

THE SCALE SQUADRON
OF
SOUTHERN CALIFORNIA



Founders of the
US Scale Masters Championships

SCALE DIMENSION

Official Newsletter of the Scale Squadron of Southern California



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Founders & Proud Supporters of
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On the Cover

1. Matt Webb's Christian Eagle II doing what Christian Eagles do.
2. Robinson R22 flown by Thanh Chung off on another sightseeing tour of Black Star Canyon.
3. Whether flying or sitting on the tarmac, Greg Minden's ERCO Ercoupe 415-D has to be seen to be believed.



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Mike Greenshields
Commander

Squadron:

Well, it's been an interesting month for your club Commander... One week in Chicago for the Ace show, one week in Vegas for Super Zoo (Animal Supply Show), and a week of dealing with a completely failed home air conditioner and all the floor damage the old A/C caused (water everywhere...). We still have another week of home repairs to fix all that.

Yep, I'm the proud owner of a brand new 4 ton A/C with all new ducts. Yay me...

Funny, this brought to mind our good friend Sam, God rest his soul. Not that long ago, Sam and Nancy dealt with a similar issue. Washer machine failed, destroyed the home floor, and they spent the better part of a month dealing with it all.

Anyway, bottom line is I truly hope this last month of hot and humid weather didn't negatively affect you all too much. I feel like it was too hot to build or fly really. We're coming up on good building weather and this will be the time to hunker down and get that new model in-process, or that old project finished.

This week was just a reminder of why we generally don't schedule events in August and the

first half of September. You never know just how hot it will really be?!

I'm truly looking forward to things getting back to normal and we can all get on with some good modeling!

Bring your projects and let's talk about the **Squadron Builders' Wing 2023**.

Speaking of the Builders' Wing, at the August Squadron meeting we went around the room and got commitments from a number of pilots to build airplanes for W&C 2023. Here's the list so far:

- **Mike Greenshields** - Saito Fly Baby Kit
- **Steven Penn** - Biplane Project
- **Tim Cardin** - Composite ARF P-47 Thunderbolt
- **Larry Wolfe** - Apache or Panther
- **Eric Puchalski** - Stinson SR9 Reliant
- **Gordy Truax** - Hellcat
- **Ed McCormick** - RAF S.E.5a
- **Jaime Colley** - Fokker D.VIII
- **Steven Penn** - Sopwith Pup
- **Joe Trama** - TBM Avenger or Bates Bearcat
- **Jerry Thompson** - Stinson SR9 Reliant
- **Wayne Spani** - Aeronca L?, Schneider DFS 108-14 SG-38 Schulgleiter, or Buhl LA-1 Bull Pup
- **Rob Hahn** - Grumman F-11 Tiger micro glow EDF

Notice that some of these builders have not made up their minds on a final project. But that doesn't mean they can't commit to having *something* done in time for W&C 2023. We'll be checking in on them over the next several months.

See **Page 25** for more information on the **2023 Builders' Wing**.

Let's make it a fun September meeting.

Mike Greenshields, Commander
Commander@ScaleSquadron.com

p.s. Get your home A/C checked regularly!



EDITOR'S NOTES

Well, I hope you're enjoying all the recent California sunshine! I know we've been getting an extra heavy dose of it over the past couple weeks and that's resulted in a lot of OCFA activity at OCMA Field. And that, in turn, has been limiting flying time out there. With temperatures ranging from the 90's to the 110's pretty much everywhere a lot of folks have been keeping close to home and cooler climes.

On the up side, the warmer temps help accelerate glue drying times so everyone should be making great headway on projects, right?

Final Installment of Warbirds & Classics Action

This month's newsletter includes the third,(and final) installment of airplane photos from the Warbirds & Classics event in June. Check out the models beginning on **Page 5**. If you missed the two other installments, take a look at the July and August newsletters.

As usual, we've included some basic information about each model. But you'll notice that many of the details are incomplete. This is primarily due to not having the information supplied by the pilot. If we don't get a Pilot Information Sheet for a model (or if the writing is illegible) then we can't pass on the details.

Warbirds & Classics Photos Online

As I mentioned last month, we've finally been able to put all of the photos that I took at W&C online. Anyone can access the archive and download anything. A couple caveats: These are photos that I took personally. I did my best to get pictures of everyone's airplane but one guy with a camera vs. 150+ airplanes just wasn't a fair fight.

Here's the link:

<https://u.pcloud.link/publink/show?code=kZXjd4VZphzdFFFzrnVwLUfWDorcv4YKHBb7>

There's a **README.TXT** file there that you should take a look at. It includes information about the photos and what you're allowed to do with them (pretty much anything). Take a look and help yourself.

Miniature Engineering Craftsmanship Museum

I was able to squeeze in a field trip recently that left me amazed and humbled. The MECM is in Carlsbad and is a must-see for anyone looking for inspiration to build something amazing. When the



Eric Puchalski
Newsletter Editor

weather cools down a bit we'll start planning some group field trips and the MECM will be at the top of the list of destinations. Take a look at my trip report beginning on **Page 18** and you'll see why.

Rob Hahn's F-11 Build

One of the things I've grown to love about Rob Hahn is the breadth of his interests. This month, he shows us progress on his **Grumman F-11 Tiger** project and includes (at no extra cost) some lizard wrangling. I can only suggest that you take a look at **Page 13**.

Builders' Wing of Warbirds & Classics 2023

Activity on the 2023 Builders' Wing is well under way. We discussed the basic rules at the August meeting and **Mike Greenshields** even went so far as to hold all Board members' feet to the fire and made them commit to a specific model that they will fly at W&C 2023.

Personally, I'm *very* excited about this activity and if I get you cornered, I'll do my best to convince you to participate. The rules have been refined a bit but they're still pretty basic. The purpose of this activity is to stimulate *building* (rather than *assembling*) scale model airplanes. It's not for everyone but if you've ever had the urge to try your hand at building a scale model, now's the time. Take a look at **Page 25** for more details.

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WARBIRDS & CLASSICS GALLERY: PART 3

Aero L-39 Albatross - Shannon Gallagher

Power: EDF Origin: ARF
WS: 57" Materials: Foam
Weight: 16 lbs Finish: Paint



Boeing YL-15 Scout - Ken Blasius

Power: Electric Origin: Scratch
WS: 120" Materials: Built-up
Weight: ? Finish: Fiberglass, cloth, painted



ERCO Ercoupe 415-D - Carl Lindou

Power: ? Origin: ?
WS: ?" Materials: BUSA Kit
Weight: ? Finish: Paint



North American OV-10 Bronco - Tony Quist

Power: Electric Origin: ARF
WS: 108" Materials: Built up
Weight: 45 Finish: Shrink film



Christian Eagle II - Matt Webb

Power: Electric Origin: ARF
WS: 62" Materials: Built up
Weight: 12 lbs Finish: Shrink film



Republic P-47 Thunderbolt - Matt Webb

Power: Electric Origin: ARF
WS: 67" Materials: Built-up
Weight: 14 lbs Finish: Shrink film



2022 Warbirds & Classics Gallery: Part 3

North American P-51D Mustang - Tim Cardin

Power: DA-100 Origin: Kit
WS: 100" Materials: Built up
Weight: 39 lbs Finish: Fiberglass, paint



Piper L-4 Grasshopper - Shannon Gallagher

Power: Electric Origin: ARF
WS: 96" Materials: Built up
Weight: 14 lbs Finish: Shrink film, paint



North American OV-10A Bronco - Frank Kelley

Power: Electric Origin: ARF
WS: 108" Materials: Built up
Weight: 45 lbs Finish: Shrink fabric, paint



ERCO Ercoupe 415-D - Greg Minden

Power: VVRC 60 Origin: BUSA kit
WS: 120" Materials: Built up
Weight: 30 lbs Finish: Shrink fabric, paint



de Havilland DH.98 Mosquito - Anand Patel

Power: ? Origin: ?
WS: ? Materials: ?
Weight: ? Finish: ?



Nakajima Ki-43 Hayabusa (Oscar) - Tony Quist

Power: Saito FG-90 Origin: ARF
WS: 88 Materials: Built up
Weight: 29 Finish: Shrink film



2022 Warbirds & Classics Gallery: Part 3

North American P-51D Mustang – Jerry Thompson

Power: O.S. 120 4S Origin: Kit
WS: 65" Materials: Built up
Weight: ? Finish: Monokote



Supermarine Spitfire - Dave Kadonoff

Power: DLE-61 Origin: BARF
WS: 95" Materials: Built up
Weight: 26 lbs Finish: Shrink film



Bücker Bü 180 Student - Keith Hedge

Power: Saito 150 4S Origin: Short kit
WS: 113" Materials: Built up
Weight: 23 lbs Finish: Shrink fabric & paint



Mitsubishi A6M Zero - Mike Dolan

Power: Saito Origin: ARF
WS: 92" Materials: Built-up
Weight: 31 lbs Finish: ?



Pitts S-2A - Thomas Williams

Power: Electric Origin: ARF
WS: ? Materials: Foam
Weight: ? Finish: Paint



Grumman F8F Bearcat - John Bashore

Power: ? Origin: ?
WS: ? Materials: Built-up
Weight: ? Finish: ?



TIM CARDIN'S P-47 "LITTLE CHIEF" BUILD

[ed note: This is the second in a multipart series where Tim provides updates on his progress on finishing Ed Woodson's P-47 Thunderbolt. Part 1 appeared in the August 2022 newsletter. If you want to contact Tim directly to see what's up, your best bets are email or you can catch him most days at OCMA Field.]

by Tim Cardin

The sliding canopy is now ready, rails and actuator mounts are Hysol'd in place. The hatch is now cut and mounting is in place for a sturdy access panel (**Photo 1-3**). It will house access to all those flight critical features like On/Off switch, Fueling, Air fill valve and gauge. I flip flopped on hatch hinging between miniature piano hinge and off set hinges. I settled on the offset hinges as they hide well. There is a small space penalty to pay but not too costly, everything fits well. With aid of hot glue I worked out hinge placement. To make things easier I used a common hinge pin for the three off set hinges and worked out hinge placement. I've always wanted to use these little hinges and am glad I did. The access hatch is nearly invisible with only the door pull giving it away.

Paint Testing

As I mentioned at last month's meeting graphics were on order from **Callie Graphics** (<https://callie-graphics.com>) and a full cockpit kit from **IflyTailies.com** (<https://www.iflytailies.com>). All of it has arrived and looks great. I also ordered enough additional paint from **Warbird Colors** (<https://www.warbirdcolors.com>) to do the job. Ed had ordered samples to make sure they were the proper colors. Some test painting was done to some scrap, the canopy cut from Lady Alice and windows cut from the P47 canopy. Testing was done over **Wings West Primer**, prepped with 320 wet, bare scrap prepped and unprepped. Warbird colors sticks well on Wings West primer and on the prepped bare scrap (**Photo 4**). The bare unprepped scrap demonstrated why you must clean and sand to provide some 'tooth' for the paint. Tape easily pulled that paint off as did my thumbnail. Paint stuck very well to all the other pieces standing up to taping and attempts to scrape it off with my thumbnail.



Photo 1: Access hatch hinging for power switches, service connections, air pressure gauge, etc.



Photo 2: Here's a shot of what that hatch looked like before it was installed.



Photo 3: With the hatch installed, here's the backplate that will hold all the components that will be covered by the hatch.

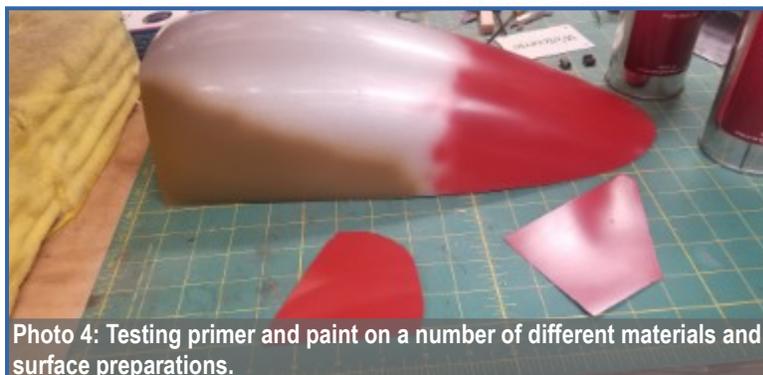


Photo 4: Testing primer and paint on a number of different materials and surface preparations.

Tim Cardin's P-47 "Little Chief" Build

Radio Programming for Pneumatic System

One of my many challenges with this project is learning **Spectrum DX18** programming and the **Jet-Tronics** air valves. If you want to learn how to use a new radio, set it up in a complex warbird. That worked pretty well for me (**Photos 5-8**). Mounting the air valves and tank per the manual, connecting only the tail wheel retract and tail gear doors was a great way to work out all the timing and potentially the speed of the gear. The DX18 has a special feature for sequencing gear doors which works splendidly. Air tank, fill and gauge were all connected using **Festo** airline connectors. The air tank is designed with a Festo connector for a larger airline. Using the larger line from the tank to the Jet-Tronics valves seemed a logical thing to do. I am opting for a **Bob Violet** service valve. I have switched all of my aircraft to use them and find them the absolute easiest and surest way to fill the air systems. With the root of the air system in place a little pressure test was in order. I did not lose ANY pressure in the system for a week showing that the Festo connectors are solid as are the Jet-Tronics valves. I've never used the Festo connections before; I am sold on them now.

Engine Controls & Exhaust

Moving to the business end of "Little Chief" it was time to get the engine set up. The engine mount is factory installed and predrilled as I see in the manual. I am not sure why but the engine is rotated about 3 degrees before 12 o'clock. I'm sure it won't make any difference in performance, the appropriate right thrust is provided by the engine mount. There wasn't much option for mounting the ignition, the connecting cables settle that. Mounting the throttle servo was cake but mounting a choke servo was another story. I ended up using a piece of laminated aircraft plywood 1" x 1" x 3.5" that was in the scrap wood box. It's bolted and dowel pinned to the firewall, removable and very sturdy (**Photo 9**). The last item of business was to make the exhaust headers to route from the outlets on the exhaust ring through the firewall (**Photo 10**) and exiting out the waste gates (**Photo 11**). Made from $\frac{3}{4}$ " copper flex line they make a very clean installation. I do believe I

Photo 5: Physical components, basic air plumbing, and wiring in place.

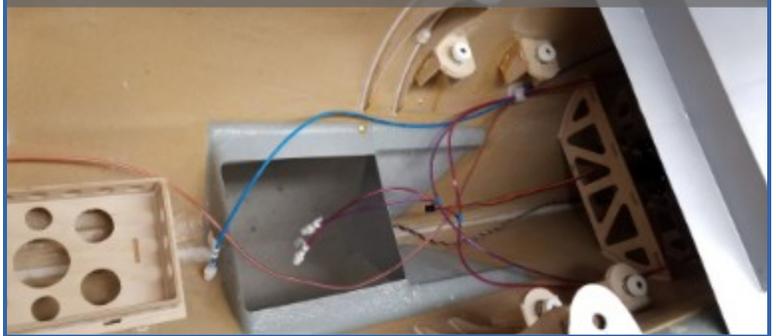


Photo 6: Here's how things looked after working around the previously installed sliding canopy..



Photo 7: Air system plumbed and ready for testing.

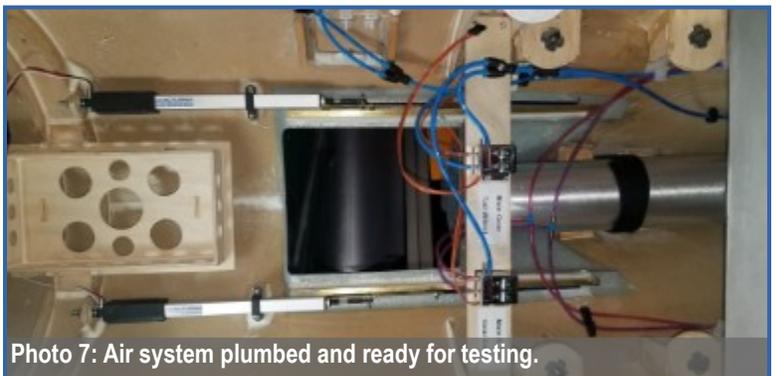


Photo 8: Once the air system was in place, radio controls came next. Note the additional radio tray and wiring.



Tim Cardin's P-47 "Little Chief" Build

will put some sort of insulation between them and the engine support gear which all sits above the pipe. There is cooling through the firewall and out the oil cooler vents but I want a little more separation of heat and electronics.

Some Clean-Up Tasks

The last step in the fuse at this point was to get the receiver tray mounted and populated. Then routing and securing the servo leads. The airlines will be extended to the wing once the fuse is painted. I have to say, I used cable management that came with peel and stick mounting. Even cleaning before sticking didn't do much and they came off with only a little yanking. I clean the adhesive off of them and use that **SuperGlue Total Tape** double sided red tape that was in the pilot's goodie-bag at our Warbirds & Classics this last June, it's made by Pacer. It came to use via Mike Greenshields and Ace Hardware. It is amazing. I will be quite surprised if any of the cable management falls off as all those "adhesive backed" items tend to do. If you need something to stay stuck, this is the stuff to use!

Radio Programming for the Wings

Now that I have a grasp on radio programming it's on to the wings. The wings as I mentioned had already been assembled. Going through the manual there is much preassembled, especially with the flaps as the operating mechanism is installed before the upper/lower wing halves are joined as is the Fowler flap mechanism. I immediately found an issue. The flap servo was not providing enough movement to fully operate the flaps. The next size control arm is so long it will hit the wing skin. Shortening them and drilling a new hole solved it. The servos are 146%-150% of travel in both directions and we have full movement of the flaps. Gear and doors were reviewed, I only had issue with one outer gear door that had a tendency to hang and that is solved. Like it says in the manual, if something fails on the bench, even once, it will surely happen in flight and must be addressed.

Photo 9: Throttle and choke servos, and ignition system mounted behind the main firewall..

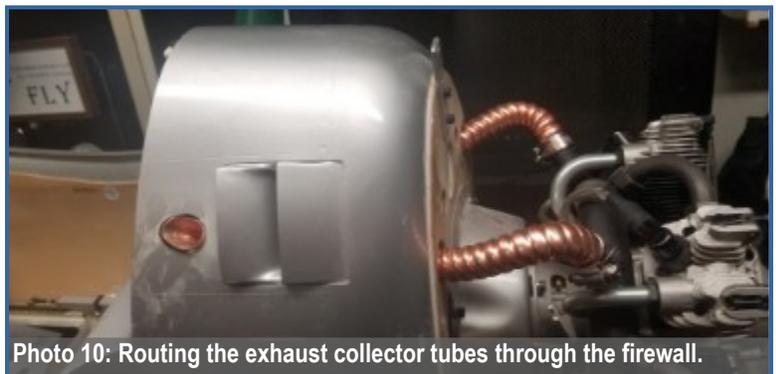


Photo 10: Routing the exhaust collector tubes through the firewall.



Photo 11: Exhaust exit point at the bottom of the cowl.

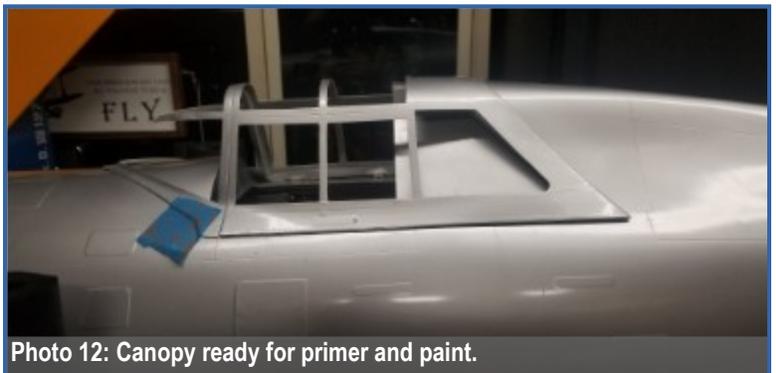


Photo 12: Canopy ready for primer and paint.

Tim Cardin's P-47 "Little Chief" Build

Next Steps

With so much experience under my belt now, it's time to move forward to painting. There will be lots. There is a lot of airplane and I have very limited room. So it will all be done in stages, to help keep things in order.

Until next time,

Tim Cardin

Tim.Cardin@CardinWest.com



Photo 13: Canopy shell trimmed, sanded, primed, sanded again, primed again, and finally ready for paint..

Photo 15: Fuselage sanded, primed, and ready for more sanding and priming before finish colors are applied..



Photo 14: Verifying the location of the graphics and major markings.

OCMA Field Rules: 1A(b) on Announcing Intentions

It's important for everyone who flies at OCMA Field remember that our ability to use the field is not a right, but rather a privilege granted following negotiations between OCMA and the **Orange County Department of Parks & Recreation**. The OCMA Field Rules serve two major purposes: Compliance with OCMA's agreement with OC Parks and the safety of pilots, spectators, wildlife, equipment, and the environment. The rule highlighted this month is very easy to comply with and goes a long way toward protecting everyone's safety and the environment.

Rule 1C(b): *Announcing loud enough so all flyers present on the flight line can hear; all take-offs, landings, and touch-and-goes. These are the only maneuvers that can cross to the south of the Deadline. Yelling "dead stick" gives that pilot the right of way. Do not enter the runway from the pit area unless you have observed a clear runway. If you don't look; you can't see.*

Applies to: Anyone operating any aircraft in any area of the field: fixed-wing, rotary-wing, and drones.

Purpose: The purpose of this rule should be pretty obvious: when someone is piloting an aircraft, their attention is *not* on what's going on everywhere else. A pilot setting up for a touch-and-go may not notice that someone has stepped onto the runway to retrieve a wayward aircraft. At two points in *every* flight a model needs a clear runway; take off, and landing. These are also typically the most tense portion of the flight and the pilot may not be aware of anything except his or her aircraft and the runway centerline. It's up to all pilots to keep all other pilots informed of their actions and intentions with respect to the runway centerline.

Consequence: Some consequences of not applying this bit of common sense are: models landing on top of other models, models hitting stalled models, models hitting people. You don't want to be the pilot who caused any of these situations or pretty much everyone else will be keeping a very close eye on you from then on.

Penalty: This is a **Tier 1** Rule, which means Field Safety Officers are empowered to retrieve the OCMA member card and key from anyone who violates this rule even *once*. If you violate the rule and there are no other pilots flying then you may get off with a warning. But that's probably not worth the risk. Just get in the habit of letting people know what you're doing on the runway and you'll be fine.



ROB HAHN'S F-11 TIGER BUILD

by Eric Puchalski

When we last dropped in on **Rob Hahn** to see how he was doing on his **Grumman F-11F-1 Tiger**, (see the **August 2022** newsletter), he had made amazing progress. He had worked out most of the technical details relating to installing a Cox .020 Pee Wee engine in a modern day 50MM fan unit. He had redesigned the intake and thrust tubes for the model based on experience and more current information. Since the original model was not designed for R/C, there were no accommodations in the design for maintenance of internal components. So Rob had to come up with ways to access components for regular maintenance. Through creative use of carbon fiber strands and mat, he had adapted his 1950's era Berkeley free flight kit to R/C. Last month, some of his solutions had not yet been implemented but he had a pretty good idea of where he wanted to go.

He still had a number of challenges to overcome, including how to set up a modular fan unit that could be removed from the fuselage for starting and tuning, and then be returned to the airframe (while running) for flight. And, oh, yeah, and it had to have throttle control!

Believe it or not, Rob has actually overcome most of those technical challenges and is working on finishing touches like finish trim detail.

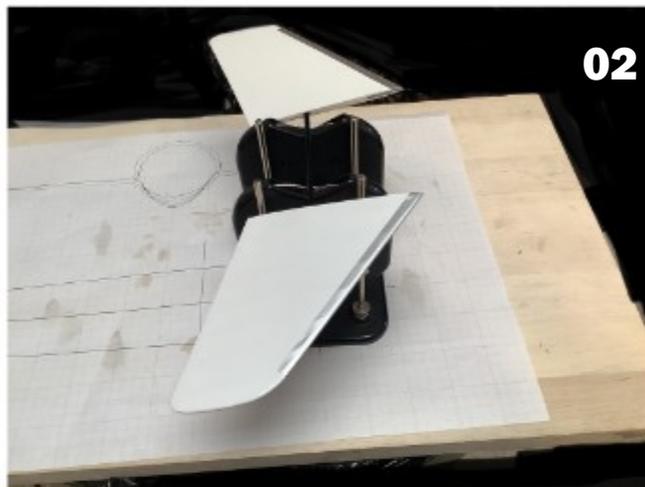
Through most of the construction, the fuselage was built in two halves that were originally meant to be joined late in the construction process. This was the construction method recommended by Berkeley and Rob saw no reason to deviate from what worked then. He's finished and covered the two halves and they will remain separate until the last possible moment.

As always, Rob has provided a number of photos and comments over the past month, so I'll step aside and let him do the talking from here.

01: Here's what we're emulating, in case you don't remember. The airplane shown belonged to USN **VA-156 Attack Squadron** which was operational from 11/1950 through 01/1959 when it was redesignated VF-111 Fighter Squadron.

02: Not sure if balancing the flying stab is necessary or even beneficial. Each one took about 0.9g of lead.

03: I once built a semi-scale MiG 29 Fulcrum. Finished it with flat gray MonoKote. I was not happy with the covering as it seemed to wrinkle endlessly in the sun. So the next time I needed gray I bought UltraCote which is here on the fin. I recall not being happy with UltraCote gray either so I laid the fin out in the sun to see. The wrinkles were present but the real bad part was that any edge where the covering did not wrap all the way around to the dark side of the fin came unstuck and pulled away. Not good. I'll decided that gray MonoKote was worth another look.



Rob Hahn's F-11 Tiger Build

04: Fan compartment all sealed up and fuel-proofed with resin.

05: The new roll of flat gray MonoKote arrived so I tested it and then made a corporate decision to carefully remove the UltraCote and redo it in MonoKote. Don't remember the previous gray MonoKote I used being so agreeable but this new stuff is wonderful. Minor setback.

06: 2mm gap between shroud and thrust tube filled with automotive sealing compound. Once cured and trimmed, it will make more sense. (hopefully)

07: Here's how that worked out. I was able to pull fan shroud out with mostly cured sealing compound attached. This compound will, in theory, serve as the rear fan unit mount, shock absorber and more importantly, perhaps keep most of the fuel mess in the tube rather than fan compartment.

08: The spring used for gear suspensions just happened to be the right diameter to fit snugly (hopefully snugly enough) on the axles to retain the wheels.

09: Visited McFadden Dale hardware to find the right size spring to make a similar keeper for the upper aluminum spring collar on the nose gear strut. That is a 5g nano servo with plastic gears. To use such a light and fragile servo, the linkage to the nose gear and rudder will use all the travel of the servo to get the bare minimum of movement at other end.

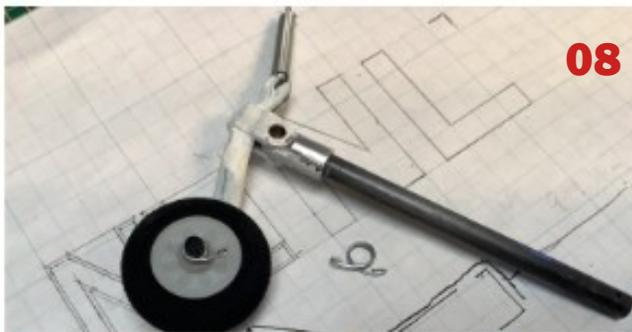
10: Cut open the receiver bay for test fitting. Each antenna wire is guided thru a piece of Robart air line ending up in the wing roots at the prescribed angles. Had to spray wires with silicone to get them to go. CF is in both halves at keel so it is left uncut.



05



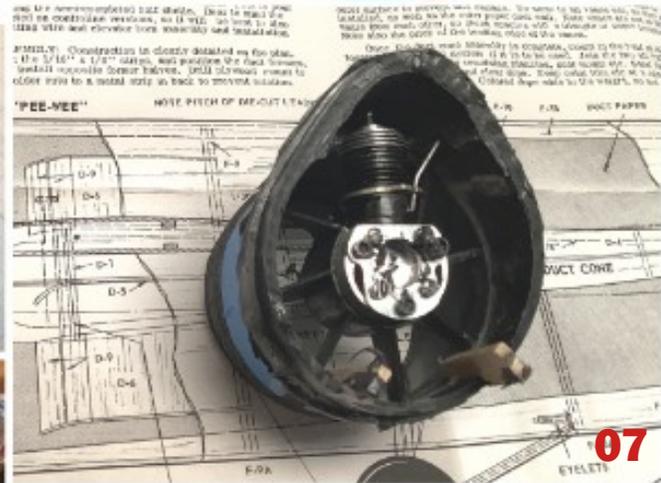
06



08



09



07



10

Rob Hahn's F-11 Tiger Build

11: A torsion spring keeps the throttle linkage at idle unless moved by hand while starting and tuning or this servo when in place. It travels about a quarter inch from idle to full throttle. And yes, I too think it will be a miracle if all this actually works!

12: A little sanity check to make sure everything fits as (mostly) planned.

13-14: The first receiver battery I tried to use (not heavy enough) was a 300mAh LIFE @ 20g. Still needing more weight in the tail, I found an 850mAh LIFE @45g that could still be made to fit in the space between thrust tube and skin.

15: With fuselage halves joined, I was able to secure fan latch, add shroud handle, pins and magnets for hatch. The gap between shroud and inlet duct (intensional) needs to be filled with a sealant lip so as not to suck atmospheric pressure from this compartment where fuel bags are also located.

16: CF tab added to top, front of fan shroud. Spring-loaded Delrin latch can be secured once the two fuse halves are joined. I have discovered that using CF makes for a very light plane. In fact I figure if I can cram another 2-3 lbs of CF into this project, by the time I get out to the flying field I'll have to tie a string to it just to keep it from floating off! No, but really, it is currently at an all-up weight of 13oz with only a few small items left to add.



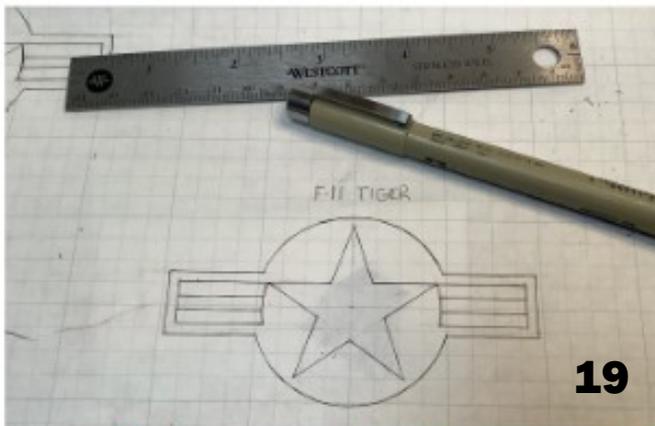
Rob Hahn's F-11 Tiger Build

17-18: The first springs used for main gear were too weak. The only other suitable springs on hand seemed to strong at first but ultimately worked. At a weight of 13oz, each main gear will have to carry about 6oz.

19-21: Speaking of markings, I start with drawings of the markings I want and transfer those to lightweight cardboard for tracing onto MonoKote. (The templates shown were compliments of El Pollo Loco.) These markings are then carefully cut out and ironed on to the airframe. The scrap pieces are trimmed off. When all is said and done, everything looks like it supposed to.

22: Target scheme.

23: The plane is basically done. Plenty of blank covering asking for more graphics, accessories and weathering. The pilot figure is a little too big making the plane look small. Weighs 375g or 13.2oz dry and you can add 30cc of glow fuel for gross. Cox Tee Dee .020 not running good enough yet. Suspect it needs more castor oil and nitro. Still tinkering.



Rob Hahn's F-11 Tiger Build

And Then There's This...

(Ed note: As a service to bored modelers everywhere, Rob offers some tips and techniques for making friends with lizards. If nothing else, it will give you something to do while paint is drying, epoxy is setting up, or glue is drying.)

24: Birds eat lizards. When in the presence of your favorite backyard lizard do not whistle any tune of any type for any reason be it happy or sad. This is not conducive to gaining trust.

25: Lizards like food. Apparently, food in motion is most attractive. If you move it around with your finger like a hockey puck, he (she?) will come and steal it from you. You can sort of play keep-away.

26: Don't bite the hand that feeds you. After eating a mealworm, he tested my hand a few times to see if it was also edible.



FIELD TRIP: MINIATURE ENGINEERING CRAFTSMANSHIP MUSEUM

By Eric Puchalski

So, I used to amuse myself by telling myself that I'm a pretty good modeler and maybe even a bit of a craftsman. On the craftsmanship scale I'm certainly not in the 90's but *maybe*, if you squint your eyes a bit and stand back 15 feet or so, I might get into the low to mid-80's. I sometimes take a while to complete a project but by the time I'm satisfied with my work and "finished," at least *I* usually think it looks pretty good.

Well, that whole illusion was shattered a couple weeks ago when my friend (and similarly misguided soul), **Jack Guiso**, and I spent a morning at the **Miniature Engineering Craftsmanship Museum** in Carlsbad, CA.

The focus of MECM is on craftsmanship, and it places special emphasis on metalworking and woodworking projects at the small (sometimes *very* small) end of the size scale. The museum isn't huge (after all, it's filled with miniatures, right?) but there's still *so much* to see! It's impossible to take it all in with just one tour. We cruised through the displays just to get the lay of the land and then took another, slower look. And then another. I'd look in a display case for the second or third time and I'd see something I had missed on previous visits. A couple times I thought I was walking down a new aisle when I

suddenly realized I'd been there before.

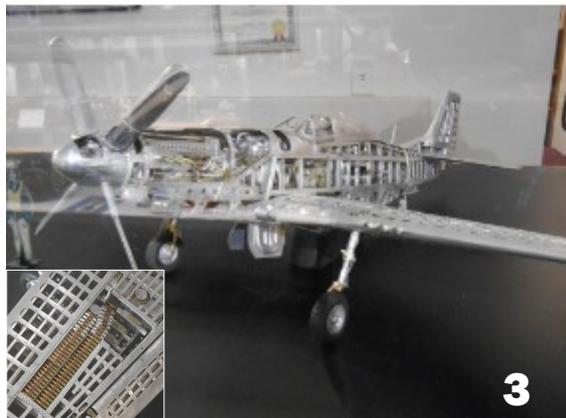
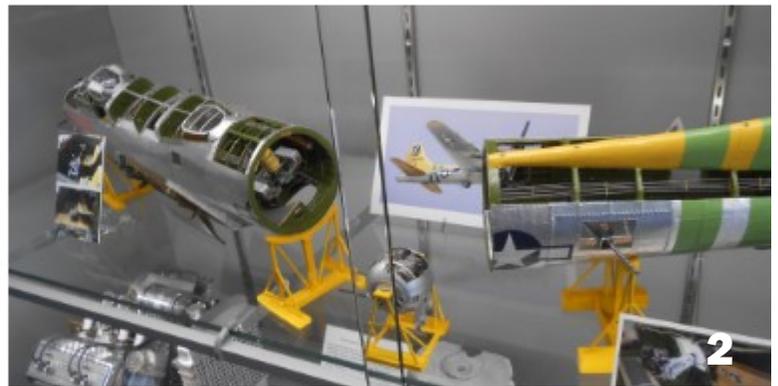
MECM's emphasis is on craftsmanship in general and not specifically model airplanes. There are a few airplanes (including a terrific collection of **Joe Bridi's** personal airplanes, engines, and radios), and

01: MECM is housed in a light industrial area in Carlsbad that's an easy drive from Orange County.

02: A scratch-built version of "Fuddy Duddy," the **Boeing B-17 Flying Fortress** currently held in the Lyon Air Museum at OC Airport. The ball turret alone looks like a couple years' work.

03: This **P-51D Mustang** was also scratch-built and includes an incredible amount of details. Notice that the .50 cal Brownings (inset) have individual belt feeds and rounds; all individually crafted.

04: Check out the fuselage details on the **P-51**.



Field Trip: Miniature Engineering Craftsmanship Museum

lots of engines: 2-strokes, 4-strokes, ignition, glow, flat twins, radials, V-8's, V-12 *freaking Merlins*, both home-grown (kit and scratch-built) and commercial (Saito, O.S., Fox, Cox, Brown, Dennyrite, and more).

But there's also a lot of other stuff: Steam engines, locomotives, tanks, doll houses, machine tools, hand tools, firearms, Gatling guns, boats, tether cars, pulse jets, and even a roller coaster and a carousel. But everything is executed in meticulous miniature and with a breath-taking level of accuracy that transcends what most of us think of as "pretty good." For me it was both humbling and inspiring to see the level of craftsmanship that has gone into these projects. Humbling because up until now, I thought I was pretty good; inspiring because now I know there are much higher levels to achieve.

While this is a museum, it's not at all like visiting a high-brow, stuffy repository of artifacts, placards, and dioramas. Instead of the museum overwhelming you with objects and information, this museum feels like *your* shop or living room. You're right up close and personal with all the displays. The displays are well-lighted and all have mirrors behind each shelf so you can see all around the items without having to change your point of view. It's absolutely wondrous and everywhere you turn, there's something familiar; maybe even something you currently have in your own collection.

This is *not* unfamiliar stuff. You'll find dream machines and nostalgia, flights of fancy, and things you never thought of. I guarantee that there will be at least one thing that will amaze you and completely capture your imagination. At one point, Jack pointed out what appeared to be a smudge on a piece of cotton that reminded me of the sliver of wire I pulled out of the bottom of my foot the other day. It was unidentifiable to the naked eye (well, to *my* naked eye). It turned out to be a nearly microscopic bolt and nut, and a wrench with which to tighten them. (Of course, if you sneeze while working with them, you'll never see them again.)

I could go on for hours but from here, I'll let the photos on the rest of these pages speak for themselves. (Apologies for the slight distortion on many of these but nearly everything is understandably enclosed in glass or Plexiglas cases.) Jack and I are *definitely* making another trip to MECM. Let me know if you're interested and we'll make it a group field trip.

I *guarantee* that your time won't be wasted.



5



6

05: No self-respecting shop is complete without a Bridgeport mill. This little cutie is 1:14 scale, stands about 8" tall & is *fully functional*.

06: And if you're going to have a mill then you obviously will need a lathe. At 1:6 scale, this machine was the builder's masterwork & required about 20,000 hours (10 years at 40 hours per week) to complete. Everything is functional, right down to the sump pump that recirculates coolant from the bed to the cutting tool.

07 & 08: This 1:6 scale 1932 Duesenberg SJ is a centerpiece of the museum & is beyond belief. It comes complete with a running 8-cylinder engine & is accurate right down to the last nut, bolt & wheel spoke. The model has over 6,000 hand-made parts with nearly 1,000 in the wheels alone.



7



8

Field Trip: Miniature Engineering Craftsmanship Museum



9



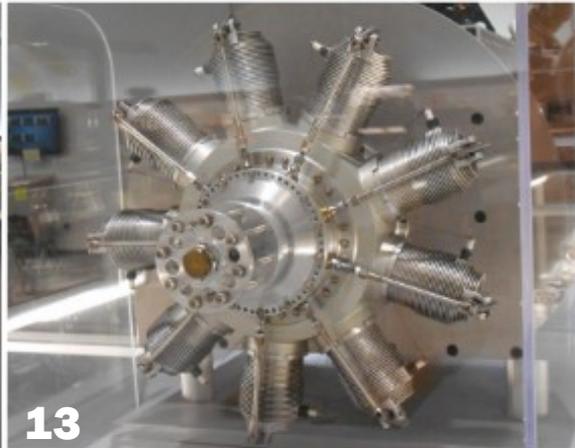
10



11



12



13



14



15



16



17

09: At just 14" long, 6" wide & 10" inches tall & weighing only 11.25 lb., the **Conley Stinger 609** is the world's smallest supercharged four-stroke V-8 engine currently in production. At just 6.09 CI (100 CC) displacement & 10,000 RPM it produces 9 HP.

10: My friend Jack stands agog in front of the collection of miniature tether cars, many of which were milled from solid steel or aluminum billet & hand-finished.

11: A closer view of part of the tethered car collection.

12: There are several aisles dedicated to model engines of all sizes & types. The collection includes many one-of-a-kind prototypes & hand-built engines.

13: Here's a working 1:3 scale **Gnome 160 HP rotary**. This one was scratch-built & was originally used to power a 12' Avro 504K. It displaces 27 CI & weighs in at 11 lb.

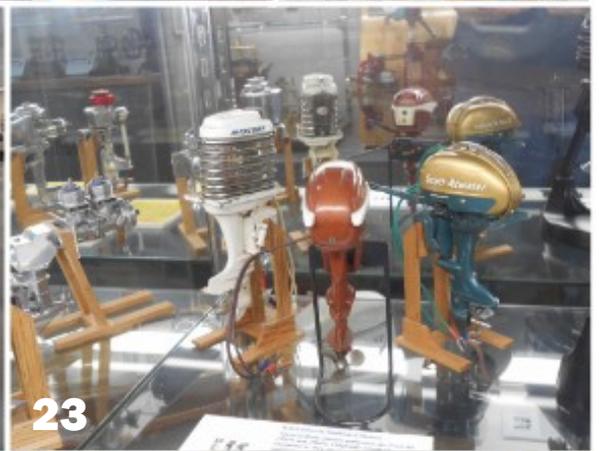
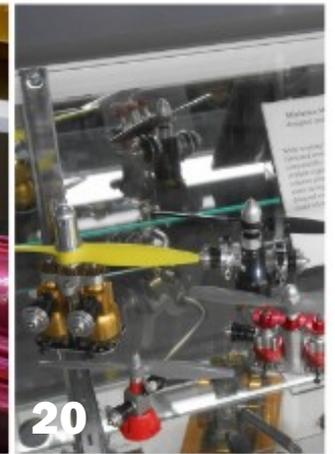
14: The **Gasparin G63V12** is a 90° V-12 powered by compressed CO₂. Its 4 mm bore, 5 mm stroke & 12 cylinders gives it a total displacement of .24 CC (.015 CI). Overall weight: 108 gm.

15: This **JT 1800** 9-cylinder radial uses Saito 120 cylinder assemblies, but everything else was designed & built from scratch. To complete the package, it has a 28" custom design, hydraulically controlled, variable pitch propeller.

16: If nine cylinders are good then 18 must be twice as good, right? This **Pratt & Whitney R-1830-65 Twin Wasp** 18-cylinder two-row radial was hand-built & runs on gas using a dual-spark ignition system.

17: This **Jacobs 7-cylinder** radial was a five-year labor of love for the builder who designed & fabricated everything except the Saito 120 cylinders.

Field Trip: Miniature Engineering Craftsmanship Museum



18: Part of the collection of **Joe Bridi's** personal airplanes, radios, engines & awards. It gets no better than this for the aeromodeler.

19: This is what you get when your ski boat absolutely, positively, has to have *four running V-8's!*

20: Several **Cox 1/2A's** done up as twins driving one prop.

21: Here's a **1950's RC hydroplane** with a custom-built V-8 & centrifugal clutch to drive the prop. Controls include rudder, throttle & spark advance, all controlled via a vacuum tube radio setup.

22: There are several finely detailed, **full-rigged ships**. Most are scratch built & a couple are kits. But all contain an amazing amount of detail.

23: If your boating preference is outboards, here are some power options. Some of these are commercially made but there are also many scratch-built examples.

24: Having done my fair share of clock & watch repair, I really appreciated the museum's collection of horologist's tools.

25: Here's a pretty amazing collection of vintage **Erector Sets** including a fire truck, city bus, and lots of parts to keep you busy.

26: So, dollhouses may not be everyone's forte but when you consider the skills required to build something like this from scratch—including the house itself, all the furniture, picture frames, cabinets, windows, doors, lighting fixtures (that work, of course), bed clothes & everything else in the picture—it seems we might have something in common with the builder.



AUGUST 2022 SQUADRON MEETING

The August meeting was memorable for a couple reasons: First, in addition to the regular business discussions, **Commander Mike Greenshields** presented more details on the **Builders' Wing** activity for the 2023 Warbirds & Classics event. Mike even called on all of the Board members to commit to a build and to name what they were going to do. Initial details about the Builders' Wing were available in the August newsletter and more are presented elsewhere in this issue. Second, there were a lot of presenters for Show & Tell. It was great to see that seven members brought something to talk about. Here's a summary of how that went...

Jaime Colley brought in the **Sopwith Camel** restoration project he's been working on for the last few months. He's working on the final details and he described some of the challenges of 3D printing custom parts. He did a fair amount of that for details such as a steerable and spring-loaded tailskid, windscreen, gunsight, and numerous small details for the dummy Le Rhône 9J rotary engine. Jaime says he's pretty much "done" working on the airplane and now he intends to just fly it and make whatever repairs are necessary.



It was nice to see **Larry Casey** again and he brought along a couple things. First up was another selection from his carbon fiber stockpile. He suggested that anyone who wanted some of it should help themselves. The other thing Larry brought was a prototype of a hand- or catapult-launched glider. He explained how he has been working with some of the neighborhood kids and the local school to get the kids some hands-on experience with modeling. The model he's developed uses a solid piece of carved foam for the fuselage with Coroplast flying surfaces.



August 2022 Squadron Meeting

Joe Trama brought along the wing panels for his *giant Grumman TBM Avenger* that he's been working on for about six years (off and on). He built the model from a Charlie Kellogg kit. Wingspan is 108" and it's powered by a DLE 85. Because the all-up flying weight will be about 55 lbs., it will require an LMA-1 (Large Model Airplane) certification. It uses 13 servos (all on separate channels), and includes lights, retracts, bomb bay doors, and a torpedo release. The color scheme is based on a TBM that operated out of Willow Grove NAS in Pennsylvania during the late 1940's. Paint is from Sherwin Williams which, Joe discovered, conveniently stocks colors based on federal color standards. Joe says that with all the servos and moving parts, the radio programming has been a bit tricky. Although there are still a couple issues with the torpedo release, the model is essentially complete and may have had it's first flight by the time you read this. *(See the April 2022 newsletter for more details on this terrific model.)*



Steve Penn is very much into "mini" models and his latest project is no exception. He showed us his **de Havilland DH-82A Tiger Moth** that he received from a friend. The acquisition included the motor and radio gear (all of which should work nicely for this model) but no battery. Despite its diminutive size, Steve said that this project has presented some "interesting" challenges. He wanted to include a number of details that were not part of the original kit design. Weight is always a factor in all our models but in this case, the all-up target weight is only 1 oz. and his required some creative solutions.

In attempting to meet that goal, Steve found some very lightweight wheels at Peck polymers. Had to figure out something for the hinges and he finally settled on monofilament fishing line. There are many other clever changes he made to save weight. He's now searching for the lightest possible battery to power everything and he'll be good to go.



August 2022 Squadron Meeting

Michelle Nolan showed an interesting project with her **North American-Rockwell OV-10 Bronco** done up in **CAL FIRE Air Tactical Aircraft** livery. CAL FIRE operates 15 OV-10s and uses them as the primary command and control platform on wildland incidents.

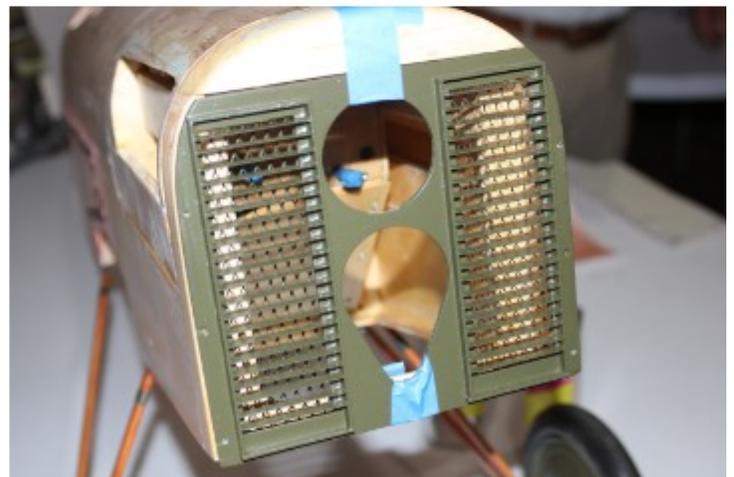
Michelle's model began life as a PNP foam ARF from Motion RC. She is fond of unconventional color schemes and she has always liked the bright, bold CAL FIRE design. So she went to work. It didn't take long for her to scrape the traditional USMC markings and colors off the model. Then, after some filling and sanding, four coats of Krylon white, and a vinyl markings package from Callie Graphics, she had just what she wanted.

Michelle had not flown the model yet when she brought it to the meeting but she said that would happen in the next couple days.



Ed McCormick has been making great progress on his **RAF S.E.5a**. If you've been following Ed's progress on this project you'll know that he's meticulous in his research and determined in his efforts to make things look just right. Ed settled on Poly-Fiber light fabric held in place with Poly-Tak cement for covering the model. He's never tried to simulate rib stitching on a model so he figured he'd better look into that. Doing his usual due diligence, he spent a lot of time looking at what other modelers do and asking people who have done it before. He tried several of the methods and finally settled on one that produces the effect he's looking for.

Ed also completed the detailed radiator grille and louvers, and built a spring-loaded tailskid (which was not on the plans but was on the full-scale S.E.5a). The finished model will be powered by a Zenoah G-38, which should provide plenty of power.



August 2022 Squadron Meeting

Rob Hahn has nearly completed work on his Grumman F-11F-1 Tiger that he's building from a 1950's era Berkeley kit. The kit called for a built-up ducted fan to be powered by a Cox .020 Pee Wee and Rob (because he's Rob) decided to build it that way. He did change out the internally-mounted engine and stamped aluminum fan that came with the kit for a modern 50MM carbon fiber fan and shroud. Most of the shroud was custom made using carbon fiber and it will still use the Cox .020 for power. He modified the engine and fan so he could mount the engine inside the fan shroud to make a removable "power module." This module will be removed for starting and tuning and then, while running, be inserted into the fuselage for flight.

The model will be covered with a couple types of shrink film and Rob's making all the markings out of shrink film and other methods.

(See the August newsletter and the article elsewhere in this issue for more details on Rob's work.)



Inaugural Builder's Wing of Warbirds & Classics

At the July Squadron meeting, **Commander Mike Greenshields** proposed the idea of some kind of special recognition for pilots who bring handmade models to **Warbirds & Classics**. That idea has been fleshed out a bit and will be discussed at the August, 2023 meeting. The **2023 Builder's Wing of Warbirds & Classics** is open to any Scale Squadron pilot who builds a scale model airplane. The purpose here is to get back to the roots of what the Scale Squadron was, and still is: the *building* of scale model airplanes.

Qualifications

1. Model must have been finished *after* the 2022 W&C but was flown at least once before **May 1, 2023**.
2. Model needs to be built from a kit, plans, or scratch.
3. You can start with someone else's work, but **you** need to have done the majority of the building and finishing of the plane
4. ARFs or BARFs do not qualify. This needs to be a kit or scratch model. BTW, ARFs that are really not ARFs, like Composite ARF, are just fine. Why? If you've ever built a CARF kit, you will agree that a wood airframe would be easier to build and finish.
5. No foamies (all foam airframes) unless you cut the foam and assembled the components yourself. Manufactured foamies have been part of the hobby for decades but they are not in the spirit of this effort.
6. Buying someone else's built airplane is great, but it does not count here.
7. **The BIG ONE:** We are hoping that you will commit. Put your name down on the official sign-up sheet at any Squadron meeting, or send an email to **Mike Greenshields**. Then bring in your model every month the Squadron meetings. Share your plane, share your progress, get your fellow club members to help you if you run into a challenge.

Registration for the Builder's Wing has already opened. So dust off a couple of those old projects and get ready to show your stuff.

See you at Warbirds & Classics 2023!



MONTHLY MEETING NIGHT

Monday
September 12, 2022
7:00pm

The September 2022 Meeting is On!

Be prepared to hear from **Commander Mike Greenshields** about the **Builders' Wing** and how that will be incorporated into the 2023 Warbirds & Classics event. If you're interested in participating in the Wing, be sure to bring along whatever materials you have for your project. Keep in mind that visitors are always welcome so don't be shy about bringing someone. And remember that anyone with *anything* for **Show & Tell** will receive a raffle ticket for special prizes to be raffled off at the Squadron Annual Banquet in December.

Meeting location is the **Green Valley Adult Clubhouse**. The address is:

17250 Los Jardines West
Fountain Valley, CA 92708

Directions from the South:

- From I-405 North, exit at Euclid
- Turn **Left** onto **Euclid** at the offramp
- Turn **Left** onto **Slater**
- Go **past Los Jardines East**
- Turn **Right** at the light onto **Los Jardines West**

The Clubhouse is on the right about a half block past the school on the left.

Directions from the North:

- From I-405 South, exit at **Brookhurst North**
- Merge onto Brookhurst and turn **Right** onto **Slater**
- Turn **Left** onto **Los Jardines West**

The Clubhouse is on the right about a half block past the school on the left.

UPCOMING EVENTS

Special Note Regarding Events

A list of upcoming scale events that are easily reachable from Southern California is included here. We encourage everyone to participate in as many of these events as possible in order to show support for clubs that have gone through the same difficulties that the Scale Squadron has experienced recently. Remember that when you attend any of these events, ***you are an ambassador of the Scale Squadron.*** Be sure to mention your affiliation with the Scale Squadron and represent us well! (Also, bring back lots of photos and get them off to **Eric Puchalski** so they can be included in the next newsletter.)

Date	Host & Location	Event & Summary
Oct 19-23	Arizona Model Aviators Superstition Airpark, Mesa CA	2022 US Scale Masters Association Championships Details on this event are a little sparse right now but there should be more information as the event gets closer.
Oct 21-22	Victor Valley R/C Flyers Hesperia, CA	Warbirds Over the High Desert Scale warbirds open to all. \$50 entry fee includes lunch. 500ft. Runway with electricity for chargers.
TBD but Probably Nov 2022	Hemet Model Masters Santa Maria, CA	Scale Masters Clinic Beginners' workshop hosted by U.S. Scale Masters. Bring your own model & learn skills required to be confident & competitive. \$10 landing fee, includes lunch. Class starts at 8:00am & covers all aspects of model selection, documentation, presentation, briefing judges, flying, etc.

POSTPONE



WELCOME ABOARD FLIGHT 687

Get in your seats, buckle up
We are leaving RIGHT NOW!

Errors &

Omissions:

If you note any errors in any information in this list or the flyers on the following pages, please contact **Eric Puchalski** or any of the members of the Scale Squadron Board of Directors. If your club is hosting a scale-themed event that's not on this list, contact Eric to get the event added to the list. If you have flyers, an informational website, or online registration page we would be happy to include that in this section as well.

ARIZONA MODEL AVIATORS

PROUDLY PRESENTS

U.S. SCALE MASTERS ASSOCIATION

41st

National Championships

Model Aviation's Most Prestigious Annual Event



October 19 - 23

**Spectators
Welcome!**

**Mesa
Arizona**

LTV A-7 Corsair by Chris Wolfe



At Superstition Airpark Meridian rd. & Levee dr.

R/C Scale Contest

Pilot's Compete for Prizes and National Recognition

Tim Dickey - tdickey2@icloud.com | Paul Goldsmith - pt19nut@aol.com
480-540-7553 602-323-7753

www.uscalemasters.org

www.azmodelaviators.com

Warbirds over the High Desert!



\$50 Entry / Free for spectators

**VICTOR VALLEY
RC**

6963 Arrowhead Lake Rd,
Hesperia, CA 92345

VVRCF.ORG

FREE LUNCH WITH ENTRY

OCTOBER 21ST-22ND, 2022

8:00 AM - 6:00 PM

500FT. RUNWAY & ELECTRICITY

PREREGISTRATION CONTACT:

Brian Hueffmeier: 909.229.8943

bhueff@gmail.com

We will prepare you for your first scale contest



Open to all a/c types** and power source

SCALE OPEN

SCALE MASTERS CLINIC

HEMET, CA

PLACEMENT ★ PRECISION ★ REALISM

AUG 6, 2022

IMPROVE SKILLS & CONFIDENCE!

Practice Flying In Front of Judges

Bring your favorite scale model and we will teach you additional skills to be confident & competitive



What is Static Judging?

Beginners Workshop

will focus on the entry-level class

Craftsmanship judging available for improving your scores

Landing Fee: \$
Class starts at 8:00 | Lunch available at 11:00

- Topics include: (as time permits)
- Most Often Asked Questions & Misconceptions
- Selecting Best Model Based on Skills and Class Entered
- Preparing Documentation for Model of YOUR Choice
- Learn to Brief Flight Judges & Selection of Flight Maneuvers
- Understanding Relationship w/your Caller
- Score Sheets / Judging your Model / Contest Flying Basics
- Q&A Session w/instructor, judges, coaches

Learn About the Different Classes:

- EXPERT
- TEAM
- ADVANCED*
- PRO/AM PRO*
- PRO/AM SPORTSMAN* (*ARFs allowed)
- (**No 3D flying)

AMA Required to fly | Turbines: waiver required

Clinic Run By
U.S. SCALE MASTERS
www.uscalemasters.org

Contact: **Curtis Kitteringham**
cak11@cox.net
(760) 807-5519

Hosted by
HEMET MODEL MASTERS
www.hemetmodelmasters.net

Advancing & Promoting the Hobby of Remotely Controlled Scale Miniature Aircraft

Many people from all walks of life find it fascinating to produce a miniature working replica of a full-size object, be it a doll house, sailing ship, or operating steam locomotive. In our case it is our passion for flying machines that motivates Scale Squadron members.

Today as scale modelers we pursue nearly every possible aviation subject with the confidence that not only will our project be successful, but that it may well outperform that of its full-scale counterpart.

Squadron members delight in the pursuit of authenticity for scale projects. This requires research and documentation of specific aircraft and their variants.

Many of the flying replicas thus created are of Museum Quality and our members take to the skies with these flying miniatures regularly and successfully.

On the other hand, not everyone wants to make a scale masterpiece. That's OK, too! Whatever pleases you is what counts. Whether you are kitbashing, volunteering at charity aviation events, or making molds from scratch for Scale Masters or AMA National Championship competition scale aircraft, Scale Squadron is a club that embraces all facets of scale aviation R/C modeling and the related community.

Scale Squadron Club Meetings are held on the

second Monday of each month at:

Green Valley Adult Clubhouse
17215 Los Jardines West
Fountain Valley, CA.

Meetings start at **7:00PM** and last about 2 hours.

Our meetings throughout the year include the usual club business as well as Member Show & Tell, Modeling How-Tos, Aviation and Industry presentations, and good ol' time social gathering to help enlighten and encourage our membership to push the boundaries in the art of Miniature Aircraft Replication. Visitors are always welcome. All members and visitors alike are encouraged to bring their latest scale models and projects!



JOIN US!

Membership Requirements

Membership in the Scale Squadron is open to all Academy of Model Aeronautics (AMA) members who are interested in safe formal and informal flying, including the research, building, and flying of Scale R/C Miniature Aircraft.

Membership Annual Dues are \$30.00 covering January 1 through December 31. Membership begins after verification of your current AMA membership card, your FAA Small UAS Certificate of Registration, and receipt of Scale Squadron membership dues.

The Scale Squadron Board reserves the right to deny or delay new membership approval.

Membership Benefits

Membership in the Scale Squadron includes:

- ◆ A subscription to the *Scale Dimension* monthly online newsletter.
- ◆ Squadron membership card and name tag.
- ◆ Advance notice of scale aircraft events.
- ◆ Annual Holiday Banquet for members and one guest.

Membership Meetings

Meetings are the second Monday of each month at 7:00pm. The December meeting includes the Annual Holiday Banquet and raffle drawings for anyone who presented a topic at any of the monthly meetings.

See the *Who We Are* section of this issue for details on the meeting location.

How to Join

If all this sounds like something you would like to be a part of, you can join us in a couple ways:

1. See the last page of this issue for a membership application. Fill out the form and submit it along with the required supporting documents.
2. Use the [Online Form](#) on the Squadron's website to provide basic information and pay the membership dues. A copy of the online form will be sent to you via email. Print this out and submit it with the required supporting documents.

How to Submit Your Application

All membership application submissions must include:

- ◆ A hard copy of the membership application form
- ◆ If the membership dues were not paid online then include a check for \$30.00 made payable to "Scale Squadron." Dues are not prorated if you join after January 1.
- ◆ A photocopy of your AMA membership card
- ◆ A photocopy of your FAA Small UAS Certificate of Registration

Mail these to:

Scale Squadron Membership
PO Box 8074
Fountain Valley, CA 92728

You will receive your membership card and instructions for how to obtain your key to the OCMA field by return mail in about a week.

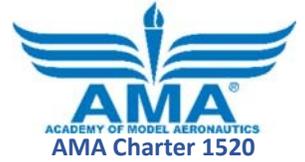


SCALE SQUADRON OF SOUTHERN CALIFORNIA

THE SCALE SQUADRON
OF
SOUTHERN CALIFORNIA



MEMBERSHIP APPLICATION



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NEW RENEWAL Recommended by _____ DATE _____
Name _____ Spouse _____
Address _____ City _____
State _____ Zip Code _____ Email _____ Birthday _____
Home Phone _____ Work _____ Ext _____ Mobile _____
AMA# _____ FAA _____ USSMA _____ FCC/Ham _____ EAA _____

MODELING INFORMATION

Years in R/C _____ Modeling Level: New Intermediate Expert Need Help

Interest Area: WW1 WWII Golden Age Civilian Vintage Jets

Private or Commercial Pilots License & Type Rating _____

Are you interested in Scale Competition? Yes No Would Require Assistance

How did you hear about the Scale Squadron? _____

GENERAL INFORMATION

Meeting Preferences. Check all areas that you would like to see at the monthly meetings

How To Videos Guest Speakers Scale Techniques Scale Contest Prep

Your Ideas _____

Would you be willing to assist at Scale Squadron Events? Yes No Maybe with Help

Registration Gate Flight Line Judging Scoring Cooking

Comments _____

NOTICE: This information is only for the Scale Squadron Data Base and will not be shared or sold to any outside agencies. Your information may be used in a Scale Squadron Membership Guide available only to paid members.