



KNOX COUNTY RADIO CONTROL

Newsletter

Knoxville TN Sept 2015 AMA #594
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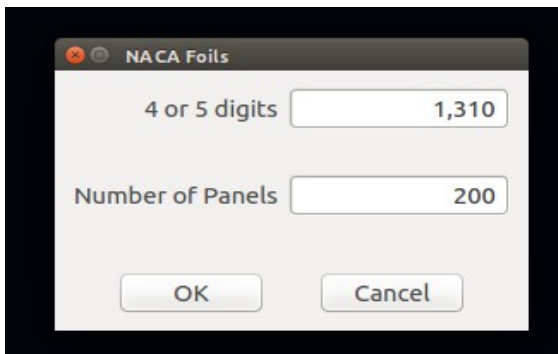
How to develop a flying wing using XFLR5.

By Michael Catlin

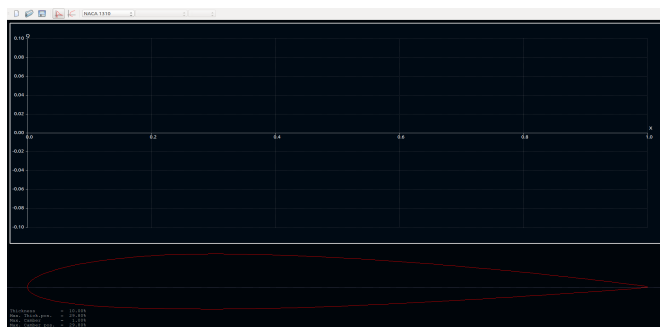
By using XFLR5 one can develop airfoils and use those airfoils to develop aircraft. My interests lay in flying wings, so that is the path I will follow to describe the necessary development tricks. XFLR5 may be downloaded at www.flr5.com for Windows, Mac, and Linux. Since I will be using the Linux installation your screen shots may be different.

To develop a flying wing airfoil, an airfoil with reflex (up turned trailing edge) is needed. I'll be showing the steps to generate your own using NACA 4-digit series airfoils.

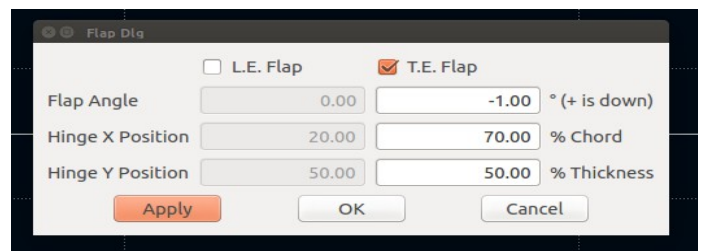
Open XFLR5 and select from the top menu bar > File – XFOIL Direct Analysis. What opens is a pane with 5 graph windows. Select from the top menu bar >Design – Naca Foils. A window opens with places to enter the 4 or 5 digit airfoil number and number of panels. The default number of panels is 100 but I usually change that to 200.



The screen will change showing the airfoil at the bottom.



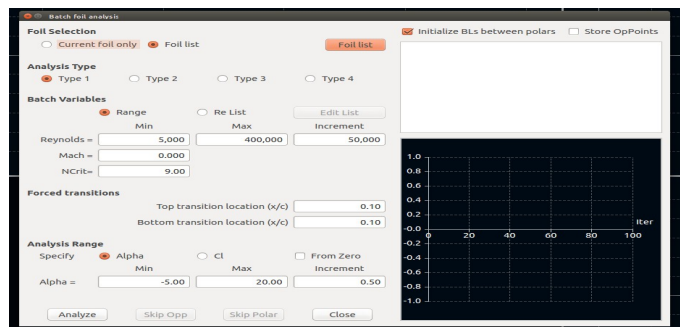
From the top menu bar select Design – Set Flap.



Check the box for T.E. Flap and enter -1.00 for the flap angle, 70 for the % Chord and leave the Hinge Y position at 50%. At this point I pick OK and in the next window I append the position and angle to the airfoil name (NACA 1310 70-1) to keep track of things and pick "OK". Next select from the top menu bar> Foil – Current Foil – Export and save the ".dat" file. Next go the top menu bar> File – Open and open the airfoil you just saved. Repeat the process entering different values for the flap deflection remembering "-" (negative) is up.

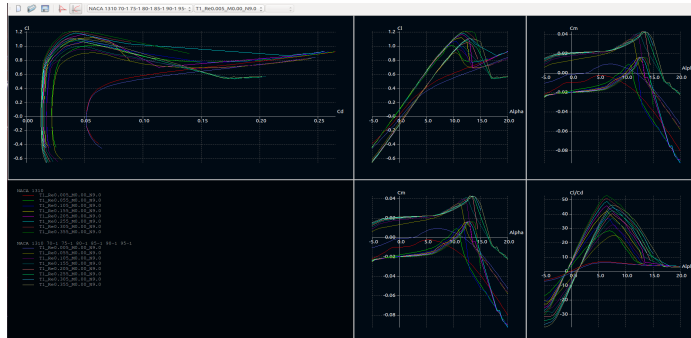
Once you have the amount of reflex desired export the airfoil to save it and select from the top menu bar >menu – Analysis - Batch Analysis.

Check the dot for Foil List and pick the NACA foil you started with and the last foil you created. Don't worry about Analysis Type but "Batch Variables" must have "Range" selected. Change "Reynolds=" to 5,000 Min, 400,000 Max and Increment to 50,000. I usually change "Mach=" to 0.001". "Analysis Range" should have "Alpha=" -5.00 Min, 20.00 Max and 0.50 Increment.

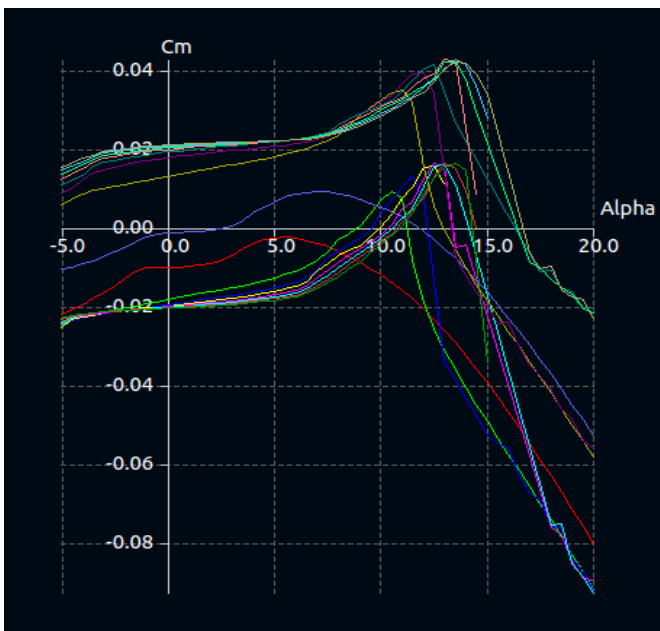


Select Analyze in the lower left corner and watch as the program generates the airfoil "Polars". Don't worry if "unconverged after 100 iterations" appears. When finished "Analysis completed" appears at the bottom of the status box. Patience is a virtue here.

Lots of data are generated but the important graph is C_m vs. Alpha.



Notice that for the baseline airfoil the C_m curve only briefly goes positive but for the reflexed airfoil the curves are always positive till stall. This shows that this airfoil is usable for a flying wing.



Next month, I cover using XFLR5 to design a flying wing and properly balance it. Questions can be posed on the Facebook page and I'll do my best to answer them quickly and, hopefully accurately.. Michael ■

SAM in Tennessee

by George Shacklett.

The 19th SAM in Tennessee contest was held on July 21,22 and 23. at Cedar Hill TN (just south of Clarksville TN). There were 19 contestants, which is pretty good for a SAM contest. Contestants were from Tennessee, Louisiana, Indiana , Florida, Kentucky and Michigan. The weather was mostly hot, with a few scattered showers. There was little wind, so most folks got their flights in. Jeff Elliott (former president of

KCRC) won first place an an event called Fox-a-Coy (35 Fox engine and 800 sq. inch wing) L. A. Johnston placed in 2 events using my Flamingo with different engines. L. A. won other events also as he usually does. The social interaction of old friends in SAM is a big part of the "contest". Everyone came away with a plaque to remember the contest provided by CD Bob Metzger. There was a variety of airplanes and many good flights....George ■.



Illustration 1: Handsome group of flyers. George on left in front.



Illustration 2: Had a few showers but nothing damps the activity. Timer being shielded from rain.

KCRC Executive Committee Meeting

August 5, 2015

President Holder called the meeting of the KCRC Executive Committee (EC) to order at 6:50 pm.

- The initial topic of discussion was the parking of members' cars up by the pit shelter. The traffic is causing the grass to die and erode, and the area will become muddy and slippery when it rains. The KCRC Field Rules state:

"Parking next to the flight line shelter on the south side is only allowed for those pilots with handicap parking permits."

The problem is that members without Handicapped Parking Permits are driving up to the pit area. They often leave their vehicles there while they fly, as also do several people with handicapped permits. In addition to the grass wear problems listed above, these vehicles are of increased likelihood of being hit by an errant aircraft.

After some discussion, the Executive Committee came to the consensus that **the requirement for handicapped permits must be strictly enforced**, and the rules should be modified to state that driving to the pit area is only for unloading. After unloading, the handicapped drivers must move their vehicles down to the regular parking area. In addition, to alleviate the severe grass wear on the bank near the helicopter area, vehicles should enter the runway area at the west end (toward the water treatment plant) and drive along to the pit area, then exit at the east end, going down the steeper bank. This procedure should only be used when the ground is suitable, not after it has been recently soaked by precipitation.

- There was discussion of the Rules requirement that pilots put their AMA license cards in the Frequency Board so people could see who was flying. Since this is not done, the EC recommends removing that sentence from the Rules.
- The EC noted that there are excess funds in the Mowing category and a lack of funds for Utilities and Runway Maintenance. We recommend a redistribution of funds from Mowing to Runway Maintenance (\$1500.00), and to Utilities (about \$200.00).
- Finally, there was some discussion of rebuilding the safety fence because the netting is deteriorating. We discussed raising the fence to five feet, and also ways of creating safe openings for access to the runway. Action on the fence was postponed until the fall.

Respectfully submitted, Philip F. Spelt, Secretary

THIS'N THAT

► Got this note from **George Shacklett** and thought it interesting enough to include in the newsletter. Give it some thought, please..

“ **I have** been considering how I might get more people interested in SAM. Your comments about building got me to thinking further about it. SAM's membership is declining for several reasons, not the least of which is aging of the membership. SAM was started by some old time modelers who flew the old gas & rubber models in the 30's and 40's. They liked the shapes and sounds of the old models as well as how they flew. Remember that all the old models, of necessity, had inherent stability and many were lost before the advent of dethermalizers---and some after that.! Many of us just like to look at the beautiful shapes of the old models—parabolic wings, complex cylindrical fuselages etc..

SAM has both free-flight and RC assist categories. Because there's no control over where a

free flying model lands, a fairly large clear area is required so we have no place to fly FF in East TN --the same applies in many other states. Lots of free-flight in CA still. I like FF much better than RC, but certainly would not be up to the chase at age 89. There is a fairly large FF contingent at the SAM Champs which is to SAM the equivalent on the AMA NATS.

The founders of SAM were up in years from the beginning. There were rather restrictive rules early on. Later some liberalization of the rules such as allowing glow engines, doing away with builder of the model rule and others. Also two events were added trying to entice more flyers. What is not generally appreciated by today's modelers is that there are other facets of the hobby which can be just as much fun as the racy ARFS .

Many of today's flyers don't repair damage (don't know how) so they just replace with another ARF. SAM flyers are usually builders, which harks back to your article on the fun of building. There are many in SAM who build, but are not as interested or very good at flying (like me). The opposite is true as well as evidenced by a large number who fly competitively. This year is the 19th consecutive contest in Tennessee.

I've been thinking of offering to do an introduction to SAM for those interested. Do you think there would be some interest?...George “

What do you think, Club. After talking with George I realize that KCRC is not a good place for any SAM events (unless we write special rules), but SAM is an organization bent on maintaining the history of model flying the way it was. And the models are beautiful flyers .

► Got this note from Safety Officer **Ed Dumas**:

“ **We've got the weather station data now online** and it can be viewed anytime. It turned out that we had to jump through several hoops to get the data transferred to a web server where it could be viewed, but the site is now up and running and data are coming in reliably.

To visit the site, go to:

www.eddumas.com/kcrc

Jeff will get a link on the KCRC page as soon as he gets back from travel. In the meantime, have a look at the link above. Comments are welcome!
Best regards, ...Ed “

By the time you get this, the information will probably be on the KCRC webpage.

► Got a note from **Ed Dumas**, KCRC Safety Officer;

Can we get the word out for everyone to please leave the breakers at KCRC ON from now on? The breakers to the weather station were shut off last night after the club meeting and nearly drained the battery by this morning. We need the power to stay on from now on!

We have put tie-wraps on the breaker box at the flight line pavilion to make it nearly impossible for folks to turn the breakers off, but we want to get the word out

regardless. There is no problem with leaving the breakers on 24/7 and, in fact, it will save wear and tear on the contacts. Thanks,--Ed

Minutes

KCRC Meeting, August 11, 2015

President Ralph Holder called the meeting to order at 7:04pm.

We had a new member, **Jimmy Russell**, who joined this evening.

Minutes of the July meeting were unanimously approved, as presented in the newsletter.

Joel Hebert presented the **Treasurer's Report**, which was approved unanimously.

Reports of Officers and Committees

Ralph Holder thanked the following members.

Ed Dumas for getting the KCRC weather station online

Jim Scarbrough for a great newsletter.

Michael Caitlin for the KCRC Facebook page.

Ralph Colon and helpers for the success of the Floatfly

John Basalone and John Partridge for keeping the grass mowed,

Ralph Colon announced that due to the success of the **Float fly**, another one was being planned for the Fall.

KCRC Safety Officer Ed Dumas had a laptop online to demo the KCRC weather site to anyone interested.

Old Business.

Parking and unloading at the flight line was discussed. The EC recommended due to grass damage and muddy ruts, only people with handicap permits should unload, no parking for anyone, and driving up to the flight line should be from west to east to minimize damage to the grass/dirt patch on the east end. It was decided to vote on the individual issues.

MOTION: Allow Handicap to unload and park, - **PASSED**

MOTION – Only allow driving up to the flight line from west to east. – **PASSED**

MOTION – Only Handicap permit holders are allowed to park or unload at the flight line - **PASSED**

New Business,

None

Model of the Month:

None

Crash-of-the-Month

Phil Cope told of his large Saito .91 powered Seawind flying boat that splashed in hard at the floatfly. Phil nowadays uses dual switches and batteries in most of his planes, but the Seawind had been sitting up for a couple of years, and he just installed a single switch and battery. He noted the battery connection was very tight when he installed it but thought it was OK. Apparently not; he was making a beautiful aerobatic flight when he had to utter those dreaded words, "I ain't got it!" It was in

a left turn and it just spiraled on into the water, full bore. The plane was a loss, but all the equipment was salvaged.

Bill Dodge told of doing a rolling triangle maneuver with his SPA Curare at a precontest practice flight in Cullman, AL. He forgot that the roll at the top starts from the inverted position and gave it down in the middle of the roll. He tried to recover while it was diving right at him and the observers, by pulling full up, but ran out of altitude and options before recovering.

Phil won COTM due to Bill's previous win this year.

Bill Dodge announced that since he now had enough jugs, he would be ordering another drum of club 15% fuel soon.

John Basalone asked that users of the 5 gal trash buckets on the flightline empty them into the large drum in the pavilion to make collection and removal of trash easier.

Allan Valeo showed his pneumatic hand cannon for launching a line up into trees. It's charged with a tire pump to about 60 psi and has an electric valve and trigger, and a weighted PVC projectile attached to a fishing reel. It can fire a line up to about 120 ft high.

Meeting was adjourned about 8:10 pm.

Respectfully submitted, Joel Hebert, acting secretary,.. ■



My P-47 Razorback

This is Randy Philipp's Seagull P-47. Powered by an OS .95.. Phil Cope helped with the positioning of the engine on the firewall since there was no markings from the factory for positioning. Another issue was getting the CG correct. Dave Johnson furnished the lead (13 oz) and Charles Wilson melted it into a usable shape. The plane has nine servos including one for each mechanical landing gear with oleo legs.. Receiver is a Lemon 7 channel gyro stabilizer. Two piece plug in wing for easy transport. 63 inch span. Strong aluminum wing joiner, large top hatch which allows easy access to radio.. Fiberglass cowl with flap detail and dummy engine insert, wing guns, drop tanks and navigation light set included. Also a painted pilot. Wing area 728.5 sq in, and approximate flying weight of 10.5 pounds " Phil Cope did the maiden flight and said everything went well. I flew it the following weekend and am well pleased with my new warbird.....Randy " ■

WEATHER STATION

Ed Dumas, KCRC Safety Officer

Current data from KCRC's new weather station is now online! The main site is located at www.eddumas.com/kcrc and a mobile-friendly site located at www.eddumas.com/kcrc/mobile. The two sites are nearly identical, with one exception.

When you first go to the main site, the wind speed and direction data for the last 3 days will be shown on the graph. The data can be changed by clicking on the various highlighted areas in the picture of the tower to the left of the graph. Hover the mouse over the "bubbles" in the picture for the wind anemometer, temperature sensor, the pressure sensor, and the diagnostic data and a tool-tip will pop up to tell you what you are hovering over. Click on the bubble and the graph data will change. On the mobile site, just click the button for the data set you would like to view. The refresh rate for the mobile site might be slower than the main site depending on the device you are using. Most phones and pads don't have as much processing power as regular computers and it might take a little while to process the data.

The other option to select is the graph time scale. Periods of 1 hour, 2 hours, 6 hours, 1 day, 2 days, and 3 days of data can be shown. Just click on the appropriate button for the time scale you want. This works the same on both the main website and the mobile website. While you're clicking on the various time scales you'll notice that the peak wind gust will most likely change. It is recalculated for each time period that is selected. Other values will not change as they are always the latest values available.

The website is updated automatically about every 5 minutes. There is latency due to the cell phone connection (which can sometimes be problematic) and the data processing at NOAA and this refresh time can vary somewhat. I've noticed up to a 25 minute delay in some case, although those seem to be rare. On both the main and mobile site, the webpage will automatically refresh every 5 minutes. Give it a try!

As always, if you have any questions please don't hesitate to ask! --Ed Dumas

As always, if you

