KNOX COUNTY RADIO CONTROL

November 2019 Newsletter

Knoxville TN AMA #594

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There is no meeting minutes this month as there were no club meeting or Executive committee meetings. Seems like a busy month for all the officers. Ed went to Europe, Randy and I went to Florida and things just didn't happen but some "work" got done in spite of the traveling.

If you have been to the field and gone out on to the runway you will see that it has been re-coated with a commercial sealing slurry and re-striped with 'parking lot' striping paint. The marking were added and "X's" placed at each end to denote a closed runway. While it may seem like a waste of time and effort (it didn't cost any extra) the goal was to protect the club and park district in case some fool in a C-172 decides to practice short field landings and take offs.

Club stickers have been ordered and a design for 2020 is being worked on. These stickers are 1 ¼ diameter and are to be placed on the upper left corner of the transmitter. The sticker shown in the photo is representative of the size and placement.

2019 Elected Officiers

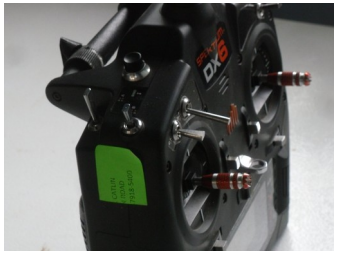
Pres…..……....Ed Dumas……..….....ed@eddumas.com
Vpres……...Paul Funk…….....paulfunk24@gmail.com
Secretary……..Roger Kroodsma…….....rogkroods@att.net
Treasurer ……...Mike Catlin……...catlimi2000@gmail.com

Executive Board

Randy Philipps……..…....randy@accesssolutionsinc.com
John Baselone……...……...jrbfarm@yahoo.com

Safety Officer

Denny Evans ……....evans9633@bellsouth.net



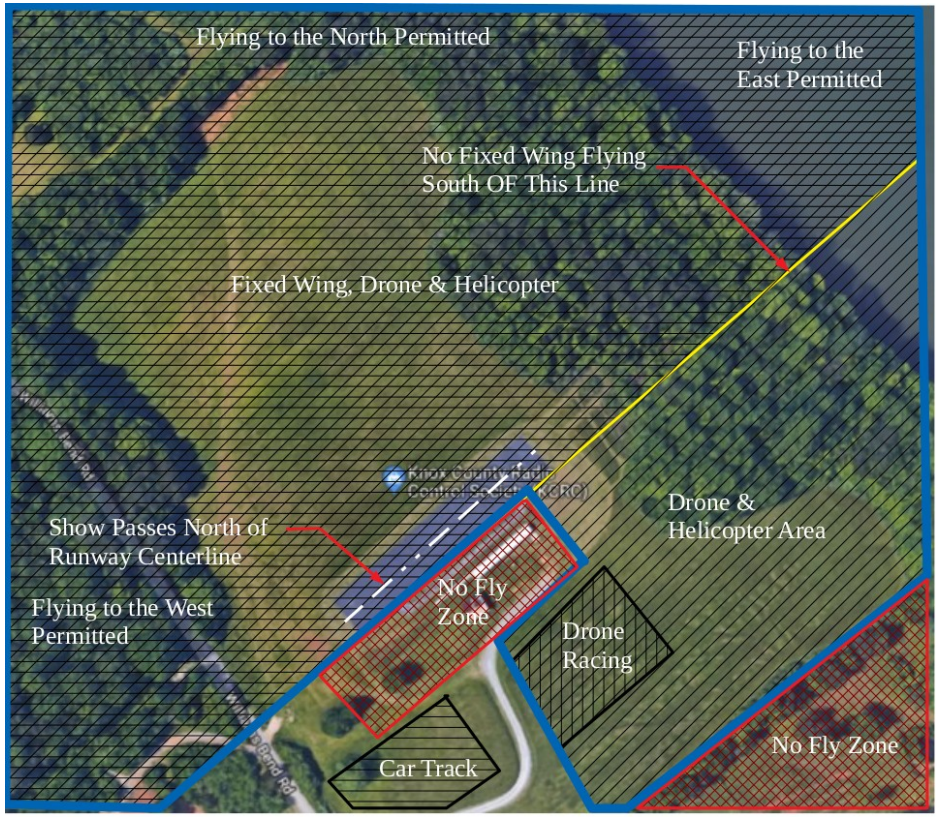
The bright color and placement is to make it easy to determine membership. Regular (fixed wing) members will have one color and drone members will have another color. The colors will be changed every year. The stickers will have a date notation and icon to represent the level of membership.

We don't expect to have different stickers for car members as their transmitters are very different from fixed wing and drone transmitters. I know some of you will need extra stickers and they will be provided if asked for. Why have member identification? Because I have noticed that over the past year several people have come to the field, setup and flown without being members. On at least one occasion an application was provided and that person was never seen again.

Several events happened in the past months, the drone race (actually, we've had 2) and the Scout Fest. The drone race netted us $91 and a good time was had by all with the proceeds coming primarily from the food sales.

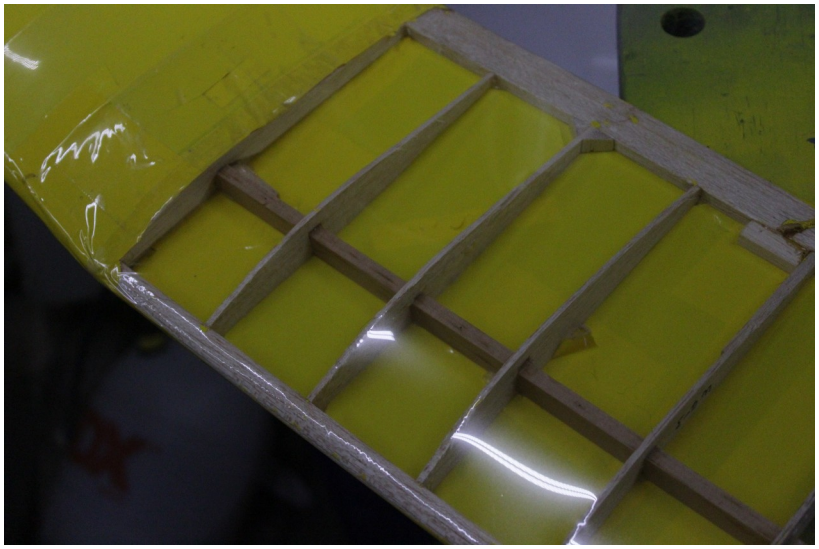
The Scout Fest was attended by Ed and Melissa Dumas, Steve Jones and myself. The Scout Fest was a STEM (Science, Technology, Education and Math) event with hundreds of scouts and their families attending. At first KCRC was set up at the far end of the runway and we were disappointed that not many people would come all the way down to see us but we were really surprised when we discovered that we were the first tent seen as the campers exited the camping area and a large crowd formed. Mid morning we were moved down to the other end of the runway so we could begin flight demonstrations. Ed had his powered glider and Steve had a foamie and between the 2 of them several dozen scouts had the opportunity to take to the sticks via buddy boxes.

The change in club rules pointed out some deficiencies in the current rules and one of those was the text of the rules referred to different areas on the site without defining them. I have generated a map (still subject to approval) which revises the site map and the usage areas. The main area to be concerned is the no fly area over the flight line and pavilion area which reaches to the porta-potty. The Drone and Helicopter area wraps around the no fly area and it is expected that "vertical operations" will take place North East of the barrier fence from the helicopter pad. We still need to be conscious of the area South East of the field as there are new homes being built in that direction and we don't want noise to become an issue. And, as always, be courteous when using the Fixed Wing, Drone and Helicopter area North of the barrier fence. Study the map and if you have concerns about the layout let the Executive committee know.



I had an interesting conversation with one of the club members concerning the newsletter while I was at the field one morning. The club member (who will remain nameless) told me that they thought I wrote too many articles about 3D printing and things that were "over their head". When I asked if they had any ideas for articles or suggestions as to what I should write about, I was met with stony silence. While I will admit I have published several articles about 3D printing I am simply writing about what interests me or I write about things that come up talking to others at the field. I am always looking for submissions for the newsletter so don't be afraid to write something up or even just make a suggestion. That said, let's transition to this month's article.

A few weeks ago I took the glider I had converted to electric to the field for it's first flight. Phil Cope helped me get some wash in removed from one of the wing panels and the topic of having a spar not being full depth of the wing was giving up strength. That got me thinking, what was the reason?

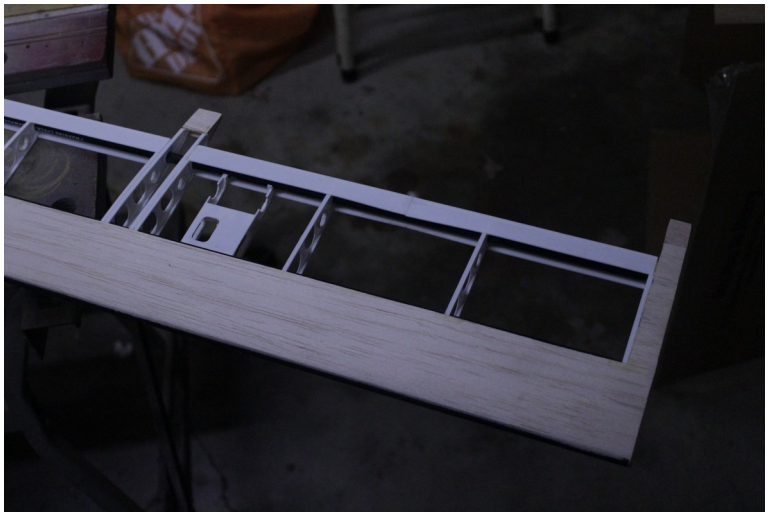


Having a full depth spar provides the most efficient means of getting strength but for this kit the spar was held short of the upper surface by about ¼ inch. Now the strength of a member in bending goes up by the cube of the depth so leaving that ¼ inch on the table made for a weaker wing. It is such a fundamental engineering principle that it's doubtful that the designer wouldn't have known about it so there must be something else driving the "design decision".

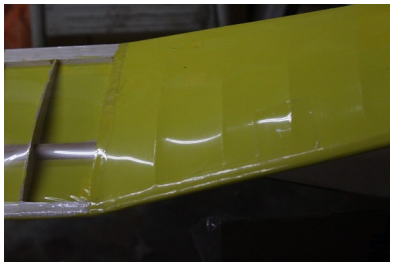
After working on my new wing and doing some recovering of the glider wing caused by a ground collision (don't ask…) I began to realize what the designer was trying to optimize. The wing's lift and stall resistance.

On my first wing using 3D printed ribs I included sub ribs extending from the leading edge to just behind the spar. These ribs were to maintain the forward contour and ended just past the spar to use the spar to maintain alignment and to smooth the transition across the spar. By placing the spar at the deepest part of the airfoil gained me the best strength but it also built in a discontinuity just at the point where the airfoil is most likely to experience separation of the boundary layer and in turn promote a stall. One could see it clearly when the covering was applied. Between the ribs forward of the spar the covering followed the rib shape only at the ribs. Between the ribs, the covering sagged and dished in due to the shrinkage of the covering between the leading edge and the spar. Behind the spar the same thing was happening tho to a lessor extent due to the reduced curvature. The reflected lighting clearly shows the disruption in the wing's upper surface..

The replacement wing has leading edge sheeting (balsa) back to the spar. The much stiffer sheeting does not sag between the ribs. However, behind the spar the covering still does not maintain contour and there is a subtle “kink”. This kink could lead to flow separation and stall or simply degrade the wing’s performance.



So how does this relate to the spar in the glider wing? I believe it was an attempt by the designer to maximize wing performance by maintaining a smooth airfoil contour all along the wing chord. There is no spar bump to cross. Instead the covering follows the rib contour at the ribs and between the ribs it smoothly changes airfoil contour to a thinner airfoil section midway between the ribs and then smoothly changes back to the rib profile.



There is probably a design intent to keep the covering from touching the spar and be able to have one piece ribs. If more spar strength was needed the spar could have been made “fatter”. While not taking advantage of the cubic relationship, making the spar fatter could have made up for its lack of depth. And also remember it’s always nice to make use of standard shapes and sizes to keep costs down.

Don’t forget to visit KCRC Knox County Radio Control on Facebook! 190 members strong.
Daily 3 day weather predictions
Daily aviation photos
Event advertisement from other area clubs
Items for sale
Articles, information and aviation related videos.

https://www.facebook.com/groups/817242841697766/

The December club meeting will be at the New Beginnings Baptist Church on Yarnell Rd.

December 10 at 7:00PM

Elections, voting on revised rules and by-laws and much more.

We will be accepting dues for 2020. Cash, check or credit card accepted.