



July 2020

SECRETARY'S CORNER

Jeff Killen



I hope you are having a good summer, and are starting to get out after the re-orienting of our lives due to COVID-19.

As promised back in December, I will give you an update on my efforts to return an old model to flying condition (along with some photos). In my Secretary article for the January newsletter, I provided a list of things yet to do with my re-work of the Calypso model.

(As of January), work that remained:

- Check wing mounting (it is off currently)
- Check weak area in fuselage just aft of servos
- Add screws for support to fore and aft wing mounts
- Canopy work:
 - o Remove old damaged one
 - o Replace with new one from Nic – thanks
 - o Build an engine cover from old canopy
- Miscellaneous clean-up of monokote

- Check weight and balance, add lead as needed

I would have hoped that I would have this plane ready to go by now. But with home repairs (3 areas of hard surface flooring getting vinyl plank flooring, and carpets replaced throughout the house) along with a 2 week trip to Florida just before the COVID-19 clamp down hit, I have been busy. But I am pleased with the progress, and the end is in sight.

Wing mounting – This is done. Just some enlarging of holes, and sanding to make things level allowed me to complete this work quickly. The rear wing mount needed some new mounts; this was done a while back.

Weak area aft of servos – I did add some glue in hard to reach places, adding much needed strength. One troublesome area was a split piece of balsa on one side of the fuselage. I removed the covering, tried to brace it up, and then glued the lengthy crack. The area is much stronger now, but the replaced covering I did is not fully level. I also worked on the irregular ding at lower left of photo, improving the look.



Add screws for fore and aft wing mounts – I had forgotten about this until seeing it in my list. This won't take long. Just a few holes drilled in select places will spread out the wing weight stress to make a much more secure wing mount.

Canopy work – The old canopy had cracks in it. I took it off, or rather cut it off, as this was really the only option considering the old mount. I used some of this old canopy to make a new covering for the engine (see next paragraph). Nic provided a new canopy from another model. There was a blemish on the inside of the canopy near the middle, so I decided to add some white trim tape over the top to hide the blemish; white was used as it matches the rest of the fuselage color. I also had to do some modifications to get a reasonable fit. The first mounting attempt left the canopy about a half inch too high. Charlie K. advised me on this; lower the canopy to prevent air flow thru. So I trimmed off about a half inch from the left and right sides of the canopy, and drilled new holes for my screws. A small piece of 1/4" Frost King door trim tape was used at the front edge to give an air tight seal. The back end of the canopy is about 3/4" short in length; I will just live with that. There is room for a pilot figure which is something else I will research.



Build an engine cover from the old canopy – This is complete. I took about 3 inches from the old canopy that was reusable, cleaned it up, and spray painted it

flat black. With a few screws I mounted it to cover the top side of the electric motor. This cleaned up the irregular end of the model left from the glow fuel motor and minor damage from the nose-in crash long ago.



Monokote/covering clean up – The model's covering is adequate, but showing a lot of blemishes due to age. I have added numerous small patches to improve the look. Two sticky areas aft near the rudder on the upper side of the horizontal stab gave way to Goo Be Gone product, and now look good. I also replaced a few of the narrow red and black stripes on the top of the fuselage.



Overall, the wing needs a lot of work to get the 3 colored stripes (upper side) to look better, as they

have air bubbles under much of the stripe. I decided to sand the bubbles out, and recover with new stripes. This came out fairly well. The red color is a bit darker than originally, so I will probably change the stripes on the tail as well.



Weight and balance check – I did a preliminary check on this after getting the wing mounts correct. I may need a few ounces of lead up front. But I will finalize this once the rest of the work is complete.

In summary, this project has led to many small areas of work, and decisions on how best to proceed.

One more thing: my work area. We had some carpet scraps left over, and I was able to cover most of a single car bay in my garage. This makes for comfortable walking so I moved my work from an indoor ping pong table (makes my wife happier). I also had a removed bathroom vanity cabinet in the garage. With the top removed and discarded, I added two flat $\frac{3}{4}$ " thick planks on top and screwed them down. I now have a nice work table of proper height. In the cabinet below, I added a shelf to provide some storage area. Finally, I have learned that working in the morning just after breakfast gives me a good hour or more before the summer heat starts to cook my garage. It is a good alternative for this space which lacks air conditioning.

Jeff Killen

EDITOR'S NOTES – Upcoming Events

Jeff Killen

1. **Club Meeting, at the field, 7:00 PM, 7/28/2020**
2. **FARM Club Day & Fun Fly #5 at the field, all day, 8/2/2020**
3. **National Model Aviation Day, all day, 8/15/2020**
4. **Shenandoah Pattern Classic, at Harrisonburg, VA, all day, 8/15-16/2020, CD: Don Click: dclick1@verizon.net**

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SECRETARY'S REPORT

Jeff Killen

There was no club meeting in June. But we should be meeting in July at the field. See you then !

MOTORS

John Hunton

Club members really enjoyed Charlie's comments on the four stroke motor the other night (Editor's note: that was a few months ago). We did a lot of motor work at Melpar back in the 1980's, I thought the club might enjoy some information on that

Melpar had developed some early research drones in the 50 to 100 pound range. They were using Ross four cylinder two cycle motors which had some reliability and service problems. The exposed cylinders were being unevenly cooled by the airstream causing some cylinders to drop out. And the carburetors were being affected by variations in the airflow.

There were no large commercial motors available then to power the drones, so Melpar developed an acceptable drone motor from a Sears chain saw, the

Roper. This motor put out about 3.6 HP. As the drones got larger the Roper was proving to be inadequate so larger motors were sought.

We put together an in-line twin Roper that produced over eight horsepower, more than twice that of a single Roper. We called Evinrude and asked about that. They said “Sure, there are more pops per revolution now and the power is being applied more evenly.”

We found a motor manufacturer in California, a Dale Herbrandson, who was making larger motors from Stihl cylinder heads and his own crankcases. He offered a 16 horsepower twin so we got a couple.

In order to utilize a motor properly we had to know it's characteristics, so Melpar got a dynamometer. We needed to know at what RPM the motor produced it's Maximum horsepower. We made up a series of test propellers of graduated sizes, put the motor on the dynamometer and ran tests at various RPMs.

By multiplying torque by RPM and dividing by 63,025 and plotting HP vs RPM a nice curve was developed. We could carve a propeller that would let the motor develop it's maximum horsepower.

Of course at that time there were no large propellers available so we had to carve our own.

To design a propeller, knowing the ideal rpm, we determined diameter by keeping tip speed well under supersonic, where prop efficiency drops off. Pitch was determined by assuming a cruise velocity and assuming 60% prop efficiency.

We made up a thrust stand for car-top use and ran around the beltway testing props. The Herbrandson 16 hp motor worked out very well for us in larger drone usage. Eventually we worked up to a 24 hp Herbrandson with good results.

All of the Melpar drones were powered by pusher motors which led to some severe cooling problems. The solution of those cooling problems is another story.

FUN FLY #4 RESULTS

Nic Burhans

The 2020 FARM Club Fun Day-Fun Fly points chart as of 12 July is shown below.

The Club's Fun Day was on July 12, and it was Fun Fly #4 (Yes, it was the first one we have flown this year, but it was the fourth one in the scheduled sequence of six for the year).

We had three members who only participated in the Fun Day and only received 3 total points each for signing in, as indicated below.

We had seven members who participated in the Fun Day and the Fun Fly and received the total points as indicated below:

- 3 points for signing in, 8 points for being the Fun Fly CD, 5 points for flying in the Fun Fly, and Fun Fly placement points (reverse order number of the number of participants)

- The Fun Fly results:

1st place - Ken Bassett (7 pts.)

2nd place - Ralph Raul

3rd place - Don Szczur

4th place - Ernie Padgette

5th place - Charlie Koustenis

6th place - Nic Burhans

7th place - Dave Rothbart (1 pt.)



From the Manassas air show a few weeks ago.

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Field Marshall	John Gilbert	703-582-7144
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