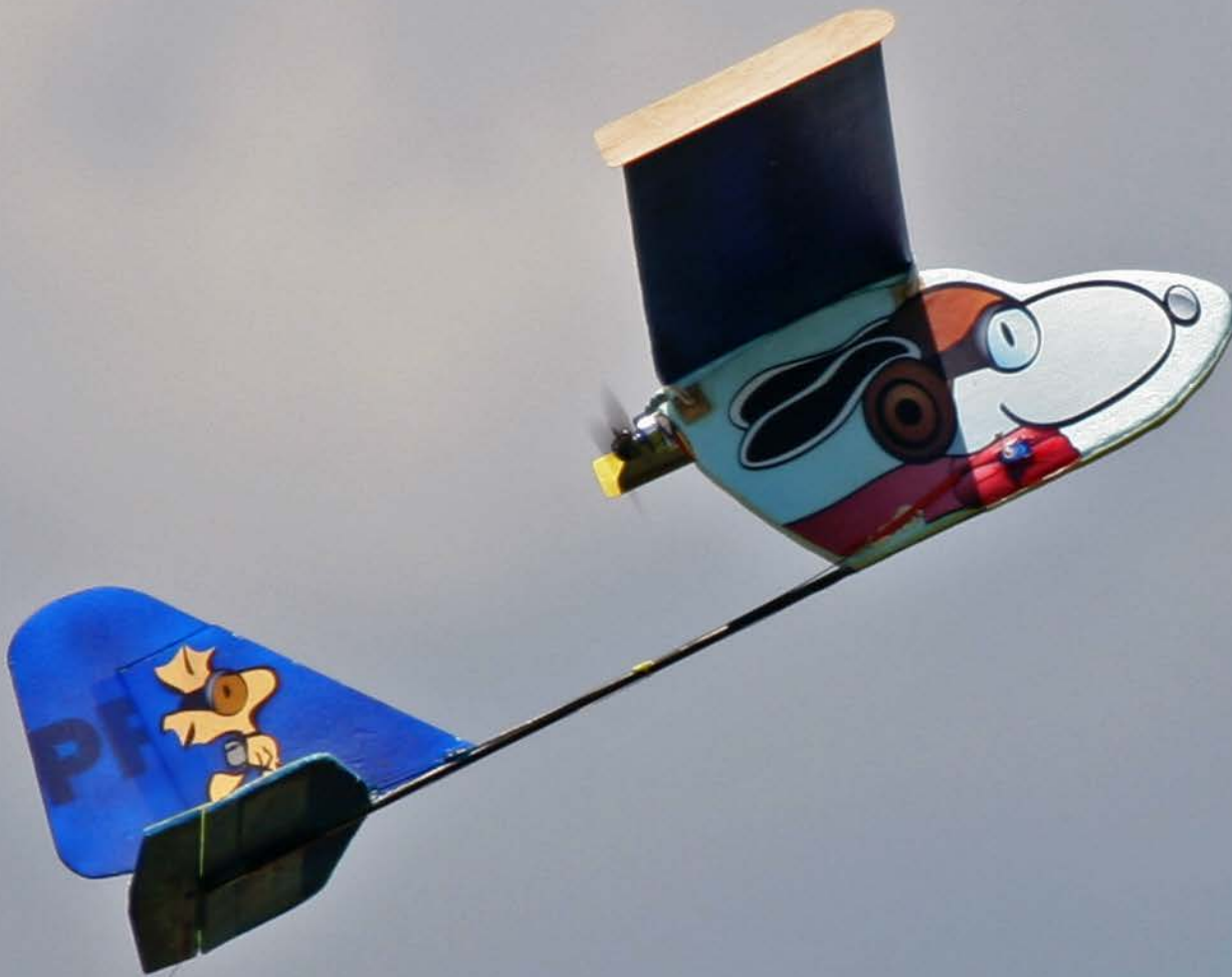




# Glitch Busters

December 2013



**NEXT MEETING**  
**December 3**

**Newark Senior Center**

## UPCOMING EVENTS

Freeze Fly  
January 1, 2014

AMA #197 / IMAA #687

## FROM THE PRESIDENT

I apologize for missing last months' General Membership Meeting. My consulting company goes where we are wanted when we are wanted and money is a big incentive, at least until we win the lottery. Thank you Greg, John, and the others for pinch hitting.

Dick Stewart did a great job running the Auction/Swap Shop and that report will either be in this newsletter or given at our next Membership meeting which is on December 3rd, 7:30PM, at the Newark Senior Center. I plan on bringing two very nice raffle items to help two of you get off to a fast start in 2014. We will also be getting our new officers installed at that meeting.

We will also be discussing our year end budget analysis and discuss the items on our plate for 2014. It should be a good meeting especially if you want to know more about how our club is doing fiscally. Please plan on attending.

It seems impossible for our Freeze Fly is only a month away. I was reminded last night at our Board Meeting that the Freeze Fly is "always" the responsibility of the club president. So, I guess I know what I will be doing. Fortunately, guys like Greg and Davey are always there to help and do a great job at cooking. We will have more about the Freeze Fly at the Club Meeting and again in next month's newsletter.

Please bring your latest project for the club meetings are as good as the programs we come up with and that usually means some kind of "Show and Tell."

Finally, we all hope you and your families had a wonderful Thanksgiving!

## MEETING MINUTES

- One guest from silent knights, Sean Belardo.
- Show & tell was Jim Schlapfer with 2 foam P-40 made from one sheet of foam. Fred brought in a Carbon Cub. he got the first one in from G Force.
- Next meeting they are going to accept nominee's for club officers.

## KARLSSON AWARD

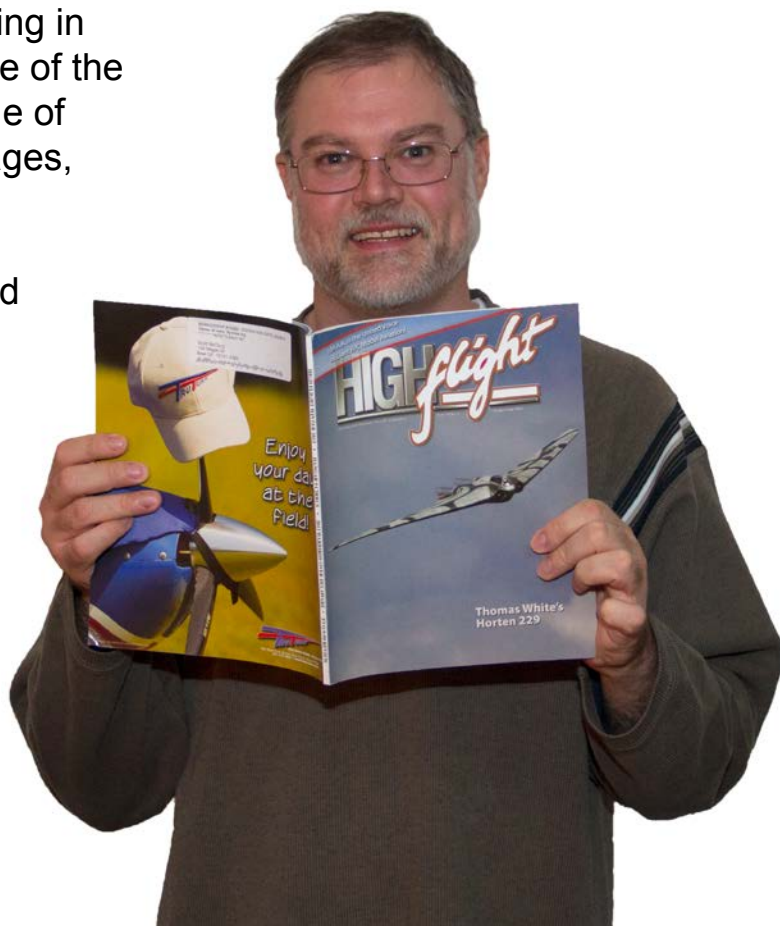
Last month Bob Karlsson was presented a plaque commemorating his 38 years of service on the AMA District IV Scale Contest Board. The Plaque was presented by John Kirchstine the AMA District IV Associate Vice President. We would like to add our congratulations to Bob, for his fine service.



## FROM THE EDITOR'S DESK

Warbirds Over Delaware will be appearing in two magazines: Highflight (the magazine of the IMAA) and Model Aviation (the magazine of the AMA). Highflight is out now, it's 6 pages, plus we got the cover! The article was written by Hank Mausolf, but was incorrectly credited to Scott. He and I did do the photos.

Scott also wrote a 6 page article for Model Aviation for the January issue, which should arrive in mailboxes mid-December. This article also features photos from both of us. Check out the online edition when it's out. It should have additional photos.





## FLEA MARKET & SWAP MEET - by Dick Stewart

The Delaware R/C Club Flea Market & Swap Meet was held on November 2nd. Early birds arrived before 7am. Our assigned custodian (Charles) got there early too, so that table renters could set up before 8am. We were open to the public before the scheduled time of 8:30am.

The new format, all tables & a "Pop Up" Auctioneer was received with many favorable comments. All feedbacks were greatly appreciated by this writer. Some areas for improvements are to display an event timetable, to define the use of a pop up auctioneer and to maintain more control between the microphone operator & audience talk.



Turnout was excellent! The deals at the tables and during the auction phase were unbelievable. It's hard to believe that two table renters tried to pay me for tables next year. Scott from Hobby Town USA attended for the second year. Of course Lynn & Jason representing MPI products were in attendance. The tasty food was provided at a reasonable cost by the Boy Scouts (Troop 30).

Many "Thank You" (s) to: Jim Lester for handling security at the entrance; Loren

Caudill for taking memberships & the distribution of Club Stickers; John Krick as table master; Judy Ellifritz, Paul Gustafson and Scotty Moyer for the sale of raffle & 50/50 tickets; Paul Bryk for the outstanding work as auctioneer and finally the set up & return team of Mike Donato, Joe DeNest, Joe Mongillo, John Kirchstein, Mark Weiss, Rick Scott and Greg Schock. You may have recognized some of these names as perennial volunteers.

### Winners:

50/50 = Greg Schock - \$86.00  
Flyzone Beaver = Dick Plyler

Battery Charger = Steve Rogers  
Tactic Radio = Doug Currin

A financial report was submitted to the treasury. **CD – Dick Stewart**



## PHOTOS FROM THE FIELD





## SO WHAT IS WITH THAT WING? - by Roger McClurg

I often get that question when R/C'ers see my stepped wing airplanes for the first time. The answer is: it's a KF airfoil. It's supposed to look like that.

This month I thought I'd introduce my readers to an unusual airfoil that is easy to build, light, strong, and has excellent stall characteristics.

The KF airfoil is the product of two graphic designers: Dick Kline and Floyd Fogleman. In the 60s they created a paper airplane with a stepped wing that just flew and flew. In 1985 Dick Kline went to Kill Devil Hills NC home of the Wright Brothers first powered flight. Dick appeared on Good Morning America where he flew his paper airplane some 401 feet (the Wright brothers only went 122 feet).

Over the years numerous tests have been performed by NASA, universities, and private companies. All were looking to use the stepped airfoil for full scale aircraft, and all concluded that the KF stepped airfoil had a poor lift to drag ratio (L/D) and rejected the airfoil out of hand.

Not being dissuaded, in 2006 Tony65x55 an RCGroups.com member and designer of numerous foam airplanes built a Zagnutz model with a KF step on the bottom. Tony found that the step performed amazingly well. The new Zagnutz had great low speed handling, and made the stall to more of a mush. Tony went on to design numerous KF stepped airplanes, and added KF stepped wings to some of his older designs.

I read Tonys threads in RCGroups.com and was curious. I built a 3 channel foam model called the Blu-Beagle (not Tony's design). It was made from sheets of blue fan-fold foam. The wing was a simple sheet of foam which was curved into an under cambered airfoil. The plane never flew well at all. I hit upon the idea of making a KF stepped wing with the step on top (as most of Tony's designs now had). The new wing made the plane a breeze to fly, and helped train PJ and Scott to fly RC.



I later built one of Tony's designs, a 60 inch span plane designed for taking arial photos, the Blue Baby AP. The plane carried a belly mounted point and shoot camera in a plywood frame. The camera equipment increased the wing loading of the airplane



by 50%, and yet the wings easily handled the extra weight without impacting performance.

After the Blue Baby AP I started designing my own KF airfoiled airplanes. The first design was a version of the Quick One, a fast little twin boom pusher. The KF version of the Quick One was a lot faster than the original, and rolled at an incredible rate. It was hot. Maybe too hot.



An old Aerodynamics professor of mine said KF airfoils only work for us, because of the great thrust to weight ratios on R/C planes. Nothing has a lower thrust to weight ratio than a sailplane. So I determined to prove him wrong, and designed an 8 foot span sailplane using a KF airfoil with 2 steps. The plane, the Blu-Guppy (90% of the structure is blue foam), flew amazingly well. It would never win any soaring contests, but it could hold its own in a thermal. I made my best ever spot landing with the Blu-Guppy, so it has a special place in my heart.



I published plans and a build thread for the Blu-Guppy on RCGroups.com. To date almost 5000 copies of the plans have been downloaded. Modelers from all over the globe have built the Blu-Guppy. They sent photos of their planes, and the details of ingenious modifications some made. It is very gratifying to know that my impossible sailplane was so well received.

A few years ago I felt the need for a biplane. I found one of Tony's old designs for an SE5a. It looked like it had potential, but it was too small and used under cambered wings. I scaled up the plans to 150% of the original and designed my own wings. Of course, I used KF steps. The resulting airplane flew beautifully. The power plant did not offer much in the way of top speed, but it does just about anything I want at just above cruise throttle, so I'm happy.

I carved Snoopy from the same blue foam I used to make the airplane.





He is about 3 times as big as he should be for the SE5a, but that is what we intended. Since the SE5a naturally has so much drag of it's own, the extra drag from Snoopy's big head isn't noticeable. The SE5a is a slow graceful flyer, but it can easily do any aerobatic maneuver typical of world war one aircraft. I still fly this model regularly.

I designed and built an airplane to gather data on KF airfoils. I equipped it with an Eagle Tree flight data recorder and telemetry in hopes of being able to answer why KF airfoils work as well as they do for R/C models. The data gathering didn't work out as expected, but the airplane it turned out to be a great flyer. It was a blast to fly. So much so that I stopped gathering data, and just had fun with it. It could go fast, it could go so slow you could walk beside it, and it loved to do aerobatics. As it turned out the test plane was a much better flyer than I was... I still have the wreckage. The wings and tail are intact, I just never got around to building a new fuselage.



What I built was a combat wing. It is basically a Zagnutz, but it has KF steps on the top and bottom of the symmetrical airfoil. The wing is made from foam extracted from commercial illustration board. The foam is very dense, and consequently it's heavy for it's size. The extra weight is not a handicap though. The dense foam makes the wing very strong. I added carbon fiber spars, and carbon fiber stiffeners throughout the structure. This wing is rugged, and has great low and high speed maneuverability. In the right hands it should be a force to be reckoned with in combat. Look out Vinny!

You may have noticed that most of my KF airplanes have flat plates on the wing tips. Those are to help reduce drag from the tip vortex that these wings shed. I think they help, but a lot of people don't bother with them. They are a matter of personal preference.

There is a lot of debate in the R/C community about the relative merits of KF airfoils. Most will agree however, that KF airfoils are very easy and cheap to build, they're strong, they give an airplane amazingly good low speed handling, and a very mild stall. Lot's of designers of "foamies" agree. There are literally hundreds of foam models designed with KF wings available on [RCGroups.com](http://RCGroups.com). So if you think building a foam airplane might be fun, why not try out a KF wing while you are at it?





We'd like to thank G-Force Hobbies for their generous support of our club:



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