



## Newsletter

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## IMPORTANT

Fellow members::The Federal Aviation Authority has decreed that all drones ( all rc flying models and as I understand, even control line models ) require a registration number be affixed to the model. Below is what I've learned:

- All aircraft that are flown using a ground control system are required to participate. This includes fixed-wing aircraft, not just multirotors or drones.
- Any pilot flying models weighing between .55 pounds (or 250 grams) and 55 lbs is required to register.
- You will not be required to register every aircraft individually. You only need to register yourself and can affix one registration number to all your aircraft.
- You must mark all aircraft with your registration number. The number can be inside the aircraft, such as a battery hatch – but should not require tools to access.
- The FAA plans to launch the online registration website on Monday, December 21.
- There is a \$5 fee to register, which is waived if you register within the first 30 days.
- You only need to register once every 3 years.
- Owners can register unmanned aircraft at

[www.faa.gov/uas/registration](http://www.faa.gov/uas/registration) starting December 21<sup>st</sup>.

Rules can be viewed at

<http://www.faa.gov/news/updates/media/20151213-IFR.pdf>

Our AMA organization says::We are still working out the logistics for this process. Some details are still being discussed, including:

- We are seriously discussing with the FAA a system where your AMA number could be used as your federal registration number as well. At this point, this is only a proposal and details are not yet finalized.
- At this time, AMA members will not automatically be registered when the registration website launches next week. However, we are in conversations with the FAA

## 2015 Elected officers

Pres.....Ralph Holder.....[holderrf@charter.net](mailto:holderrf@charter.net)

V. Pres.....Ralph Colon.....[ralphcolon@bellsouth.net](mailto:ralphcolon@bellsouth.net)

Secretary....Ed Dumas.....[ed@eddumas.com](mailto:ed@eddumas.com)

Treasurer...Joel Hebert.....[hebertji@gmail.com](mailto:hebertji@gmail.com)

## EXECUTIVE BOARD

Jeff Prosis.....[jeffpro@wintellect.com](mailto:jeffpro@wintellect.com)

Randy Philipps.....[randy@accesssolutionsinc.com](mailto:randy@accesssolutionsinc.com)

Phil Cope.....[philcope@bellsouth.net](mailto:philcope@bellsouth.net)

## Safety Officer

Ed Dumas.....[ed@eddumas.com](mailto:ed@eddumas.com)

about the best way to streamline the registration process for AMA members going forward.

This is an ongoing process and we will continue to provide updates on the registration rule. Stay tuned to [modelaircraft.org/gov](http://modelaircraft.org/gov), social media and your email for the latest news on the registration process.

**NOTE:: The AMA has a pending lawsuit against the FAA in district court and suggests that AMA members might hold off registering until it is resolved ( or February 19<sup>th</sup> ). I don't know what would happen if the FAA gestapo found you flying without a number while you were waiting.....**

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## From The Desk of your President

As your club President, I would like to thank

**all members for a great year and support. The following provides an overview of our accomplishments this past year:**

1. The entrance gate was sanded and painted
2. The entrance landscaping was overgrown and was cut back and cleaned up.
3. The field grass was cut on a regular basis by our Landscaping Committee chair, John Basalone and helpers. This was the biggest expense to the club budget and saved approximately \$3,000.00.
4. We contracted our haying twice a year to Allen Hunt, a local farmer, for no cost to the club.
5. Landscaping edging and rocks were installed in the sitting area of the flight line.
6. Trash cans were installed at all charging stations under the flight line shelter and the field club house.
7. Bylaws were updated to improve auditing and transparency of club financials to the members.
8. Flight Line rules were removed from the by-laws to a stand-a-lone document allowing for easier

updating as our hobby evolves.

9. Old flight line safety nets were removed and a new 5' fence and netting was installed.
10. A new 10x 20 foot safety net installed at the west end of the flight line walkway.
11. Skyways are a little cleaner. (enough said)
12. Flight line truss replaced on the west end(rotten)
13. Repair made to club pavilion
14. Repairs to runway (sealing and coating bad spots)
15. We held one indoor fly.
16. Hosted another SPS contest.
17. We held two Float Flies.
18. Had spontaneous summer weekend cookouts.

None of this could have been accomplished without the help of all the members that gave their time and energy to make our club better. Let's all show our pride of membership and help it to remain the best club around.

In closing, please take this moment to pray for our country and leaders. I hope you take this joyful time of the year and enjoy the holidays with your family....*Ralph Holder* ■

## THIS'N THAT

► As you can see from Ralph's letter above, 2015 was a very good year. We had some guys who outdid themselves in making this year one of the best in a long time in upgrading and maintaining the club facilities. Let's see if we can beat this in 2016. Several of the accomplishments are great money savers

One thing that bears mention is the clubs ongoing encouragement of building models rather than assembling them. Not that assembling an ARF is not rewarding because it is, especially the quality models produced today/ It's just such a goody shiver to start out with a handful of balsa, some glue and a plan and turn it into a beautiful structure, and the education derived from the problem solving is a special bonus

► See the header above to note the new officers for 2016. Maybe not a huge change because there are some members whose efforts on behalf of the club have almost made them indispensable. Note that ole Joel just keeps on keeping on. Don't know what we'd do without him.

► Randy Philipps sent this:

This is Roger Kroodsmma using a deer tree stand to retrieve Kevin's plane. He went up about 35 feet with the tree stand then free climbed another 20 feet. He safely got the plane and himself safely down for another day of flying for all involved. I don't know about you, but I would have

been holding my breath til he got down....Jim ■

## The beginning The climb



## JANUARY SAFETY

by Ed Dumas

I recently experienced an unusual problem when programming an old model to work with a new transmitter. This case involves an F-18 that hadn't flown since I acquired my DX9 transmitter about a year ago and I needed to create a new program in order to fly it. This model is unusual in that it has two elevator servos that are plugged into separate channels, elevator and Aux1, on the receiver and are then linked using a programmable mix in the transmitter. I had done this before on the old DX7 and flown the plane successfully dozens of times so I quickly created the program, checked it briefly and flew the airplane a few times.

After one flight I noticed one side of the elevator was permanently deflected way beyond its normal position and wouldn't move so I grounded the plane and checked it on the bench. After removing the servo from the plane and trying to exercise it I found it was very hot to the touch. Strange... I plugged a new servo in and it worked just fine. So why did the old servo croak? The answer was in the new program I had quickly created.

I started the DX9 program by using sub-trim to bring the Aux1 servo to a neutral point that seemed "close enough" before I added the elevator-Aux1 mix. When I was finished things seemed to work fine, however I noticed the Aux1 half of the elevator stopped short of coming up to the same level as the elevator half when I pulled full up elevator. It worked just fine when I pushed full down so I didn't think too much about it and went on to fly anyway. It was a clue that something was wrong though.

The problem was that the Aux1 channel by default is operated from a switch. It doesn't have a neutral point in the same sense as the elevator and my mistake was using sub-trim to try to bring it back to center before I created the elevator-Aux1 mix. I was

able to bring it close to center, but not exactly to center. Because it wasn't exactly centered, the Aux1 servo was being driven beyond its physical endpoint at one end of its travel but not the other. That was why it was not deflecting equal amounts on either side. After being driven beyond its physical limits in one direction one too many times, the motor shorted. That was why it was hot to the touch and wouldn't move when I powered it on the bench...

To fix it I had to replace the servo, remove the extreme sub-trim, and then add an offset in the mixing menu for the Elevator-Aux1 mix to bring the neutral point of the new servo to its center of travel so that it would behave exactly the same as the elevator servo. When I finished I was able to see that both servos had exactly the same throw and exactly the same neutral point using the servo monitor. The servo monitor, by the way, is a very handy tool to show exactly where the neutral point of your servos are and whether they are being over-driven at their limits of travel by bad programming.

The main point here is that your servos should all work within the range in which they were designed. Be careful when mixing channels that might not be compatible and investigate carefully if you have to use excessive sub-trim to center a servo... It usually means there is something wrong somewhere in either the programming or the control linkage.--Ed ■

## **Ply Orientation**

by Michael Catlin

Well, now we have cloth and resins picked out but how do we determine what orientation to place the cloth? Some might say that it doesn't matter and unless you want the utmost in lightness it probably won't. But there are other considerations.

Ply orientation is referenced along the length of the cloth i.e. in the direction the cloth would be rolled on the roll. Ninety degrees would be in the direction of the width of the roll. Since the strength of the cloth is greater in the 0 degree direction the orientation matters but for model making the difference between 0 and 90 degrees can probably be ignored.

Resin, by nature will shrink as it cures. Epoxy by 1-2% and polyester 3-5%. To avoid creating a banana or saddle the laminate should be balanced and symmetric. For example, for a 3 ply layup the outer plies should run at 0 degrees and the middle ply at 45 degrees. Since the middle ply is the 'odd ball' it won't affect the laminate. A 3 ply layup made from 120 glass will be about .012 thick or less than a 64<sup>th</sup> of an inch thick which is pretty thin. But even though it's thin it will have about 500 lbf/in breaking strength. That is, a strip of laminate 1 inch wide will withstand 500 pounds of pull. Why not just have all 0 degree orientation? The torsional loads run through the lamination at 45 degrees and material is needed to resist these loads. Vertical tails introduce torsional loads as well as engine or motor torque and it's best to have plies dedicated to react these loads.

A 4 ply laminate would have the 0 degree plies

on the outside and the 45 degree plies in the center. (or the reverse) If you were to place the 0 degree plies together on one side and the 45 degree plies together on the other side the resin shrinkage and primary strength direction of the cloth could result in a saddle shape when cured. With 4 plies the thickness would be .016 thick or 1/64th of an inch and good for 708 lbs/inch. The extra ply will result in twice the stiffness due to the extra thickness as the stiffness goes up as the cube of the thickness increase.

A 5 ply laminate would have the 0 degree plies on the outside and the 45 degree plies in the center OR 0 degree, 45 degrees, 0 degrees, 45 degrees 0 degrees. Either of these meet the balanced and symmetric criterion. If plies are 'dropped' (5 plies in the nose and 3 in the tail) then 2 plies would be dropped together again keeping the balanced and symmetrical. In this case inner plies would be dropped so as not to leave a ply edge on the outer surface that can possibly lead to a delamination flaw if something were to wedge under the free edge.

Types of cloth can be mixed in the laminate too. The coarser weaves can build up thickness but more resin is needed to fill the weave and resin isn't strength. I've shown that increasing thickness will increase stiffness so it might be desirable to have a little thicker laminate in a flat area of a fuselage. A layer (or 2, or 3) can be added locally to get this added thickness where needed without adding weight throughout.

Remember, balanced and symmetric.

Since these thicker plies have more inherent strength and stiffness placing them in the middle of the 'stack' will minimize the tendency of the laminate to warp. Additional plies can be added wherever loads are introduced. Adding local thickness where hold down dowels go through the skin will distribute the load into a greater perimeter of skin and reduce point loading. If you find that a hold down dowel is tearing through the skin it is OK that a patch bonded on will cure it without warping the cured skin. Next time, just place the patch into the laminate to begin with and realize a cleaner look and simpler build.

For a wing skin with the spanwise direction considered the 0 degree direction the outer plies should be 45 degree plies. Why? Because if the skin were to be scratched we would not want it to be the primary load carrying fibers to be compromised. Would the scratch cause the wing to warp? No, the shape is locked in when the resin cures and a scratch does not affect the whole layup only leading to stress risers right at the scratch.

I know this sounds complicated but for the thin fiberglass parts we would be making it's pretty simple.

Remember balanced and symmetric....Michael ■

**KCRC Club Meeting**  
**Minutes, December 8, 2015**



President Ralph Holder called the meeting to order at 7:00pm in the Fellowship Church on Middlebrook Pike. There were no guests present.

Minutes of the October meeting were approved as presented in the November News Letter.

Joel Hebert gave the Treasurer's Report, which was approved by unanimous voice vote.

Thanks and recognition were given to all the officers and Board members for their service in 2015, as well as Jeff Prosize for the web site and Jim Scarbrough for the newsletter.

Randy Phillips reported for the Field Committee. The rafters on the west end of the pit shelter were replaced. The long step on the runway side of the pavilion and the railing on the east steps were repaired. The footers were repaired – cracks filled and the concrete units were coated to protect them from weathering.

Under **Old Business**, the members present voted to keep the dues structure at the same levels as last year, as recommended by the Executive Committee.

**New Business** included a suggestion that the Club buy oars for the row boat that is at the field. This was approved by voice vote. Phil Spelt asked the Club to approve dates for the annual Ben Oliver Memorial SPA Pattern Contest. The Club approved May 21-22, 2016, for that event.

A tally of the votes cast by email and in-person paper ballots showed that our "new" officers and Board are as shown:

<b>President</b>	<b>Ralph Holder</b>
<b>V. President</b>	<b>Ralph Colon</b>
<b>Secretary</b>	<b>Ed. Dumas</b>
<b>Treasurer</b>	<b>Joel Hebert</b>

**Board of Directors**

**Jeff Prosize, Randy Phillips, Phil Cope**

**The Annual KCRC Banquet will be held at the Golden Oak Grill Café 410 S. Tulane Ave, Oak Ridge (865-272-1075). in Oak Ridge, with arrivals between 6:00 and 6:30 pm Tuesday, January 12, 2016.**

**Crash of the Month:** There were no crash reports this month.

**Model of the Month:** there were no MoM entries.

Jack Cooper talked about his new trainer design, made of EPP (expanded polypropylene) and coroplast in the sides of the fuselage front for strength. He calls it the Phoenix, and a kit is available from his company. The airframe is covered with laminating film, of 5 mil thickness. Discussions are under way with the AMA to have the Phoenix be a standard trainer from AMA. The plane is powered by a Grand Turbo 1020 kv (25-12/o5) electric motor spinning a 7-5 prop.

**Meeting adjourned at 7:55pm.**

**Respectfully submitted, Philip F. Spelt, Secretary** ■

**SAFETY TIP**

Hi Jim Here are a few additional items to add to

the newsletter for this month, if there is room and time:

Randy Phillips and I were talking at the field today and he pointed out that with the onset of cold weather, folks should be more aware of loose-fitting clothes around propellers. He pointed out the strings hanging down from his hoodie that could get caught in the prop and absolutely ruin your day. The potential for SERIOUS injury here is very real. Please be aware of your clothes and surroundings when working around rotating propellers.

Also, I wanted to remind everyone to put their name, address, and AMA number in their planes... I made a bunch of self-adhesive labels that I print out in a large sheet and stick them on every airplane I have. Remember, this is an AMA safety code requirement and should be done as soon as possible regardless of what happens with the FAA registration process

Thanks, --Ed ■



The picture above was from an RC Modeler magazine 44 years ago. It is a picture of KCRCer John Walking about to launch a prototype glider he built. He still has the glider and is converting it to electric power and plans to bring it to the February meeting. ■

And in closing out 2015, I think it is appropriate that we thank all the officers and members who worked so hard this year to improve the facilities at KCRC and direct the activities that keep the interest at a high level. There were float flies and cookouts and pattern contests and something for everyone in the club. If you didn't take part, then maybe you will take part in 2016 because there will be many opportunities coming up, starting with the banquet to begin the year instead of a club meeting. The location is posted in the Minutes on the left.

In the meantime, let me wish you all a happy and prosperous new year and a lot of flying time.

Also, please send me some information on what you're doing and pictures of the models you're flying because I figure if I'm interested, then others will be interested also.....Jim