



December 2018

SECRETARY'S CORNER

Jeff Killen



I will take a break from continuing the Birdman book review to look into something that has always interested me about airplanes. That is the subject of wing loading.

Years ago I recall folks who don't know much about aviation saying things like, especially when looking at a jet airliner, "I don't understand how that airplane can stay in the air." Of course, it is just related to having enough wing to lift the weight and maintaining enough speed to keep the airplane from stalling. If you put numbers to that you can also see that wing loading data behaves in predictable ways too.

Looking at two large (and heavy) airplanes, one lesson to learn is that an airplane with a low wing load can fly slower than an airplane with a high wing loading. For my two subjects, let's look at the B-1B bomber, a military aircraft, and the A-380, the heaviest of airliners that I know of.

I am drawn to the B-1B bomber because in my earlier working years, I had the privilege of supporting this airplane, and to see the earliest specimens in production

before delivery. But I also recall, going all the way back to 1984-1985 hearing things like, "that airplane has one of the highest wing loading values of any military plane." The value given to me at that time, as I recall, was about 250 lbs/square foot. So, each of those 1950 square feet has to lift 250 lbs of airplane to get this thing to fly. I checked on line today to see if this old data was right, and I found that it was fairly close. The max takeoff weight for the B-1B is 477,000 lbs. So doing the math, we have: $477000 / 1950 = 244$ lbs/sq. ft. for the wing loading.

But what about the A-380 ? Its max take off weight is 1,234,600 lbs. The wing area is an enormous 843 sq. meters, which equals 9073.9 sq. ft. So, once again, doing the math, we have $1234600 / 9073.9 = 136$ lbs/sq. ft. for the wing loading.

So, the difference is significant between these two large airplanes. B-1B is going to stall quicker as we reduce speed as compared to the A-380.

But to look at something a little closer to home, I decided to come up with a quick study to compare 3 models that I now own. These would be the following:

- Olympic II glider (with electric power added)
- A5 Ikon (micro version)
- P-40 Warhawk (micro version)

The Olympic II is a large model (8 foot wing), but the plane only weighs 3 lbs 1.6 oz. By taking a few measurements, I came up with 810 square inches for the wing area. This is 5.625 square feet. Divide the weight of 3.1 lbs by 5.625 square feet, and you get .55 lbs, or 8.8 oz per sq. ft. as the wing loading. This model gives you a slow relaxed flight speed.

Moving to something smaller, let's look at the A5 Ikon micro version. I got this model last summer, and have flown it 3-4 flights. It is a small model, with just a 22" wingspan. Weight, ready to fly, is only 3.3 oz. The wing area comes out to 34.56 sq. inches per side, or 69.12 sq. inches overall. Doing the wing loading calculation gives me a value of 6.87 oz per sq. ft. The flying with this model is definitely quicker than with the Olympic II

glider; the A5 clearly has a higher stall speed than the Olympic II.

Finally, we come to the newest addition to my air force, the P-40 Warhawk, just obtained last Saturday at the Christmas party. This little guy has 14" wingspan and only weighs 1.6 oz. ready to fly. The wing area comes out to only 31.74 sq. inches. From that, I come up with a wing loading of 7.23 oz. per sq. ft. I have not flown this model yet. But, it looks fast.

Comparing these 3 models, I see that the wing loading values are very close to each other. It would be wrong to think that wing loading alone determines how fast the model must fly to stay in level flight. If that were true, the 3 models would fly at about the same speed, but they do not. What about airfoil, and drag factors from the fuselage, etc. ? These all figure in to a plane's performance.

Jeff Killen



EDITOR'S NOTES – Upcoming Events

Jeff Killen

1. Club Meeting, at Warrenton Community Center, 7:00 PM, 1/22/2019

SECRETARY'S REPORT

Jeff Killen

The November club meeting was held on November 20 at the Warrenton Community Center. Nine members (including four board members) were present.

The Crockett Park event in 2019 will need a new coordinator, as Duane Beck is not available.

Rent for the Center has been paid for next year.

No new nominations for the board of directors were received at the meeting. We will go with the list of 9 candidates received thus far.

We received a letter of thanks from the Fauquier County Food Bank. We gave them canned food, and leftovers from the last Float Fly this year. They received \$440 from the sale of items we donated to them.

When renewing AMA membership, look for revised safety guide on the web.

We are supposed to renew FAA certification number by the end of the year, but there is no where to do this for now. Last issue of AMA magazine, page 15, shows all rules for us, including how to understand airport airspace. FPV guys/rules could hurt us.

Calendar event news for 2019:

- Our usual pattern contest at end of May is getting moved to June 29-30. This may help with having better weather.
- Nic Burhans is working on other events

For the Christmas Party, we will do some gifts for wives who come. Gift scramble will have only RC flying gifts.

Treasurer Report

We have \$3334 in the bank now, we are in the black, and expect to have around \$5-6K in the bank to start next year. Twenty member have paid their dues so far for next year; two flyers are not renewing. Don't forget to renew your AMA membership as well.

Rhynalds Property and Search Committee

The old caretaker at the property is out. There is no news about wanting to sell the property (which is good news for us). Two Cubs have been sold. We are thinking about knocking down small leaning building next to the barn.

In an effort to be proactive to be sure we have a flying site, we established a search committee to that end. It would be best to stay where we are. Gene Flynn knows of a strip 6 miles from us in Remington. Ernie Padgette was nominated and approved to head up the committee. Serving with him are: Duane Beck, Bill Towne, John Hunton, Nic Burhans, and Dave Rothbart.

Show and Tell

Un-named Tell – A good web site by Kermit Weeks connects to YouTube, and shows private aircraft renovations.

Dick Sutton – During final flight for Don Rhynalds as an airline pilot, he saw an erratic plane nearby. It turned out to be a hijacked plane.

John Hunton/Dave Rothbart – Box plans from 1964 and 2 short kits. Drill holes in balsa using forstner bits. When building and cutting balsa from sheets, cut to center of black line on plans, but make a copy first. Use duco cement to build, as cyanoacrylate glue may aggravate allergies. Model building has begun, and features planking in narrow sheets between stringers. John also showed us a cowl. Model was planned for .09 glow engine for sport flying, .15 for exciting flying, but John plans to use electric power, about .20 size.

Ralph Graul – has purchased a 3D model from China by Precision Aircraft LTD. For 100 cc motor, and will weigh in at about 25-29 lbs. He showed us the horizontal stab, but it is mostly elevator !

Gene Flynn – large tow glider from company now out of business. 118” wing, 3 meters, ARF, Platus V2. T tail, 1 lb in nose to balance, 5 lb – 7 oz ready to fly. Ailerons and spoilers, 2 wheels (front and rear) on the fuselage.

Nic Burhans – 3 balancers, barbs in fuel tank, old FM receiver, failsafe check for receivers, Parkside portable drill with snap-in bits (\$14 at Lidl).

2019 BOARD OF DIRECTORS

Jeff Killen

As determined by votes tallied at the Christmas party (and post vote discussion by the elected members), here is the 2019 FARM Board of Directors:

1. President - Dave Rothbart
2. Vice President - Bill Towne
3. Treasurer - Nic Burhans
4. Secretary – Jeff Killen
5. Safety Officer – Keith Crabill
6. Field Marshall – Ernie Padgette
7. Member-at-Large – Charlie Koustenis

CHRISTMAS PARTY

Jeff Killen

Here are a few pictures from the Christmas Party.



FARM OFFICERS for 2018

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Secretary Jeff Killen 703-369-0807
Treasurer Nic Burhans 540-349-2733
Field Marshall Ernie Padgette 540-439-6085
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FAUQUIER AERO RECREATION MODELERS

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The P-40 Warhawk that I (Jeff K) won at the gift scramble (a little airplane, weighing just 1.6 oz.).

