S. 55AX engine, and re-covered it with a retro-1966 look. He liked the natural wood on the airplane, so he used clear MonoKote to expose the beautiful grains.

"I ended up with an attractive plane that has superior performance," he wrote. "Its performance and unique appearance garnish attention every time I fly it."

Freewing AL37

Victor Shamulus (San Pedro, California; email: victor.shamulus@yahoo.com) wanted to share his Freewing AL37 foam airliner that he did in a South African Mango Airlines 737-800 livery paint scheme.

The airliner is controlled by a Spektrum iX12 radio and a Spektrum AR 8010 receiver with a Hobby Eagle AL3 gyro but is stock beyond that. Graphics were provided by Callie Graphics, but Victor noted that it arrived to him as plain white so that he could customize it however he chose.

Interested in sharing your handiwork? Visit *www.ModelAviation.com* for submission guidelines.

Johnny Casburn Super Lucky Fly 2

Nick Ziegler (Moline, Illinois; email: a100dork3@yahoo.com) submitted what he says is one of the last flying Johnny Casburn Super Lucky Fly 2 airplanes. "No one has ever seen another," he stated. This build is from an NOS kit. "I spent 30 years trying to find one of these since I always loved the one my dad did back in 1982."

The Super Lucky Fly 2's color scheme is in the same colors as the original with orange and white MonoKote. Nick also tracked down a Rossi .60 black-head engine that was on the original airplane. "Even the tuned pipe and header is correct," he said. A Williams Brothers Model Products pilot tops it off. The only change he made was the NOS Kraft slimline wheels. A Spektrum system controls and powers the airplane.

E-flite UMX P-51D BL

Gary Smith (Grass Valley, California; email: grsmith8675309@gmail.com) wanted a P-51 Mustang, but only had access to a small flying field. He purchased an E-flite UMX P-51D BL that flies beautifully in his limited space. "My first cousin, Emil Schroeder, flew a P-51D in World War II and I wanted to paint the plane in his squadron's markings as a tribute," he wrote.

Gary stated that Emil joined the Army Air Corps in 1942 and made it to Hawaii and into the 7th Fighters, 15th Fighter Group, 47th Squadron. Emil and the 26 other pilots of the 47th became the first fighter squadron deployed to Iwo Jima. On June 1, 1945, Emil took up with 183 other P-51s to escort 535 B-29 bombers on a long-range mission to Osaka, Japan. They encountered bad weather and 27 of the P-51s were lost. Three pilots were recovered, but not Emil, who was posthumously awarded the Silver Star. The event would become known as Black Friday, the largest single-day loss of fighters after Pearl Harbor.

14 Screaming Motors

George Lumpkins (L; Katy, Texas; email: golumpk@swbell.net) and Mike Kettel (Houston, Texas; email: mike.kettel@sbcglobal.net) fly with the Bayou City Flyers in Houston, Texas. Mike wrote:

"George has an old, tired, and lonely 60-size Ugly Stik with a 69-inch wingspan extended to 79 inches to accommodate two 50 mm ducted fans and heavily reinforced ailerons [and] hold a total of six Tacon Bigfoot 15 [motors] with 50-amp ESCs. [It is] powered by four 4S 4,200 mAh batteries. Yes, he mounted the motors directly on the ailerons (vectored thrust). [A] separate battery [is used] for the receiver and [it has] an added beeper for [if it becomes] lost in the woods.

"[I have] a VSTICK 60 with [a] 73-inch wingspan and six Tacon Bigfoot 15 [motors], with 80-amp ESCs mounted on the trailing edge. [It is] powered by two 5S 5,000 mAh batteries. [It has a] separate battery for the receiver and no beeper.

"Both planes flew very well (just like a Stik) and there were no issues. Lots of screaming motors!"

Naval Aviation Fleet

Ron McMillin (Queen City, Texas; email: ronpennymc@aol.com) recently rejoined the hobby after a 30-year hiatus. He belongs to the Texarkana Radio Control Club. His preference for U.S. Navy aircraft is because he was in naval aviation for more than 20 years, retiring from the Navy in 1972. He is now 85 years young and enjoying life.

Only two of the airplanes in his photo are from kits: the four-engine C-130 and the Ford Trimotor. All of the electric-powered aircraft operate on Spektrum radio gear. "Since I'm not a very good pilot, I guess the ones that outlast a few flights have to be my favorites," he wrote. Apart from Navy military aircraft, Ron is also partial to most airplanes from the Golden Age of flight.

Avios C-130

Don Massa (Southport, North Carolina; email: don.massa@comcast.net) sent in a photo of a HobbyKing Avios C-130 that started life as a standard gray U.S. Air Force version.

The scheme was painted with standard rattle-can paint and coated with satin finish polyurethane. The ink-jet graphics were printed on self-adhesive label stock and coated with polyurethane to make them waterproof. Don substituted the propellers from the Avios Fat Albert C-130 because they had the scale Hamilton Standard decals on them, which were missing on the Air Force version. The propeller tips were painted white, and art tape was used for the red stripes.

"The aircraft is painted to resemble [the Coast Guard's] CG 1342, on which I flew many missions while stationed in Elizabeth City, North Carolina," Don stated. "I think the Coast Guard version looks much nicer than either the Air Force gray or the Marine Fat Albert versions."

Flight of the Phoenix

For years, Jay Maguire (Waller, Texas; email: sherwat44@gmail.com) had wanted to build the airplane from his all-time favorite movie, 1965's *The Flight of the Phoenix*. Jay's self-designed airplane has an 80-inch wingspan and weighs 20 pounds with a 50cc RimFire electric motor.

Using the Palmer Plans 1/12-scale C-119, Jay's final design was a combination of the C-119 and the Tallmantz Phoenix P-1. "I felt like Heinrich Dorfmann [a German aeronautical engineer in the movie] coming up with something that would fly," he wrote. He used a 50cc motor, a Fila 22 x 10 electric propeller, a 12S 5,000 mAh LiPo battery pack, and a Castle Creations 160 Phoenix Edge ESC.

The windshields acted as spoilers, so they were removed. "It was a fun project," Jay stated. "Designing and building a flying RC model was on my bucket list."

AMA Nats 2019 RC Combat Fleet

Andy Runte (Dousman, Wisconsin; email: ajrunte@gmail.com) designed most of his RC Combat fleet and built, flew, and competed with them all in four RC Combat Nats competition classes.

Pictured in front are aircraft for the E-1000 class: William Whale flying wing, Wood-E, Arrow, Mini Gremlin, and Fast & Furious. This class is a new, experimental electric-power class that limits the airplane to a 1,000 mAh LiPo battery pack.

The aircraft in the column from front to back to Andy's left are his Slow Survivable Combat designs that are powered by O.S. Max 15 LA engines. The airplanes in the middle column are his GNat-class designs that are powered by Magnum 15 XLS engines, and the aircraft in the column from front to back to Andy's right are his Limited B designs that are powered by O.S. or Magnum 25 engines.

Andy wrote, "I flew most of these planes during test flights or competition at the 2019 Nats [at the International Aeromodeling Center in Muncie, Indiana] and placed first in all classes, except GNat, finishing second. Besides the enjoyment of flying competitively, I enjoy the camaraderie among the other RC Combat pilots the most."

Top Flite P-47

Nick Ziegler's (Moline, Illinois; a100dork3@yahoo.com) Top Flite P-47 was custom painted in olive drab. He added more than 2,500 drops of glue to add to its "fantasy scheme," panel lines, and did a lot of airbrushing.

Powered by an RCGF 20cc engine, Nick used Hitec servos, a Tech-Aero Designs IBEC, Robart Manufacturing retracts, wheels, and struts, a Fortitude fuel tank, Xoar World War II propeller, and a scale hub. He noted that there was too much more to the P-47 to list.

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Free Flight is alive and well—as long as there's a place to fly. This excellent turnout was at the January 2020 Southwest Regionals in Arizona.

WE HAVE MUCH TO LOSE

By Bob Angel | samrcflier@verizon.net

ALONG WITH MODEL SAILPLANES, our Old-Timer (OT) aircraft flying specialty has potentially the most to lose as the FAA moves into new, uncharted areas of regulation in the name of national security. The March 2, 2020, deadline has passed for the formal submission of comments to the FAA, but the rulemaking process is ongoing and is subject to decisions yet to be finalized.

One of the most onerous new restrictions is the 400-foot altitude limit—and in particular, how it might be applied. OT and sailplane flying primarily involve thermaling. Good thermals are usually *just* becoming well-formed and are intercepted at 400 feet and above. They typically rise to levels well beyond our eyesight, and we escape from them long before that occurs.

AMA members' safety history is excellent in this area. Although it would be possible to regulate our activities to below 400 feet, little can be done to clear out the millions of birds such as geese, ducks, hawks, vultures, eagles, etc., that often weigh more than our models. Those critters don't receive safety bulletins, post lookouts, or even recognize the hazards so that they can avoid the many regular bird strikes that occur each year. Our potential for hazards is insignificant by comparison.

The EAA is on AMA's side in our battle for survival. Many—or possibly most—EAA members are, or were at one time, active in model flying, and they understand what is involved. They also recognize that any unsafe modeling activities would be especially hazardous to themselves because they spend a lot of time in similar airspace.

I was given the February 2020 edition of EAA's *Sport Aviation*, the organization's version of *Model Aviation*. Sean Elliott, the EAA's vice president of advocacy

and safety, wrote a column titled "Preserving Legacy Model Aviation." He pointed out how the EAA, alongside AMA, is doing all that it can to educate lawmakers about what can safely remain unregulated, while still presenting no particular hazard. I like that term "legacy model aviation" because it succinctly describes the activities that we have pursued safely for years while being regulated by our AMA Safety Code.

There also lurks a possible FAA requirement to register *every* model aircraft. A typical legacy modeler probably has 20 or more aircraft, of which 15 or more might not even be in flying condition. That idea needs to crash before getting off the ground.

Part of the problem is the lack of distinction by regulators of the vast differences in the hazard potential between model airplanes and drones—especially those in commercial operations—where the vehicles are not restricted to visual-line-of-sight control.

One plan under consideration is to initially register all flying sites, after which no more would be registered or allowed to be used—*ever*! That radical proposal represents the heavy hand of big government at its worst. Initially, it would be a scare tactic to ensure that there are no holdouts from registration. In the long run, it would ensure the complete demise of aeromodeling, when flying sites would be lost and couldn't be replenished.

A photo of a chair? Not just any chair, my friends, but a special folding swivel chair for following your aircraft directly overhead! Swiveling field chairs change seasonally at outfitters such as Cabela's, Gander Mountain, and Bass Pro Shops. It's best to check them out personally before buying.

My own small, local flying group currently flies at a fairly remote site with nearby homes that will only accommodate and tolerate a small group occasionally flying there. We can't hold competitive events, nor can we even safely register the location with either the FAA or AMA because it would be publicly identified, resulting in uninvited guests and eviction for us.

Still another FAA plan, if radically implemented, might require each of our models to carry an onboard transmitter that would broadcast our identity, location, and altitude at all times. Never mind that the technology has not yet been developed, nor the cost and weight even estimated. The closest analogy I can think of would be the U.S. Coast Guard issuing an edict that every rowboat, kayak, dory, canoe, etc., be equipped with similar devices, plus modern radar to ensure that they present no safety concerns to ocean liners, freighters, or warships.

We recognize the need for national security, but our security isn't limited to just keeping close watch over ourselves for dangerous or subversive activities. Security also involves being able to effectively defend ourselves in the event of warfare, which,

Ed Hamler is a picture of concentration on a cool, spring morning at the excellent Greenfield Flyers field near Bakersfield CA. Can you guess the name of his aircraft?

unfortunately, is never out of the question.

Model builders were an unrecognized but significant part of winning World War II. That success involved our ability to quickly gear up and produce massive amounts of arms and supplies.

At that time, more than half of the nation's young men had built model airplanes and were acquainted with the manual arts, as well as some physics, chemistry, and basic electricity. Those skills transferred directly to our industrial base, which was more widely credited with winning the war.

Today, much of our population is either in sports or other entertainment, service jobs, politics, desk jobs, etc. Even the education industry has begun to recognize a shortage and greater need for more manual skills and technical training. Model building, and flying as a hobby, can round out an education for those who possess only a college degree in the many offerings outside of the hard sciences, engineering, etc.

Let's hope that reasonable people are in charge of the FAA and will come up with sensible solutions the first time around. That's crucial because when government badly fouls something up, the mistake is almost never admitted or rectified. By then, there are fresh political battles being waged.

With respect to finding and keeping flying sites, we OT pilots have our own little problem—namely noise. Admittedly, our "pure" OT aircraft with loud, unmuffled engines make noise, even if it's in fairly short bursts that average a fraction of a minute per flight. In a world that is overcrowded with boomboxes, power mowers, and illegally loud but largely unpoliced autos and motorcycles, as well as legally unmuffled full-scale airplanes, there is little tolerance for any new or unaccustomed noise.

This little story came across the internet: An RC pilot occasionally needed to break in a new engine, but he didn't want to risk the noise complaints and the wrath of his neighbors in his dense housing area. He'd mount an engine on top of a lawnmower, start it out back, then push the mower back and forth across his front lawn with never a complaint.

Storing Balsa Wood

I'll share a typical observation one makes after building models for a long time. Bare balsa wood dries out and becomes brittle over time. If you've had a framed-up, uncovered model hanging around for years, you'll likely notice that it's dry and brittle. I assume this is because the moisture and oils have dried out from air exposure.

A snug stack of balsa sheets keeps a little better, and a covered model does better yet. Several years ago, clubs often offered balsa as contest prizes. Some of the balsa stacks were wrapped neatly in plastic wrap, where they seemed to age little, if any, over time.

In another observation, a fellow Society of Antique Modelers (SAM) chapter member in Alaska noted that balsa ages poorly in his cold, dry climate.

SAM Champs

The 2020 SAM Champs is currently scheduled for September 14-18 at the International Aeromodeling Center in Muncie, Indiana. Registration will be September 13. For more information, visit the "SAMChamps info" section on the SAM website.

SOURCES:

SAM
www.antiquemodeler.org

Cabela's
(800) 237-4444
www.cabelas.com

Gander Mountain
(888)542-6337
www.gandermountain.com

Bass Pro Shops
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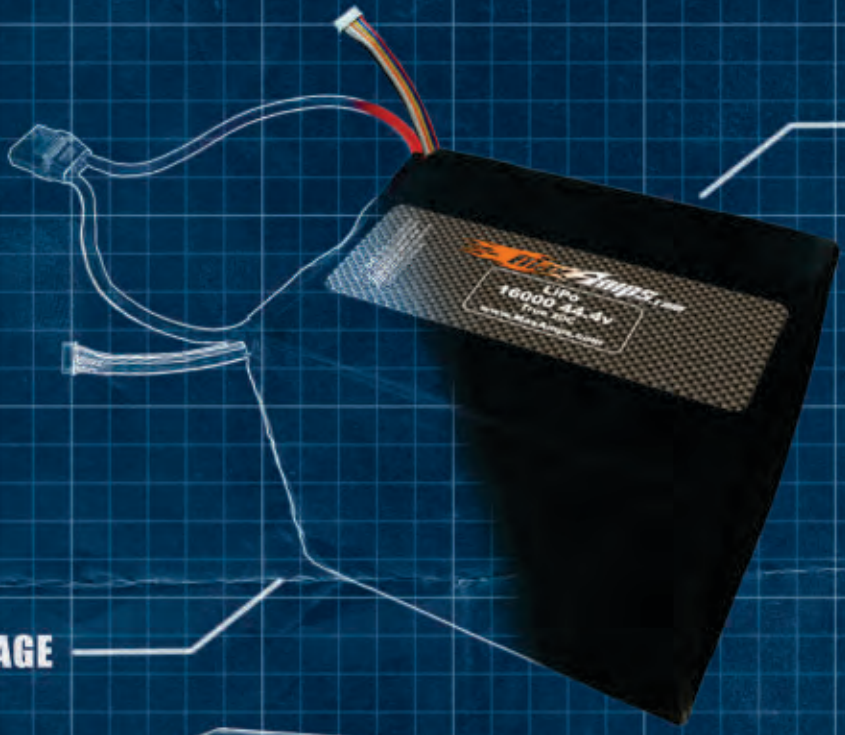

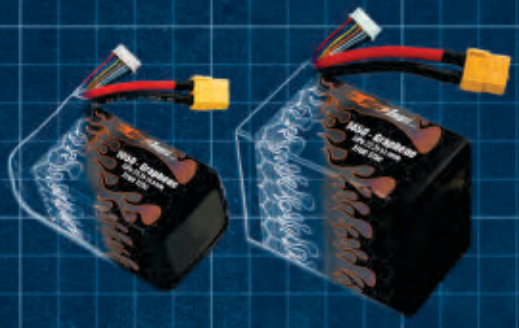

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by Design

MaxAmps.com

Scott Hudson's Sig Manufacturing Demoiselle floats majestically in front of the setting sun, silhouetted against the evening sky.

TIP FOR UNEXPECTED REPAIRS

By Pat Tritle | patscustommodels@gmail.com

NOW THAT the winter and the spring wind are behind us, we should be enjoying a terrific summer flying season. As an added bonus, June is definitely my favorite month of the year, with temperatures here in New Mexico in the low 100s, humidity in the single digits, a light breeze, and rarely a cloud in sight. It doesn't get any better than that—except maybe for those cool mornings at the field, of course.

Meanwhile, if you're flying, you're probably breaking things, or possibly even gathering a bit of hangar rash now and then. A case in point is that not long ago, a picture frame fell off of the wall and cut my Rans Courier nearly in two. The repair affected the numbers on one side of the fuselage, but instead of ordering new graphics, I was able to salvage the old numbers. Here's a tip that might speed up one of those unexpected repairs, should you find yourself in the same situation.

When the covering was cut back to access the internal damage, the numbers were trimmed out of the original covering, leaving roughly a 1/8-inch border of the original covering material around the perimeter of the individual vinyl numbers. After the repairs were made and the new covering was applied, the numbers were put back in place and ironed on over the patch.

I laid a piece of parchment paper over the numbers to protect them from the warm iron to avoid damaging the more delicate vinyl graphics. The Rans was covered with MicroLite covering, but the technique will work with nearly any of the iron-on Mylar products that we use.

Projects From Our Friends

Judging by the number of great photos that I've received in recent weeks, it

must have been a rough winter all the way around. This time, I am loaded with so much good stuff that I simply can't get to all of it, so my apologies go out to those who will not be featured until future columns. Not to worry, though. I'll get there. For now, I have some great stuff in store, so I will get right to it.

First up is Len Rozamas, who loves smaller, vintage models. As an "old schooler," he still prefers wet fuel to electric power. I can understand this because getting started in electrics these days, with the multitude of motors and other components from which to choose, can be a daunting task. Besides, as the bearer of a large collection of small glow and diesel engines, making the change now doesn't make much sense.

Len Rozamas is an "old schooler" at heart and still prefers the sound and smell of those old "wet-fueled" powerplants. His three-channel RC Sniffer is powered by a .33 diesel engine.

Keeping that in mind, Len has brought us his 1949 Sniffer. The BMJR Models kit is a 150% enlargement for 1/2A gas-powered or electric-powered RC models. In Len's words, "It represents the 70 years I have been a dedicated airplane modeler."

The Sniffer is powered by a PAW .033 RC diesel engine and guided by a Spektrum DX8 transmitter and an AR0410 antennaless receiver. The model is covered with red Japanese tissue on the fuselage and vertical tail and covered with yellow Litespan and transparent red Oracover on the wing. The cabin was highlighted in Aero Gloss Cloud Gray, and the engine compartment was sealed with Klass Kote epoxy paint.

Next up is Mike Myers' 56-inch Stinson Reliant. The model was built from a Manzano Laser Works short kit, covered with Polyspan and dope, and painted using latex house paint. A 1,000 Kv outrunner motor with an APC 12 x 6 propeller and a 2S LiPo battery provide power for the 32-ounce Stinson. There's just nothing as classy as a Stinson gullwing aircraft in flight.

Taking a step back in time, Scott Hudson dropped in with his Sig Manufacturing Demoiselle. The airplane kit, however, was only the tip of this iceberg.

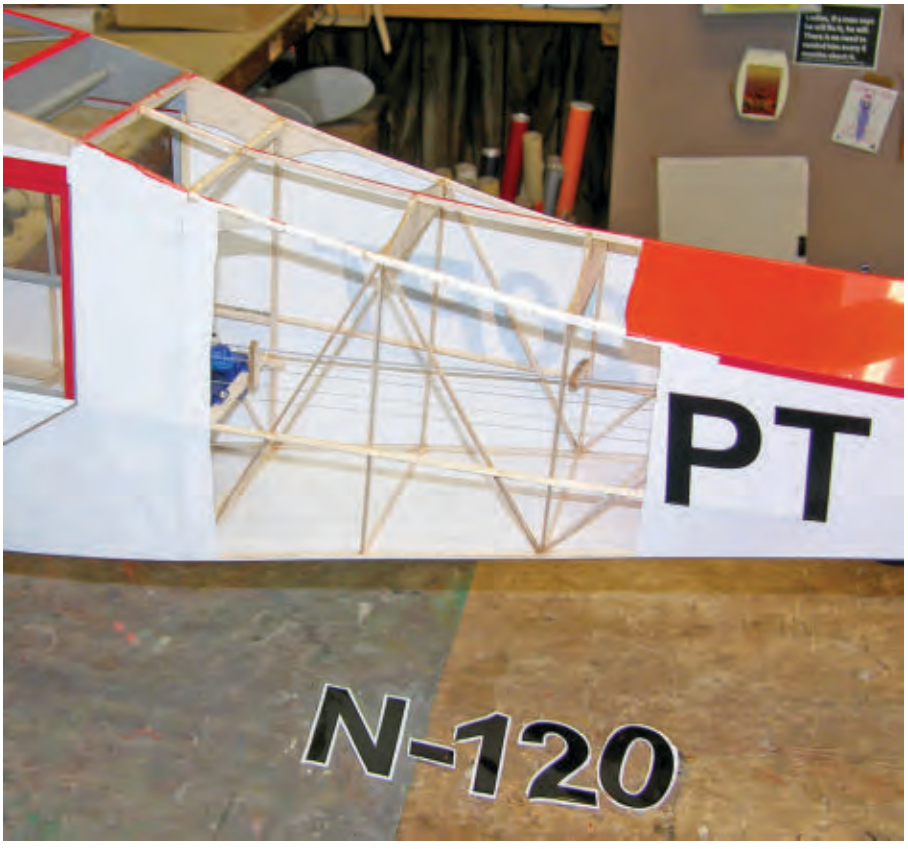
The fuselage booms were replaced with round stock that was wrapped with Kevlar thread and sealed with amber shellac to give it a bamboo look. The kit wheels were replaced with spoke wheels that were built from Manzano Laser Works wheel kits. The dummy engine was detailed using 1/64 plywood and fine wire for a more scalelike

Michael Virr built his P-38 Lightning from the popular Guillow's kit. The electric RC modification included servo-actuated homemade retracts with mechanical down locks.

look, and the propeller was dry brushed to simulate wood grain. The prominent pilot was made from flat foam and painted. It is, as described by Scott, "not perfect, but looks good from 10 feet away."

The Demoiselle is covered with Polyspan, sealed with polyacrylic water-based varnish, and painted with a light dusting of water-based craft paint. Powered by a Himax HC-2212-1120 motor with an APC 9 x 4.7SF propeller, an 800 mAh 2S LiPo battery, and three-channel control, the model flies every bit as good as it looks.

The gull-wing Stinson Reliant is no doubt one of the classiest airplanes that was ever made. Michael Myers has outdone himself with his Reliant that was built from a Manzano Laser Works short kit.



The numbers on the author's Rans Courier were salvaged and reused after the model was damaged by a fallen picture frame.

Last, but certainly not least, is Michael Virr's 40-inch wingspan P-38 Lightning that was built from a Guillow's kit and converted to electric RC. The conversion includes homemade retracts that are operated by micro servos.

The servos aren't stout enough to secure the gear, so a lock plate was fabricated to lock the gear in position when it is extended. Guillow's kits have always been great sources for electric-powered park flyer conversions and are open to all sorts of innovative modifications.

With that, it looks like we've pretty well got it covered. The variety and quality of the models this month have again brought a smile to my face, and the mix of scale and vintage modeling is encouraging. For those who are burdened with unfortunate and often untimely mishaps, I hope that my repair tip will make it easier to complete those repairs.

I know heading into the summer flying season that new building projects will slow down some, but despite that, keep the good stuff coming, and do enjoy the flying season while it's here.

SOURCES:

Manzano Laser Works
tomj@manzanolaser.com
www.manzanolaser.com

Sig Mfg. Co., Inc.
(641) 623-5154
www.sigmfg.com

Guillow's
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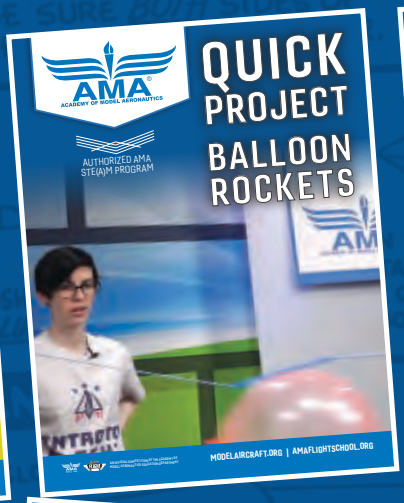

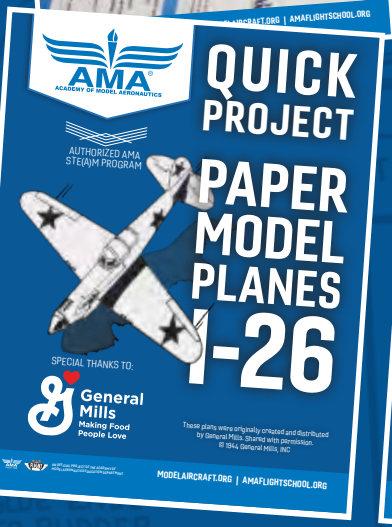

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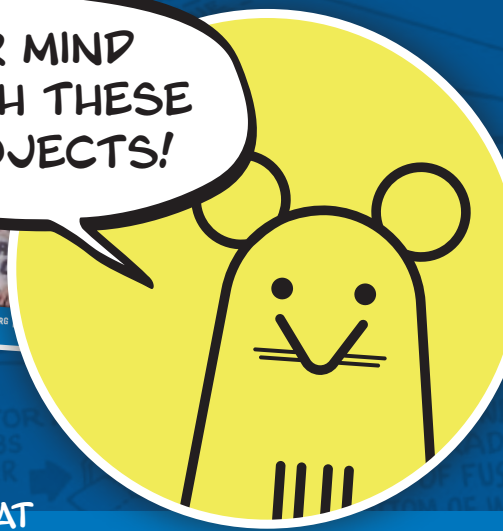

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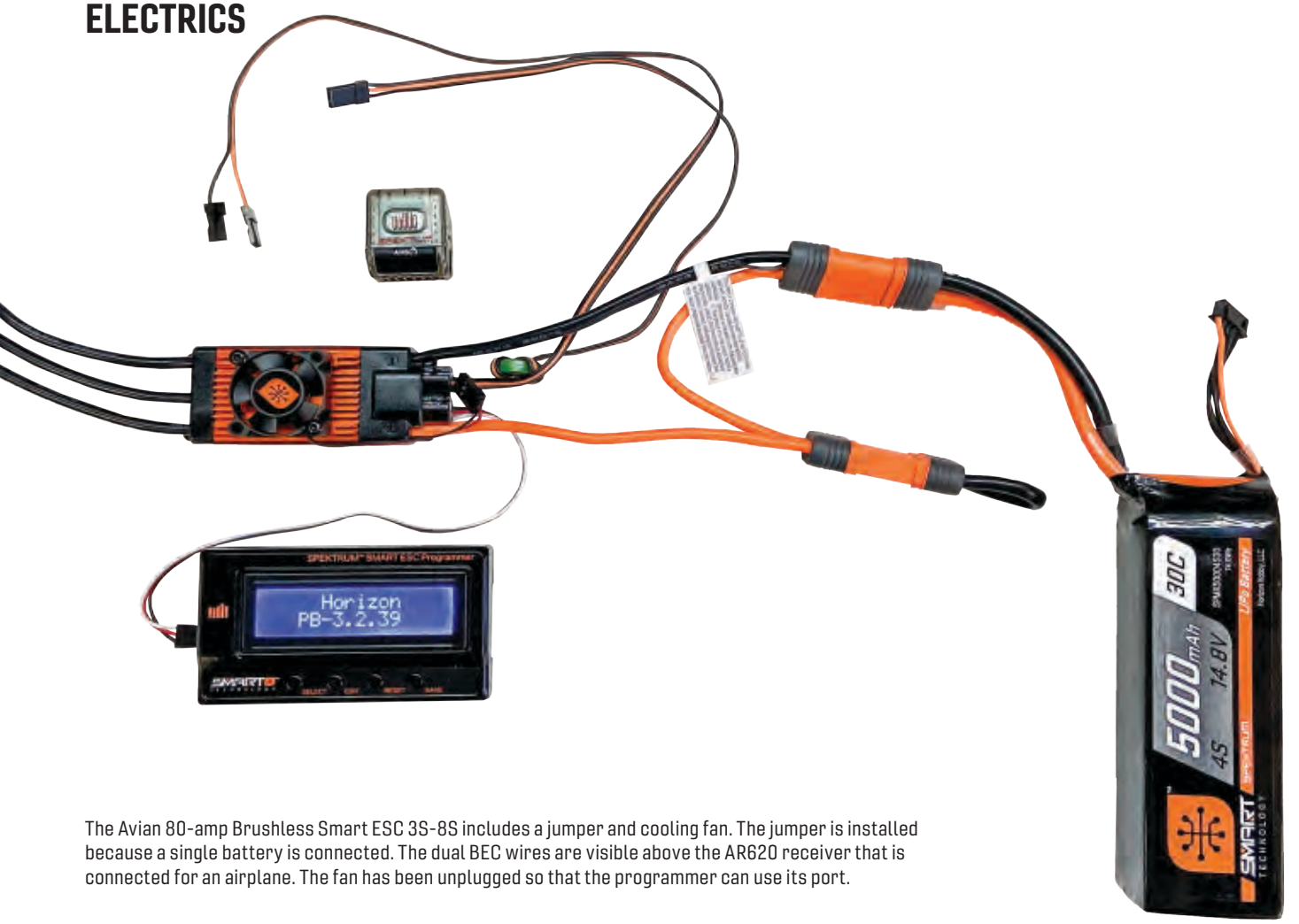


The Avian 80-amp Brushless Smart ESC 3S-8S includes a jumper and cooling fan. The jumper is installed because a single battery is connected. The dual BEC wires are visible above the AR620 receiver that is connected for an airplane. The fan has been unplugged so that the programmer can use its port.

ESCs: SMART STUFF!

By Greg Gimlick | maelectrics@gimlick.com

IN MY FEBRUARY 2020 COLUMN, I talked about the new Smart technology gear from Spektrum RC. I want to update some of that now that I've used it for a few months and have gotten my new 80-amp Smart ESC with a programmer.

Batteries First

I've been happy with how the batteries have held up over multiple cycles and various levels of abuse. I'm transitioning slowly as I replace packs, but the good news is that everything is backward compatible with batteries that don't employ the Smart technology.

Some have argued that this restricts you to a single proprietary hardware choice, but I don't see it that way. Although it is proprietary, it still allows me to use my other batteries and controllers. I don't get the information that the Smart system provides when I do, but it doesn't prohibit me from using the other gear.

I'm a fan of the self-discharge feature of the Smart batteries and the amount of data that I can retrieve from each pack to compare its history. The short answer is yes, I'm happy with the Smart batteries.

Avian Smart ESC and Programming Box

It took a while for the ESCs to make it onto the market, but they are now available. My backordered 80-amp ESC arrived in time for the start of the flying season.

Spoiler alert: I'm pretty darn happy with it! With that stated, there is a lack

of clarity in some of the instructions when it comes to connecting everything. I suspect by the time you read this, much of that will be updated online in the form of addendums, etc.

I ordered the Avian 80-amp Brushless Smart ESC 3S-8S (SPMXAE1080) and the Avian and Firma Smart ESC Programming Update Box (SPMXCA200). The ESC is programmable by means of stick inputs from the transmitter, but I consider that a last resort and prefer an interface device. I find it much easier and less prone to mistakes.

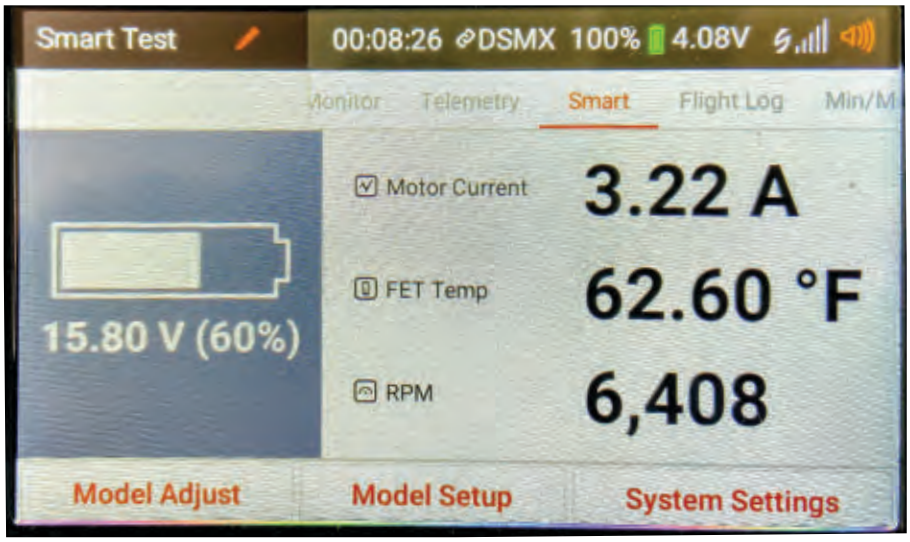
Here's a short list of some of the 80-amp ESC's features:

- 32-bit ARM M4 processor
- SmartLink USB updating and programming application
- Throttle-stick programming
- Overcurrent protection
- Automatic LiPo low-voltage cutoff (adjustable)
- Thermal protection
- Failsafe protection
- Ready to install—no soldering required
- Heat-dissipating aluminum heat sink and cooling fan
- Tabs included for a hard mount
- Adjustable high-power BEC
- Dual BEC power connectors
- Updatable firmware
- High-heat-resistant IC connectors; backward compatible with EC connectors

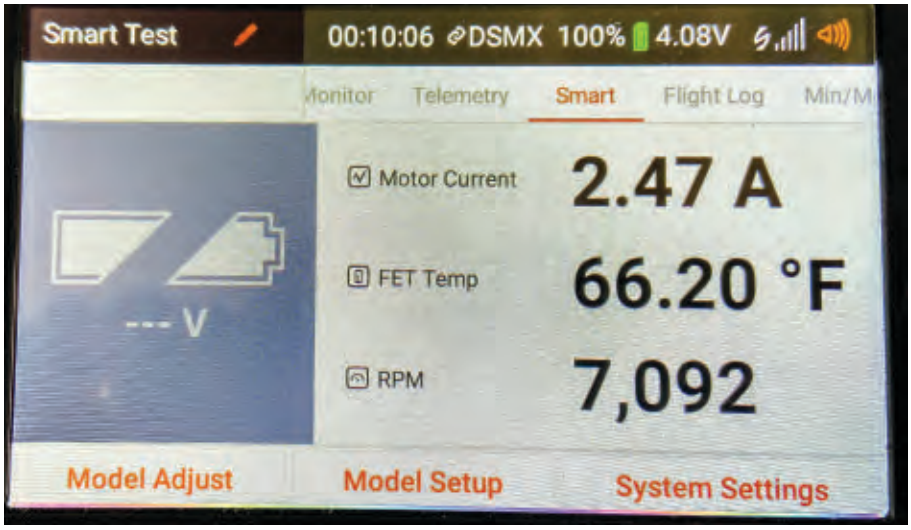
Many of these features are expected when purchasing a high-current ESC, but surprisingly, a number of ESCs sold within this price range don't include them. I'm particular when I buy ESCs and look for these features.

A Few Things Worth Noting

- When connecting the ESC to the programmer, you need to disconnect the cooling fan wire because it uses the port required for the programmer connector.
- Power on the ESC after connecting it to the programmer. If it's connected to a motor, ensure that the propeller has been removed. The "Select" button will move you through the settings.
- Remember to hit "Save" each time you change a setting before you move to the next item.
- Remember to reconnect the fan wire when programming is complete.



The author's Spektrum iX12 transmitter screen shows some of the information that is available with the Smart battery connected.



This screen shows what the author gets without a Smart battery. He still receives the current, temperature, and rpm.

- There are two wires coming from the ESC to the receiver. One has three wires into one plug and should be connected to the throttle input of the receiver. The other wire has power on two wires and can be connected to any open port for a parallel connection of the BEC. It also has a signal wire on its own plug if you have a separate flight controller that requires it. If not, just let it hang free.
- There are two main battery wires from the ESC. It is designed for two battery packs in series to make your main motor pack (two 4S batteries to make 8S, two 3S for 6S, etc.). If you're using a single battery, plug the provided jumper plug into one of the connectors. I suggest that you use the one with the two orange wires for the jumper and leave the black/orange wire for the battery connection.
- It's best to rebind the receiver when it is connected to a Smart ESC to ensure that it's fully configured.

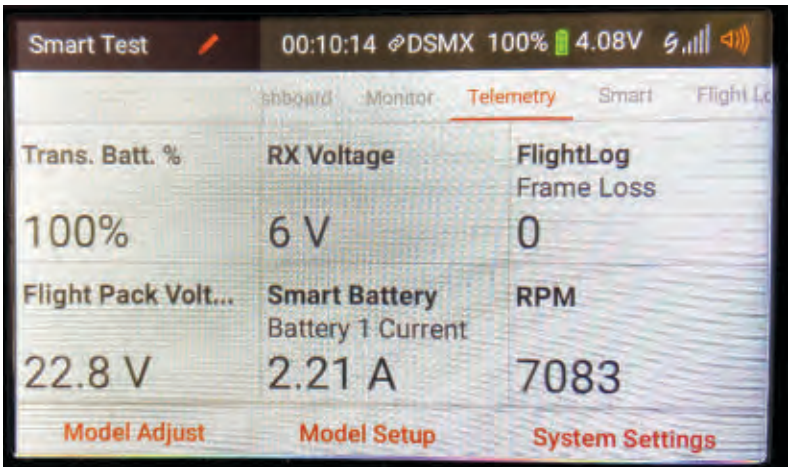
Compatibility Considerations

Not all radios and receivers are *fully* compatible with the capabilities of the Smart ESC. Check the Spektrum compatibility chart listed in "Sources" to see if your gear is compatible. My AR620 receivers are compatible now that I have updated them, as is my Spektrum iX12 transmitter.

There are updates in the works for more equipment, but not all of them will be fully compatible. Some will get some of the information, but not everything that a fully compatible receiver will.

Rumors and Myths

There is a lot of misinformation being



Although this battery doesn't have Smart technology, it shows the total pack voltage on the telemetry screen.

As the author worked his way through various screens for adjusting the ESC, he changed the BEC voltage to 6 volts. The default was 7.4 volts—the servos that he used wouldn't like that. Each setting is easily changed. Hitting the "Save" button sets it so that you can move to the next. "Reset" takes it back to the default settings.

tossed around on the internet regarding the Smart gear and what can or can't be used with it. The ESCs can be used with any radio, motor, or battery, but only fully compatible gear will get all of the data that is being accumulated.

I still use some battery packs that aren't Smart, and I get the total motor battery voltage, current, and motor rpm, along with field-effect transistor (FET) temperatures. What I don't get is the individual cell data that I would with a Smart battery or the percentage of charge remaining. If you plug a Smart ESC into a system utilizing a Futaba radio or some other brand, it will still control the motor as would any other ESC.

Wrapping Up

After several weeks of using the Smart ESC in one of my test airplanes, I'm sold. It provides me with the data that I love to have at my fingertips without myriad additional sensors, etc. Prices are in line with non-Smart equipment, and technical support is available through Horizon Hobby.

In my next column, I'll explore some questions that I've received about ESC programming in general. I might even dispel a rumor or two.

SOURCES:

Spektrum RC
(800) 338-4639
www.spektrumrc.com

Horizon Hobby
(800) 338-4639
www.horizonhobby.com

Spektrum Smart Technology ESC Compatibility Chart
https://bit.ly/38gCYMj

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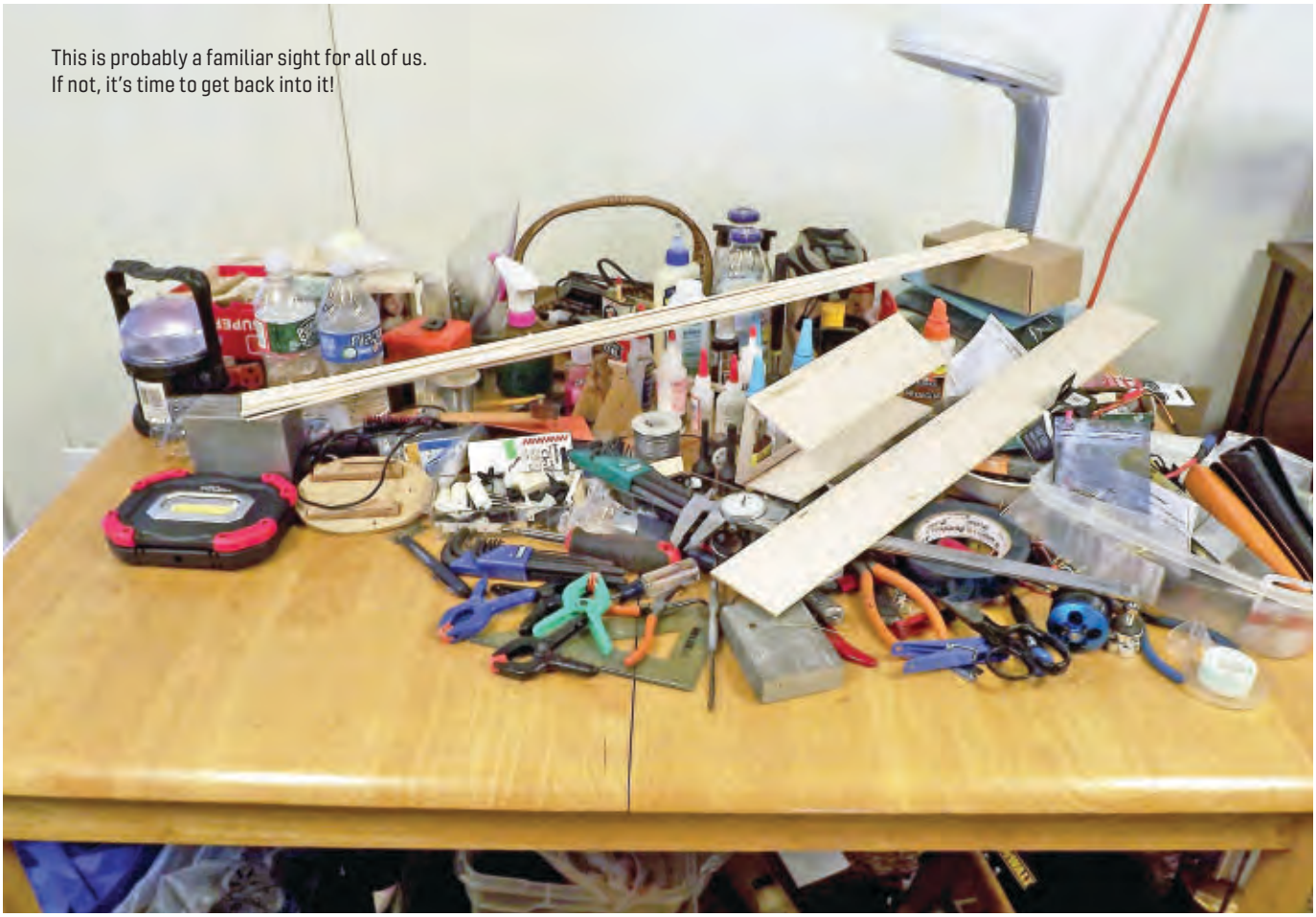


This is probably a familiar sight for all of us. If not, it's time to get back into it!

KEEP ON FLYING

By Jennifer Reynolds | jensunshine3@gmail.com

ONE OF MY previous columns was about how model aviation has given me a boost when life gave me lemons. Well, the theme continues—but this time around, I'm not going to talk about specific personal life happenings. In this column, I've written about something that's impacting us all: proposed rules and regulations that might ultimately have a potentially challenging impact on our hobby.

It's no secret that many modelers are taking to online forums, social media, and writing to government officials to express their opinions on everything from ceiling limits to Remote ID. Boy oh boy, the posts and letters certainly run the gamut! Many people are outright enraged. Even within my own club, I can practically see smoke coming out of some members' ears.

At our club meetings, and from what I have read in some posts, there are mumblings of taking away rights that have been in place for such a long time. Several people have compared possible ceiling limits to political hot topics, and others have even spoken about selling their airplanes.

The concern is understandable. Many of us question the need for these proposed ideas in the first place. Others say that it's bothersome, especially because they've been flying for ages. "Why can't we just continue to have fun in the safe, enjoyable manner that we have done for so long?" is a common phrase that I often see or hear.

My feeling is that, although the potential rules definitely bring about a slew of concerning thoughts, it's not time to throw our hands up in the air and make (as I've heard) comments about trading in our helicopters for a nine iron. Keep emailing or calling government officials.

Continue to fly. Keep spreading the word about model aviation in your community to encourage new membership and to build interest. Sure, the feeling of doom and

gloom can be a natural instinct, but the hobby is far from over. It will also likely be some time before changes occur, so keep enjoying what you have taken pleasure in for so long.

This is why I appreciated a post in the I Fly AMA Facebook group from pilot Dan Landis. It was a breath of fresh air. He stated that there's been a lot of regulation banter happening and decided to bring the focus back to more positivity—asking everyone to share projects that they've been working on. In another post, he mentioned how some high school students were enjoying model and full-scale airplanes.

His posts got me thinking. As with anything in life that's talked about with such frequency that you think your head might explode, it's nice to take a break. This isn't to say that we should push important topics entirely by the wayside, but sometimes it's necessary to take a breath when things get hectic, so I thought I'd share some of my own latest projects and around-the-house images.

My husband and I usually attend an RC auction in New Hampshire (now a swap meet). A few years back, a large, unfinished wing and fuselage that were there caught my

eye. They sat in separate parts of our home for a while.

These days, we're in the process of putting together what we've dubbed a FrankenPlane, with the idea of seeing how creative we can get with the two parts. Right now, it's all about designing a large rudder, adding stringers, and buying covering.

Like most RC enthusiasts' homes, ours is filled to the brim with airplanes, covering, glue, hobby knives, and tape. Enter our house and that's the first thing you'll see. Sure, we have the usual furniture and coffee tables, but ours are typically adorned with plans instead of decorative pillows.

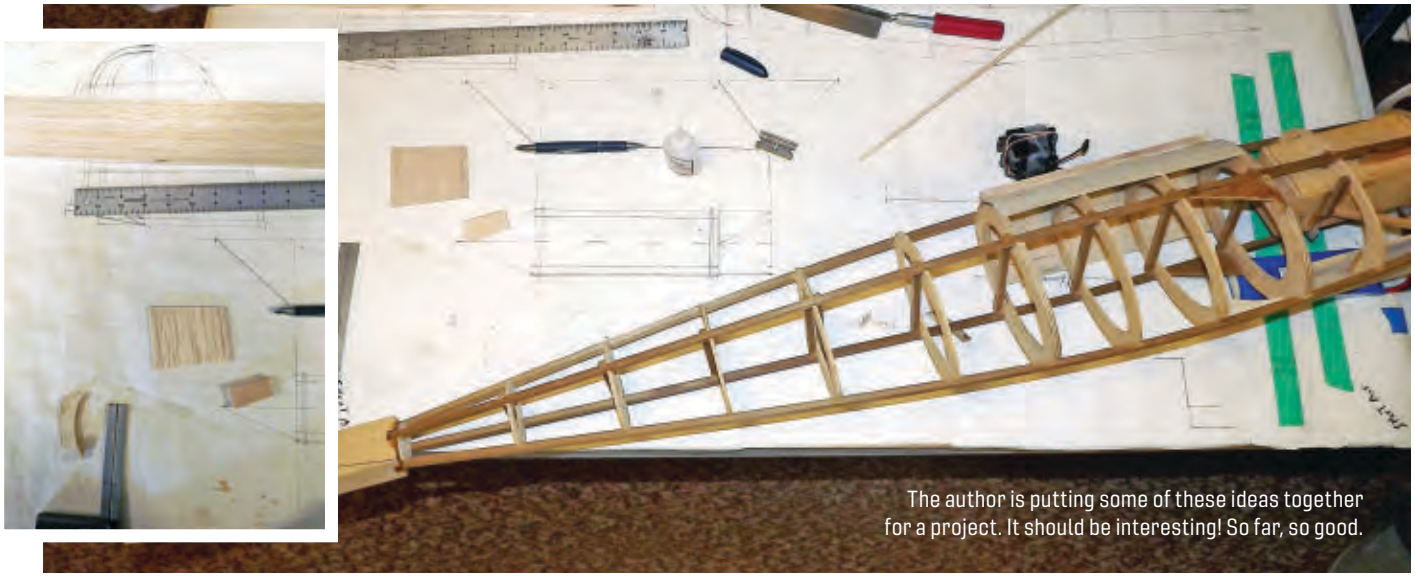
Rather than keys or shopping lists on the table near our front door, all kinds of spray bottles, servos, and screwdrivers grace ours. Airplanes are propped up here and there. Sometimes they are a reminder of something to work on soon. In other cases, they're positioned just so in order to allow proper time for the glue to dry.

It feels good to have these sights in our home. It's nice to think about what our airplanes will ultimately look like and to discuss all of the possibilities.

Going to swap meets, interacting with other modelers, and starting new projects continue to be great sources of fun for me. I hope it continues to be for you as well, and that we all remember to keep taking a breather during heightened emotions and appreciate what we have enjoyed for so long.

A wing that is the length of the author's sofa caught her eye at an event a few years back. The unfinished fuselage made her do a double take as well. Now to make it all happen!

The fuselage is showing signs of progress! Little by little, right?



The author is putting some of these ideas together for a project. It should be interesting! So far, so good.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A full DJI setup, including the controller.

DIGITAL FPV IS HERE: SHOULD YOU SWITCH?

By Joshua Bardwell
joshuabardwell@fpvknowitall.com

I'M NOT HERE TO TELL YOU whether or not line of sight (LOS) or FPV is the better way to enjoy RC flight. I started out flying LOS as did most people. I enjoyed it, but I felt as though something was missing. The reason I wanted to fly was because *I wanted to fly*. I didn't want to watch an airplane up in the sky—I wanted to *be* up in the sky.

That's where FPV came in. In an FPV system, a tiny camera and wireless video transmitter are mounted on the aircraft. The pilot wears goggles over his or her eyes, which shows the image from the camera. It feels like riding along inside of a drone!

Until recently, the biggest weakness of FPV systems has been that they use *analog* technology. In fact, FPV cameras and video transmitters send the same National Television System Committee and Phase Alternating Line video signals that were used by broadcast television. If you have ever watched TV shows from before the mid-2000s, you know why there's a lot of room for improvement.

Why do we have to fly FPV with a video feed that was invented in the 1950s? Why can't we have high-definition (HD) video? We finally can. Digital HD FPV systems have arrived.

The two systems that I will focus on are the DJI HD FPV system and the Fat Shark Byte Frost system. In my opinion, these are the only viable systems in production today. The Fat Shark and DJI systems beat their competitors in terms of range, link reliability, size, and weight. Most importantly, they come from reputable companies with a long history in the hobby that have been proven to deliver great build quality, customer support, bug fixes, and feature upgrades.

Analog goggles aren't dead yet.

The main advantage of a digital HD system is easy to understand: high definition. Think about how bad television from the '90s looks now that you're used to HD video. Enough said.

A less obvious advantage of digital systems is the ease of management. Analog transmitters rely entirely on the users to avoid each other's channels. When someone else powers up on your channel, you lose video and crash. With digital systems, channel selection can be automatic, eliminating this concern.

The DJI system offers a combined control and video link. If you use the DJI controller, you don't need a separate receiver in the quad because the DJI Air Unit acts as the receiver. It outputs S.Bus to your flight controller, similar to how any other receiver would. This greatly simplifies wiring, especially with newer flight controllers that are designed to be plug-and-play compatible with the Air Unit.

Digital FPV systems also have disadvantages though. They are more expensive than analog ones. The DJI goggles are approximately the same price as the premium analog FPV goggles that are available. The DJI camera and Air Unit are close to three times the price of a typical analog camera and video transmitter. The Fat Shark Byte Frost system is less expensive, but still costs more than analog.

Although the weight of digital systems is low enough to make them viable for general use, they're still heavier than analog systems, especially the tiny ones that are used on micro quadcopters. The smallest quads that can carry a digital FPV system use approximately 2.5-inch propellers.

The DJI system's image, shown on the left, has a high resolution with "blockiness" as the image breaks up. The analog system's image on the right shows lower resolution with static.

If you're using digital, your friends can't tune into your video feed with their analog goggles. DJI goggles transmit a two-way datalink, which means you can't stand near other pilots while you fly or your goggles will cause interference for them. The DJI pilot ends up standing 20 feet away from everybody else, which can feel a little lonely. The Fat Shark Byte Frost is a one-way link and doesn't have this issue.

One of the biggest challenges of digital FPV systems is reducing the latency of the link. DJI has reduced the best-case latency of its system to approximately 25 to 35 milliseconds, which is not as fast as the fastest analog systems, but it's similar to typical analog equipment. The problem with the DJI system is that the latency increases unexpectedly as the signal strength goes down. Average pilots don't seem to notice this, but more experienced pilots—especially racers—seem to be sensitive to even small changes in latency. Fat Shark's system has consistent latency, more like an analog system.

When an analog signal becomes weak,

static appears and the image can flicker or roll. Digital systems don't do this. The DJI system responds to low signal strength by reducing the effective resolution of the image. Basically, the image gets "blocky."

Fat Shark has a more "analog" style of breakup, where flickers appear across small parts of the image, but other parts of the image still have full resolution. Some people prefer the stability of the digital-style breakup, while others feel analog-style breakup preserves more information that can be used to fly out of a bad situation. This could be seen as either an advantage or a disadvantage, depending on your preference.

Flight controllers typically support the ability to draw an on-screen display (OSD) on top of the video feed—but only if it's analog. They can't handle HD signals. Fat Shark and DJI address this by reading data from the flight controller then putting that data into their own OSDs. But they don't support the full functionality of the flight controller's OSD.

For example, the digital system might be able to display the battery voltage and capacity but not the GPS coordinates or direction-home arrow. This limitation is particularly painful when troubleshooting a problem with the aircraft because the OSD is designed to give essential diagnostic information in the field. That information simply might not be available to users of digital systems.

The big question that everyone is asking is whether it is finally time to move to digital FPV. For the first time in history, the answer *might* be yes. We finally have digital FPV systems that are truly worth buying, but they are not for everyone.

Can you afford it? If you're on a tight budget, digital FPV is not yet for you. Do you want the lowest possible latency? Analog still has the crown there.

Do you race? Race organizers are not yet set up to handle mixed digital and analog systems. Do you mostly fly quads that have smaller than an approximate 2.5-inch or 3-inch propeller diameter? You're probably better served by a good pair of analog goggles because your quads can't handle the weight of a digital system. Is your focus on GPS-assisted flight or other situations where OSD information is mandatory? No digital system currently supports full OSD passthrough.

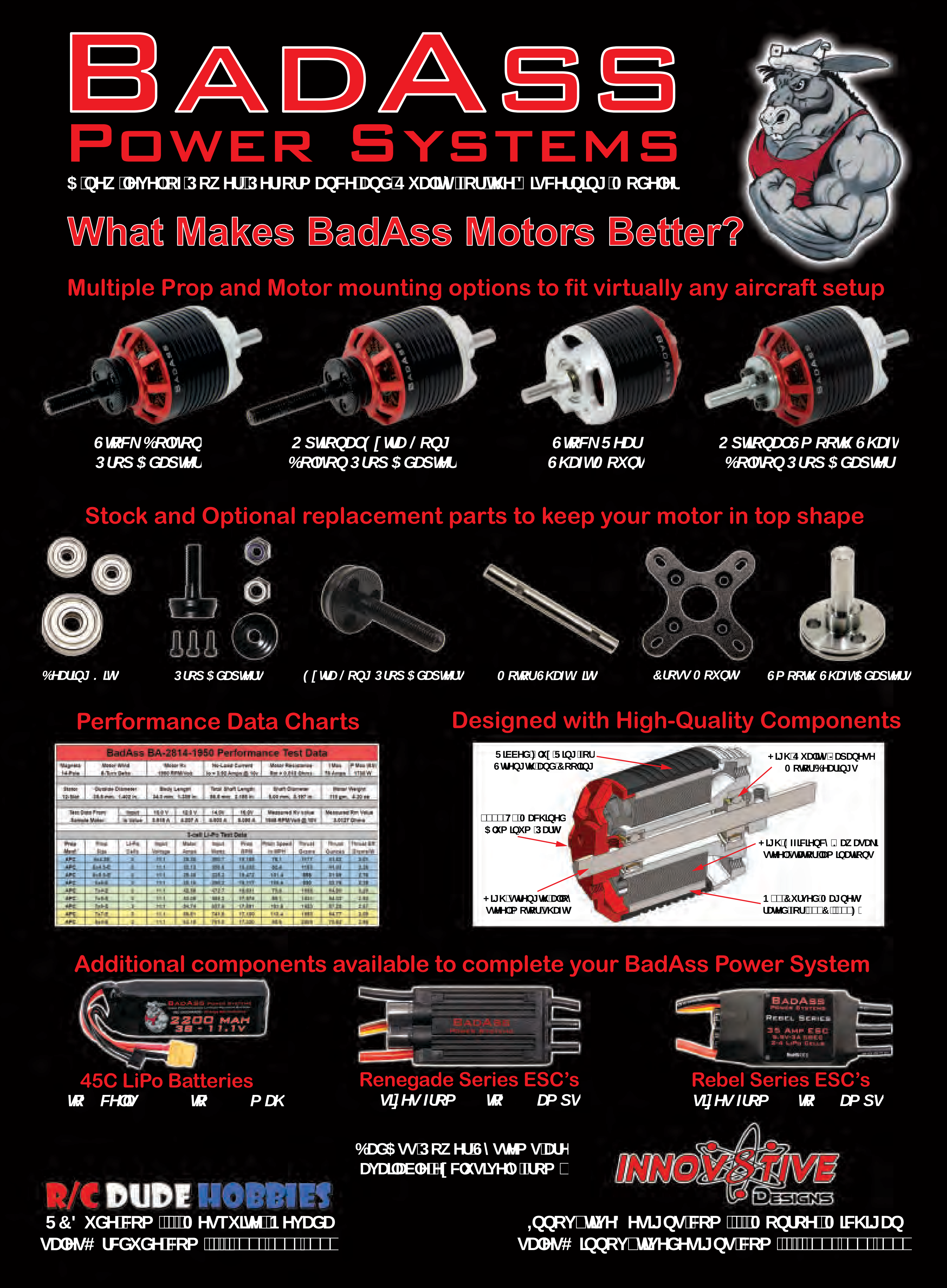
If these questions did not disqualify you, it might be time to switch to digital FPV. Of course, you'll only know after you try it for yourself—and you should. It's easy to underestimate the impact of the HD image, but many skeptics find themselves convinced after they see it in person.

SOURCES:

MultiGP
www.multigp.com

DJI
www.dji.com

Fat Shark
www.fatshark.com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The Sullivan 4-40 Ball Connectors are installed in a 1/4-scale Balsa USA Fokker D-VII's rudder and elevator servo pushrods.

WARBIRDS OVER DELAWARE: SAVE THE DATE!

By Sal Calvagna | rcgiants@optonline.net

WELCOME BACK. The 2020 flying season has begun. I hope that all of my readers are taking advantage of the great weather and having lots of flying fun.

Summer is right around the corner, which means that (as of this writing) another great Warbirds Over Delaware is scheduled for July 8-11 at Lums Pond State Park in Bear, Delaware. This is the largest Giant Scale warbird event on the East Coast. Last year, there were nearly 300 aircraft, from early World War I types to the jet age.

Plan a trip, bring a model aircraft, and enjoy the camaraderie. See you there! For more information, visit the Delaware R/C Club website, listed in "Sources."

Ball Connectors and Pull-Pull Cable Installation

Although the 2019-2020 winter was quite mild here on Long Island, New York, it was still building season. I framed up a 1/4-scale Balsa USA Fokker D-VII for a friend, and I want to share a couple of building tips.

There are many types of servo connectors on the market today. My all-time favorite is the Sullivan Products Ball Connector With Locking Sleeve. It is made from machined aluminum and has a spring-loaded locking sleeve that releases easily without needing any tools for linkage adjustment, permitting a full range of motion.

These connectors make it easy to set flying surfaces at neutral. You simply reach in with one hand, pull back the sliding sleeve, remove the connector, turn in or out to adjust it, and replace it over the ball. It's that simple. The locking sleeve ensures that it will never separate in flight.

The Sullivan Products S591 4-40 Ball Connector comes in five sizes: 2-56, 4-40, 6-23, 2 mm, and 3 mm. It is easy to install and remove.

This shows a bellcrank/tiller bar installation for the rudder and elevator halves.

Sullivan Products manufactures the ball connector in 2-56, 4-40, 6-32, 2 mm, and 3 mm sizes. For more information, visit the Sullivan Products website.

I like to install wire cables to operate the rudder and elevators on World War I aircraft. It is slightly more work, but you'll receive kudos for scale fidelity when it's done.

When I install cables, I also use a bellcrank or tiller bars to attach the cables instead of connecting them directly to the servo horn. I do this for a few reasons.

First, using a tiller bar keeps the tension off of the servo output shaft bearing. Second, it's easier to adjust for neutral on the moveable surfaces by using a single connector on the servo. Last but not least, if you have to replace a servo, you won't disturb the cables. The last thing you want is a servo horn with the cables attached to it disappearing into the fuselage and twisting up the cables.

If you take a look at the accompanying photos, you can see how simple it is to remove the ball connector to make an adjustment. Sig Manufacturing and Radical RC have tiller bars available.

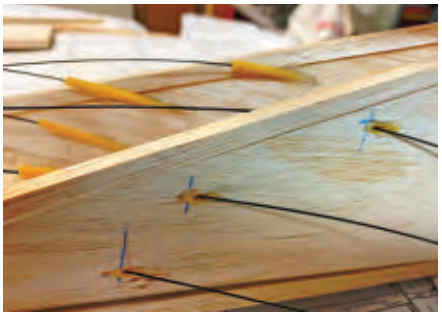
That takes care of the servo end, but what about cable exits? You need to have some type of support for the cables where they exit the fuselage. A simple solution that I have used for years is to install inner 2-56 Nylon Flexible Gold-N-Rods from Sullivan Products. Most of us have these lying around in our workshops.

I cut small sections and installed them as shown in the accompanying photo. The nylon makes a great cable bushing. Of course, you can directly attach the wires to the rudder or elevator horns by using a crimp, or you can use your favorite type of clevis.

WW I Wheel Installation

There are a few ways to install a WW I wheel to an axle. My favorite is to use a brass-tube axle sleeve, a couple of steel washers, and a cotter pin. It presents better than just using a wheel collar, and it makes installing and removing the tire simple and easy.

Depending on the size of axle that you're using, first purchase a section of brass tubing that will slide over the axle. K&S Precision Metals makes different sizes of brass tubes that can be purchased from a hobby or craft store. When installing a tire on a music wire axle, enough of the axle



Inner Sullivan Products 2-56 Nylon Flexible Gold-N-Rods were used as bearing guides for pull-pull cable installation.

A brass axle bushing with a soldered washer stop was used for a WW I wheel installation.

generally protrudes outside of the tire to allow the installation of a wheel collar.

In this example, cut the axle flush with the outside of the wheel. Solder a washer

A WW I wheel was installed using a cotter pin and washer for a scalelike appearance.

onto the inner part of the brass tube to use as a stop. If you want, you can use a wheel collar. This will keep the inside of the rim from rubbing against the landing gear. Cut a section of brass tube that will allow approximately 1/4 inch to protrude from the steel axle. This 1/4 inch will be used for the outer washer and cotter pin.

Next, you can either solder or epoxy the brass sleeve onto the steel axle. Slide the tire and the outer washer stop on and mark the brass tube. Drill a hole the appropriate size for a small cotter pin. Now you know why the brass tube protrudes from the axle. It is simpler and easier to drill the brass tube through than to drill a hole through the music wire. Slide the tire and washer back on and install the cotter pin. Congratulations! You're done! Great job.

That's it for now. Remember to have a safe and happy flying season.

SOURCES:

Delaware R/C Club/Warbirds Over Delaware
www.delawarerc.org/warbirds.htm

Sullivan Products
(410) 732-3500
www.sullivanproducts.com

Sig Mfg. Co., Inc.
(641) 623-5154
www.sigmfg.com

Radical RC
(937) 256-7727
www.radicalrc.com

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www.ksmetals.com

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The need for speed! The author is shown with his SAB Goblin Speed helicopter.

NEW AUTHOR INTRODUCTION

By James Wang | heloeditor@gmail.com

ADVANCEMENTS IN RC helicopters have progressed in leaps and bounds, especially during the last 20 years. Today's helis can perform amazing 3D stunts that leave spectators in awe. We have come a long way from the old days of flat-bottom airfoils, wooden rotor blades, and side frames made from bent aluminum sheets.

Hello everyone. I am one of your new authors for the "RC Helicopters" column. I look forward to sharing something exciting and new in each column, including the coolest new helicopter models and accessories, event updates from around the world, tips on how to set up and enjoy the best performance and safety from your helicopters, and interviews with top pilots. My goals are to get more people interested in flying RC helicopters and to keep pushing the boundaries of helicopter technology.

I love RC helicopters of all types. I participate in Speed, 3D, and Scale. In approximately 1989, I was really into flying Speed helicopters. I purchased surplus police radar equipment for $500 then went to the 1989 USA F3C Team Trials to measure the speed of the helis that were being flown by the top FAI pilots. I remember clocking Cliff Hiatt's .61-engine powered Kalt doing 84 mph, and Robert Gorham's TSK reached 87 mph.

In roughly 1991, I used an O.S. .61 RF rear-exhaust engine that was blue-printed by my friend Royce and reached 93 mph with a highly modified Gorham Model Products (GMP) Stork helicopter. Today, almost any stock 700-class electric-powered helicopter that is properly set up can achieve a speed of 100 mph. A dedicated Speed heli, such as a Henseleit or a minicopter Diabolo S, can exceed 150 mph.

Today's RC models and equipment are truly engineering marvels, and the prices have not gone up when compared with the cost of living. This is the best time to enjoy RC helicopters. Their performance is higher than ever, the quality and safety are top-notch, and prices are competitive.

I started flying U-Control (Control Line) and RC airplanes early in elementary school. In 1976, while flying my RC airplane at the Sepulveda Basin in California, I met John Gorham, who was flying a Schluter Heli-Baby. Back then, few people flew helicopters. If you could even get one off of the ground, you were a hero. If you could do forward flight, you were a legend. John was flying and looping his Heli-Baby.

My parents told me that if I received straight As in school, they would get me one, and I studied hard. John was gracious and taught me how to fly for free. It took a year to learn how to hover. At that time, everyone used airplane radios and engines and no gyros.

In 1979, I became pretty good at flying my GMP Cricket without a gyro. I flew it with a Kraft four-channel airplane radio and an O.S. .25 FSR engine with no cooling fan. I could land that Cricket on the top of a 1-foot square mailbox. I practiced religiously every day after class.

Since then, I have built more than 400 RC helicopters and have designed a few of my own. Some of the glow-engine and electric-powered RC helicopter kits you might have flown in the last 20 years were my designs and were produced by well-known manufacturers.

My passion for RC helicopters has led to a lifelong career in the rotorcraft industry. I went on to study helicopter design as my doctorate, and then worked at Sikorsky Aircraft and Leonardo Helicopters. My specialties are rotor design and helicopter flight dynamics.

As a helicopter engineer and designer, it is necessary to know a bit about everything on helicopters, including transmission, structures, composite, aerodynamics, acoustics, avionics, and manufacturing. I have worked on the UH-60 Black Hawk, CH-53E Sea Stallion, RAH-66 Comanche, S-92, and AgustaWestland AW139, AW169, AW189, and AW609, among others. I also designed the all-electric Project Zero eVTOL. Getting paid to work with helicopters—how much cooler could that be?

The author designed the Thunder Tiger Titan X50 heli 10 years ago. It still has the highest power-to-weight ratio in the .50-size class of engine-powered helicopters.

In the 1980s, when the RC helicopter hobby started to grow, it was difficult to find information. To share my experience, I wrote my first article in 1987. It was printed in the March 1988 issue of *International Helicopter* magazine, published by Colin Cameron Tough in England. The first article explained the aerodynamics of model rotor-blade design.

From that first story, I received many letters from fellow RC heli enthusiasts around the world. That is how I got started as a helicopter columnist. My follow-up article was on Delta-3, and the next was on the Bell-Hiller mixing ratio.

In 1988, Alex Gauss, from Virginia, became the first to produce and sell fiberglass rotor blades in the US. His blades used a distribution of three different airfoils that I recommended and featured a tapered platform and a swept tip. I then worked with blade manufacturers in Europe and Asia to design various carbon-fiber main blades.

Spanning a few decades, I have been fortunate to meet many fellow RC helicopter enthusiasts around the world through my writings for *Model Builder, HeliScene, SE Modeler, Quiet Flyer, 3D Flyer, Model Airplane News, Rotory Modeler, Radio Control Heli Pilot, Model Helicopter World,* and *Model Aviation*.

Most of us are still passionate about this hobby and have stayed in touch. It is a wonderful camaraderie. My wife always wonders why everywhere we go for vacation, there is always a warm friend to greet us, regardless of whether we are in Slovenia or Singapore. Maybe she doesn't know that I picked the vacation spot because there is a fun-fly or a heli friend there.

I still fly a few times a week and spend more of my earnings in RC than anything else, including buying models, spare parts, accessories, and attending events around the world. My family knows that this is my passion, so they support it. On average, I build a new model every month.

I became fascinated with 3D flying in the 1980s. I started learning inverted flight with a switch in 1985. By 1987, I learned the switchless flying method, which was a prudent decision. The switchless flying technique allows you to have full control of the helicopter, no matter what the helicopter orientation is (RC airplane pilots do not use an inverted switch).

Becoming proficient at 3D flying requires thinking, diligence, quick reflexes, a well set up helicopter with a powerful engine/motor, and persistent practice. 3D flying is so much fun because there is no limitation to what you can perform—it is all up to the imagination and guts.

Electric-powered helicopters now dominate 3D heli flying, and modern computer flight simulators such as RealFlight or Aerofly Professional are perfect tools with which to try out new maneuvers. If you

The fixed-pitch Schluter Heli-Baby was used by the author in 1976 to learn how to hover. Dieter Schluter, from Germany (shown above), is often credited with the invention of the RC helicopter.

make a mistake and crash, just hit the escape key and try again.

A typical .90-size engine-powered helicopter weighs 12 pounds and the engine generates 3 hp, so it has approximately 0.25 hp per pound of weight. A full-scale, high-performance military helicopter such as a Sikorsky Black Hawk can have a takeoff weight of 22,000 pounds, and its two General Electric jet engines produce 3,400 hp together. That gives approximately 0.15 hp per pound of weight.

A modern 700-class electric-powered helicopter that weighs 10 pounds typically has a 4,000-watt motor. Because 746 watts equals 1 hp, it is equivalent to almost 5 hp or 0.5 hp per pound. Electric-powered helicopters have a phenomenal power-to-weight ratio for doing aerobatics.

Stay tuned to future columns because I will examine some of the new RC helicopter models in detail and explain how to set up any helicopter for beginner, Scale, 3D, or Speed flying.

See you soon.

SOURCES:

International Radio Controlled Helicopter Association (IRCHA)
www.ircha.org

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The author launches his scratch-built P-40. Photo by Ken Hawkins.

LOVE OF THE WIND LED NEW COLUMNIST TO SLOPE SOARING

By Greg Schutte | gshooty@yahoo.com

ARE YOU INTERESTED in Slope Soaring? What type of Slope flying do you do? Maybe you even think you are a hardcore addict? Well, hold my transmitter and let me introduce myself!

I fly RC airplanes and full-scale paragliders, hang gliders, and speed wings. I have always been infatuated with the wind. Where I grew up in southern Idaho, the wind never stopped blowing. I had to learn how to use it or hide from it. My mind is full of fond memories of building wings out of burlap and wood fencing and jumping off of the haystack. I would make a parachute out of rope and a tarp to be dragged down the road on a skateboard.

On Sundays, my family would go over to my grandparents' house for lunch and sometimes my Uncle Bob would bring out his two-meter RC glider to fly. It was covered in transparent colors and glowed like a rainbow in the blue sky. He would fly it next to a big grove of trees, where it would just float there high in the wind.

In my teens, I recall water skiing on the lake and looking for the wind's shadow—that was where the water was the smoothest.

I learned the fine art of Slope Soaring in the late 1990s while studying architecture and graphic design at college in Boise, Idaho. My cousin, Rob, was an RC pilot and took me under his wing to teach me how to fly RC airplanes. I built a two-meter Gentle Lady glider on the floor of my apartment using foam board as a table. We spent hours and hours on the side of the hill specking out, doing flybys, and having an excellent time.

I then got a gas-powered airplane. It was fun, but I didn't like it as much

as being on the slope. Everything changed when I discovered blue foam and EPP foam. Combat, here I come! I was hooked beyond belief.

I was taught to be gentle when flying. By that I mean balsa breaks, and you need to land gently. That went out the window. Huck, chuck, crash, bash! Touch-and-go on the rocks? Who cares! Fly it hard!

The cold sweats and nerves about flying close to the terrain or landing went away. My pilot skills greatly improved in a short period. The places for me to fly opened up exponentially. Places that we didn't fly because of fences, rocks, no landing areas, or too short of a hill didn't matter anymore. I now soared in any weather condition—rain, snow, sleet, blistering heat—I didn't care. If the wind was blowing, I was flying.

The Weather Channel became the mainstay on my television. I would watch it for hours to learn about high-pressure and low-pressure systems, how clouds formed, what the different types meant, wind gradient, and even how to use the local airport wind talkers to my advantage.

My CAD drafting skills worked well for designing and building foam airplanes. I could go to a local hardware store, buy a piece of blue foam for less than $20, and, using a hot wire, I could build a half-dozen flying machines. I've never looked back.

One day after I had been Slope Soaring, as I was packing up my airplanes to go home, a local paraglider pilot showed up to fly. He got out of his truck, grabbed his paraglider that was packed into a large backpack, laid it out, and smoothly pulled it up over his head.

He launched and proceeded down the ridge at approximately 50 feet over the lip. The time from his arrival to when he took flight hadn't taken but 5 minutes. All I could hear was the wind blowing through his lines.

Upon his return, he flew over the launch site and started to intermittently pull on both brake lines. It sounded to me like a bird flapping. This stopped his forward speed and he calmly floated down and landed, much like stepping off of a chair.

He stood there for a couple of seconds, smiled, relaunched, and went down the ridge again. Every time he would come over my head, we would talk. This continued until sunset. That was one of the coolest things I have ever seen.

The author gets ready to hang glide. Hawkins photo.

(L-R): Ken Hawkins, the author, and John Raley. Hawkins photo.

On my way home that night, I decided that I was going to start my paragliding journey.

There are some non-RC airplane skills you learn when you spend enough time on the slope, such as how to help launch a hang glider. Because I'm a Slope Soaring junkie, I was always out flying. This was a big help for the hang glider pilots who needed help to safely launch a hang glider at certain places, or when the wind speed required an extra person to hold onto the nose wires as the pilot walked up to the launch area. The pilot would yell, "Clear!" take a couple of steps, and then float away.

I became friends with most of the hang glider pilots. One day while flying, I was asked if I would like to take some lessons. That was the wrong thing to ask. Long story short, I now own and fly two hang gliders.

The newest flying machine in my quiver is a speed wing. I have always enjoyed being outside, and I like to hike and explore. One thing I don't like about hiking

is the hike down. Well, not anymore.

A speed wing is a combination of a parachute and a paraglider. It is made to go down slower than a parachute and faster than a paraglider. The speed wing and harness weigh less than 10 pounds. The flight can be radical or a calm sled ride to the landing area, depending on how you want to fly that day. Needless to say, I don't go to the gym to exercise anymore. Let's go hiking!

I design and scratch-build most, if not all, of my current RC airplanes. My CAD drafting skills can be used to make 3D models, laser-cut files, and make schematic drawings of whatever I can imagine. I also have a CNC hot wire holding down the floor in my garage. I have recently started making plugs and molds for constructing composite RC airplanes.

I have downloaded apps onto my cellphone for real-time weather information and flight charts for checking airspace, and I've looked on Google Earth for possible locations at which to fly. I even have an app that tells me who owns the land and how to get ahold of the owner. I can talk about Reynolds' number for airfoils, wing loadings, the price of foam, and where to get all of the building supplies you will need to make your flying machine a reality.

One of the cool things I have discovered with my time on the slopes is the friends I have made. I have made many wonderful friends from all walks of life. Some fly one discipline or a couple of disciplines; it doesn't matter to me. We all enjoy talking weather, design, flying conditions, and having the wind blowing in our faces.

My name is Greg Schutte. Let's go flying!

SOURCES:

League of Silent Flight (LSF)
www.silentflight.org

Waiting for the signal to launch. Hawkins photo.

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Whether you are a judge at a full-scale aerobatics contest or a competitor or judge at an IMAC contest, use a few of the tools discussed in this column. Jim Bourke, the owner and pilot of the full-scale Extra 330SC that is shown here, developed one of them. Photo courtesy of Jim Bourke Airshows.

TRAINING AIDS

By John Glezellis | jglezellis@gmail.com

NO MATTER WHAT the sport, a serious competitor understands the importance of preparation and the role that it plays in success. A pilot needs to understand the rules that he or she will be judged against and how to properly fly a specific sequence. Preparation is not only the pilot's duty but also falls on judges at the contest!

The main topic of my April 2020 column revolved around perspective. Not only did I look at the judging criteria and a few simple penalties that can quickly accumulate with incorrect aircraft orientation, I also discussed a few areas where a pilot could take to the sky and practice certain maneuvers to perfect his or her techniques.

In this column, I will take the topic of perspective a step further by examining a few training aids that exist today from which both a pilot and a judge can benefit.

Years ago, you had to travel to attend a judging seminar or contest to become familiar with certain criteria and sequences. Now, as you will soon discover, many items are accessible to and within reach of everyone in the comfort of their own homes.

With that being stated, let's get down to business!

Tools of Perspective

Because of the size of our models and the distances at which they are flown, it is easy to be penalized if an aircraft is incorrectly banked. The important item to highlight is that the issue exists when a pilot believes that the wing of his or her airplane is level, yet it is not. The same applies for a judge who feels that the bank angle is incorrect when that might not be the case, or not the case to the severity believed by the judge.

Jim Bourke, who owns Knife Edge Software (the maker of the RealFlight simulator) and is the creator of RCGroups.com, serves as a member of the International Aerobatic Club board of directors [a division of the Experimental Aircraft Association and the National Aeronautics Association], is a competitive full-scale aerobatic pilot, and has been a member of the Unlimited US Aerobatic Team since 2017. He has developed an interactive tool that is called the Roll Trainer.

In short, the Roll Trainer is a web application that displays an aerobatic aircraft on the screen with a defined roll to be performed. After the user selects start, the aircraft will perform a roll and the pilot selects how many degrees of error were performed. You can run through multiple scenarios where the airplane's orientation changes, and the program keeps track of how well the user is performing and/or has performed.

I find this to be a beneficial tool for International Miniature Aerobatic Cub (IMAC) pilots and judges because it allows a person, over time, to quickly analyze the positioning of an aircraft and note whether the orientation is correct. For a judge, it builds strength in the assessment of errors in angle so that you can analyze each mistake (if applicable) in seconds and devote your attention to the rest of the maneuver and/or sequence that is being flown.

I was impressed with this software and reached out to Jim because I was curious about how he decided to move forward on this valuable and innovative tool. He replied:

"I made the Roll Trainer because I realized how hard it is for judges to see roll rotation errors. These are very important to see correctly, but there is no tool a judge can use to practice it. I don't like how competitors get angry at judges when they innocently miss a small detail.

"Sometimes the pilots can see more than the judges because they spend weeks practicing, whereas a judge might only judge a couple of weekends per year. The Roll Trainer is a good way for people to self-assess how well they can judge these errors and to map out their own plan to become better.

"I have deeper plans for this part of my website, but, of course, there are a lot of other priorities!"

To take advantage of this web application, visit Jim's website (listed in "Sources") and select "Software" at the top righthand portion of the screen. Scroll to the bottom of that page and select "Roll Trainer."

In addition to the training tool, remember to visit the IMAC website, where many valuable items can be found for new and experienced aerobatics pilots and judges alike.

Similar to a pilot being familiar with Known and Unknown programs, if applicable, a judge must know the routine that he or she is seeing.

In many instances, a scribe notifies the judge on the next maneuver to be flown or on certain elements within the current figure. In some cases, a judge will keep track of where the airplane is within a given sequence, will mentally note any downgrades, and will write down the score for

the figure at hand. In short, a lot must occur during a timespan that only lasts seconds!

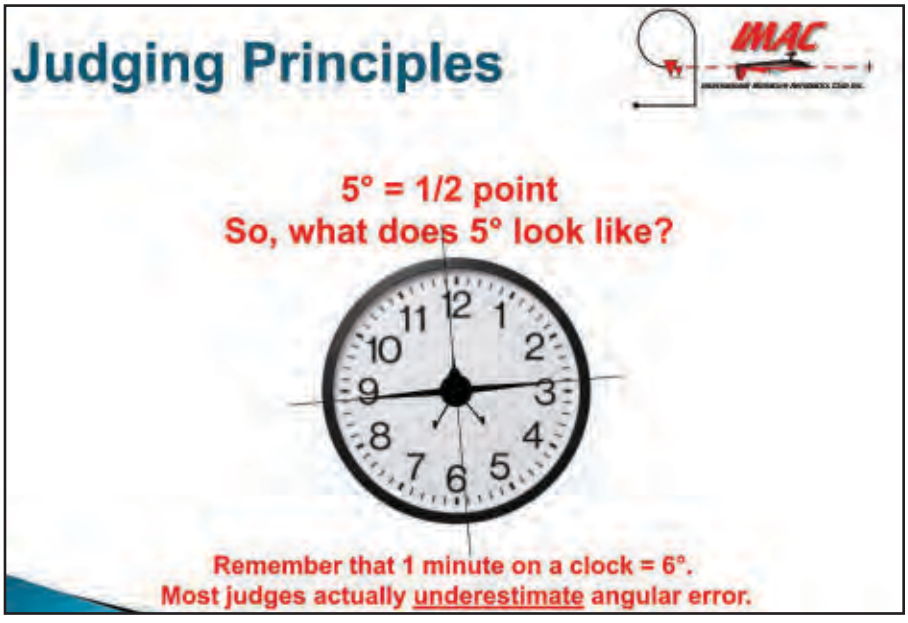
When I am at a contest and judging a class, I spend time looking at the Aresti for a sequence to not only become familiar with it, but also to memorize it. As a judge, familiarity of the routine and all of the individual elements to be flown is important because it allows you to devote your full attention to the pilot and the sequence that he or she is flying.

Because I mentioned the term Aresti, I want to note that although learning the Aresti can be challenging for a beginner aerobatics pilot, examples always provide value.

Throughout the past few years, Italian aerobatics pilot Sacha Cecconi has produced YouTube video tutorials for those interested in flying in the Basic, Sportsman, Intermediate, Advanced, and Unlimited categories. You can see the latest sequences being flown, from start to finish.

What I find valuable for new pilots, aside from actually flying the sequence, is that Sacha's videos also show the Aresti figure for each maneuver, along with video footage of an aircraft performing that figure within the sequence.

The Roll Trainer is an innovative software tool that allows an individual to perform a self-assessment to see how well he or she can judge an error in a roll.



Visit the IMAC website to find various educational content that includes numerous PowerPoint presentations and videos to help increase your understanding of the criteria against which you will be judged.

Final Thoughts

While a pilot must focus on perfecting a given routine, the judge should devote his or her full attention to looking at the aircraft and each figure being flown. Pilots and judges alike must be familiar with a program.

I recommend that you apply what you've learned through the IMAC website (rules, judging seminar content, general forum discussions, etc.), aids such as the Roll Trainer, and videos such as those offered by Sacha, to become familiar with the Aresti and how to properly fly a sequence, note the orientation of an aircraft, etc. Although many online resources exist, it is beneficial to attend a local flying event and/or seminar near you.

Above all else, always remember to enjoy each event and the friendships that are

SOURCES:

International Aerobatics Club
www.iac.org

IMAC
www.mini-iac.org

Jim Bourke Airshows
www.jimbourke.com

Sacha Cecconi YouTube channel
https://bit.ly/2vbQrI3

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Tim LaNore instructs Tyler Zink on the basics of CL flight at the PGRC club in Maryland.

BRINGING IN NEW CL FLIERS

By John Vlna | flycarrier@yahoo.com

THROUGHOUT THE YEARS, most of us have tried to bring new fliers into the Control Line (CL) ranks. "You're never too young to start" has always been my motto and, although he's only three months old, I am already introducing a CL handle to my great-grandson, Thomas. It might be awhile before he can actually fly, but he seems comfortable with the handle.

A bit more advanced is Tyler Zink, who was a recent visitor to my flying field at the Prince George's RC Club (PGRC) in Upper Marlboro, Maryland. He was able to solo on his first CL flight. PGRC holds several open-house events throughout the year and is always accommodating to visitors who are interested in model aviation.

A Baby Ringmaster airplane made from Coroplast (a trademarked, corrugated plastic cardboard) was used. This material is nearly indestructible and is perfect for a trainer. Our electric-powered trainers use 2.4 GHz radios for throttle control. We also use smaller versions of the 15-inch diameter saucers that I mentioned in my last column. The use of throttle allows an instructor to quickly land the airplane in case a student gets into serious trouble. It also goes a long way in minimizing training damage to the aircraft.

Building

By the time this article is published, the building season will probably be over, but it is not too early to think about your next project. I have a new building project on the bench all year long, so the calendar does not mean that much.

Building a new CL Navy Carrier model today almost always means building

from scratch. There are a couple of kits out there that can be used for Profile, but only two that I am aware of are for Carrier: the Bill-Calkins-designed Brodak Guardian and the Bill Reeves-designed Fury F-2J.

The Guardian is for AMA or Sportsman Profile, and the Fury is for .15 Profile. Brodak Manufacturing sells a pattern sheet for the Guardian for those who scratch-build. There are plans of some more modern Profiles out there. The most modern design, by Bill Melton, was the Grumman Guardian that was published in *Model Aviation* in September 2000.

The AMA Plans Service has several other Carrier models. Tom Hazen's MO-1, published in *Model Aviation* in 1979, can be as competitive as any model flying today, with a few minor modifications. It was my first Carrier airplane and, to date, the one with my highest score as a glow-powered aircraft.

The slider is more inboard today for better hanging geometry, and the open center section, where the bellcrank is mounted, needs to be filled in. The wing joint is slightly too weak as shown. Many models today have the bellcrank mounted on the outside of the fuselage, which makes for easier adjustments.

There are other plans sources. *Flying Models* and *Model Airplane News* still sell a lot of CL plans of models that are either intended for Carrier or can be easily converted for Carrier use. The AMA Plans Service lists not only all of the plans that have been published in *Model Aviation*, but those of *Model Builder*, the John Pond collection, and the Gene Falada collection. Links to Brodak Manufacturing and the AMA Plans Service are listed at the end of this column in "Sources."

There are also a number of plans services that are shared on the internet. A word of warning: Some of the plans that

Tyler Zink soloed on his first attempt!

Thomas Maddrey, the author's great-grandson, is introduced to a CL handle.

The electric-powered Baby Ringmaster trainer airplane was used for Tyler's first CL flight.

are offered on these websites might still be under copyright. I make it a rule that if the plans are still commercially available, I don't use the free download. See the "Sources" at the end of the column.

The First Official CL Navy Carrier Event at the Nats

For those who like history, in the U.S. Navy's July 1952 *Naval Aviation News* publication, there is an article about the first Navy Carrier event that was offered at the Nats. That was the fifth year that the Navy hosted the Nats, and the 21st year for the Nats overall. It was held at Naval Air Station Los Alamitos in California (now known as Joint Forces Training Base, Los Alamitos). For the first CL Navy Carrier Nats event, the Navy even built a deck named the USS *Small Fry* at the Naval Gun Factory (Washington Navy Yard) in Washington, D.C.

The article offers a good description of model Carrier aircraft that flew and notes the similarities between the model event and the first shipboard takeoffs and landings in 1911 by Eugene Ely. It also states that Carrier would be the highlight of the 21st Nats. (The Navy might have been a little biased on this point.)

SOURCES:

Navy Carrier Society (NCS)
www.navycarriersociety.org

Brodak Manufacturing & Distributing Company, Inc.
(724) 966-2726
www.brodak.com

AeroFred
www.aerofred.com

AMA Plans Service
800-435-9262, ext. 507
www.modelaircraft.org/ama-plan-service

***Naval Aviation News*, January 1952**
www.google.com/books/edition/_/DWFGAQAAMAAJ?hl=en&gbpv=1

Carrier-Deck.com Plans
www.carrier-deck.com/?page_id=63

Outerzone
www.outerzone.co.uk

Hip Pocket Aeronautics Builders' Plan Gallery
www.hippocketaeronautics.com/hpa_plans/index.php

Drake Hooke's new Royono is his second one. The 1956 design was a good-flying model for B and C Gas events, but the geodetic wing and stabilizer construction and the undercambered wing airfoil made it a more difficult build.

OLD MODELS AND NEW TECHNOLOGY

By Louis Joyner | joyner28@comcast.net

THE NATIONAL FREE FLIGHT SOCIETY'S (NFFS) Nostalgia Power and Rubber events have been around for roughly 25 years. Limited to designs from the 1950s, the latest addition to the lineup is Nostalgia Electric.

The event offers the opportunity to fly Nostalgia-era, gas-powered models without the mess and noise. For someone flying in other than electric-powered events, such as E-36, Electric A, Electric B, and F1Q, Nostalgia Electric provides another one for this increasingly popular type of power.

At the 2019 AMA Nats, Bob Sowder flew an electric Lucky Lindy. This was no big surprise because he's been successfully flying Lindys in a wide range of sizes. "I am a Lindy loyal and have built planes ranging from 170 to 750 square inches," Bob said.

The Lucky Lindy was designed by the late Larry Conover and was powered by an O.S. Max .15 engine. At the 1960 World Championships in Great Britain, Larry was one of five contestants whose aircraft survived a 12-round flyoff. He was named a joint champion. (Flyoff rules were changed soon afterward to require progressively increasing maxes instead of the long series of 3-minute maxes that were used in 1960.)

Similar to the other Nostalgia events, Nostalgia Electric allows the model to be scaled up or down. For his E-400 Lucky Lindy, Bob reduced the original design to a 400-square-inch wing area. He built a similar-size electric-powered model using a Cheetah A2216-6 brushless outrunner motor. It uses an 850 mAh 75C LiPo battery, E-flite 25-amp ESC, and a Graupner 8 x 4.5 folding propeller. The timer and servo are from Texas Timers. That is a lot more to pack into a fuselage than just the engine, tank, and timer of the original Lindy.

Fortunately, Larry had designed the original Lindy with a wide, built-up pylon. The original design also featured a ballast box in the bottom of the fuselage—a perfect spot for batteries instead of lead.

Bob has flown the model in Nostalgia Electric and the AMA Electric A events. "I would not hesitate to fly it in Electric A [because] it is an extremely competitive model," he said. (The AMA Electric A and Nostalgia Electric events do not allow auto surfaces such as auto rudder, variable-incidence tailplane, and bunt.)

The AMA Plans Service offers the Lucky Lindy plans in 62-inch, 64-inch, and 71-inch wingspan versions. Jim O'Reilly Model Plans has Lindy plans in wing areas from 275 to 825 square inches.

Royono

At last summer's Nats, I spotted a familiar (at least to me) but seldom-seen gas-powered design with an unusual name. Drake Hooke had a just-finished Royono. The Gary Christiansen design dates back to the early 1950s. The B- and C-class Royono had a 634-square-inch wing, which was considered a bit small back then. But the undercambered Gottingen wing airfoil gave the model an excellent glide.

As Gary pointed out in a 1956 article, its compact size and rugged construction helped it survive the rigors of contest flying and retrieval. When it was published, the design held the national record with three 6-minute flights and a 35-minute flyoff flight.

Drake's new model was actually his second. "I built my first Royono after seeing it in *Model Airplane News* in 1956," he said. "It was a record-setter and I figured it would be a good flier. Well, it wasn't, mainly because I learned at a young age how to build an airplane with nice warps. I gave up on it.

"A couple of years ago, I found the plans on the internet and built my present one, this time without warps. The engine in it right now is a Torp .29 for B. I also have a SuperTigre .35 for C." (Royono plans are available from the AMA Plans Service.)

For the new build, Drake used UltraCote covering and a Dens electric timer for both the motor run and dethermalizer (DT) via a servo that trips a Texas Timers remote shutoff for engine cutoff. It also releases a line to the stabilizer for the DT. The model is equipped with a Ken Bauer remote DT.

For years, Bob Sowder has built and flown the Lucky Lindy Power model in a variety of sizes. This is his first electric-powered version. He flies this aircraft in both Nostalgia Electric and Electric A.

This is quite a change from the simple clockwork timer and fuse DTs of the 1950s.

The reason I was familiar with the Royono was because my older brother, Bud, built one in 1958. He still has the model.

"I built a Ramrod, and the Royono was a better-looking version of a big stabilizer and big downthrust configuration," Bud said. "The stabilizer area was 55% of the wing area, which was even higher than the Ramrod.

"I also built a geodetic wing model of my own design, so building the Royono was no problem," Bud continued. "It flew great from the start. I don't remember any adjustments at all. It was originally powered by a Fox .35 for C Gas and I planned to also fly B Gas with a .29. About

a year after I built it, the AMA upped the power loading, so I put a K&B .15 and a little lead in it. It still flew great, [but it] just didn't get as high."

(Under the old rules, a .29-powered model had to weigh 29 ounces. The new power loading rules upped the weight to 35 ounces. The higher power loading for AMA Gas events only lasted a few years.)

Scaling Plans

Many model plans services offer some designs in a variety of sizes. If the one you want isn't available, a company might be able to scale it up or down to your desired size. Many events allow scaling, but there are some restrictions for the Old-Timer and Nostalgia events, so it is best to check the rules on the NFFS website.

How do you know how much to enlarge or reduce plans? Scaling a dimension such as the wingspan is simple. Divide the desired wingspan by the original wingspan. For example, if you wanted to scale the 63-inch wingspan Lucky Lindy MKIII down to an E-36 size, you would divide 36 by 63 then use the result—in this case, 0.5714—to multiply all of the other dimensions on the original plans. Better yet, just ask the plans service to print the airplane at the new scale.

It gets a bit more complicated if you are trying to scale to a desired wing area. To find the scaling factor, you have to divide the square root of the desired wing area by the square root of the original wing area.

For example, to scale up a model with a 120-square-inch wing to 270 square inches, divide the square root of 270 (16.432) by the square root of 120 (10.945). The result is a scale factor of 1.5. It's easy if you have a scientific calculator.

The original gas-powered Lindy had a built-up pylon that provided extra room for some of the electronic components.

The battery for the electric-powered Lindy fits in the same space that carried lead ballast in the 1960 Lucky Lindy.

SOURCES:

NFFS
www.freeflight.org

AMA Plans Service
(800) 435-9262, ext. 507
www.modelaircraft.org/ama-plan-service

Dens Model Supplies
info@densmodelsupplies.co.uk
www.densmodelsupplies.co.uk

Ken Bauer
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Jim O'Reilly Model Plans
(316) 744-0856
www.jimoreillymodelplans.com

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Listed are people and organizations that donated $10 or more in March 2020. These donations are earmarked for AMA's programs, the National Model Aviation Museum, and the International Aeromodeling Center. If your name is not listed, or if you have any questions, contact AMA Foundation at donations@modelaircraft.org or (800) 435-9262, extension 277.

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Ball Brothers Foundation - IN - $5,000 grant to assist with a new strategic plan for the National Model Aviation Museum

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THINKING ABOUT establishing a will or a financial plan for the future can be uncomfortable and something that is often put on the back burner. We encourage you to think about your plans for your loved ones who will be honoring your wishes in the future. Whether you are planning to find homes for your model airplane collection, retirement accounts, or other assets, a plan will save your loved ones time and reassure them that your wishes are being honored.

The AMA Foundation thanks the many people who have included the AMA Foundation in their plans for the future. These esteemed supporters are part of the AMA Foundation Legacy Society.

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IN LOVING MEMORY

of our friends who have taken their final flights

By Angie Martin, Membership director | angiem@modelaircraft.org

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From the Copilot's Seat

INAUGURAL AMA NATIONAL FUN-FLY PLANNED

By Randy Cameron, Executive Vice President | flyrc@modelaircraft.org

As everyone knows, the COVID-19 pandemic has caused huge shifts in everyone's way of life, and those changes continue to evolve. It will influence how we do things for the rest of our lives. I believe it will forever change how we work, how we shop, how we bank, how our children learn, how we gather and interact, our economy, and much more.

Many events have been canceled or rescheduled for later in the year. I'm not saying we won't have flying events because I believe we will, although how we interact with others might need to change.

Between the pandemic and the FAA's Remote ID proposed rulemaking, AMA is experiencing a decline in membership. We need to look closely for ways to grow our hobby during these crises. Welcoming potential new members has always been important to the growth of clubs and the AMA. During this lockdown period, the AMA has effectively used social media to promote model aviation. The I FLY AMA Facebook group has grown and is becoming quite popular. AMA Executive Director Chad Budreau's short video updates is a well-viewed area.

Podcasts have been effective as well, in providing government relations information and interesting interviews of influential persons in our hobby.

I wanted to let you know that, at least at this point, the National Fun-Fly has not been canceled. Its dates are July 24, 25, and 26, 2020. The first 100 who sign up will receive a free T-shirt and a Saturday evening meal is planned for all directly after our national membership meeting. Hope to see you there.

Until then, fly if you can, build if you can't, and stay safe.

I

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District I

Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont

This was my first time attending and flying at District I's premier float-fly, hosted for its 24th year by the Southern New Hampshire Flying Eagles (SNHFE) on September 13-15, 2019, at Greenfield State Park in New Hampshire. This event attracts AMA members from throughout New England for RC flying on beautiful 135-acre Otter Lake from its 900-foot beach shoreline. The park has an area for overnight camping and parking of vehicles, trailers, and motorhomes.

There are restrooms, a boathouse where model airplanes can be charged, stored, or repaired, and an area with picnic tables near mobile food concessions. Each evening, the pilots got to sit around a huge fire where they enjoyed chitchatting about the hobby. The club provided buddy-box flying for newcomers, raffles for charities, retrieval boats, and designated pit areas and pilot flight stations for safe flying.

We set up the AMA shade structure with AMA handouts and magazines and Associate Vice Presidents Daren Hudson, Steve Brehm, and John Yassemedis, and I took turns answering any AMA or hobby-related attendees' questions. We also did some live video streaming of the event.

Club officers Ron Carey, president; Tim Sowder, vice president; Tim Campbell, secretary; Steve Lewis, safety officer; and members who are pictured below know how to run great events characterized by hospitality and meeting attendee needs.

Check the club's website for this year's event status at http://snhflyingeagles.org. We had a great time and hope COVID-19 is under control. Utilizing social distancing and other precautions, this event is scheduled to take place in September 2020.

Dan Weed flew his scale 112-inch Aeroworks Bravata.

Les Haley flew his 70-inch Sig 1939 WACO SRE.

Ray Breton flew his 84-inch Extreme Flight Bushmaster.

Rick Taylor flew his custom, classic Northeast Aerodynamics Train Air 40.

Rick Chapman flew his 72-inch Extreme Flight Muscle Coupe.

Zach Neumann with his E-flite Valiant.

SNHFE club officers and members held the 24th annual float fly at Greenfield State Park in New Hampshire.

District II

New Jersey, New York, Europe

I frequently hear about AMA members who owe their success to now-deceased mentors who took new modelers under their wings many years ago. I recently heard a wonderful story told by AMA member Scott Black, formerly of District II, who now resides in District VI.

As Scott tells it, "This is the man to whom I owe so much: Bruce Knox of the RC Aircrafters of Western New York. He's holding his own scratch-built pattern plane in this photo I took.

Bruce is the one who taught me how to fly and how to build in the late 1970s. I lived near Buffalo, New York, at the time—a teenager with no car.

"Bruce gave me a lot of balsa and parts to keep me going so I could build and fly. I was earning money by mowing grass and had a weekly paper route. If it weren't for Bruce helping me with what I needed, it could be weeks before I'd have the dollars I needed to rebuild my airplane each time I'd crash. Bruce has passed away now, so all I can do is pay it forward to honor this kind and helpful man. He was a top-notch modeler too."

I don't have room to tell all of the stories of fallen modelers who helped and mentored me and others over so many years, but I'll highlight two who taught me valuable lessons.

Among the individuals who mentored me was Robert "Teddy" Cozzens. Teddy was an AMA member and a professional craftsman, but also a gentleman who would gladly share and help others. His company built high-end trade show displays. Teddy was always helpful with building techniques, and in particular, finishing. Some of the models that appeared at Top Gun and other contests carried Teddy's graphics. I was a lucky recipient of Teddy's work on my airplanes. I'll always cherish his eagerness to give and share, and to help others with his knowledge.

Another individual who taught life lessons was Robert "Dusty" Miller. A World War II veteran, Dusty's quiet personality hid his generosity. Several of Dusty's airplanes had been stolen from his home. A few days later a father appeared at Dusty's doorstep with one of the stolen airplanes, while firmly grasping his young son's neck! After the father commanded the son to admit to Dusty that he was among several young thieves, Dusty asked a prophetic question.

Dusty asked if he stole the airplane because he wanted to steal something or because he liked model airplanes. After the boy sheepishly said he liked model airplanes, Dusty did a wonderful thing. He said that if the boy would come to his shop one day a week, he'd teach the boy about model airplanes. And, the boy did so.

It was marvelous that Dusty wanted to not just teach about airplanes, but to provide a life lesson for this young boy.

These mentors and others taught us not just how to build and fly models, but how to enrich the lives of others. The people whom these individuals helped have not forgotten what was done for them. These are lessons I try to carry forward every day and I hope you do too. If we can all be like Bruce, Teddy, and Dusty, our hobby will be in fine shape.

Remember, it's not about what you fly, it's about the friends you make.

II

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District III

Ohio, Pennsylvania, West Virginia

Last fall, I saw on Facebook that the Laurel Highlands Model Airplane Club (LHMAC) was hosting a fall fun-fly at the Ridgeview Golf Course in Ligonier, Pennsylvania. RC on a golf course? I loaded up the van on October 19, 2019, and drove to the Ridgeview Fall Fun Fly.

The LHMAC's regular flying field is Mammoth Park near Greensburg, Pennsylvania. One of the club members, Don Gilbert, is the manager of a golf course that closes in the fall for the season, so why not fly RC off the greens? Great idea!

Don opened the clubhouse to the modelers and served chili and hot dogs with plenty of desserts. It was a beautiful, sunny, fall day and the flying took place off of one of the courses with nicely manicured fairways. What a great place to fly!

Thank you LHMAC and Don for hosting this fun-fly in such a scenic setting.

On November 2, 2019, I punched off another bucket-list item when I flew in the 53rd annual Cumberland Aircraft Model Society (CAMS) RC Soaring event at Highpoint Aviation Field in Ridgeley, West Virginia. The history of this event is fascinating.

The property was first used as an airfield when legendary, record-holding modeler Maynard Hill used the site for an altitude record attempt in the fall of 1967. No record was set, but the experience of flying from the top of this scenic and beautiful mountain meadow was so amazing that everyone wanted to come back the next year just to fly for the fun of it, and so, the Annual Cumberland Soar for Fun was born.

In 1992, club member James Dolly purchased the land and spent countless hours and money improving the property to become one of the premier RC Soaring sites in America.

The fall weather was perfect with pilots from New York, Virginia, Illinois, Maryland, Ohio, Pennsylvania, West Virginia, and more in attendance. Being a Soaring novice, I was somewhat intimidated at seeing the huge models being flown by experts; however, my fears were lessened when I walked the flightline and found many modelers flying smaller foam and balsa electric-assisted gliders. Everyone offered help and advice to newcomers.

I experienced two types of Soaring in one day! In the morning, the thermal activity kept my glider aloft and in the afternoon, I experienced the wind blowing off the surrounding mountain slopes, holding my glider aloft. What a rush! I could go on and on about this event and the people.

If you want to experience fantastic RC Soaring, then this event in West Virginia is the place to go. For more information on the CAMS, visit www.camsrc.org. Thanks to James Dolly and the CAMS for hosting this great event. I'll be back!

Members of the LHMAC who flew in the fall fun-fly at the beautiful Ridgeville Golf Course in Ligonier PA.

Giant Scale gliders and the majestic mountainous region of West Virginia and Maryland.

The man responsible for High Point Aviation in the mountains of West Virginia is James Dolly. Those beautiful mountains in the background make for some fantastic soaring.

Until next month, fly safely and fly AMA.

District IV

Delaware, District of Columbia, Maryland,
North Carolina, Virginia

I pray that everyone is making it through this pandemic and that by the time you read this, we are well on the road to recovery and getting back to our normal lives.

We have had some great flying weather in North Carolina and I hope you have been able to be distracted from our condition by getting outside in the fresh air to fly while maintaining social distance and cleanliness. Instead of a handshake, I have seen a lot of greetings created from giving the high sign with your airplane to the Vulcan greeting, which is actually hard and funny for many to do quickly.

I'm sure we will all get through this with social distance awareness and hand washing/sanitizer (no, fuel doesn't work), and continuing for some time to come as general good practices. Be sure your flying site is equipped to offer these practices if at all possible or establish field rules to manage this and follow guidelines as they develop.

There haven't been any events happening to report so I'll bring you one from last summer that space didn't permit me to print. Jack Upchurch, president of the Eastern Shore Aeromodelers Club (EASC), brought us this report.

The Annual Jim Coll Control Line (CL) Stunt Contest was held on August 10-11, 2019, by ESAC at the new field in Vienna, Maryland. Club member Jim Coll was once the only CL pilot in the club, but his passion generated an active CL group that wanted to preserve his memory, beginning in 2009 with the first competition in his honor.

Jack Rosemere, the contest director (CD) and District IV CL coordinator and associate vice president (AVP), reported a total of 30 pilots. We added a new event this year (new to ESAC at least) called CL Navy Carrier.

Supervised by his wife, Jo, Everett Shoemaker,

CL Stunt participants at the Jim Coll event.

Everett Shoemaker ran CL Navy Carrier.

District IV AVP Mark Weiss holds a pilots' meeting.

the District IV CL Carrier Contest Board member, was on hand to set up and coordinate the Navy Carrier portion. They managed to complete the contest on Saturday despite having 10 pilots flying 14 airplanes in rounds.

This year, the Jim Coll event has grown to include Profile Stunt, Old-Time, and Carrier on Saturday, and Precision Aerobatics Model Pilots Association (PAMPA) Stunt on Sunday. Pilots came from Pennsylvania, Maryland, Virginia, and North Carolina.

ESAC hopes to expand the contest next year, maybe adding more events and expanding to three days. For more information about our club and events, visit www.eascclub.org.

Go fly, practice social distancing, wash your hands, and have fun safely.

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District V

Alabama, Florida, Georgia, Mississippi, Puerto Rico, South Carolina, Tennessee, US Virgin Islands

First off, a tip of the hat to our new Contest Director (CD) Chris Campos from Columbus, Georgia.

What a difference a few weeks makes! I attended the South Eastern Model Show in Perry, Georgia, and Florida Jets in Lakeland, Florida. They were likely my last events until the country gets restarted and back to some form of normalcy. If things go well, it's possible we are getting back to our daily lives by the time you read this. I can only hope.

In addition to myself, AMA District II Vice President (VP) Eric Williams, District IV VP Jay Marsh, Executive VP Randy Cameron, and Chief Financial Officer Keith Sessions, as well as AMA Headquarters staff member Tony Stillman were all in attendance at Perry to answer members' questions. Tony's wife ran the AMA booth selling AMA merchandise.

The event organizers made a space available for us to have a roundtable meeting with members or guests interested in asking the status of the Remote ID notice of proposed rulemaking (NPRM). Roughly 20 people attended and asked some excellent questions. I'm learning a lot in a short time, and it was nice to be around people who have been fighting for our rights for several years.

Florida Jets was well attended with 125 pilots. Because we were just on the leading edge of the COVID-19 situation, the event went on as scheduled. That noted, everyone kept a respectful distance from each other and hand sanitizer flowed liberally. Organizer Frank Tiano puts on a great event and the weather was a perfect mix of moderate temperatures and light wind.

STEM

I mentioned STEM as one of my priorities and District I Associate Vice President (AVP) Daren Hudson reached out to inform me that the SAE Aero Design Competition was happening at Paradise Field (home of Florida Jets) in District V on March 6-8, 2020. Sponsored by Lockheed Martin, the design competition is for college teams to compete in design and flight challenges and network with executives from the various sponsors.

Each team has a mentor and pilot who must be current AMA members, and I have received reports from several individuals who acted as mentors. They relayed a wonderful experience working with the students.

The competition alternates between Texas and Florida each year and the next time it comes to Florida, I plan to attend.

Engineering students at the SAE Aero Design East competition in Lakeland FL.

I ran into Hope Finn, from Butler GA, flying Free Flight models in the indoor flying area at Perry GA.

As a turbine/CD holder, I had the opportunity to help a group of new jet pilots achieve their turbine waivers. From the left are Corey Chevalier of Orange Park FL; me; Warren Bio of Orange Park; Mike Stanley, the other turbine/CD and Bo Joiner, both of Jacksonville. Thanks to Gateway RC for allowing us to use its excellent facility for a waiver sign-off day.

District VI

Kentucky, Illinois, Indiana, Missouri

Hello June. As I am writing this, the future is more uncertain than I have ever experenced! As I have previously noted, I am writing this nearly two months ahead of publication. For this month it is the evening of March 31 and the only thing on TV news is coronavirus, and the most depressing is the experts don't think that this will peak for another few weeks. I pray that by the time you are reading this, things will be returning to normal—if they can ever be normal again.

This month, I only received one submission, therefore, I will share more pictures. This was submitted by Kevin L. Cox Sr. of the Phantom Flyers RC Club in Saint Charles, Missouri.

September 28-29, 2019, was the club's 62nd annual Pattern Contest. The members and their spouses go out of their way to make the visitors feel as though they are part of the club!

As the club's editor/photographer I try to capture the energy of the event. As an RC pilot, I have a lot of respect for the effort and long practice sessions that take place for each of the contestants throughout the season to stay competitive.

Because of the coronavirus pandemic, I expect submissions to be nonexistent because of canceled events. Therefore, I am making the following request. Send me a short write-up and a few pictures from one of your club's events from last year. Heck, it doesn't even need to be a club event! It could be a short write-up about your club and pictures from the flying and camaraderie during a weekend gathering.

Remember, to see your club in the magazine, simply send me a submission by email to amadistrictVI@modelaircraft.org with the word "magazine" in the subject line.

To this point, I have put every submission received into the magazine. I promise to continue doing that even if I am drowning in submissions!

I will end by asking you to introduce someone to model aviation, whether it is on a buddy box or on your simulator!

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District VII

Iowa, Michigan, Minnesota, Wisconsin

As I write this column in early April, quite a few of us remain under stay-at-home orders and social distancing because of COVID-19.

Many flying fields are closed and gatherings of more than 10 people are prohibited. Quite a few events have been canceled or postponed. Needless to say, model aircraft flying, for the most part, is on hold for the time being.

There has probably not been a better time to head to your shop and get to some of those projects that have been put on hold. Home is about the safest place we can be until this pandemic blows over, so go ahead and take out that old kit you'd been thinking about building or take a crack at repairing a wrecked model that's been gathering dust in a corner. You might be surprised to see it wasn't as bad as you first thought.

Regardless of what you do, please take every precaution to stay healthy and safe. The virus isn't going to last forever and I look forward to seeing you at a flying field once we get it in our rearview mirror.

Rather than present an outdated event report, I'd prefer to send a few pictures taken in happier times throughout the years.

Take a kid flying—as soon as you can!

District VIII

Arkansas, Louisiana, New Mexico, Oklahoma, Texas

I hope that by the time this gets to you, we will be back on the fields again. Events have been canceled and rescheduled as we try to get back to normal. Stay safe guys and girls. Check https://amadist8.com for the latest information.

The Texarkana R/C Club held a swap meet in late February. Those who attended included Associate Vice President (AVP) Stan Kopreski; AVP Johnny Hunt; SHARKS RC Club vice president (VP) Terry Monroe; Dale Womack, president of the FARM RC Club; AVP Gary Strickland; president Corey Ashley of Mena RC; Daniel Bowman; District VIII VP Lawrence Harville; AVP Stew Moore; and Clay Mitchell, president of the Texarkana Club.

(L-R) Miles, 4, and Mason, 7, are with their mom, Marina, and dad, Mike Willcox. Mike is the 2002 F2D World Champion. Also shown are VP Lawrence Harville; Rylan Ritch, current F2D Junior World Champion; Rylan's dad, AVP Randy Ritch; and Larry Skelley of Benton AK. The Willcox family all fly Control Line Combat. Miles was in the Combat circle flying as I walked up at the 2019 Nats.

Bob Galway at a fun-fly event held in March by the Small Model Aircraft Society of Harlingen TX. Photo by AVP Bruce Landsman.

Passing it on—Lewie Moore and his 12-year-old grandson, Spenser.

The turnout was outstanding at the 2019 Georgetown RC Club Pattern Contest.

Big boys come out to play! Edwin Lacayo, Alex Rios, Kelly Conway, Trinty Lopez, Dave Horton, Joe Doucet, Chuck Ezell, and Harold Davis.

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District IX

Colorado, Kansas, Nebraska, North Dakota, South Dakota, Wyoming

My first order of business is to apologize for a couple of mistakes I made in previous columns. My thanks to those of you who set me straight.

In my March column, I managed to spell Lindel Gilden's name two ways in one paragraph. In the April issue, I identified Ken Davis as the president of the LAMA club. Current LAMA president is Chris Doerr. I'm so sorry for these rookie editing mistakes.

"May you live in interesting times," is said to be an ancient curse. As I write this in April, most of the country is sheltering at home and practicing social distancing. The mandates make it hard on small businesses, and our local hobby shops are among those trying to adapt.

I reached out to a few of the District IX hobby shops to see how this new business paradigm affects them. Here are a few words from some of them.

"It's a challenge, but small business has always been a challenge in the many years we've served this community. In fact, we are celebrating our 70th business anniversary this year. We are still here and operating as nearly normal as we can. We follow the social distancing rules and only let a few people in the door at one time. We also will deliver curbside. Whatever it takes, we'll adapt. This is not our first rodeo."

Owner Clancy Kingsbury is at the helm of Who's Hobby in Rapid City SD.

—Clancy Kingsbury, owner of Who's Hobby House in Rapid City, South Dakota

"We're doing well. Our door is always open within the given guidelines. With everyone at home, people need things to do. We have a huge variety of those kinds of projects families can do together. Our core hobbyists are stocking up on projects and kits since they now have a few more hours in the man cave."

—Mark Erdmann, Hobby Hut in Fargo, North Dakota

"We're adjusting to the new routine. We currently deliver curbside, following guidelines as they evolve. We will make it work—we always have. I've had a few people tell me that we should be considered an essential business because we keep people supplied with materials that contribute to their peace of mind and well-being."

—Chris Nielson, Hobby Hut Models, Grand Junction, Colorado

We do not want to lose these essential resources that enable our hobby. I encourage you to patronize these stores and the local hobby shops in District IX that didn't make my impromptu interview list. I did not purposely leave anyone out.

North Dakota Associate Vice President (AVP) Brandon Koch turned in this report about a trip to Utah:

I made a trip to Utah for the Remote Possibilities RC Club's Presidents' Day Fly-In. Also attending was South Dakota AVP Terry Wiles. While at that event, we were asked by our hosts, Andrew Taylor and Kyle Dahl, if we'd like to try Slope Soaring. We trekked to Andrew and Kyle's favorite soaring spot. After a quick tutorial, we had our borrowed aircraft in the air.

These Utah pilots flew Discus Launch Gliders, the 3m Fox from Horizon Hobby and a small foam 3D glider called an Ahi with which Andrew was able to do a knife-edge spin!

We have since bought a few smaller gliders to try and are hoping we can find a few high spots to launch when the wind shuts down other flying.

I encourage anybody who has never tried Slope Soaring to find your nearest club. I guarantee it will be worth your time and you just might share our enthusiasm. For additional pictures and video of the area we checked out, look up Southern Utah Soaring on Facebook.

Andrew Taylor gets a little help launching his 3m Fox Slope Soarer.

District X

Arizona, California, Guam, Hawaii, Nevada, Utah

I am writing this in early April, in the midst of the COVID-19 pandemic. I hope you and your loved ones are safe from this scourge and that by the time this reaches you, we have turned the corner and are doing better.

It's easy to fly our models and safely social distance, so I hope you are able to do so during this difficult time. We have had to cancel our third annual District X Fly-In, which we had planned for May 1-3, 2020, at Bennett Field in Las Vegas. COVID-19 concerns just made holding the event impossible, but I promise we will hold it next year.

We are still planning to hold AMA Expo 2.0 November 6-8, 2020, at Whittier Narrows in Southern California. I will have more information about the event soon. I want to have something we can all look forward to when this passes.

This year's Arizona Electric Festival (AEF) was the 16th iteration of this annual event sponsored by the Arizona Model Aviators. The club's field is located on the northeast corner of the Phoenix metropolitan area. Starting when electric models were still mostly small and powered by NiMH batteries, this event has grown from showcasing electric-powered models to celebrating electric modeling as a large portion of model sales and presence at the flying field.

This year's contest director (CD) was Shannon Gallagher, who is also this year's Arizona Model Aviators' club president. His assistant CD was Pat Gagnon. Club member John Mangino played the role of flightline safety officer. You could tell that this group, and the members of the Arizona Model Aviators, had done all this before. It was a great event from start to finish.

Besides the months of planning that resulted in several suppliers participating in the vendor area, flight demos from several demo teams and pilot prizes for all of the registered pilots, this year's weather added to the event's success. With clear blue skies, light breezes, and daytime highs in the 60s, the event weekend of February 7-9, 2020, showed why so many winter visitors choose the Valley of the Sun.

The AEF is a one of the largest flying events in District X. This year's gathering attracted more than 90 pilots from throughout the Southwest, as well as the chilly north country. Along with the large group of pilots, the spectator stands were filled. The event parking supervisor said he'd counted more than 270 vehicles in the parking area.

There were short lines for the flight stations on Saturday and there were always aircraft entertaining the crowds. The tarmac was overflowing, with a variety of airplanes including foam, balsa, and film, as well as those with fiberglass construction.

As always, some of the big crowd-pleasers were unique and included scratch-built models such as Alan Piercy's large B-36 Peacemaker and Jeremy Solt's heavily modified AL37 airliner, which took the field as a four-engine KC 135 Stratotanker with an extending boom.

For those planning a February visit to the Phoenix area, attending the AEF as either a pilot or spectator will be well worth your time.

My thanks to Jim Mohan for his coverage and photos of the AEF.

Jeremy Solt and his son, Kyler, from Utah, return to the pits with their KC-135. Kyler flies formation with an F-16 to simulate refueling.

The AEF flightline is packed with more than 100 electric models.

Until next month, I wish you all happy landings and to stay safe.

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District XI

Alaska, Idaho, Montana, Oregon, Washington

This has been quite a month! I'm writing this on April 5 and we have finished our comment period for the FAA proposed rule for Remote ID. We are in the middle of the COVID-19 pandemic, and it snowed this morning!

Two days ago, with the help of my associate vice presidents (AVPs), I made the tough decision to cancel the 2020 AMA Northwest Jamboree and we have also had many more events canceled.

With everything going on, it is easy to get discouraged, but there is a lot to look forward to. Get out and fly! It is great to get outdoors and enjoy the hobby, even if you can't attend the big events.

I'm going to practice my scale flying maneuvers. Maybe I can finally get a 10 for my Figure Eight (it's a tough one!). You can clean the shop or do some building. Many aspects of the hobby are still available. I've even cleaned up and put some glue on the Der Jager wing today!

AVP David Agar wrote:

This past weekend saw me on the road to Seattle for the Lake Sawyer Hawks annual model aircraft display at the Museum of Flight. I was met at the door by Steve Ashmore, the event organizer, and Randy Liny, the club president. They gave me a tour and pointed out the highlights.

There were dozens of tables full of airplanes, a movie theater with videos of the club's activities, and a simulator for the public to test out RC flight. The local Soaring group had the back wall of the room covered with sailplanes.

I was impressed with the builders' skills. There was a J-3 Cub that has the fuselage built out of stainless-steel tubing all welded together. The downside was that all of this skillful labor had been covered and painted so it was hard to see. I will be waiting on a flight report.

Because I had brought an airplane to put on display, I was given free entrance to the museum. The Museum of Flight is definitely a bucket-list item. They have just opened a Vietnam memorial using a restored B-52. The building also displays some RC airplanes that have been built by modelers. I had a great time and I am looking forward to next year.

AVP Tom Strom Jr. has been working on a B-25. He converted this ARF from an American livery to British. Here are a couple pictures. I look forward to seeing it fly later this year.

That's all for this month. Remember, keep flying!

Clubs and Membership

By Ilona Maine, Clubs director | ilonam@modelaircraft.org

"Any pilot can describe the mechanics of flying. What it can do for the spirit of man is beyond description."

—Barry Goldwater

I recently saw a meme on social media that said the year 2020 was shaping up to be quite a special leap year: 29 days in February, 300 days in March, and 5 years in April. With that noted, as I sit here, writing my article, it feels as though we are roughly six months into April.

I am grateful for the ability to work from home and still provide customer service to our members and clubs. I hope that by the time you read this, things are (slowly) starting to return to normal.

The annual March 31 deadline for club charter renewals has come and gone. Thank you to all of the clubs that have renewed for the 2020 charter year. If you have been holding off on renewing because of the uncertainty of the times, now might be a good time. If you misplaced your renewal documents, please email us at clubs@modelaircraft.org and we can resend them to you.

Did you have a chance to join some of our live video feeds? Aside from the *AMA Air* livestreaming from hosts Matt Ruddick's and Claire Aldenhuysen's living rooms, we've also hosted some additional sessions addressing chartered clubs, sanctioned events, competition rules, and many other topics. If you have a topic that you would like for us to discuss, please let us know and we will do our best to work it into the lineup.

I would love to hear how your club navigated the last few months with social distancing and local/state ordinances in place.

How did you stay in touch with your club members? Did you hold virtual meetings? Did you or your property owner close your club flying site, or were members able to fly with the appropriate safety precautions in place? Have you rescheduled club events? What are your club's post-COVID-19 pandemic plans? We'll share your experiences through our various communication channels to provide ideas and resources to other clubs.

I can't pass up the opportunity to introduce the Clubs department. Whether you are a longtime club officer or have been recently elected, I am sure you have communicated with Lois Mock, AMA's chartered club coordinator.

Lois has been with AMA for 27 years and has overseen the chartered club program just as long. She knows all the ins and outs of the program and can practically charter a club in her sleep. Lois also administers AMA's Introductory Pilot Program.

Lisa Johnson has also been with AMA for 27 years. She has worked in various departments, allowing her to gain a lot of organizational knowledge, which makes her a great asset to AMA. She joined the Clubs department in 2011 and is our clubs/claims coordinator. Lisa's main responsibility is assisting members when they need to file an insurance claim, and she also plays an important role with club charter renewals. Because our department is taking over the Flying Site Assistance program from Tony Stillman, she will be heavily involved in overseeing and developing that program.

I started working for AMA in 1999 in an entry-level position. Throughout the years, I've worked with the AMA Safety Committee, coordinated AMA's Grand Event when it was hosted by local clubs, and administered the Turbine and Large Model Airplane programs.

With 21 years at AMA, my two main responsibilities are AMA's club chartering program and member/club insurance benefits. During my tenure, I have learned a lot about model aviation. I don't fly. People have tried to teach me, but I have never graduated from buddy-box flying (it's better for everyone's safety!) Nevertheless, I have made many friends throughout the years, and that is one of the reasons why model aviation is important to me.

I have a few topics in mind for future columns, including things such as an annual walk-through of your flying site to look for safety problems, why having and following your club's bylaws is important, club insurance, etc. But I want to touch on subjects you want to read about, so please send me your suggestions and questions.

I hope you'll all soon be cleared for takeoff!

AMA ENROLLMENT FORM

SIGNING UP ONLINE IS EASY, VISIT WWW.MODELAIRCRAFT.ORG/JOINAMA TODAY!

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ACADEMY OF MODEL AERONAUTICS NATIONAL MODEL AIRCRAFT SAFETY CODE

Effective January 1, 2018

A model aircraft is a non-human-carrying device capable of sustained flight within visual line of sight of the pilot or spotter(s). It may not exceed limitations of this code and is intended exclusively for sport, recreation, education and/or competition. All model flights must be conducted in accordance with this safety code and related AMA guidelines, any additional rules specific to the flying site, as well as all applicable laws and regulations.

As an AMA member I agree:

- I will not fly a model aircraft in a careless or reckless manner.
- I will not interfere with and will yield the right of way to all human-carrying aircraft using AMA's See and Avoid Guidance and a spotter when appropriate.
- I will not operate any model aircraft while I am under the influence of alcohol or any drug that could adversely affect my ability to safely control the model.
- I will avoid flying directly over unprotected people, moving vehicles, and occupied structures.
- I will fly Free Flight (FF) and Control Line (CL) models in compliance with AMA's safety programming.
- I will maintain visual contact of an RC model aircraft without enhancement other than corrective lenses prescribed to me. When using an advanced flight system, such as an autopilot, or flying First-Person View (FPV), I will comply with AMA's Advanced Flight System programming.
- I will only fly models weighing more than 55 pounds, including fuel, if certified through AMA's Large Model Airplane Program.
- I will only fly a turbine-powered model aircraft in compliance with AMA's Gas Turbine Program.
- I will not fly a powered model outdoors closer than 25 feet to any individual, except for myself or my helper(s) located at the flightline, unless I am taking off and landing, or as otherwise provided in AMA's Competition Regulation.
- I will use an established safety line to separate all model aircraft operations from spectators and bystanders.

For a complete copy of AMA's safety programming handbook, please visit: **www.modelaircraft.org/files/100.pdf.**

No. 1118: Infield Engineering TBD-1 Devastator: Paul Kohlmann's 60-inch wingspan warbird is powered by a 650 Kv brushless motor and 4S 3,700 mAh LiPo battery.....$27.00

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No. 1116: SkySpringer: Clark Salisbury's 40-1/2-inch wingspan electric beginner airplane uses a 1,080 Kv brushless motor and three-cell 1,300 mAh LiPo. $14.00

No. 1115: Turn-E-Cat: Mike Hausner's 39-inch wingspan electric Pylon racer is constructed using MPF foam. $8.00

No. 1114: Fidget: Al Clark's aircraft is specifically designed for the Galloping Ghost radio control system $10.00

No. 1113: Curtiss SB2C Helldiver: Pat Trittle's 48-inch wingspan warbird is guided by four channels and powered by an outrunner motor and 2S LiPo battery $18.00

Full-size plans list available. A complete listing of all plans previously published in this magazine through no. 1118 may be obtained for $2.00 from the AMA Plans Service, 5151 E. Memorial Dr., Muncie IN 47302; ph: (800) 435-9262, ext. 507; email: planservice@modelaircraft.org. Plans listings, photos, and printable order forms are also available online at www.modelaircraft.org/plans.aspx.

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Product Spotlight: Worth a Closer Look
We have found some of these items on our own, but many have been brought to our attention by outside sources. If you have a product or service that you feel might be "worth a closer look," contact *MA* Executive Editor Jay Smith by email at jays@modelaircraft.org.

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Manufacturers and distributors should include their mailing address, telephone number or email, a website address, and the purchase/retail price of the product for the consumer.

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Model Aviation's *Frequently Used Abbreviations/Acronyms*

ARF	Almost Ready to Fly
BEC	Battery Eliminator Circuit
BNF	Bind-N-Fly
CA	cyanoacrylate glue
CAD	computer-aided design
EAA	Experimental Aircraft Association
EPP	(foam) expanded polypropylene
EPO	(foam) expanded polyolefin
EPS	(foam) expanded polystyrene
ESC	electronic speed control
FAA	Federal Aviation Administration
FPV	First-Person View
LCD	Liquid Crystal Display
LED	light-emitting diode
LiFe	Lithium Iron Phosphate
LiPo	Lithium Polymer
Nats	National Aeromodeling Championships
RC	Radio Control
RTF	Ready to Fly
SIGs	Special Interest Groups
STEM	Science, Technology, Engineering, and Math
STEAM	Science, Technology, Engineering, Art and Math
sUAS	Small Unmanned Aircraft Systems
UAS	Unmanned Aircraft Systems
UAV	Unmanned Aerial Vehicle

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ARKANSAS
06/4/2020 - 06/7/2020 - Mayflower, AR (C) S.M.A.L.L. Site: Arkansas Sky Tigers Field 855 Arkansas River Trail. Mr Pavel Plechacek CD/EM PH: (501)269-2914. Email: pavelp1971@yahoo.com. Visit: www.arskytigers.com. Sponsor: ARKANSAS SKY TIGERS.

06/13/2020 - 06/14/2020 - Wrightsville, AR (AA) LOST SQUADRON IMAC. Site: FRATERNAL ASSN OF RC MODELERS FARM 7158 Lost Squadron Dr. Mr Dale E Womack CD/EM PH: (501)257-7925. Email: daleflysrcp47@basicisp.net. Sponsor: FRATERNAL ASSN OF RC MODELERS FARM.

06/20/2020 - 06/21/2020 - El Dorado, AR (A) GRIZZLEY BEAR IMAC CONTEST . Site: TRI CITY RC MODELERS 742 Industrial Rd. Mr Rick W Crow CD/EM PH: 406-559-6662. Email: rwcrowjr@gmail.com. Visit: mini-iac.org. Sponsor: TRI CITY RC MODELERS.

CALIFORNIA
06/4/2020 - 06/6/2020 - Hemet, CA (C) BIGGEST "LITTLE" JET RALLY IN THE WEST. Site: Hemet Model Masters Airpark - Simpson Field 6601 Simpson Rd. Mr Mario D Muniz Sr. CD/EM PH: (909)969-1003. Email: mmkarbiz2@gmail.com. Visit: www.hemetmodelmasters.net.

06/5/2020 - 06/7/2020 - San Diego, CA (CRST) UAS4STEM. Site: SEFSD Rotorplex at Mission Bay South Shores Pky. Mr Jim A Bonnardel CD/EM PH: (858)292-5518. Email: jbonnardel@earthlink.net. Sponsor: SILENT ELECTRIC FLYERS OF SAN DIEGO.

06/6/2020 - 06/7/2020 - Isleton, CA (AA) WEST COAST CHALLENGE IMAC. Site: TRCM 18303 Tyler Island Rd. Mr Mark L Huntley CD/EM PH: (916) 529-1279. Email: mark@huntleyfamily.net. Visit: www.tokayrcmodelers.com.

06/6/2020 - Rancho Cordova, CA (AA) SIERRA CHAMPIONSHIPS. Site: 6551 Sunrise Blvd. Mr Chris Borland CD/EM PH: (916)457-4469. Email: candjborland@surewest.net. Sponsor: SIERRA EAGLES.

06/6/2020 - 06/7/2020 - Silverado, CA (C) 14TH ANNUAL WARBIRDS AND CLASSICS SCALE FUNFLY. Site: Bob Swenson Memorial Field 5305 Santiago Canyon Rd. Mr John Randall O Wilbur CD/EM PH: (949)683-9662. Email: rwilbur@videotecheng.com. Visit: scalesquadron.com. Sponsor: SCALE SQUADRON OF SOUTHERN CA.

06/6/2020 - 06/7/2020 - Riverside, CA (C) IERCC SUMMER HELI BASH. Site: 11401 Arlington Ave. Mr Thomas S Rogers CD/EM PH: (909)772-6831. Email: ts.rogers9o9@gmail.com. Visit: iercc.net. Sponsor: INLAND EMPIRE RADIO CONTROL CLUB.

06/13/2020 - 06/14/2020 - South El Monte, CA (AA) BILL NUSZ SPEED & HERB STOCKTON RACING MEMORIAL. Site: Whittier Narrows Recreation Area 750 S Santa Anita Ave. Mr Joe A Brownlee CD/EM PH: (714)393-1940. Email: jallenbrownlee@gmail.com. Sponsor: CL SPEED FLYERS OF SOUTHERN CA.

06/13/2020 - San Carlos, CA (DEMO) BIGGEST LITTLE AIRSHOW. Site: Hiller Aviation Museum 601 Skyway Rd. Mr David S Neves CD/EM PH: (510)673-4467. Email: rcheliguy7@gmail.com. Visit: hiller.org. Sponsor: BAYSIDE RC CLUB INC.

06/14/2020 - Perris, CA (AMA) ORBITEERS MONTHLY . Site: Taibi Field 26075 San Jacinto Ave. Mr Michael Pykelny CD/EM PH: (858)748-6235. Email: mpykelny@hotmail.com. Visit: www.sandiegoorbiteers.com. Sponsor: SAN DIEGO ORBITEERS.

06/27/2020 - 06/28/2020 - Visalia, CA (AA) CVRC SOARING BENTWING CONTEST. Site: Central Valley RC Soaring Field 8400 Ave 320. Mr Phil D Hill CD/EM PH: (559)217-4655. Email: phil.hill.48@gmail.com. Visit: www.cvrcsoaring.com. Sponsor: CENTRAL VALLEY RC SOARING CLUB.

COLORADO
06/6/2020 - Strasburg, CO (C) OPEN HOUSE. Site: MILE HI RC 52860 E Quincy Rd. Mr David M Weiss CD/EM PH: (303)549-5778. Email: davemw@q.com. Visit: www.milehirc.com. Sponsor: MILE HI RC.

06/12/2020 - 06/14/2020 - Littleton, CO (C) WARBIRDS & CLASSICS OVER DENVER. Site: Chatfield State Park 11500 N Roxborough Park Rd. Ms Lora K Knowlton CD/EM PH: 303-973-1209. Email: cocoug@aol.com. Visit: warbirdsoverdenver.com. Sponsor: JEFCO AEROMODLERS CLUB.

06/20/2020 - 06/21/2020 - Golden, CO (AA) 2020 COLORADO PATTERN CHALLENGE. Site: AAM Airpark 7608 Hwy 93. Mr Joseph F Pirozzoli CD/EM PH: (303)422-0290. Email: jfpirozzoli@gmail.com. Visit: www.arvadamodelers.com. Sponsor: ARVADA ASSOCIATED MODELERS.

06/26/2020 - 06/27/2020 - Ault, CO (C) ROCKY MOUNTAIN BIG BIRD FESTIVAL. Site: Drake Field 12760 14th Hwy. Mr Van G Kratzenstein CD/EM PH: (970)330-7670. Email: marvanaircraft@comcast.net. Visit: loveair rc org. Sponsor: LOVE-AIR R/C CLUB.

CONNECTICUT
06/6/2020 - Farmington, CT (C) 6TH ANNUAL FARMINGTON VALLEY WARBIRD FLY-IN. Site: 3 Meadow Rd. Mr Peter R Church CD/EM PH: (860)276-8102. Email: peterchurch@cox.net. Visit: www.ccrcclub.com. Sponsor: CENTRAL CONNECTICUT RC CLUB.

06/13/2020 - 06/14/2020 - Salem, CT (C) MEMORIAL FUN FLY. Site: 479 Norwich Rd. Mr Shane M Duffy CD/EM PH: (860)908-7096. Email: shane-m-duffy@hotmail.com. Sponsor: RC PROPBUSTERS INC.

06/27/2020 - Farmington, CT (C) DON WILD MEMORIAL CUBS AND CLASSICS FUN-FLY. Site: 3 Meadow Rd. Mr Craig Korsen CD/EM PH: (860)559-3228. Email: cbk07@yahoo.com. Visit: ccrcclub.com. Sponsor: CENTRAL CONNECTICUT RC CLUB.

DELAWARE
06/6/2020 - 06/7/2020 - Newark, DE (A) ESL-SKSS ALTITUDE LIMITED ELECTRIC SOARING (ALES). Site:143 Fairhill School Dr Anthony R Guide CD/EM PH: 717.870.9684. Email: tonyg66@yahoo.com. Visit: skss.org. Sponsor: SILENT KNIGHTS SOARING SOCIETY.

FLORIDA
06/6/2020 - 06/7/2020 - Land O Lakes, FL (AA) 24TH ANNUAL SPRING CLASSIC IMAC CONTEST. Site: BCF Area 52 Flying Field @ Conner Preserve 22500 State Rd 52 Dr Gregory C Baggerly CD/EM PH: (813)310-3182. Email: gbaggerly@gmail.com. Visit: baycityflyers.com. Sponsor: BAY CITY FLYERS, INC.

06/6/2020 - Dunnellon, FL (C) 11TH ANNUAL TRI-COUNTY ELECTRIC FLY IN. Site: Rainbow RC Airpark 11729 Bridges Rd. Mr Bruce D Richardson CD/EM PH: 352-425-9976. Email: brucerpda@earthlink.net. Visit: www.tricountyrcclub.homestead.com. Sponsor: TRI-COUNTY RC CLUB.

06/9/2020 - 06/10/2020 - Palm Bay, FL (AMA) FMA JUNE RECORD TRIALS. Site: FMA - Sopadilla Rd 2190 Sapodilla Rd SW. Mr Duncan McBride CD/EM PH: (239)437-0065. Email: n319dm@gmail.com. Sponsor: FLORIDA MODELERS ASSOCIATION.

06/13/2020 - Riverview, FL (C) PREMIER WARBIRD FLY-IN. Site: Triple Creek RC Field 12705 Balm Boyette Rd Dr. Malcolm R Greenberg CD/EM PH: 989-798-0536. Email: mirogflyer@aol.com. Visit: www.triplecreekrc.com. Sponsor: TRIPLE CREEK RC.

GEORGIA
CANCELED
06/5/2020 - 06/7/2020 - Andersonville, GA (AA) PEACH PATTERN CLASSIC. Site: Hodges Field 428 Neil Hodges Rd. Mr Robert G Campbell CD/EM PH: (850)499-7095. Email: rgc1701@gmail.com. Visit: www.hodgeshobbies.com. Sponsor: EGLIN AERO MODELLERS and MILL CREEK AERODROME, INC.

CANCELED
06/11/2020 - 06/13/2020 - Andersonville, GA (C) WARBIRDS OVER GEORGIA. Site: Hodges Field 428 Neil Hodges Rd. Mr Mike Chilson CD/EM PH: (205) 306-7164. Email: emailme@mikechilson.com. Sponsor: CENTRAL ALABAMA SPORTFLIERS.

06/13/2020 - 06/14/2020 - Whitesburg, GA (AA) CHATTAHOOCHEE CHALLENGE. Site: NGTurf Sod Farm 1487 Black Dirt Rd. Mr James A Altenbern CD/EM PH: 864-398-0303. Email: jaltenbern0705@charter.net. Visit: www.thermalthumbers.com. Sponsor: THERMAL THUMBERS OF METRO ATLANTA.

06/20/2020 - Dunwoody, GA (A) JUNE INDOOR. Site: Saint Luke's Presbyterian Church 1978 Mt Vernon Rd. Mr Nicholas A Ray CD/EM PH: 865-368-3820. Email: lasray@gmail.com. Visit: www.thermalthumbers.com. Sponsor: THERMAL THUMBERS OF METRO ATLANTA.

06/26/2020 - 06/28/2020 - Menlo, GA (C) RED, WHITE & BLUE FUNFLY. Site: 1215 Sunnydale Rd. Mr Timothy B Williams Sr. CD/EM PH: (423)595-9023. Email: tim309will@yahoo.com. Sponsor: BIG SKY R/C CLUB.

IDAHO
06/6/2020 - Pocatello, ID (A) RED BARON'S TURKEY SHOOT. Site: GEISLER FIELD 1950 Boeing Ave. Mr Randy K Shiosaki CD/EM PH: (208)785-6691. Email: shiosaki@cableone.net. Sponsor: EASTERN IDAHO AEROMODELERS and RED BARON RC MODELERS.

06/24/2020 - 06/28/2020 - Moscow, ID (AAA) KIBBIE DOME ANNUAL. Site: KIBBIE DOME 711 S Rayburn St. Mr Jake A Palmer CD/EM PH: (360)545-3113. Email: 82.jake@gmail.com.

ILLINOIS
06/6/2020 - 06/7/2020 - Elwood, IL (A) CHUCK MACK MEMORIAL PATTERN CONTEST. Site: 17415 West Bernhard Rd. Mr Raymond V Shroba IV CD/EM PH: (815)258-1618. Email: president.jolietrc@gmail.com. Visit: jolietrc.com. Sponsor: JOLIET RADIO CONTROL CLUB INC.

06/6/2020 - Pontoon Beach, IL (C) ALL-ELECTRICS FLY-IN (DANNY URBECK MEMORIAL). Site: 285 Bruns Rd. Mr Stanley J Marmuziewicz Jr. CD/EM PH: 618-741-1926. Email: soarin2007@live.com. Visit: http://midwestairwingrc.com/events. Sponsor: MIDWEST AIR WING R/C CLUB.

06/13/2020 - 06/14/2020 - Streator, IL (C) DAVE GOERNE MEMORIAL FUN FLY. Site: Streator RC Field 1248 E 15th Rd. Ryan L Hinton CD/EM PH: (815)341-3369. Email: catfish25p2000@yahoo.com. Sponsor: STREATOR RC FLYERS.

06/18/2020 - 06/20/2020 - St. Charles, IL (C) WINDY CITY WARBIRDS AND CLASSICS. Site: 3821 Karl Madsen Dr. Mr Armin Weber CD/EM PH: (630)697-0992. Email: aweberp47@gmail.com. Visit: foxvalleyaero.com. Sponsor: FOX VALLEY AERO CLUB.

CANCELED
06/20/2020 - Roscoe, IL (C) FLOAT FLY. Site: Chickory Ridge Lake 11123 Chickory Ridge Way. Mr Orv S Steinmetz CD/EM PH: 815 988 6583. Email: skyhawker6@gmail.com. Visit: rockvalleyr/cflyers.club.com. Sponsor: ROCK VALLEY RC FLYERS.

06/20/2020 - Pawnee, IL (C) SANGAMON VALLEY RC FLY IN. Site: Holmes Airstrip 7800 N Pawnee Rd. Mr Gary E Stevens CD/EM PH: (217)691-2224. Email: therossiman45@gmail.com. Visit:

SANCTIONED EVENT CALENDAR

svrcflyers.com. Sponsor: SANGAMON VALLEY RC FLYERS.

06/26/2020 - 06/28/2020 - Decatur, IL (C) GLOW PLUG PALOOZA. Site: 4814 Cundiff Rd. Mr Michael I Ramsey CD/EM PH: (973)945-9956. Email: milehipilot@gmail.com. Visit: http://glowplugpalooza.com. Sponsor: DECATUR AEROCOMMANDERS R.C INC.

CANCELED

06/26/2020 - 06/28/2020 - Erie, IL (C) RC FLIGHT FEST 2020. Site: Erie Air Park 8689 Star Rd Neal F Zahn CD/EM PH: 309-507-9012. Email: erieclubrc@gmail.com. Sponsor: ERIE RC CLUB.

06/27/2020 - 06/28/2020 - Hoffman Estates, IL (AA) TRI VILLAGE PATTERN CONTEST. Site: 3000 Shoe Factory Rd. Mr Robert G Satalino CD/EM PH: (847)987-9516. Email: bobrcair@comcast.net. Sponsor: TRI VILLAGE RCERS.

INDIANA

06/6/2020 - 06/7/2020 - Muncie, IN (AAA) NOFFA/HOOSIER CUP FREE FLIGHT. Site: International Aeromodeling Center 5161 E Memorial Dr. Mr James F Gaffney CD/EM PH: (440)937-7790. Email: jamesfgaffney@hotmail.com. Sponsor: NORTHERN OHIO FREE FLIGHT ASSN.

06/6/2020 - 06/7/2020 - Muncie, IN (A) MCCOOK FIELD SQUADRON FAC MEET. Site: International Aeromodeling Center 5161 E Memorial Dr. Mr Patrick M Murray CD/EM PH: 317-410-2200. Email: pmurray@centerlinedesignllc.com. Visit: flyingacesclub.com. Sponsor: CENTRAL INDIANA AEROMODELLERS.

06/6/2020 - Winamac, IN (C) FLYING FLEA MARKET. Site: Braun Field 238 South 100 W. Mr Stanley Zolodz CD/EM PH: (219)776-1652. Email: sjzolodz@hotmail.com. Visit: www.midwestsundowners.com. Sponsor: WINAMAC AERO-MODELERS.

06/7/2020 - 06/13/2020 - Muncie, IN (CRST) CAMP AMA. Site: International Aeromodeling Center 5161 E Memorial Dr. Mr Kyle J Jaracz CD/EM PH: 765-287-1256. Email: kylej@modelaircraft.org. Sponsor: ACADEMY OF MODEL AERONAUTICS.

06/10/2020 - 06/14/2020 - Muncie, IN (C) SCALE SOARING.COM AEROTOW. Site: International Aeromodeling Center 5161 E Memorial Dr. Mr Leonard E Buffinton CD/EM PH: (860)395-8406. Email: lbuff1@comcast.net.

06/11/2020 - 06/14/2020 - Elizabeth, IN (CRST) 2020 EDF JET JAM. Site: RRCF flying field 11352 Hwy 111 SE Mr. Robert N Belluomini CD/EM PH: (513)325-6268. Email: bneffb@icloud.com. Sponsor: ROSEWOOD RC FLYERS.

06/13/2020 - Morristown, IN (C) CUBS AND FLOATY FLYERS. Site: Blue River Air Park Indy RC 9860 Blue River Rd. Mr Ted B Brindle CD/EM PH: (317)797-8502. Email: iflyrc5@comcast.net. Visit: indyrcmodelers.com. Sponsor: INDIANAPOLIS RC MODELERS.

06/17/2020 - 06/18/2020 - New Haven, IN (BRST) BOB HARTWIG MEMORIAL 32ST ANNUAL RC OLD TIME CONTEST. Site: Ft Wayne Flying Circuits Field 1702 N Webster Rd. Mr Bruce H Wallace CD/EM PH: (260)450-2948. Email: wallbh.9613@gmail.com. Visit: flyingcircuits.org. Sponsor: FT WAYNE FLYING CIRCUITS INC.

06/19/2020 - 06/20/2020 - Elwood, IN (C) MADISON COUNTY DAWN PATROL. Site 8246 County Rd 1850 N. Mr Tamas T Seres CD/EM PH: 765.620.6483. Email: tom.seres@yahoo.com. Visit: madisoncorc.com. Sponsor: MADISON COUNTY RC FLYERS.

06/20/2020 - 06/21/2020 - Muncie, IN (AA) OLD TIME NOSTALGIA FREE FLIGHT. Site: International Aeromodeling Center 5161 E Memorial Dr. Mr Meredith Chamberlain CD/EM PH: 765-643-1885. Sponsor: CENTRAL INDIANA AEROMODELLERS.

06/20/2020 - Wheeler, IN (C) FLYING FLEA MARKET. Site: Rainford Field 476 N 650 W. Mr Stanley Zolodz CD/EM PH: (219)776-1652. Email: sjzolodz@hotmail.com. Visit: www.midwestsundowners.com. Sponsor: MIDWEST SUNDOWNER R/C FLYING CLUB.

06/20/2020 - New Carlisle, IN (C) ART PEEBLES MEMORIAL FLY-IN. Site: 55600 Snowberry Rd. Mr Joseph Larson CD/EM PH: (574)271-0020. Email: beaglewerks@gmail.com. Visit: http://michianaskyraidersinc.com. Sponsor: MICHIANA SKY RAIDERS, INC.

06/20/2020 - St John, IN (C) ANNUAL FLOAT FLY. Site: Lake Hills Dr at Golf Lake. Mr Dennis W Shipley CD/EM PH: (219)696-9652. Email: deltadawn3@hotmail.com. Sponsor: CROWN POINT AEROMODELERS.

06/26/2020 - 06/28/2020 - Elizabeth, IN (AA) MINT JULEP SCALE MEET. Site: RRCF flying field 11352 Hwy 111 SE. Mr Dale Arvin CD/EM PH: (812)284-0162. Email: darvin8094@aol.com. Visit: rosewoodrc.com. Sponsor: ROSEWOOD RC FLYERS.

06/27/2020 - Morristown, IN (C) ALL ELECTRIC FLY IN AND TAILGATE SWAP MEET . Site: Blue River Air Park Indy RC 9860 Blue River Rd. Mr Ted B Brindle CD/EM PH: (317)797-8502. Email: iflyrc5@comcast.net. Visit: indyrcmodelers.com. Sponsor: INDIANAPOLIS RC MODELERS.

06/27/2020 - 06/28/2020 - Danville, IN (C) BLACKSHEEP R/C MODELERS 13TH ANNUAL WARBIRD. Site: Corsair Field 178 E Twin Bridges Rd. Mr Rege E Hall CD/EM PH: (317)250-4767. Email: hall.rege@sbcglobal.net. Visit: blacksheepclub.org. Sponsor: BLACKSHEEP R C MODELERS CLUB.

IOWA

06/12/2020 - 06/14/2020 - Montezuma, IA (C) MIKE GRETZ MEMORIAL RC FLY-IN. Site: Sig-Hester's Airport 5115 US HWY 63. Mr Robert E Nelson CD/EM PH: (319)239-5744. Email: bobsrc@zumatel.net. Visit: sigmfg.com.

06/19/2020 - 06/20/2020 - Montezuma, IA (AMA) MIKE GRETZ CONTROL LINE FUN FLY & SL COMBAT. Site: Sig-Hester's Airport 5115 US HWY 63. Mr Robert E Nelson CD/EM PH: (319)239-5744. Email: bobsrc@zumatel.net. Visit: bobsrc@zumatel.net.

KANSAS

06/6/2020 - 06/7/2020 - Paola, KS (C) HEART OF AMERICA FLOAT FLY. Site: W Lake Miola Dr. Mr Patrick A McGhee CD/EM PH: (913)696-1168. Email: pmcgheekc@gmail.com. Visit: http://rcbarnstormers.info. Sponsor: R/C BARNSTORMERS.

06/20/2020 - Berryton, KS (C) ALL SIZE FLY IN. Site: Blue Sky Aerodrome 4535 Southeast 69th St. Mr Aaron M Charest CD/EM PH: 785-640-2655. Email: aaron_charest@hotmail.com. Visit: nekbssi.org. Sponsor: N.E. KANSAS BLUE SKY SQUADRON INC.

06/27/2020 - 06/28/2020 - Pittsburg, KS (AA) 2020 PITTSBURG RC PATTERN CONTEST. Site: Atkinson Municipal Airport 504 S 200th St. Mr Ihncheol Park CD/EM PH: (620)719-9453. Email: patternflyer@sbcglobal.net. Visit: www.facebook.com/pittrc. Sponsor: PITTSBURG RADIO CONTROL CLUB.

06/27/2020 - 06/28/2020 - Salina, KS (AA) 4TH ANNUAL NATS WARM-UP FOR IMAC. Site: Levee Trail System. Mr Rudy D Voldrich CD/EM PH: (785)456-4586. Email: rvoldrich@cox.net. Visit: smokyhillrc.org. Sponsor: SMOKY HILL MODEL FLYING CLUB INC.

06/27/2020 - Lawrence, KS (C) JAYHAWK FLOAT FLY. Site: E 1000 Rd. 952 East 1000 Rd. Mr Gary L Rauckman CD/EM PH: (785)423-2700. Email: rocketman200@juno.com. Visit: jayhawk float fly. Sponsor: JAYHAWK MODEL MASTERS INC.

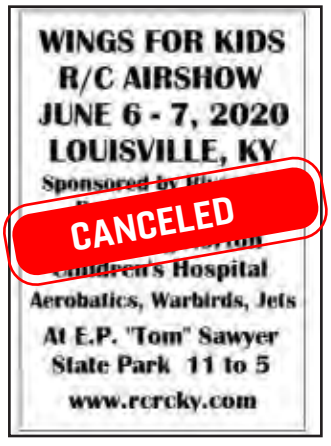
KENTUCKY

CANCELED

06/4/2020 - 06/7/2020 - Bowling Green, KY (C) VETTE CITY BIG BIRD FLY IN. Site: Carson Stahl Memorial Aerodrome 185 Stahl Ln. Mr Steven Price CD/EM PH: (270)790-9050. Email: sprice.ky@gmail.com. Visit: www.skymacbg.com. Sponsor: SOUTHERN KY MODEL AERO CLUB SKYMAC.

06/6/2020 - Somerset, KY (C) START OF SUMMER FLY IN. Site: CR Fowler Field Kentucky 1247. Mr Jami L Albright CD/EM PH: 606-305-5660. Email: jami.albright@twc.com. Visit: smac-ky.org. Sponsor: SOMERSET MODEL AIRPLANE CLUB.

CANCELED



06/6/2020 - 06/7/2020 - Louisville, KY (DEMO) WINGS FOR KIDS R/C AIR SHOW. Site: Bill Fluke Airfield at EP Tom Sawyer Park 2565 KY 1747. Mr Douglas E Bailey CD/EM PH: (502)930-5753. Email: zgconcours@icloud.com. Visit: rcrcky.com. Sponsor: RIVER CITY RADIO CONTROLLERS.

06/13/2020 - Paducah, KY (CRST) GEORGE LANKTON MEMORIAL FLY-IN. Site: McCracken County Model Air Park 501 County Park Rd. Mr Phillip Rudd CD/EM PH: (270)217-3150. Email: greyfoxx@bellsouth.net. Visit: paducahaeromodelers.com. Sponsor: PADUCAH AERO MODELERS, INC.

LOUISIANA

06/12/2020 - 06/13/2020 - Sulpher, LA (C) CUBS AND COUSINS. Site: Hinch Model Airpark 7036 Larksfield Rd. Mr Jeffrey S Reed CD/EM PH: (409)313-2852. Email: lpgreed@yahoo.com. Sponsor: LAKE AREA RADIO KONTROL SOCIETY.

06/27/2020 - 06/28/2020 - Sulpher, LA (AA) GULF COAST PATTERN CHAMPIONSHIP. Site: Hinch Model Airpark 7036 Larksfield Rd Mr. Monroe D Michaelis CD/EM PH: (337)853-6642. Email: patternflyer444774@yahoo.com. Visit: www.larksrc.org. Sponsor: LAKE AREA RADIO KONTROL SOCIETY.

MARYLAND

06/13/2020 - Boyds, MD (C) ANDY KANE FLY-IN. Site: Walt Good Field 16200 Schaeffer Rd. Mr Edward A Leibolt CD/EM PH: 301-949-8790. Email: ealeib@verizont.net. Visit: dc-rc.org. Sponsor: DCRC CLUB.

06/20/2020 - 06/21/2020 - Vienna, MD (AA) ESAC JACK STOVAL IMAC CHALLENGE. Site: 4835 Indiantown Rd. Mr Kenneth M Weaver CD/EM PH: (410)726-7577. Email: kenweaver191@yahoo.com. Visit: esac.org. Sponsor: EASTERN SHORE AEROMODELERS.

06/27/2020 - Beltsville, MD (C) AIRPLANES OF THE WORLD XVI. Site: Konterra Model 6050 Van Dusen Rd. Mr Kirk M Adams CD/EM PH: 443-995-2962. Email: kirkfsa@gmail.com. Visit: flyfreestate.com. Sponsor: FREE STATE AEROMODELERS.

MASSACHUSETTS

06/13/2020 - Dartmouth, MA (C) DAVE ANDRADE MEMORIAL FUN FLY & WARBIRD DAY. Site: 482 Smith Neck Rd. Mr Edward E Watts CD/EM PH: (781)326-1045. Email: nedwatts@mac.com. Sponsor: BRISTOL COUNTY RADIO CONTROL.

06/18/2020 - 06/21/2020 - Newburyport, MA (CRST) 2020 PLUM ISLAND JET RALLY. Site: Plum Island Airport 24 Plum Island Turnpike. Mr Robert J Radford CD/EM PH: (603)475-2200. Email: 1fb111nav@gmail.com. Sponsor: PLUM ISLAND AIRPORT R/C FLYERS.

06/21/2020 - Turner Falls, MA (C) FCRCC ANNUAL FATHER'S DAY FUN FLY. Site10 Aviation Way. Mr Theodore A Toothaker CD/EM PH: (413) - 475 - 3936. Email: toothata1@gmail.com. Visit: www.franklinrc.com. Sponsor: FRANKLIN COUNTY RC.

MICHIGAN

06/4/2020 - 06/6/2020 - Grand Ledge, MI (C) WARBIRDS AND CLASSICS OVER MICHIGAN. Site: 8328 Otto Rd. Mr Gerry D Kesler CD/EM PH: (517)719-6438. Email: gkesler1@hotmail.com. Visit: warbirdandclassics.com. Sponsor: CAPITAL AREA RADIO DRONE SQUAD C.A.R.D.S.

06/11/2020 - 06/13/2020 - Baldwin, MI (C) MICHIGAN JET RALLY. Site: Baldwin Municipal Airport 8140 Michigan 37. Mr Len Todd CD/EM PH: (970)903-3569. Email: lentodd@att.net. Visit: www.lcmfa.com. Sponsor: LAKE COUNTY MODELERS & FLYERS ASSOCIATION.

06/12/2020 - 06/14/2020 - Saranac, MI (AA) SARANAC IMAC. Site: Walter RC Park 8548 Morrison Lake Rd. Mr David A Walter CD/EM PH: (616)204-3798. Email: gasman3145@gmail.com. Visit: www.walterrcpark.com. Sponsor: IONIA COUNTY MODEL CLUB.

06/19/2020 - 06/21/2020 - Saranac, MI (C) MIDWEST EXTREME FLIGHT FESTIVAL 2020. Site: Walter RC Park 8548 Morrison Lake Rd. Mr David A Walter CD/EM PH: 616-204-3798. Email: gasman3145@gmail.com. Visit: walterrcpark.com. Sponsor: IONIA COUNTY MODEL CLUB.

06/19/2020 - 06/21/2020 - Erie, MI (C) GREAT LAKES CLASSIC SCALE. Site: Weak Signals RC Flying Site 11452 Minx Rd. Mr John S Borton CD/EM PH: (419)882-1165. Email: jsborton1@gmail.com. Sponsor: WEAK SIGNALS RC.

06/20/2020 - Beaverton, MI (C) 3RD ANNUAL SUMMER GLADWIN R/C FLY-IN. Site: 919 River Rd. Mr Scott P Armstead CD/EM PH: (989)522-5934. Email: scott.armstead12@gmail.com.

06/20/2020 - Orion Charter Township, MI (DEMO) SKYMASTER'S CONTROL LINE FLY-IN. Site: Skymasters Field 1391 W Scripps Rd. Mr Philip C Saunders CD/EM PH: (248)652-0495. Email: phil169038@comcast.net. Visit: skymasters.org. Sponsor: SKYMASTERS RC CLUB OF MI.

06/26/2020 - 06/27/2020 - Traverse City, MI (C) TRAMPS AIRSHOW. Site: 4094 Rennie School Rd. Mr Kim A Couturier CD/EM PH: (231)929-2315. Email: kimcouturier21@gmail.com. Sponsor: TRAVERSE AREA MODEL PILOTS SOCIETY.

06/26/2020 - 06/27/2020 - Saranac, MI (C) RC HELI FUN FLY CHOPPER FEST . Site: Walter RC Park 8548 Morrison Lake Rd. Mr David A Walter CD/EM PH: 616-204-3798. Email: gasman3145@gmail.com. Visit: walterparkrc.com. Sponsor: IONIA COUNTY MODEL CLUB.

06/27/2020 - 06/28/2020 - Jackson, MI (AA) MID-MICHIGAN IMAC CONTEST. Site: Pete Dillon Field, Dalton Rd. Mr Michael L Roxberry CD/EM PH: (517)782-4921. Email: roxberrym@comcast.net. Visit: jacksonrc.com. Sponsor: JACKSON RC CLUB.

06/27/2020 - 06/28/2020 - Baldwin, MI (C) MICHIGAN PYLON RACE COMPETITION. Site: Baldwin Municipal Airport 8140 Michigan 37. Mr Len Todd CD/EM PH: (231)745-9241. Email: lentodd@att.net. Visit: www.lcmfa.com. Sponsor: LAKE COUNTY MODELERS & FLYERS ASSOCIATION.

MINNESOTA

06/7/2020 - Harris, MN (A) MMAC PICNIC CONTEST. Site: 8833 420th St. Mr Donald R Monson CD/EM PH: (651)457-2321. Email: orchardhill.llc@gmail.com. Sponsor: MINNEAPOLIS MODEL AERO CLUB.

06/12/2020 - 06/13/2020 - Owatonna, MN (C) MINNESOTA JETS. Site: 7018 Southwest 48th Street. Mr Christopher L Mayer CD/EM PH: (507)250-4160. Email: crjdriver@charter.net. Visit: http://jets.smmac.com/about. Sponsor: SOUTHERN MN MODEL AIRCRAFT CLUB.

06/13/2020 - 06/14/2020 - East Bethel, MN (AA) MINNESOTA PATTERN CHAMPIONSHIPS. Site: 19801 Minnesota 65. Mr Brian D Dorff CD/EM PH: 701-317-6816. Email: bluebaronbrian@gmail.com. Visit: anoka-rc.com. Sponsor: ANOKA COUNTY RC CLUB INC and RED BARON RC MODELERS.

06/27/2020 - East Grand Forks, MN (A) RED RIVER R/C FLYERS PATTERN CONTEST. Site: 46577 140th Street Southwest. Mr Brian D Dorff CD/EM PH: (701)317-6816. Email: bluebaronbrian@gmail.com. Visit: www.redriverflyers.com. Sponsor: RED RIVER RC FLYERS.

MISSOURI

06/5/2020 - 06/7/2020 - Lee's Summit, MO (C) 10TH ANNUAL HELI FUN FLY. Site: Stamm Field 13300 Southwest Sampson Rd. Mr David B Parra CD/EM PH: 816.309.3400. Email: dpargolf@gmail.com. Visit: www.facebook.com/eaglesassociates. Sponsor: EAGLES ASSOCIATES.

06/5/2020 - 06/7/2020 - Fenton, MO (C) 36TH ANNUAL HELICOPTER/QUAD FUN FLY. Site: Buder Park 265 Valley Park Rd. Mr Troy Von Kloha CD/EM PH: (314)324-9558. Email: tvonkloha@claytonmo.gov. Visit: stlouiswhirlybirds.com. Sponsor: ST LOUIS WHIRLYBIRDS.

06/5/2020 - 06/7/2020 - Eureka, MO (C) SLRCFA GIANT SCALE & JET FLY IN. Site: 788 Augustine Rd. Mr Marshall L Henley CD/EM PH: 636-429-2884. Email: marshallhenley@gmail.com. Visit: slrcfa.com. Sponsor: ST LOUIS RC FLYING ASSOC.

06/6/2020 - Eldon, MO (C) RELAY FOR LIFE CANCER FUN FLY. Site: Harrison Field 26 Porter Rd. Mr Daniel D Smith CD/EM PH: (573)216-8454. Email: daniel@eldonmo.com.

06/13/2020 - 06/14/2020 - Lee's Summit, MO (A) KC F2D TRIPLE ELIMINATION 2020 8TH ANNUAL!. Site: Charles W Reed III Flying Field 3581 Rennau Dr. Mr Andy Minor CD/EM PH: (816)868-9454. Email: dr.andyminordc@gmail.com. Sponsor: KANSAS CITY RC ASSN.

06/19/2020 - 06/20/2020 - Bolivar, MO (C) BOLIVAR PRO BRO. Site: 4807 S 127th Rd. Mr Steve E Prewitt CD/EM PH: 417-459-7865. Email: flymetwo@gmail.com. Visit: bolivarsportflyers.com. Sponsor: BOLIVAR SPORT FLYERS.

06/26/2020 - 06/28/2020 - Saint Joseph, MO (C) ST. JOSEPH BARNSTORMERS FUN FLY. Site: Field of Dreams 7274 Missouri 6. Mr Boston R Parker CD/EM PH: (620)290-3571. Email: bostonparker@hotmail.com. Visit: facebook.com/stjoebarnstormers. Sponsor: ST JOE BARNSTORMERS.

06/27/2020 - 06/28/2020 - Fenton, MO (C) SPIRIT OF ST LOUIS BUDER PARK CL FUN FLY. Site: Buder Park 265 Valley Park Rd. Mr Frederick S Cronenwett CD/EM PH: (316)680-1515. Email: clscale7@gmail.com. Visit: https://lafayetteesquadrillecl.wordpress.com. Sponsor: LAFAYETTE ESQUADRILLE.

MONTANA

06/6/2020 - Polson, MT (C) ROLAND AND GEORGE MEMORIAL FUN FLY. Site: Minesinger Trail Farm 7801 Farm Rd. Eric J Kendall CD/EM PH: (406)303-0853. Email: bigskyhobbycorner@gmail.com. Sponsor: MISSION VALLEY MODEL AVIATORS.

06/17/2020 - 06/21/2020 - Livingston, MT (C) PARADISE VALLEY FLY IN #1. Site: Skattum Dairy Farm 10 McDonald Creek Rd. Mr Dennis S Rollins CD/EM PH: (406)855-2640. Email: dennis.s.rollins@gmail.com. Sponsor: CRAZY MTN FLYERS RCM.

06/26/2020 - 06/28/2020 - Billings, MT (C) BILLINGS FLYING MUSTANGS ANNUAL FLY IN. Site: Chamberlain Field 8223 Grand Ave. Mr Dennis S Rollins CD/EM PH: (406)855-2640. Email: dennis.s.rollins@gmail.com. Visit: www.billingsflyingmustangs.us. Sponsor: BILLINGS FLYING MUSTANGS.

06/27/2020 - 06/28/2020 - Helena, MT (C) MONTANA SUMMER SOARING IX. Site: 3557 Eames Lane. Mr Curtis L Suter CD/EM PH: (406)459-0923. Email: suterc@msn.com. Visit: www.rcgroups.com/forums/showthread.php?3524655-montana-summer-soaring-ix. Sponsor: HELENA FLYING TIGERS.

NEBRASKA

06/19/2020 - 06/21/2020 - Alda, NE (C) GI MODELERS RC AIRPLANE FUN FLY 2020. Site: GI Modelers Field 3173 County Rd 24. Mr Steve Blayney CD/EM PH: 308-390-7439. Email: rcflyergi@gmail.com. Visit: www.gimodelers.club. Sponsor: GRAND ISLAND MODELERS ASSN.

NEVADA

06/19/2020 - 06/22/2020 - West Wendover, NV (AA) CASINO CUP. Site: BLM Site Lincoln Hwy. Mr Jack Murphy CD/EM PH: (801)550-9128. Email: jack.murphy@utahhomes.com. Sponsor: MAGNIFICENT MOUNTAIN MEN INC.

NEW HAMPSHIRE

06/6/2020 - 06/7/2020 - Concord, NH (AA) GRANITE STATE 2019 IMAC. Site: Concord Skyhawks Field 58 Locke Rd. Mr James R Cyr CD/EM PH: 2034212145. Email: warhawk@snet.net. Visit: concordskyhawks.com/pls/apex/f?p=185:home::::: Sponsor: CONCORD SKYHAWKS.

NEW JERSEY

06/6/2020 - Forked River, NJ (C) 4TH ANNUAL LAKE FUN FLY. Site: Deer Head Lake Dam Deerhead Lake Dr. Mr Richard L Bombardier CD/EM PH: 732-237-2080. Email: rlbomber@comcast.net. Visit: pbm1727.org/. Sponsor: PINE BARREN MODELERS.

06/7/2020 - Middlesex, NJ (BRST) MIDDLESEX MODELERS WARM-UP RACE/SPEED. Site: Mountainview Park 302 John F Kennedy Dr. Mr Carl T Schaefer CD/EM PH: (908)803-7405. Email: earthingbrush2@yahoo.com. Sponsor: MIDDLESEX MODELERS INC.

06/20/2020 - Bridgewater, NJ (C) BIG BIRD FLY-IN. Site: North Branch Park 355 Milltown Rd. Mr Domecq Smith CD/EM PH: (732)215-8371. Email: domecqsmith@msn.com. Visit: https://somersetrc.org. Sponsor: SOMERSET RC.

NEW MEXICO

06/6/2020 - 06/7/2020 - Albuquerque, NM (AA) JOHN GAYER MEMORIAL ROADRUNNER CLASSIC. Site: Henry Wood Memorial Field 14311 Central Ave NW. Mr Joseph F Pirozzoli CD/EM PH: (303)422-0290. Email: jfpirozzoli@gmail.com. Visit: http://rmfm.club/index.php. Sponsor: ROCKY MOUNTAIN FLYING MACHINE.

CANCELED

06/13/2020 - 06/14/2020 - Albuquerque, NM (C) ARCC GREEN CHILI SCALE. Site: George J Maloof Memorial Air Park 8500 81st NW. Mr Howard A Chapman CD/EM PH: (505)301-8244. Email: howard15@swcp.com. Visit: arcc.club. Sponsor: ALBUQUERQUE RC CLUB.

NEW YORK

06/6/2020 - 06/7/2020 - Canandaigua, NY (AA) GEORGE & CATHY WEED MEMORIAL PATTERN CONTEST. Site: 3349 Gehan Rd. Mr Kenneth G Velez CD/EM PH: (585)953-0465. Email: kvelezf3a@gmail.com. Visit: canadaiguaskychiefs.org. Sponsor: CANANDAIGUA SKY CHIEFS.

06/13/2020 - 06/14/2020 - Red Hook, NY (C) RHINEBECK ADRODROME SPRING FUNFLY. Site: Old Rhinebeck Aerodrome 9 Norton Rd. Mr Warren A Batson CD/EM PH: (845)266-3862. Email: batson.warren@gmail.com. Visit: mhrcs.com. Sponsor: MID HUDSON RC SOCIETY.

06/13/2020 - West Haverstraw, NY (C) WARBIRDS OVER THE HUDSON. Site: Beach Rd Sanitary Landfill 516-524 Beach Rd. Mr Bruce A Leach CD/EM PH: (845)786-1879. Email: bruceleach@optimum.net. Visit: hvrcc.com. Sponsor: HUDSON VALLEY R/C CLUB.

SANCTIONED EVENT CALENDAR

06/13/2020 - 06/14/2020 - Bath, NY (C) JOLAMTRA FUN FLY. Site: Jolamtra Landing Area 5752 Wind Fall Rd. Mr Paul P Spara CD/EM PH: 585-738-5424. Email: paulspara@gmail.com.

06/21/2020 - Wantagh, NY (C) NASSAU FLYERS ANNUAL ELECTRIC FLY-IN. Site: Lufbery Aerodrome, Cedar Creek Park 3320 Merrick Rd. Mr Stuart A Silverman CD/EM PH: (516)476-3194. Email: docstu5@msn.com. Visit: nassauflyersrc.com. Sponsor: NASSAU FLYERS/L.I. CONDORS RC CLUB INC.

06/25/2020 - 06/28/2020 - Crown Point, NY (C) VALLEY OF THE GIANTS. Site: Bridge Rd 580 New York 185. Mr Solomon G Allen CD/EM PH: (518)597-3570. Email: cpsollie597@gmail.com. Visit: www.champlainvalleyflyers.com.

CANCELED

06/26/2020 - 06/27/2020 - Binghamton, NY (C) WARBIRDS OVER CHENANGO BRIDGE. Site: Chenango Bridge Airport 247 Airport Rd. Mr Jason M Felice CD/EM PH: 607-341-0829. Email: felicejm27@gmail.com. Sponsor: BINGHAMTON AEROS.

06/26/2020 - 06/27/2020 - Deer Park, NY (C) EDGEWOOD FLYERS HELI FUN FLY. Site: Old Cammack Rd. Mr Boyce E Wellmaker CD/EM PH: (516)233-6301. Email: bwellmaker@yahoo.com. Sponsor: EDGEWOOD FLYERS INCORPORATED.

06/26/2020 - 06/27/2020 - Manorville, NY (CRST) WARBIRDS OVER LONG ISLAND. Site: Moriches-Riverhead Rd. Mr Victor A Macaluso CD/EM PH: (516)578-3254. Email: omots54@aol.com. Sponsor: LONG ISLAND SKYHAWKS.

06/27/2020 - 06/28/2020 - New Hampton, NY (AA) SKYSCRAPERS ANNUAL. Site: Barron Field 337 County Rd 12. Mr David Acton CD/EM PH: (914)393-7491. Email: davidptacton@hotmail.com. Sponsor: BROOKLYN SKYSCRAPERS.

06/27/2020 - 06/28/2020 - Brockport, NY (C) RAY EDMUNDS MEMORIAL JUNE FUN FLY. Site: Northampton Park Model Flying Field 304 Salmon Creek Rd. Ed Britton CD/EM PH: 585-309-4348. Email: eplanerc@gmail.com. Visit: rccr1957.com. Sponsor: RADIO CONTROL CLUB OF ROCHESTER.

NORTH CAROLINA

06/6/2020 - Winston Salem, NC (C) WINGNUT. Site: Hobby Park 2301 W Clemmonsville Rd. Mr Vance W Jones CD/EM PH: (336)831-7565. Email: jonesv2723@att.net. Visit: http://hprc.almostliveradio.net. Sponsor: HOBBY PARK RCERS.

06/6/2020 - La Grange, NC (C) ECRC FUN FLY. Site: EAST CAROLINA RCERS 1 4150 County Line Rd. Mr Brian R Brannan CD/EM PH: 919-915-0838. Email: absbran@bellsouth.net. Visit: ecrcgflyers.com. Sponsor: EAST CAROLINA RCERS.

06/13/2020 - Goldsboro, NC (C) WAYNE AERONAUTICS FIXED WING FUN FLY. Site: 262 James Hinson Rd. Mr Jimmy Pernell CD/EM PH: (919)915-3677. Email: jfpernellrc@aol.com. Visit: jfpernellrc@aol.com. Sponsor: WAYNE MINIATURE AERONAUTICS.

06/18/2020 - 06/21/2020 - East Bend, NC (C) 7TH ANNUAL GIANT SCALE WARBIRDS AND VINTAGE AIRCRAFT UP TO 1940. Site: 3324 Apperson Rd. Mr John F Welcome CD/EM PH: (336)303-2245. Email: jfwelcome@gmail.com. Visit: www.riversiderc.com. Sponsor: RIVERSIDE AERO MODELERS SOCIETY.

06/20/2020 - Youngsville, NC (C) BLAST FROM THE PAST VINTAGE FLY IN. Site: Raleigh-Durham RC Field 1339 Bethlehem Church Rd. Mr Herbby Alford CD/EM PH: 919-218-1389. Email: herbby.alford@wemc.com. Visit: rd-rc.com. Sponsor: Raleigh Durham Radio Control Club, Inc.

06/26/2020 - 06/28/2020 - Goldsboro, NC (AA) MID-ATLANTIC HELI CHAMPIONSHIPS. Site: 262 James Hinson Rd. Mr Robert M Montee CD/EM PH: (571)234-3065. Email: monteerm@hotmail.com. Visit: facebook.com/midatlantichelichampionships. Sponsor: WAYNE MINIATURE AERONAUTICS.

06/26/2020 - 06/28/2020 - East Bend, NC (C) DRAGON FLY HELI EVENT. Site: 3324 Apperson Rd. Mr Mark Pfaff CD/EM PH: (336)816-1262. Email: tmarkpfaff@gmail.com. Visit: riversiderc.com. Sponsor: RIVERSIDE AERO MODELERS SOCIETY.

06/27/2020 - 06/28/2020 - Tabor City, NC (AA) SMFC IMAC CHALLENGE. Site: SMFC Field 548 Narrow End Rd. Mr David C Williams CD/EM PH: (910)395-5930. Email: davecw@ec.rr.com. Visit: www.southeasternmodelers.com. Sponsor: SOUTHEASTERN MODELERS FLYING CLUB.

OHIO

06/4/2020 - 06/7/2020 - Hamilton, OH (C) 2020 CINCY R/C HELI SMACKDOWN. Site: 255 Joe Nuxhall Way. Mr Troy D Schwable CD/EM PH: (513)893-6383. Email: tdschwable@gmail.com. Visit: http://hawksrc.org. Sponsor: HAWKS.

06/5/2020 - 06/7/2020 - Trenton, OH (A) GCRCC/CAPS MOONSHOT PYLON RACE. Site: 1912 Woodsdale Rd. Mr Thomas S Scott CD/EM PH: 573-604-6464. Email: askus@scottmodels.com. Visit: gcrcc.net. Sponsor: GREATER CINCINNATI RC CLUB.

06/5/2020 - 06/7/2020 - Centerburg, OH (AA) CENTRAL OHIO SCALE CLASSIC. Site: Chapman Memorial Field 3275 Columbus Rd. Mr Adam J Grubb CD/EM PH: (614)312-4290. Email: grubb.34@osu.edu. Sponsor: CENTRAL OH RK SOC CORKS and FAIRFIELD OHIO RADIO KONTROL F.O.R.K.S.

06/6/2020 - Lisbon, OH (C) CENTAUR FUN FLY. Site: 8318 County Home Rd. Mr Craig M Straub CD/EM PH: (330)206-7791. Email: toytrdkaw@yahoo.com. Visit: www.centaur-rc.org.

06/6/2020 - Germantown, OH (C) DAWN PATROL & GOLDEN ERA FLY IN. Site: 10491 Carlisle Pike. Mr James A Martin CD/EM PH: 937-260-0143 - CELL. Email: hooitelovesremy@yahoo.com. Visit: worksrcclub.net. Sponsor: WESTERN OHIO RADIO KONTROL SOCIETY.

06/6/2020 - Little Hockng, OH (C) BLENNERHASSETT AREA RC ANNUAL SPRING FLY-IN. Site: 405 Carson Ln. Mr Joseph Kapraun CD/EM PH: (304)482-4670. Email: kapraunj@frontier.com. Visit: barcc.us. Sponsor: BLENNERHASSETT AREA RC CLUB.

06/7/2020 - Geneva, OH (C) KEN PAGE MEMORIAL. Site: 5925 Romeo Rd. Mr Bernard Oldenburgh CD/EM PH: 440-255-3014. Email: bernieo-rc@oh.rr.com. Visit: mentorrc.com. Sponsor: MENTOR AREA RC SOCIETY.

06/11/2020 - 06/14/2020 - Doylestown, OH (C) SPRING FLING 3D MELTDOWN. Site: 11600 Porr Rd. Mr Mark A Sivard CD/EM PH: 330-351-6713. Email: mpsivard@yahoo.com. Visit: http://doylestownbarnstormers.com. Sponsor: DOYLESTOWN BARNSTORMERS RC CLUB.

06/13/2020 - 06/14/2020 - Dayton, OH (AA) DAYTON NATS WARM UP. Site: Wegerzyn Gardens MetroPark 1301 E Siebenthaler. Mr Bob Heywood CD/EM PH: 937-890-7555. Email: rheywood@woh.rr.com. Sponsor: DAYTON BUZZIN BUZZARDS MAC.

06/13/2020 - Elyria, OH (C) MODEL MANIA. Site: 8966 Murray Ridge Rd. Mr Neil M Mabrouk CD/EM PH: (216)798-7854. Email: nmabrouk@yahoo.com. Visit: www.lcrc.org. Sponsor: LORAIN COUNTY RC CLUB.

06/13/2020 - 06/14/2020 - Perrysville, OH (C) BUCKEYE FPV RACE AT THE LAKE. Site: Pleasant Hill Lake 3431 OH-95. Mr Wesley Johnson CD/EM PH: (614)745-6133. Email: wjohnson0722@gmail.com. Visit: www.multigp.com/races/view/?race=19895/buckeye-fpv-race-at-the-lake. Sponsor: CENTRAL OHIO ROTARY FLIERS.

06/13/2020 - Piqua, OH (C) UVFF FUN FLY IN. Site: 8451 Troy-Sidney Rd. Mr Gary B Webb CD/EM PH: 937/286-2865. Email: gcwent@woh.rr.com. Sponsor: UPPER VALLEY FUN FLYERS.

06/13/2020 - Delphos, OH (C) FLY WHAT YOU BRING. Site: 7651 Elida Rd. Mr Rodney C Metz CD/EM PH: (419)738-2007. Email: dts@bright.net. Visit: http://larksclub.homestead.com. Sponsor: LARKS.

CANCELED

06/14/2020 - Columbiana, OH (C) MAHONING COUNTY MODEL CLUB. Site: Shaker Woods Field 44337 County Line Rd. Mr Richard E Evans CD/EM PH: (330)207-9161. Email: ree39@zoominternet.net. Sponsor: MAHONING COUNTY MODEL CLUB.

06/20/2020 - Ravenna, OH (A) RAVENNA THUNDERBIRDS ANNUAL NIGHT FLY. Site: Jetway Airport 7590 Peck Rd. Mr Kurt H Massar CD/EM PH: (330)968-9293. Email: kmassar@ravennathunderbirds.com. Visit: ravennathunderbirds.com. Sponsor: RAVENNA THUNDERBIRDS RC CLUB INC.

06/20/2020 - Wilmington, OH (C) 2020 CLINTON MODEL AVIATORS FATHER'S DAY RC FLY IN. Site: Clinton Model Aviators 1700 Texas Rd. Mr Mike W Winkelman CD/EM PH: (937)393-0352. Email: memwink@yahoo.com. Visit: www.clintonmodelaviators.com. Sponsor: CLINTON MODEL AVIATORS.

06/20/2020 - Alliance, OH (C) DAWN PATROL OVER ALLIANCE. Site: Barber Airport 13871 Union Ave NE. Mr Rick Jacobs CD/EM PH: (330)724-7132. Email: rickj@neorc.com. Visit: alliancebalsabees.com. Sponsor: ALLIANCE BALSA BEES INC.

06/26/2020 - 06/27/2020 - Galena, OH (C) OHIO WATERFRONT VINTAGE GATHERING. Site: Dinneen Field @ Alum Creek State Park 5770 Africa Rd. Mr Jean Marie C Piednoir CD/EM PH: (740)936-5180. Email: piednoir.jm@gmail.com. Visit: wmaa-wags.org. Sponsor: WESTERVILLE MODEL AERO ASSN.

06/26/2020 - 06/28/2020 - North Jackson, OH (CRST) NORTHEAST OHIO HELI THROWDOWN. Site: 9551 Gibson Rd. Mr Dave E Karash CD/EM PH: (330)518-

2809. Email: dkarash@sbcglobal.net. Visit: http://nighthawksrc.com/index.html. Sponsor: NIGHT HAWKS.

06/28/2020 - Elyria, OH (AA) NOFFA OUTDOOR FLYING EVENTS. Site: Lorain County Community College Field 1005 N Abee Rd. Mr James F Gaffney CD/EM PH: (440)937-7790. Email: jamesfgaffney@hotmail.com. Sponsor: NORTHERN OHIO FREE FLIGHT ASSN.

OKLAHOMA

06/6/2020 - 06/7/2020 - Tulsa, OK (AA) TULAS GLUEDOBBERS INAUGURAL IMAC. Site: Grant Wilson Field 2817 S 177th East Ave. Mr Billy Cunningham CD/EM PH: 918-906-2087. Email: bill@powermasterengines.com. Visit: tulsagluedobbers.com. Sponsor: TULSA GLUE DOBBERS.

06/11/2020 - 06/14/2020 - Duncan, OK (C) SUMMER OF FUN FLY 2020. Site: Duncan Lake South Bank 172729 North 2910 Rd. Mr Clay Ricks CD/EM PH: 870-853-7499. Email: clayricks172@hotmail.com. Visit: www.facebook.com/groups/ctrcs/?ref=bookmarks. Sponsor: CHISHOLM TRAIL RC SQUADRON INC.

OREGON

06/19/2020 - 06/21/2020 - Sutherlin, OR (C) PLAT I FLOAT FLY. Site: Plat I Reservoir 712 Plat I Rd. Mr Alan Rader CD/EM PH: 541-672-0491. Email: rockeee1@yahoo.com. Sponsor: UMPQUA VALLEY MODELERS.

06/26/2020 - 06/28/2020 - Salem, OR (AA) SALEM SUMMER TUNE-UP. Site: Bill Riegel Model Airpark 2990 25th St SE. Mr Mike Hazel CD/EM PH: (503)871-1057. Email: zzclspeed@aol.com. Visit: flyinglines.org. Sponsor: WESTERN OREGON CONTROL LINE FLYERS.

06/26/2020 - 06/28/2020 - Redmond, OR (AA) FIELD OF DREAMS 2020 SCALE RALLY. Site: FIELD OF DREAMS 1859 Northeast Maple Ave. Mr Tommy L Rainwater CD/EM PH: (858) 527-8627. Email: trainwater157@gmail.com. Visit: www.fieldofdreamsrc.com. Sponsor: FIELD OF DREAMS RC CLUB INC.

06/27/2020 - Turner, OR (C) MELON'S FOLLIES 29TH ANNUAL FUN FLY AND MODEL AIRSHOW. Site: SE 9493 55th Ave SE. Mr W L Pete Melin CD/EM PH: (503)362-8257. Email: pmelin@msn.com. Visit: salem rc pilots association. Sponsor: SALEM R/C PILOTS ASSOC.

PENNSYLVANIA

06/6/2020 - 06/7/2020 - Easton, PA (C) 41ST ANNUAL LVRCS ELECTRIC FLY. Site: LVRCS Flying Field 4140 Gradwohl Switch Rd. Mr Thomas R Castellano CD/EM PH: (610)438-3742. Email: tomp40c@rcn.com. Visit: lvrcs.com. Sponsor: LEHIGH VALLEY RADIO CONTROL SOCIETY.

06/6/2020 - 06/7/2020 - Gettysburg, PA (C) WARBIRDS OVER GETTYSBURG. Site: 600 Cavalry Field Rd. Mr Jeff R Black CD/EM PH: (717)965-5634. Email: jrblack1964@gmail.com. Visit: bluegrayrc.com. Sponsor: BLUE & GRAY MINIATURE AIRCRAFT.

06/6/2020 - 06/7/2020 - Indiana, PA (DEMO) JIMMY STEWART AIRPORT FESITVAL. Site: INDIANA COUNTY JIMMY STEWART AIRPORT 398 Airport Rd. Mr James A Duncan CD/EM PH: 724-422-5893. Email: jamesaduncan@comcast.net. Sponsor: INDIANA FLYERS CLUB.

06/12/2020 - 06/14/2020 - Toughkenamon, PA (CRST) SUMMERFEST GIANT WARBIRD AND JET RALLY. Site: New Garden Airport Field 1235 Newark Rd. Mr David Malchione Sr. CD/EM PH: (610)357-6649. Email: bvmjpo6@aol.com. Visit: newgardenflyingfield.com.

CANCELED

06/15/2020 - 06/20/2020 - Carmichaels, PA (AAA) BRODAK FLY IN 2020. Site: Locust Ave. Mr Will D Davis CD/EM PH: (704)860-1079. Email: willddavis@msn.com. Visit: bridal.com. Sponsor: METROLINA CONTROL LINE SOCIETY and FLYING CIRCUS.

06/20/2020 - 06/21/2020 - Carlisle, PA (A) 2020 POLECAT ALES. Site: Bear Field 363 Potato Rd. Mr David V Reisinger CD/EM PH: (717)385-6801. Email: dvr5606@gmail.com. Sponsor: CARLISLE AEROMODELERS INC.

06/20/2020 - Homer City, PA (C) 6TH ANNUAL SUMMER SOLSTICE FUN FLY. Site: Old Home Manor Dr. Mr Anthony Hallo CD/EM PH: (724)953-9912. Email: tony.hallo365@gmail.com. Sponsor: INDIANA FLYERS CLUB.

06/27/2020 - 06/28/2020 - Herndon, PA (C) 6TH ANNUAL CARL BREDBENNER FLY IN. Site: Aerobats Club Field 452 Flying Eagle Rd. Mr Joseph J Reiner CD/EM PH: 570.425.2782. Email: grrrrrumpy@tds.net. Sponsor: AEROBATS.

SOUTH CAROLINA

06/6/2020 - York, SC (C) MARK WILLIS MEMORIAL BIG BIRD FUN FLY. Site: 240 Langrum Branch Rd. Mr Gregory A Blackwell CD/EM PH: (803)487-8850. Email: jet_doc@comporium.net. Visit: yorkcountyflyers.com. Sponsor: YORK COUNTY FLYERS INC.

06/6/2020 - Florence, SC (C) ANNUAL SPRING FLY IN. Site: 2600 Paper Mill Rd. Mr Robert H Gainey CD/EM PH: 843-615-8114. Email: ruddercable@yahoo.com. Visit: gooneybirdsrc.com. Sponsor: GOONEY BIRDS.

06/20/2020 - Campobello, SC (C) CAMPOBELLO FLYERS SUMMER 1 FLY IN. Site: 1475 Roddy Rd. Mr Robert M Babb CD/EM PH: (864)529-8973. Email: cyclenutus@yahoo.com. Visit: campobelloflyers.com. Sponsor: CAMPOBELLO FLYERS RC CLUB.

SOUTH DAKOTA

06/6/2020 - 06/7/2020 - Aurora, SD (C) GIANT SCALE FLY IN. Site: 20920 474th Ave. Mr Tom A Sroufe CD/EM PH: 605-690-6953. Email: mufflerace2000@yahoo.com. Visit: brookingsaeromates.weebly.com. Sponsor: BROOKINGS AEROMATES RC.

TENNESSEE

06/5/2020 - 06/7/2020 - Arlington, TN (C) MEMPHIS PROPBUSTERS WARBIRD FUN FLY HONORING VETERANS. Site: 3945 Inglewood Pl. Mr Rick Pellicciotti CD/EM PH: (901)481-1934. Email: rick@belleaireaviation.com. Visit: www.memphispropbusters.com. Sponsor: MEMPHIS PROP BUSTERS.

06/6/2020 - Knoxville, TN (C) KCRC CUBFEST. Site: 3204 Williams Bend Rd. Mr Edward J Dumas Jr. CD/EM PH: (865)386-7506. Email: ed@eddumas.com. Visit: www.kcrctn.com. Sponsor: KNOX COUNTY RC SOCIETY.

06/6/2020 - Tullahoma, TN (C) SPRING FUN FLOAT FLY. Site: 2912 Northshore Rd. Mr Michael Jenkins CD/EM PH: 931-581-5479. Email: webmaster@coffeeairfoilers.com. Visit: https://coffeeairfoilers.com/spring-float-fly. Sponsor: COFFEE AIRFOILERS.

06/12/2020 - 06/15/2020 - Corryton, TN (AA) HOUSE MOUNTAIN IMAC CONTEST. Site: Thompson Airpark at House Mountain 8621 Washington Pk Dr. Kevin Turner CD/EM PH: 865-776-8465. Email: kevinjulieevan@gmail.com. Visit: mini-iac.com. Sponsor: BLOUNT COUNTY MODEL AVIATORS and RED BARON RC MODELERS.

06/12/2020 - 06/14/2020 - Ooltewah, TN (C) WARBIRDS OVER SUMMIT. Site: Summit Air Field 4234 Old Woodland Dr. Mr Stephen D Payne CD/EM PH: 423-819-8918. Email: p51c@epbfi.com. Visit: crccflyers.com. Sponsor: CHATTANOOGA R/C CLUB.

06/13/2020 - 06/15/2020 - Ooltewah, TN (C) CRCC WARBIRDS OVER THE SUMMIT. Site: Summit Air Field 4234 Old Woodland Dr. Mr Anthony Bosco CD/EM PH: 423-667-2498. Email: anthonybosco701@comcast.net. Visit: crccflyers.org.

06/13/2020 - 06/14/2020 - Cedar Hill, TN (C) MTRCCA SPRING FELLOWSHIP FLY-IN. Site: 3000 Maxey Rd. Mr Augustus R Tonan CD/EM PH: 615-995-6291. Email: dtonan@mac.com. Visit: mtrcca.org. Sponsor: MIDDLE TENNESSEE R/C CLUBS ASSOCIATION.

06/20/2020 - Harriman, TN (C) WARBIRD FLY IN AND FUNFLY. Site: Happy Hollow Rd. Mr Randy E Daugherty CD/EM PH: (865)307-3653. Email: randy.daugherty0408@gmail.com. Visit: tneagles.com. Sponsor: TENNESSEE EAGLES R/C.

06/25/2020 - 06/28/2020 - Mountain City, TN (C) 2019 JET PRECISION AEROBATICS NATIONAL CHAMPIONSHIPS. Site: Johnson County Airport 611 Airport Rd. Mr Archie J Stafford CD/EM PH: (301)247-9298. Email: rcpattern2012@gmail.com. Visit: www.jetaerobatics.org.

TEXAS

06/5/2020 - 06/6/2020 - Hempstead, TX (C) JUNE WARBIRD. Site: Bomber Field 13917 FM 1887. Mr Woody B Lee CD/EM PH: (832)794-3370. Email: woody.lee123@gmail.com. Visit: bomberfieldusa.com.

CANCELED

06/5/2020 - 06/7/2020 - Tyler, TX (C) 6TH ANNUAL TUFF FUN FLY/TAILGATE. Site: Northside RC Airpark 3463 Corporate Dr. Mr John Skinner CD/EM PH: 903-539-1308. Email: wrang123@yahoo.com. Sponsor: TEXAS UNLIMITED FUN FLYERS.

06/6/2020 - Fort Worth, TX (C) GSW BIPLANE FUN FLY. Site: 6903 Randol Mill Rd. Mr Darrell L Abby CD/EM PH: (817)692-7380. Email: darrellabby@att.net. Visit: flygsw.org. Sponsor: GREATER SW AERO MODELERS INC.

06/6/2020 - Rosenberg, TX (C) FORT BEND RC, GIANT SCALE FLY-IN, JUNE 6, 2020. Site: 1135 Spur 529. Mr Heedo Yun CD/EM PH: (281)512-9163. Email: heedo.yun@gmail.com. Visit: fortbendrc.com. Sponsor: FORT BEND RADIO CONTROL CLUB.

CANCELED

06/12/2020 - 06/13/2020 - Aubrey, TX (C) WARBIRDS OVER TEXAS. Site: Eagle Field 2380 Brewer Rd. Mr Ed Kettler CD/EM PH: (469)867-7981. Email: ed.kettler@gmail.com. Visit: ndrcc.com. Sponsor: NORTH DALLAS RC CLUB, INC.

06/13/2020 - 06/14/2020 - Hamilton, TX (AAA) HENRY SPENCE MEMORIAL. Site: HAMILTON MUNICIPAL AIRPORT 489 FM 3302. Mr Steven L Spence CD/EM PH: 817-851-7446. Email: f1aspence@sbcglobal.net. Sponsor: TEXAS CLOUD CLIMBERS and LONE STAR SQUADRON.

06/13/2020 - Salado, TX (C) LATE SPRING BIG BIRD. Site: Hall Field 8680 Union Grove Ln. Mr Douglas M Pettit CD/EM PH: (817)504-2304. Email: dougmpettit@gmail.com. Sponsor: CEN-TEX MODELERS INC.

06/13/2020 - Scottsville, TX (C) SPRING LAND AND FLOAT FLY. Site: ED Baker RC Complex 1010 FM 2199. Mr Bruce G Ackerman CD/EM PH: (318)272-2348. Email: rcaddiction2242@gmail.com. Sponsor: MARSHALL AERO MODELERS.

CANCELED

06/13/2020 - Von Ormy, TX (C) WARBIRDS OVER SOMERSET. Site: 17271 Somerset Rd. Mr Dean F Lukover CD/EM PH: (210) 421 5147. Email: lukoverd@sbcglobal.net. Visit: www.somersetrcflyers.com. Sponsor: Somerset RC Flyers.

06/13/2020 - Freeport, TX (C) BCMA ANNUAL OPEN FLY. Site: Brazoria County Modelers Field 633 County Rd 792. Mr Erik D Valdez CD/EM PH: (979)265-2525. Email: erikv79@gmail.com.

06/14/2020 - Temple, TX (C) 30TH ANNUAL TEMPLE FUN FLY. Site: McGregor Park 14747 Moffat Rd. Mr Donald C Hinkle CD/EM PH: (254)718-0243. Email: don.hinkle@bswhealth.org. Sponsor: TEMPLE AERO MODELERS.

06/19/2020 - 06/20/2020 - Waco, TX (C) HOTMAC ANNUAL BIG BIRD FLY IN. Site: Speegleville Park 3400 Overflow Rd. Mr James D Roper CD/EM PH: (254)493-6743. Email: hotmacbigbird@embarqmail.com. Visit: hotmac.org/index.html. Sponsor: HEART OF TEXAS MINIATURE AIRCRAFT CLUB.

06/20/2020 - Dayton, TX (C) HI-WING HO-DOWN. Site: 9249 Farm to Market Rd 686. Mr Larry L Rogers CD/EM PH: 713-503-1191. Email: larry5926@gmail.com. Visit: jetero rc club. Sponsor: JETERO RC CLUB INC.

SANCTIONED EVENT CALENDAR

06/27/2020 - Beaumont, TX (C) BIG BIRD FLY IN. Site: 6300 Folsom Dr. Mr Charles C Nowell CD/EM PH: (281)546-8132. Email: blazenowell@aol.com. Visit: brcc.club. Sponsor: BEAUMONT RC CLUB.

UTAH

06/6/2020 - Saratoga Springs, UT (C) OPEN HOUSE AND FLY-IN. Site: 9999 Saratoga Rd. Mr Darin L Peirce CD/EM PH: 801-209-2667. Email: dlpeirce@afstores.com. Visit: utahvalleyaeromodelers.com. Sponsor: UTAH VALLEY AEROMODELERS.

VIRGINIA

06/4/2020 - 06/6/2020 - Spotsylvania, VA (C) MILITARY WARBIRDS & CLASSICS OVER FREDERICKSBURG. Site: Robbie Campbell Memorial Airfield 6900 Jefferson Davis Hwy. Mr Salvatore A Vezzi CD/EM PH: 804-519-2380. Email: salvezzi@aol.com. Visit: fredericksburgrc.com. Sponsor: FREDERICKSBURG AREA RC CLUB.

CANCELED

06/6/2020 - Bedford, VA (C) WINGS OVER D-DAY. Site: 2348 Falling Creek Rd. Mr Victor W Tuck CD/EM PH: (540)815-3693. Email: bsax@cox.net. Visit: www.vaaeromodelers.com. Sponsor: VIRGINIA AEROMODELERS.

06/11/2020 - 06/14/2020 - Cedar Bluff, VA (C) VIRGINIA JETS. Site: Tazewell County Airport 2200 Airport Rd. Mr Ken Kayser CD/EM PH: (336)251-3631. Email: kxkayser@gmail.com.

06/12/2020 - 06/14/2020 - Harrisonburg, VA (C) 36TH RAY GORDON MEMORIAL FLY-IN. Site: 4979 S Valley Pike. Mr Timothy L Blankenship CD/EM PH: (540)828-6142. Email: rcflyertim@yahoo.com. Visit: www.vrcfc.org. Sponsor: VALLEY RC FLYING CLUB.

06/13/2020 - Bealeton, VA (C) FARM 2020 SUMMER FLOAT FLY. Site: 5305 Lake Ritchie Rd. Mr William M Towne CD/EM PH: 540.428.1053. Email: bbtowne@comcast.net. Visit: farmclubrc.com. Sponsor: FAUQUIER AERO RECREATION MODELERS.

06/18/2020 - 06/20/2020 - Spotsylvania, VA (C) JETS OVER THORNBURG. Site: Robbie Campbell Memorial Airfield 6900 Jefferson Davis Hwy. Mr Salvatore A Vezzi CD/EM PH: (804)519-2380. Email: salvezzi@aol.com. Visit: fredericksburgrc.com. Sponsor: FREDERICKSBURG AREA RC CLUB.

WASHINGTON

CANCELED

06/5/2020 - 06/7/2020 - E Wenatchee, WA (C) AMA NORTHWEST JAMBOREE. Site: 5201 4th St SE. Mr Phil L Tallman CD/EM PH: (509)220-6513. Email: phillip.tallman@gmail.com. Visit: amanwjamboree.com. Sponsor: WENATCHEE RED APPLE FLYERS.

06/13/2020 - Deer Park, WA (C) WARBIRDS OVER DEER PARK. Site: Deer Park Airport 1519 12th St. Mr Robert W Lutz CD/EM PH: (509) 385-3307. Email: cloudguy5859@yahoo.com. Visit: climatehawk.org/info.html. Sponsor: BARONS MODEL CLUB.

06/17/2020 - 06/21/2020 - Zillah, WA (C) YAKIMA VALLEY AERO MODELERS HELI FUN FLY. Site: Ben's Strip 3513 Cheyne Rd. Mr George L Radford CD/EM PH: 509-307-5174. Email: george501949@charter.net. Visit: yvam.net. Sponsor: YAKIMA VALLEY AEROMODELERS.

WEST VIRGINIA

06/13/2020 - 06/14/2020 - Saint Marys, WV (AA) W.V. RC PATTERN CHAMPIONSHIPS. Site 2857 N Pleasants Hwy Mark A Radcliff CD/EM PH: 304-684-2133. Email: mradcliff@suddenlink.net. Visit: www.flyingwingnutz.org. Sponsor: FLYING WING NUTZ OF WV.

WISCONSIN

06/12/2020 - 06/13/2020 - Appleton, WI (C) FLAG DAY FUN FLY & MIDWEST 3D SHOOTOUT. Site: VAM Quarry Field W5007 Quarry Rd. Mr Tim R Miller CD/EM PH: (920)740-3250. Email: ifly12@ymail.com. Visit: www.flyvam.com. Sponsor: VALLEY AERO MODELERS, INC.

06/20/2020 - Two Rivers, WI (C) FUN FLY. Site: 3716 E Hillcrest Rd. Mr Randy Boris CD/EM PH: (920)323-7951. Email: randybeemer@comcast.net. Visit: manitwoflyers.com. Sponsor: MANITWO FLYERS LTD.

06/21/2020 - Hilbert, WI (C) FATHER'S DAY R/C AIRCRAFT FUN-FLY. Site: Calumet Flyers Miniature Aircraft Airport 2342 Ott Rd. Mr Eric Schultz CD/EM PH: (920)901-6837. Email: ekaschultz@gmail.com. Visit: www.calumetflyers.com. Sponsor: CALUMET FLYERS INC.

06/27/2020 - 06/28/2020 - Green Bay, WI (A) TUNDRA TERROR XXIV. Site: GBMAC Field 4430 County Rd N. Mr William C Drumm III CD/EM PH: 920-428-0323. Email: midair72@hotmail.com. Visit: gbmac.com. Sponsor: GREEN BAY MODEL AIRPLANE CLUB.

06/27/2020 - Beloit, WI (C) 2ND ANNUAL VINTAGE PILOTS FUN FLY. Site: 6806 South Co Rd J. Mr Stanley R Anderson CD/EM PH: (608)436-1586. Email: molokaimo@charter.net. Visit: rrams.net. Sponsor: ROCK RIVER AERO MODELERS SOCIETY, INC.

06/28/2020 - Menomonee Falls, WI (C) ELECTRIC FUN FLY. Site: Flying Electrons Tamarac Airfield N61 W17000 Kohler Ln. Mr Steven G Huelsbeck CD/EM PH: 414-358-1078. Email: shuelsbeck@wi.rr.com. Visit: flyingelectrons.com. Sponsor: FLYING ELECTRONS INC.

July

CALIFORNIA

07/23/2020 - 07/26/2020 - Santa Maria, CA (C) 8TH ANNUAL CENTRAL COAST GIANT SCALE FLY-IN. Site: Elk's Unocal Event Center, 4040 US Hwy 101. Mr Charles W Barnes CD/EM PH: (805)886-7921. Email: cdbarnes10@comcast.net. Visit: trivalleyrcmodelers.com. Sponsor: TRI VALLEY RC MODELERS.

COLORADO

07/11/2020 - Strasburg, CO (C) PLUCKROSE MEMORIAL FLY-IN. Site: 52860 E Quincy Rd. Mr David M Weiss CD/EM PH: (303)549-5778. Email: davemw@q.com. Visit: www.milehirc.com. Sponsor: MILE HI RC.

07/16/2020 - 07/19/2020 - Dacono, CO (C) LAMA FEST 2020. Site: LAMA Field 3620 County Rd 15. Mr Christopher W Doerr CD/EM PH: (303)552-6194. Email: cwdoerr@yahoo.com. Visit: www.lamarcclub.com. Sponsor: LONGMONT AIRCRAFT MODELER ASSN.

07/25/2020 - Golden, CO (C) BIG BIRD FLY-IN. Site: AAM Airpark 7608 Hwy 93. Mr James D Lavasseur CD/EM PH: (303)233-9400. Email: jdl59585@gmail.com. Sponsor: ARVADA ASSOCIATED MODELERS.

CONNECTICUT

CANCELED

07/12/2020 - Ellington, CT (C) DAWN PATROL. Site: NCRCC Field 190 Green Rd. Mr Joel R Lang CD/EM PH: (413)204-4404. Email: jrlang40@comcast.net. Visit: www.ncrcc.org. Sponsor: Northern Connecticut Radio Control Club.

07/18/2020 - Salem, CT (C) ELECTRIC FUN FLY AND SWAP MEET. Site: 479 Norwich Rd. Mr Michael J Defranzo CD/EM PH: (860)267-4317. Email: defranm@sbcglobal.net. Sponsor: RC PROPBUSTERS INC.

DELAWARE

07/8/2020 - 07/11/2020 - Bear, DE (CRST) WARBIRDS OVER DELAWARE. Site: Delaware RC Club at Lums Pond State Park 3750 Red Lion Rd. Mr David Malchione Sr. CD/EM PH: (610)357-6649. Email: bvmjpo6@aol.com. Visit: delawarerc.org. Sponsor: DELAWARE RC CLUB.

FLORIDA

07/7/2020 - 07/8/2020 - Palm Bay, FL (AA) DIXIE NATS. Site: FMA - Sopadilla Rd 2190 Sapodilla Rd SW. Mr Duncan McBride CD/EM PH: (239)437-0065. Email: n319dm@gmail.com. Sponsor: FLORIDA MODELERS ASSOCIATION.

GEORGIA

07/5/2020 - Whitesburg, GA (AMA) COUNTRY FRIED CONTEST. Site: NGTurf Sod Farm 1487 Black Dirt Rd. Mr David Mills CD/EM PH: (404)509-4289. Email: davidmillsatl@gmail.com. Visit: www.thermalthumbers.com. Sponsor: THERMAL THUMBERS OF METRO ATLANTA.

07/18/2020 - Dunwoody, GA (A) JULY INDOOR. Site: Saint Luke's Presbyterian Church 1978 Mt Vernon Rd. Mr William D Gowen CD/EM PH: 404-218-0906. Email: wdgowen@gmail.com. Visit: www.thermalthumbers.com. Sponsor: THERMAL THUMBERS OF METRO ATLANTA.

ILLINOIS

07/11/2020 - Pontoon Beach, IL (C) MIDWEST AIR WING R/C CLUB WAR BIRD/CLASSIC FLY/GIANT SCALE FLY-IN. Site: 285 Bruns Rd. Mr Stanley J Marmuziewicz Jr. CD/EM PH: 618-741-1926. Email: soarin2007@live.com. Visit: midwestairwingrc.com/events. Sponsor: MIDWEST AIR WING R/C CLUB.

07/11/2020 - Elwood, IL (C) WARBIRDS OVER RT66. Site: 17415 West Bernhard Rd. Mr Raymond V Shroba, Iv CD/EM PH: (815)258-1618. Email: president.jolietrc@gmail.com. Visit: jolietrc.com. Sponsor: JOLIET RADIO CONTROL CLUB INC.

INDIANA

07/11/2020 - Morristown, IN (C) ALL RC AIRCRAFT FLY IN. Site: Blue River Air Park Indy RC 9860 Blue River Rd. Mr Ted B Brindle CD/EM PH: (317)797-8502. Email: iflyrc5@comcast.net. Visit: indyrcmodelers.com. Sponsor: INDIANAPOLIS RC MODELERS.

CANCELED

07/16/2020 - 07/18/2020 - Goshen, IN (C) AIR SUPREMACY OVER GOSHEN. Site: GOSHEN MUNICIPAL AIRPORT 17229 County Rd 42. Mr Robert J Monroe CD/EM PH: (574)361-9784. Email: rjmonroe@baseleg.net. Visit: flygoshen.com.

07/18/2020 - Franklin, IN (C) 14TH ANNUAL BOYD HELSTROM WARBIRDS FLY-IN. Site: Tracee Field, Old Hospital Rd. Mr James W Craig CD/EM PH: (317)439-6378. Email: craig_j@att.net. Visit: jcrcf.net. Sponsor: JOHNSON COUNTY RC FLYERS.

07/18/2020 - Wheeler, IN (C) WARBIRD DAY. Site: Rainford Field 476 N 650 W. Mr Stanley Zolodz CD/EM PH: (219)776-1652. Email: sjzolodz@hotmail.com. Visit: www.midwestsundowners.com. Sponsor: MIDWEST SUNDOWNER R/C FLYING CLUB.

07/24/2020 - 07/26/2020 - Muncie, IN (C) ACADEMY OF MODEL AERONAUTICS FUN FLY AND MEMBERSHIP MEETING. Site: International Aeromodeling Center 5161 E Memorial Dr. Mr Jonathan R Cameron CD/EM PH: (417)830-9211. Email: flyrc@modelaircraft.org. Sponsor: BOLIVAR SPORT FLYERS.

07/24/2020 - 07/25/2020 - New Haven, IN (C) 2ND ANNUAL NICK MINNICK MEMORIAL WARBIRDS AND CLASSICS. Site: 1702 N Webster Rd. Mr Paul M Wildey CD/EM PH: 2604157630. Email: paulwildey@comcast.net. Visit: www.flyingcircuits.org. Sponsor: FT WAYNE FLYING CIRCUITS INC.

IOWA

07/11/2020 - 07/12/2020 - Marion, IA (C) CR SKYHAWKS ELECTRIC FUN FLY. Site:

Skyhawks Field 3125 C Ave Extension. Mr Mikeal D Tope CD/EM PH: (319)360-8335. Email: mdtope@gmail.com. Sponsor: CEDAR RAPIDS SKYHAWKS, INC.

KENTUCKY

07/11/2020 - Somerset, KY (C) NITRO S.M.A.C. DOWN. Site: CR Fowler Field Kentucky 1247. Mr Jami L Albright CD/EM PH: (606)679-3158. Email: jami.albright@twc.com. Visit: smac.org. Sponsor: SOMERSET MODEL AIRPLANE CLUB.

07/12/2020 - 07/19/2020 - Springfield, KY (C) JETS OVER KENTUCKY. Site: Lebanon Springfield Airport 650 Airport Ln. Mr Lewis Patton Jr. CD/EM PH: 502-592-5267. Email: lewisthegeneral@hotmail.com. Visit: jetsoverkentucky.com.

LOUISIANA

07/25/2020 - 07/26/2020 - Baton Rouge, LA (AA) 2020 BAYOU BASH IMAC. Site: 6402 River Rd. Mr Rich Whitlow CD/EM PH: (225)405-5998. Email: rwhitlow@gmail.com. Visit: facebook.com/redstickrcclub. Sponsor: RED STICK RADIO CONTROL FLYING CLUB.

MAINE

07/18/2020 - 07/19/2020 - New Gloucester, ME (AA) 2020 MAINE IMAC CHALLENGE. Site: 201B Tobey Rd. Mr Thomas N Chabot CD/EM PH: 207-522-6841. Email: tchabot5@gmail.com. Visit: mini-iac.com. Sponsor: SKY STREAKERS RC CLUB.

MASSACHUSETTS

07/4/2020 - Sudbury, MA (DEMO) CRRC ANUAL JULY 4TH DEMONSTRATION. Site: Davis Field 233 North Rd. Mr David Spielman CD/EM PH: (781)489-5450. Email: dspielma@gmail.com. Visit: www.charlesriverrc.org. Sponsor: CHARLES RIVER RCERS.

07/18/2020 - 07/19/2020 - Sudbury, MA (A) ALES CONTEST. Site: Davis Field 233 North Rd. Mr David Spielman CD/EM PH: 781-489-5450. Email: dspielma@gmail.com. Visit: charlesriverrc.org. Sponsor: CHARLES RIVER RCERS.

MICHIGAN

07/10/2020 - 07/12/2020 - Baldwin, MI (C) WEST MICHIGAN RC EXPO. Site: Baldwin Municipal Airport 8140 Michigan 37. Mr Len Todd CD/EM PH: 231.745.9241. Email: lentodd@att.net. Visit: www.lcmfa.com. Sponsor: LAKE COUNTY MODELERS & FLYERS ASSOCIATION.

07/11/2020 - 07/12/2020 - South Lyon, MI (C) 36TH ANNUAL MID-AMERICA ELECTRIC FLIES. Site: 6611 Sunset Dr. Mr Kenneth D Myers CD/EM PH: (248)669-8124. Email: kmyersefo@mac.com. Visit: theampeer.org. Sponsor: ELECTRIC FLYERS ONLY INC, ANN ARBOR RC FALCONS, and MIDWEST RC SOCIETY.

07/18/2020 - 07/19/2020 - Alto, MI (A) KRAM GRAND RAPIDS IMAC CHALLENGE. Site: KRAM Flying Field 8001 Wingeier Ave SE. Mr Mark Schmaltz CD/EM PH: 616-304-2027. Email: nascarmodeling@yahoo.com. Visit: kentradioaeromodelers.com. Sponsor: KENT RADIO AEROMODELERS, INC.

07/24/2020 - 07/25/2020 - Grand Ledge, MI (CRST) ACES OVER THE LEDGES WW1 FUN-FLY. Site: CARDS Field 8328 Otto Rd. Mr Joseph W Vermillion CD/EM PH: (517)230-2672. Email: baldielocks2006@gmail.com. Visit: www.cardsrc.com. Sponsor: CAPITAL AREA RADIO DRONE SQUAD C.A.R.D.S.

07/25/2020 - Adrian, MI (CRST) BITS AND PIECES 40TH ANNUAL GIANT BIRD FLY IN. Site: Heritage Park 3218 N Adrian Hwy. Mr Daniel R Wamboldt CD/EM PH: (734)433-5451. Email: danrcpilot100@aol.com. Visit: www.bitsandpiecesrc.com. Sponsor: BITS AND PIECES RC CLUB.

MINNESOTA

07/12/2020 - Harris, MN (A) MMAC SUMMER MEET. Site8833 420th St. Mr Dale M Mendenhall CD/EM PH: (763)535-2976. Sponsor: MINNEAPOLIS MODEL AERO CLUB.

07/12/2020 - East Grand Forks, MN (A) RED RIVER R/C FLYERS FUN SCALE CONTEST. Site: 46577 140th Street Southwest. Mr Brian D Dorff CD/EM PH: (701)317-6816. Email: bluebaronbrian@gmail.com. Visit: redriverflyers.com. Sponsor: RED RIVER RC FLYERS.

MISSOURI

07/11/2020 - 07/12/2020 - Lee's Summit, MO (AA) KCRC PATTERN CONTEST. Site: Charles Reed Field 3581 Rennau Dr. Mr Vicente "Vince" Bortone CD/EM PH: (913)449-5670. Email: vincebrc@gmail.com. Visit: www.nsrca.us/index.php/list-events/eventdetail/830/588/kcrc-pattern-contest-charles-reed-rc-field-lake-jacomo-lee-s-summit-missouri. Sponsor: KANSAS CITY RC ASSN.

07/17/2020 - 07/18/2020 - Kansas City, MO (C) 13TH ANNUAL KANSAS CITY PRO BRO. Site: 7200 Northeast 96th St. Mr Mike W Coyne CD/EM PH: (816) 556-6790. Email: blackduckfast57@yahoo.com. Visit: northernknights.com. Sponsor: KC NORTHERN KNIGHTS MAC.

07/25/2020 - Smithville, MO (C) DAM BUSTER ALL PIPER CUB FLY-IN. Site: County Rd DD. Mr John R Whitsitt Jr. CD/EM PH: (816)908-2763. Email: johnwhitsittjr@gmail.com. Visit: facebook.com/smithvilledambusters/. Sponsor: SMITHVILLE DAM BUSTERS RC.

07/25/2020 - Columbia, MO (C) MMRCA FLYING TIGERS SUMMER SIZZLER BENEFIT FUN FLY. Site: MMRCA Flying Tigers Field 2810 S Coats Ln. Mr Jeff Buchner CD/EM PH: (573)819-8093. Email: jbuchner@midcitylumber.com. Visit: www.mmrca.org. Sponsor: MID MISSOURI RC ASSOCIATION.

MONTANA

07/11/2020 - Libby, MT (C) KOOTENAI RC FLYERS ANNUAL FUN FLY. Site: Champion Haul Rd. Mr Sam Scheer CD/EM PH: (406)270-8230. Email: sam.scheer@gmail.com. Visit: www.kootenaircflyers.com. Sponsor: KOOTENAI RC FLYERS.

07/25/2020 - Bozeman, MT (A) BATTLE OR THE MOUNTAINS. Site: 10927 Kelly Canyon Rd. Mr Gilbert E Curtis CD/EM PH: (406)586-6212. Email: gcurtis102@charter.net. Sponsor: GALLATIN EAGLES.

NEW JERSEY

07/11/2020 - Pemberton, NJ (AA) RC PATTERN CONTEST. Site: Pemberton Regional Airport 141 N Pemberton Rd. Mr Anthony C Rossi CD/EM PH: 9084206901. Email: p510851@gmail.com. Visit: burlingtoncountyrc.com. Sponsor: BURLINGTON COUNTY RC CLUB INC.

07/18/2020 - Pemberton, NJ (C) WARBIRDS OVER PEMBERTON NJ. Site: Pemberton Regional Airport 141 N Pemberton Rd. Mr Anthony C Rossi CD/EM PH: 908-420-6901. Email: p510851@gmail.com. Visit: burlingtoncountyrc.com. Sponsor: BURLINGTON COUNTY RC CLUB INC.

NEW YORK

07/10/2020 - 07/12/2020 - Frankfort, NY (C) HIGHLAND JET RALLY. Site Frankfort Highland Airport 120 McIntyre Rd. Mr Jason Fitts CD/EM PH: (315)601-5508. Email: jason.dfitts@gmail.com. Visit: facebook.com/mvfirebirds and www.mvfirebirds.com. Sponsor: MOHAWK VALLEY RADIO CONTROL MODELERS INC.

07/12/2020 - Johnstown, NY (C) LAZY EIGHT ELECTRIC FUN FLY. Site: 144 Knoblauch Rd. Mr William F Dexter CD/EM PH: (518)674-2446. Email: wdexter@nycap.rr.com. Visit: lazy8rcclubjohnstownny.com. Sponsor: LAZY EIGHT RC CLUB INC.

07/16/2020 - 07/19/2020 - Crown Point, NY (C) EXTREME FLIGHT NORTH EAST. Site: Bridge Rd 580 New York 185. Mr Solomon G Allen CD/EM PH: (518)597-3570. Email: cpsollie597@gmail.com. Visit: www.champlainvalleyflyers.com.

07/18/2020 - 07/19/2020 - Goshen, NY (AA) NASA NORTHEAST QUALIFIER. Site: 178 Indiana Rd. Mr Dan Carozza CD/EM PH: 914-380-2302. Email: aeroplaneart@aol.com. Sponsor: BLACK DIRT SQUADRON.

07/18/2020 - 07/19/2020 - Phelps, NY (C) AIRSHOW 2020. Site: Ford Field 2269 McBurney Rd. Mr David Reid CD/EM PH: (315)548-3779. Email: dreid77@twc.com. Visit: skyrovers.org. Sponsor: SKY ROVERS FLYING CLUB.

07/18/2020 - 07/19/2020 - Frankfort, NY (C) HELI'S AT HIGHLAND PRESENTED BY THE MOHAWK VALLEY FIREBIRDS. Site: Frankfort Highland Airport 120 McIntyre Rd. Mr Jason Fitts CD/EM PH: (315)601-5508. Email: jason.dfitts@gmail.com. Visit: www.mvfirebirds.com and www.facebook.com/mvfirebirds. Sponsor: MOHAWK VALLEY RADIO CONTROL MODELERS INC.

07/25/2020 - Marcellus, NY (A) ARCS PATTERN CONTEST. Site: Marcellus Airport 4910 Limeledge Rd Michael B Gosson CD/EM PH: (315)729-9093. Email: mbgosson@gmail.com. Visit: arcsnews.com. Sponsor: AERO RADIO CLUB OF SYRACUSE.

07/25/2020 - 07/26/2020 - Canandaigua, NY (C) LARRY BOWERMAN MEMORIAL AIR SHOW & FUN FLY. Site: Canandaigua Sky CHIEFS Field 3349 Gehan Rd. Mr James A Schwab CD/EM PH: 585-301-1107. Email: 29jschwab29@gmail.com. Visit: canandaiguaskychiefs.org. Sponsor: CANANDAIGUA SKY CHIEFS.

CANCELED

07/25/2020 - 07/26/2020 - Johnson City, NY (DEMO) BINGHAMTON AIRSHOW 2020. Site: Greater Binghamton Airport 2534 Airport Rd # 16. Mr Chris J Zonio CD/EM PH: (607)205-5050. Email: czonio@gmail.com.

NORTH CAROLINA

07/11/2020 - Newport, NC (C) CRYSTAL COAST SUMMER SIZZLER. Site: Myers Field 288 Carl Garner Rd. Mr David E Jones CD/EM PH: (252)725-0438. Email: rcflyer@coastalplanes.com. Visit: www.coastalplanes.com. Sponsor: CRYSTAL COAST RC CLUB.

07/11/2020 - Mt Pleasant, NC (C) SMITH LAKE FLYERS SUMMER FLOAT FLY. Site: Bernie Smith Aerodrome 6241 Smith Lake Rd. Mr John F Bergsmith CD/EM PH: (704)699-6977. Email: johnbergsmith@me.com. Visit: smithlakeflyers.org. Sponsor: SMITH LAKE FLYERS.

07/25/2020 - Mooresville, NC (C) GRAMS WARBIRD FLY-IN. Site: 429 Patterson Farm Rd. Mr Steve P Vergamini CD/EM PH: (336)834-0126. Email: svergamini@triad.rr.com. Visit: www.greensbororadiocontrolmodelers.com. Sponsor: GREENSBORO RC AEROMODELERS.

NORTH DAKOTA

07/25/2020 - 07/26/2020 - Fargo, ND (AA) 64TH ANNUAL RED RIVER VALLEY CHAMPIONSHIPS. Site: 1321 Elm St N. Ms Aimee L Olson CD/EM PH: (320)492-2810. Email: aimeelee.olson@gmail.com. Sponsor: F-M SKYLARKS INC.

OHIO

07/10/2020 - 07/11/2020 - Harrison, OH (C) OHIO DAWN PATROL. Site: 8470 Lawrenceburg Rd. Mr Lee McDuffee CD/EM PH: (262)444-9293. Email: lmcduffee@wi.rr.com. Visit: facebook.com cincinnati aeromodelers. Sponsor: CINCINNATI AEROMODELERS INC.

07/11/2020 - Aurora, OH (C) FLYING ACES OF AURORA FLY IN AND SUMMER SWAP SHOP. Site: Ray Harmon Park & Harmon Flying Field 619 Bartlett Rd. Mr Robert L Ferrante CD/EM PH: (330)322-0866. Email: robert.1.ferrante@gmail.com. Visit: www.flyingacesofaurora.org. Sponsor: FLYING ACES OF AURORA.

07/12/2020 - Elyria, OH (AA) NOFFA OUTDOOR FLYING EVENTS. Site: Lorain County Community College Field 1005

SANCTIONED EVENT CALENDAR

N Abee Rd. Mr James F Gaffney CD/EM PH: 4409377790. Email: jamesfgaffney@hotmail.com. Sponsor: NORTHERN OHIO FREE FLIGHT ASSN.

07/12/2020 - East Sparta, OH (C) 22ND ANNUAL R/C EAGLES FLY-IN. Site: 3900 Gracemont St SW. Mr William E Peel III CD/EM PH: (330)956-4700. Email: edp@neo.rr.com. Visit: www. rceagles.com. Sponsor: R.C. EAGLES.

07/16/2020 - 07/19/2020 - Galion, OH (C) 15TH ANNUAL EAGLE SQUADRON HUCK LOW 2020. Site: 1999 Fairview Rd. Mr Norman C Elliott Jr. CD/EM PH: (419)512-5649. Email: ncelae136@aol.com. Visit: www.eaglesquadronrc.com. Sponsor: EAGLE SQUADRON.

07/18/2020 - Alliance, OH (C) BIG FUN FAMILY FLY IN. Site: Barber Airport 13871 Union Ave NE. Mr Tommy Mabelitini CD/EM PH: (330)212-4180. Email: tm36176@aol.com. Visit: alliancebalsabees.com. Sponsor: ALLIANCE BALSA BEES INC.

07/18/2020 - Brookville, OH (C) ALL FLY FUN FLY SMALL ELECTRIC TO GIANT SCALE. Site: Brindenbaugh Field 10368 Baltimore-Philipsburg Rd. Mr Darrell Biser CD/EM PH: (937)654-2153. Email: dbplane1@gmail.com. Visit: www.fastrc-club.com. Sponsor: FLYING AERO SPORT TEAM FAST.

07/25/2020 - Grafton, OH (C) BRING A PLANE FLY IN. Site: Grafton Field 36821 Royalton Rd. Mr Mark D Miller CD/EM PH: 440-212-3993. Email: mmiller2000@sbcglobal.net. Visit: clevelandrc.org. Sponsor: CLEVELAND RC CLUB.

07/25/2020 - Delphos, OH (C) 22ND ANNUAL BIG BIRD FLY IN. Site: LARKS Flying Field 7651 Elida Rd. Mr Rodney C Metz CD/EM PH: 419/738-2007. Email: dts@bright.net. Visit: http://larksclub.homestead.com. Sponsor: LARKS.

OREGON

07/11/2020 - Lebanon, OR (C) LARC PUBLIC DAY. Site: 33370 Brewster Rd. Mr Christopher Hickok CD/EM PH: (503)394-2689. Email: hopeforchris@gmail.com. Visit: www.lebanonarearc.org. Sponsor: LEBANON AREA RC.

07/11/2020 - Mcminnville, OR (C) MCMINNVILLE AIRCRAFT MODELERS VINTAGE FLY IN. Site: Club Field SW Masonville Rd. Mr Joseph R Miller CD/EM PH: (503)798-7241. Email: dragonriders54@yahoo.com. Visit: www.mcminnvilleaircraftmodelers.com. Sponsor: MCMINNVILLE AIRCRAFT MODELERS.

PENNSYLVANIA

07/10/2020 - 07/12/2020 - Birdsboro, PA (C) DANIEL BOONE SILENT FLIERS TD CONTEST. Site: 400 Daniel Boone Rd. Mr Steven H Lucke CD/EM PH: 9733357138. Email: stluc2.4@gmail.com. Sponsor: NORTH JERSEY SOARING SOCIETY.

07/11/2020 - 07/12/2020 - Danville, PA (C) ROCKY ROLL MEMORIAL FUN FLY. Site: 209 Kaboodle Rd. Mr David L Hughes CD/EM PH: (570)428-2229. Email: telemaster@verizon.net. Sponsor: SUSQUEHANNA VALLEY MODELERS.

SOUTH DAKOTA

07/16/2020 - 07/19/2020 - Rapid City, SD (DEMO) BLACK HILLS AIR RALLY. Site: Propbuster Field 4680 143rd Ave. Mr Warren D Malone CD/EM PH: (605)393-7516. Email: malonercsd@rap.midco.net. Sponsor: RC PROPBUSTERS.

TENNESSEE

07/14/2020 - 07/15/2020 - Cedar Hill, TN (C) 24TH ANNUAL SAM 43 IN TENNESSEE. Site: Cumberland Flyers Field 3000 Maxey Rd. Mr Robert L Metzger CD/EM PH: (931)761-6291. Email: rlmjam64@aol.com. Sponsor: CUMBERLAND FLYERS.

07/17/2020 - 07/19/2020 - Ooltewah, TN (C) EDF JET JAM OVER THE SUMMIT. Site: Summit Air Field 4234 Old Woodland Dr. Mr Stephen D Payne CD/EM PH: (423)619-8918. Email: p51c@epbfi.com. Visit: crccflyers.com. Sponsor: CHATTANOOGA R/C CLUB.

07/18/2020 - 07/19/2020 - Kingsport, TN (C) FIRST ANNUAL EAST TENNESSEE SPA AEROBATIC COMPETITION. Site: Tri Cities Model Airport 120 Lancaster Rd. Mr Jerry K Black CD/EM PH: 423 418 0887. Email: blackbirdjkb@aol.com. Visit: flyjcrc.com. Sponsor: JOHNSON CITY RADIO CONTROLLERS.

07/24/2020 - 07/26/2020 - Tullahoma, TN (C) WARBIRDS OVER TULLAHOMA. Site: 2912 Northshore Rd. Mr Paul D Green CD/EM PH: 931.743.1205. Email: rcflyer116@gmail.com. Visit: coffeeairfoilers.com. Sponsor: COFFEE AIRFOILERS.

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07/10/2020 - 07/12/2020 - Orange, TX (AA) RC SCALE COMPETIONSHIP. Site: AIMS Field FM 1442. Mr Larry D Hebert CD/EM PH: 409-4239156. Email: sharpeye@wildblue.net. Visit: www.facebook.com/groups/244094939051445. Sponsor: ORANGE COUNTY R/C CLUB.

07/11/2020 - Katy, TX (C) THROWBACK FLING FLY IN. Site: Space City RC Club Field 6332 Katy Hockley Rd. Mr Paul G Curry CD/EM PH: (281)859-7626. Email: pgpjcurry@sbcglobal.net. Visit: facebook space city rc. Sponsor: SPACE CITY RC CLUB.

07/11/2020 - Salado, TX (C) FUN FLY AND TAILGATE SWAP MEET. Site: Hall Field 8680 Union Grove Ln. Mr Douglas M Pettit CD/EM PH: (817)504-2304. Email: dougmpettit@gmail.com. Visit: http://centexmodelers.com. Sponsor: CEN-TEX MODELERS INC.

07/24/2020 - 07/25/2020 - Houston, TX (C) BAYOU CITY FLYERS WARBIRD EVENT. Site: Dick Scobee Memorial Airfield. Mr Corey G Johnson CD/EM PH: 281-782-4885. Email: coreyj645@yahoo.com. Visit: bayouflyersrc.com. Sponsor: BAYOU CITY FLYERS.

WASHINGTON

07/16/2020 - 07/18/2020 - Olympia, WA (CRST) 2020 SCALEHELIPALOOZA. Site: Hot Start Helicopters 600 Hartman Rd SE. Mr Michael W Spinner CD/EM PH: 541-999-2938. Email: jestrr@msn.com. Visit: palooza.scalerchelis.com. Sponsor: FLORENCE AREA RC AIRCRAFT ASSOCIATION.

07/24/2020 - 07/26/2020 - Chehalis, WA (AA) NWSAM FARO FIELD SCALE RALLY. Site: 1354 Pleasant Valley Rd. Mr Thomas W Strom CD/EM PH: (360)791-7729. Email: flyboy23e@aol.com. Visit: nwscale.org. Sponsor: FARO FIELD FLYERS.

07/25/2020 - 07/26/2020 - Ferndale, WA (C) WARBIRDS & CLASSICS OVER WHATCOM. Site: Lummi Indian Reservation 3004 S Red River Rd. Mr John J Schoening CD/EM PH: (360)220-0407. Email: jjschoening@msn.com. Visit: bellairr/cflyers.com. Sponsor: BELL/AIR RC FLYERS.

WEST VIRGINIA

07/15/2020 - 07/19/2020 - Ridgeley, WV (C) 8TH ANNUAL CUMBERLAND SUMMER SOARING. Site: Highpoint Aviation Airfield WV-28. Dr James H Dolly CD/EM PH: (301)759-3547. Email: jdolly@atlanticbb.net. Visit: www.camsrc.org. Sponsor: CUMBERLAND AIRCRAFT MODEL SOCIETY.

WISCONSIN

07/11/2020 - Durand, WI (C) KOMRO CLASSIC. Site: Buck Knob Field 4666 Wisconsin 85. Mr Michael J Zaborowski CD/EM PH: 715-450-9889. Email: grimracercnc@yahoo.com. Sponsor: WESTERN WISCONSIN MODELERS ASSOCIATION.

07/11/2020 - Rhinelander, WI (C) FUN FLY. Site: 6040 Forest Ln. Mr John Wich CD/EM PH: (715)282-5025. Email: flashd@frontiernet.net. Sponsor: NORTHWOODS RC FLYERS.

07/11/2020 - 07/12/2020 - Grafton, WI (C) ASTROWINGS OF WISCONSIN RC AIRPLANE FLY IN AND SWAP MEET. Site: WE Energies Field 1866 N Port Washington Rd. Mr Gregg T Williams CD/EM PH: (414)761-8320. Email: pres@astrowings.com. Visit: astrowings.com. Sponsor: Astrowings of Wisconsin Grafton Flying Club.

07/12/2020 - Menomonee Falls, WI (C) 18TH ANNUAL SCALE FESTIVAL. Site: Tamarac Airfield N61 W17000 Kohler Ln. Mr Christopher P Milbauer CD/EM PH: 414-750-2740. Email: chrismilb@att.net. Visit: flyingelectrons.com. Sponsor: FLYING ELECTRONS INC.

07/18/2020 - Dorchester, WI (C) HOBBYLAND FLYERS FUN FLY. Site: 5552 Rosedale Ave. Mr David Williams CD/EM PH: (715)678-2826. Email: sw704820@gmail.com. Sponsor: HOBBYLAND FLIERS.

WYOMING

07/9/2020 - 07/12/2020 - Riverton, WY (C) 2020 WYMOPA FLY IN. Site: 40 Honor Farm Rd. Mr William K Spillman CD/EM PH: (307)856-6378. Email: kent.spillman@yahoo.com. Visit: kent.spillman@yahoo.com. Sponsor: WYOMING MODELERS PARK ASSOC.

07/24/2020 - 07/26/2020 - Casper, WY (C) CASPER AIRMODELERS ANNUAL FLY-IN. Site: Modelers Facility JC's Way. Mrs Shannon D Bastian CD/EM PH: (307)577-6463. Email: shandico@yahoo.com. Sponsor: CASPER AIRMODELERS ASSN-.

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MICHIGAN

07/11/2020 - Brooklyn, MI (E) 37TH ANNUAL OPEN AIR SWAP. Site: 8247 Wolf Lake Rd. Mr Gary E Adams CD/EM PH: (517)592-6060. Email: gadams@frontiernet.net. Sponsor: IRISH HILLS RC.

NEW MEXICO

07/11/2020 - Albuquerque, NM (E) FIRECRACKER SWAP MEET. Site: George J Maloof Memorial Air Park 8500 81st NW. Mr Victor T Newton CD/EM PH: (505)263-5736. Email: vicnewton@comcast.net. Visit: www.arcc.club. Sponsor: ALBUQUERQUE RC CLUB.

Sanctioned Event Calendar Listing and Ad Information

Questions about either Sanctioned Events listings or Supplementary Ads should be directed to AMA's Competition Department at (765) 287-1256, ext. 252. Send ads to: AMA Headquarters, Attn: Competition Dept., 5161 E. Memorial Dr., Muncie IN 47302 or via email to: competition@modelaircraft.org.

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FLASHBACK TO THE 1950s

Photos by David Boudreau | djbonnorth@yahoo.com

DAVID BOUDREAU was 10 years old in the 1950s and loved airplanes. "Model airplanes were not sophisticated, and RC was in its infancy," he wrote. "[There were] no digital radios or servos, rubber bands were used to power escapements, and escapements had to be wound up after every flight. Transmitters were as big as a shoebox, with antennae the size of a fishing pole."

David's Orbit transmitter was powered by a 22-volt battery and 1.5-volt batteries—an arrangement that was needed to power the small tube in the transmitter.

"Batteries didn't last very long in the transmitters and were not easy to get and replace back in the 1950s," he wrote. The transmitters also had one push button and sometimes a single-pole switch.

David started flying with a 1/2A Stuntman Control Line (CL) airplane on 30-foot lines. He wanted to try Free Flight (FF) as he got older, and saved money from his paper route to purchase a transmitter. He later flew larger CL aircraft with .25 to .35 engines such as McCoy, Fox, K&B, and even a green-head Torpedo .35.

"The first picture is me, with a Freshman .29 CL solid balsa-wing airplane. My dad had to stand behind me and hold onto me when I first started flying it. It had a McCoy .29 on it."

The second photo is of David with some of his more-advanced CL airplanes. The airplane on the left had a McCoy .29 engine and the one on the right was powered by a Fox .29. The two biplanes in the front belonged to his dad.

The third photo is of David's white-winged Aeronca that he built with a Hornet .09 engine. It was one of his first RC aircraft. He used an Orbit transmitter and a Bonner escapement. "The first plane didn't last long," he noted.

The Taylorcraft in the same photo was for FF. "Needless to say, it didn't last long either," he wrote.

"Over 60 years, I gained a lot of experience about crashing, building, and learning new things. The years have been good to me. I have met lots of great people in the RC hobby who share the same love for model airplanes as I do. I still enjoy building and the successful first maiden flight of a new model airplane, even with the new laser-cut, fast-build, or ARF models, RC radios with all of the latest technology, and servos that have more power than you can imagine.

"RC flying is a great hobby and I plan on enjoying it as long as I can."

SHARE YOUR STORY

Do you have a high-quality/high-resolution airplane, helicopter, or multirotor photo that you are proud of, or a model aviation-related photo with a great story behind it? Email your "Viewfinder" photo and a description about it to jennifer@modelaircraft.org.

STAN ALEXANDER

Model Aviation's *"RC Scale" columnist*

By Jay Smith | jays@modelaircraft.org

Jay Smith: *How did you get involved with model aviation?*
Stan Alexander: When I went to school, we passed the Nashville airport BNA [Berry Field Nashville] every day, twice a day. There were always lots of airplanes parked there—everything from a DC-3 to F-104s in the Tennessee Air Guard.

I started building plastic models and competing in the Tennessee State Fair. After the first year, I won in several classes. Then a good friend in our Scout troop, Mike Ferrell, had a Cox PT-19 and he showed me how to fly it after meetings. I saved and bought my own then started building Goldberg and Sterling models, including the Goldberg Eindecker E-III.

JS: *How has model aviation impacted your life and/or career?*
SA: I've been involved in AMA's Scale SIG, the National Association of Scale Aeromodelers (NASA), for more than 38 years. I served as its newsletter editor, vice president, and president for [the past] 8 years.

Jim Parker asked me to volunteer at EAA's Oshkosh AirVenture working in fly-by operations, giving pilots departure briefings. That was a lot of fun and I learned much about the full-scale flight envelopes of the different aircraft on the taxiway.

I had been judging for several years, and in 1993, I was asked to judge the FAI Scale World Championships in Holland. I have served as the FAI Chief Judge for 22 years.

JS: *What disciplines of modeling do you currently participate in?*
SA: Sport flying and Scale competition, as well as judging Scale competitions. I've judged AMA Scale Nats and FAI Scale, as well as the Top Gun Invitational, for many years. I truly enjoy building and flying models as well. I had hoped to put a model back on floats this year but that might not happen.

JS: *What other hobbies do you have?*
SA: I started shooting photos around 10 years old and have never stopped. I've shot weddings, events, and a lot of nature shots. My dad taught me to fly-fish. The last fishing trip we took was to Henry's Fork of the Snake River [in Idaho]. That was a special day many years ago, but I still enjoy it. My wife and I both like to travel, and we take our camper as often as we can.

JS: *Who or what has influenced you the most?*
SA: There have been several, including Dave Platt, Bob Underwood, Claude McCullough, Narve Jensen, and Jim Parker. All of these great friends came along at certain times and steered me in the right direction. I once wrote a letter to Dave Platt asking for help running a Scale contest. He responded to me in a week and after I obtained my contest director's license, we started a regional Scale contest.

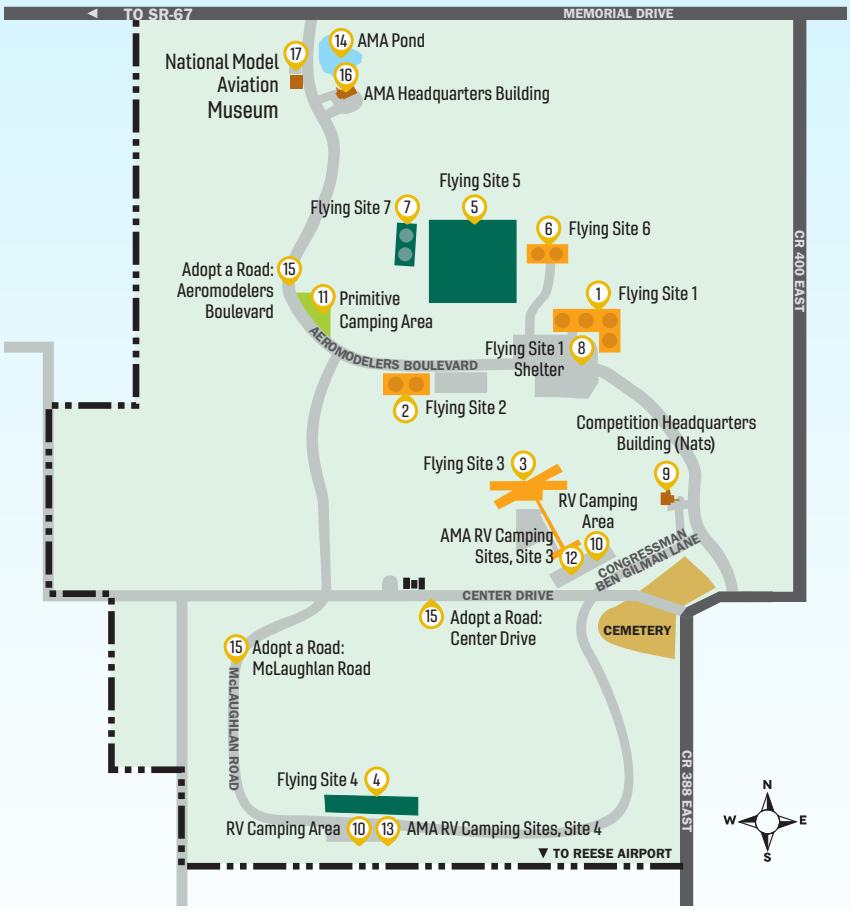
Most of all, my wife of 35 years, Esther, has always encouraged me, helped me, and gone with me whenever I go to competitions. If I've needed a part or wanted a kit, she sometimes has helped out there, although now, when I start talking about a new model, she's like, "Where are you going to put it?"

JS: *What advice would you give someone interested in Scale competition?*
SA: It's so much easier to start in Scale now. In the Fun Scale category, you can bring a model that you've bought or somebody else has built for you and compete with that. Build an aircraft that you really like a lot and gather your documentation first! The internet is a good source for many aircraft.

See if there is somebody [involved in Scale] in your area. If not, connect with Scale modelers on a website such as RCScaleBuilder.com. There are several Scale groups on Facebook and on the internet as well. Check for Scale articles in *Model Aviation*. These will help in building too.

You will make mistakes; that's part of the fun of learning. Don't enter competitions to "win." Enter to learn and have a good time. You might be surprised that in doing this you have won friends and had good times! We all learn about models and aircraft at the same time.

AMA Foundation Endowment



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RC Pylon: July 12-18
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CL/RC Scale: July 16-19
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RC Soaring: July 23-August 2
RC Combat: July 24-26
Outdoor Free Flight: July 27-31
RC Helicopter: August 2-5

REGISTER TODAY! **nats.modelaircraft.org/register**

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