



With Deepest Sympathy

Our thoughts and prayers and deepest sympathy go out to Chapter 95 member, Jan Jack, on the loss of her husband, our friend and Chapter 95 member, Don Jack.



Don passed away on September 12, 2017 at the age of 71, with family by his side after complications from surgery.



Don was an EAA Chapter 95 member and enthusiastic volunteer. Don was one of our faithful Young Eagles photographers at every Young Eagles Rally Day. Don also camped with us at Oshkosh and every year would bring up tables and chairs for our Chapter tent, along with coolers that he made sure were stocked with water, pop, and Gatorade for everyone to drink. He went above and beyond at Oshkosh to make sure we were all taken care of and it was a common sight to come back to camp and find Don filling everyone's coolers with ice. He even hauled more than a van-full of us to the flight line and then to the beer tent. At our 2010 Holiday Banquet, he received the "Jack" of all Trades award. He was also a volunteer at EAA Airventure selling tickets at the gate. I can't think of better person to greet a newcomer to Oshkosh.



For other details on his wonderful life, please see his obituary at: www.britlingerandearl.com

Redeem Your Online Tickets Here!



Don will certainly be missed. Please continue to keep Jan in your thoughts and prayers.



Young Eagles Rally Joliet Airport

Saturday, Oct 7

9am - 1pm

We have one more official Chapter 95 Young Eagles Rally left this year - Saturday, Oct 7 at the Joliet Airport. The Joliet Park District does the advertising and this is typically a pretty big event, so we are looking for pilots, ground crew, and office staff. We had such a great turnout for our Morris Young Eagles in September, I hope we get everyone out to Joliet to help too. It should be a fun, busy day. If you are able to help, please contact Jacque @ 815-741-3982.

A SPECIAL BIG YOUNG EAGLE RALLY THANKS

Thank you all who came out for another very successful Young Eagles Rally on Saturday, September 9th. We want to thank all the members who came out to help and to those who came to support the event. We especially want to thank the members who helped spread the word about our Young Eagles Rally to their friends, their neighbors, and their schools. Many parents who called, mentioned they received the information through their schools.

(Continued on Page 3)

WANTED

Holiday Banquet Committee Volunteers

It's time to start planning our January Holiday Banquet. Tricia Wagoner is once again heading up the Holiday Committee, but she needs some help with ideas and decision making, etc. If you would like to have input on the Holiday Banquet and want to have some fun putting it together, please contact Tricia as soon as possible. Speaking from past experience, this is definitely a fun committee to be involved with and a great way to get involved.

Tricia's email: triciawagoner@me.com
Mobile: 402-618-0572

From The President ...



Hi all,

Our September Young Eagles event was an awesome success with 101 kids flown. The weather was perfect and a great time had by all involved. A big pat on the back to Jacque & Larry working hard to organize the event and the same to all the pilots, office staff and ground crew who worked the event. Special acknowledgement to our youth who came to help as well good job Sy, Joe

& Lucas ☺

Sunday 9-24-17 is Joliet Airport's Open House and Chapter 95 has been invited to set up a booth and promote our chapter and Young Eagles please let me know / confirm if you can help out by working in the booth. Just give our flyers and talk Aviation with folks while hanging out at the airport.

10-7-17 we are facilitating the Young Eagles event at Joliet Airport so mark the date on your calendars and let Jacque know what position you would like to help out with. The Park District promotes the event and they typically get a lot of kids so please volunteer.

10-14 & 15 is Red Bull Air Racing in Indianapolis, IN. This is an awesome event so if you have not got your tickets yet be sure to purchase A.S.A.P. as you will enjoy the fast pace world class Air Racing.

Signing off now until next month;

Be Safe, Healthy & Happy,
Mark

Chapter 95 Meeting Minutes - Aug 25, 2017

Meeting called to order @ C09 in Matt and Jana Trofimchuck's Hangar @ 7:30pm by President Mark Molle with 35 in attendance.

Pledge of Allegiance recited

Secretary's Report by Warren Roddy – Accepted as reported in August Newsletter.

Treasurer's report by Jacque Nawojski –
Income: \$448.60
Expenses: \$261.11
Young Eagles Fund: \$3601.73
Available Funds: \$4236.68

Guest: Larry Smith (friend of Mark Molle) who is building a GlaStar - welcome!

New Member: Michael Hobbs of Wilmington, IL - welcome!

OLD BUSINESS:

Taildragger Tuesdays: This is really going strong and bringing in new members! Kudos to Matt and Jana. Contact Matt Trofimchuck to be on the email list that confirms early afternoon for each Tuesday that it's a go.

Airport Parking for Taildragger Tuesday and all times: Everyone should be parking outside the fence unless you rent a hangar or have a mobility issue.

Summer Fly-ins at IL51 and LL51: A good time was had by all. Both fly-ins had a great turnout. The wind was pretty high but right down the runway for Mark and Shelly Molle's fly-in. Congratulations to Dave and Kelly Miller for having a great event!

NEW BUSINESS:

8-26-17: Fly-in at Meadow Creek in Monee: This is tomorrow from 10am to 3pm. It's an Open House and there will be food for sale.

EAA95 Open House: The Chapter Board decided not to have our Open House this year due to several people having commitments on Labor Day weekend. If you have comments on what needs to be done next year, please contact Brian DePung.

9-9-17 Young Eagles at Morris: We have a new printer for providing pictures for the parents and kids to take home. Our Young Eagles Flyer now has the phone number corrected to contact Jacque Nawojski. Also, Jacque sent around a worker sign-up sheet for the two upcoming Young Eagles events.

9-16-17: Bruce and Cindy Limbach's annual Pig Roast: It's a great event and all Chapter 95 members are welcome to attend. Please bring a dish to pass.

9-24-17 Open House at Joliet (KJOT) airport

10-7-17 Young Eagles at Joliet: Our Chapter is hosting a Young Eagles event at Joliet. What literature are we going to hand out there? Jacque will check with Jennifer McFarland if it's ok to pass out Chapter 95 literature and Young Eagles flyers.

Guest Speakers:

Two of our EAA Air Academy Kids made presentations on their time in Oshkosh at the EAA Air Academy.

Both Sy Salinas and Joseph Saltzman came well prepared and made great presentations! They left no doubt they really enjoyed the camp and appreciated that our Chapter was able to send them. Thanks to both of you for speaking to our group!

A SPECIAL BIG YOUNG EAGLE RALLY THANKS (continued from page 1)

The day turned out to be a beautiful sunny day with light winds and comfortable temperatures. That made it a great day for flying the 101 Young Eagles by our eleven chapter pilots: Pete DeCraene, Brian DePung, Tom Ellis, Matt Kwiatkowski, Cindy Limbach, Dave Miller, Mark Molle, John Musgrave, Mike Ruffatto, Ryan Stephens and Jana Trofimchuck; and our one guest pilot: Scott Doorn (Doug Harford's partner in the C182 RG). We also thank our two back-up pilots: Doug Harford and Bob Kopeika. All the Young Eagles had a great time, especially the 55 first-time flyers. Because of the sunny weather, we stayed until we flew all of our Young Eagles.

The Ground Crew, the support team for our pilots, did a fantastic job handling the revised procedures that we've put in place. They helped make the flow between the office staff and the pilots seem effortless. Thank you: Don Bonk, Lucas Crater, Michael Foss, John Limbach, Tony Madonia, Kelly Miller, Gary Moore, Cathy Needham, Dave Richardson, Warren Roddy, Jami Salinas and Joe Saltzman. Also, we had two of our Jr Members, Sy Salinas and Nathan Kwiatkowski, helping out as ground crew.

Thanks to our two photographers, especially for keeping up with 101 flights: Larry Nawojski and Ron Needham.

We appreciate all the efforts of the Food Concession Staff: Norma Limbach, Rita Saribekian and Char Curtis.

Special thanks to Matt Trofimchuck for handling the flight operations: which included the pilot/ground crew briefing, pairing the pilots with ground crew, and keeping all of this running smoothly. Plus Matt held a ground school session for some Boy Scouts to achieve their aviation merit badge.

Especially wanted to thank the Office Staff for all their hard work: Tricia Wagoner for handling the printing of the Young Eagle photos on our new photo printer (she said it works great), Mary DeCraene for handling the Young Eagles' registration, and Eryn Ruffatto for handling the logbooks and anything else that needed to be done.

They all made the process easier and fun.

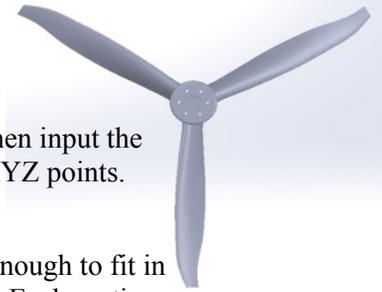
It was wonderful to see everyone pull together to make this event a very memorable one for 101 Young Eagles.

Submitted by Jacque Nawojski



Building a 3D Printed Propeller

By: Ron Needham



Like my other propellers, I used the JC propeller program to design the blade profiles, I then input the profile geometry into SolidWorks using an insert function that is called Curves through XYZ points. This makes it very easy to build the propeller in a 3D environment.

Once the propeller is fully modeled in Solidworks, the blades are cut into sections small enough to fit in the printer's work window. For my printer, each section needs to be about 7 inches high. Each section is then exported as a STL file.

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JC Propeller Design™

INFORMATION

Procedure

| | | |
|----|----------------------------------|---------------|
| 0 | System input units | U |
| 1 | Airplane | Velocity XLFG |
| 2 | Wing Span, b (feet) | 33 |
| 3 | TOW (Lbs) | 2700 |
| 4 | Wing area S (sq.ft) | 99.0 |
| 5 | Body Interference | N |
| 6 | Engine | LT1 |
| 7 | Rated HP @ Cruise (Design point) | 236 |
| 8 | Rated HP @ Max | 290 |
| 9 | RPM @ Cruise (Design point) | 2500 |
| 10 | RPM @ Max | 2800 |
| 11 | Design Speed, Cruise (MPH) | 182.0 |
| 12 | Camber Ratio (Thickness) | 0.95 |
| 13 | Aspect Ratio | 4.00 |
| 14 | Number of Blades | 3 |
| 15 | Max Allowable Diameter inch | 67.65 |
| 16 | Chose Material | Ge |
| 17 | Check Minimum Safe Camber Ratio | |

Final Calculation

2.32

| | | | |
|-------------------|-------|------------------|---------------|
| Aspect Ratio 2.08 | 67.65 | D Climb P 77.20 | Min CR= -0.21 |
| Aspect Ratio 2.46 | 67.65 | D Stand. P 79.55 | Min CR= -0.04 |
| Aspect Ratio 2.84 | 67.65 | D Cruise P 81.90 | Min CR= 0.14 |
| Aspect Ratio 3.41 | 67.65 | D Speed P 85.56 | Min CR= 0.39 |

Initial Calculation

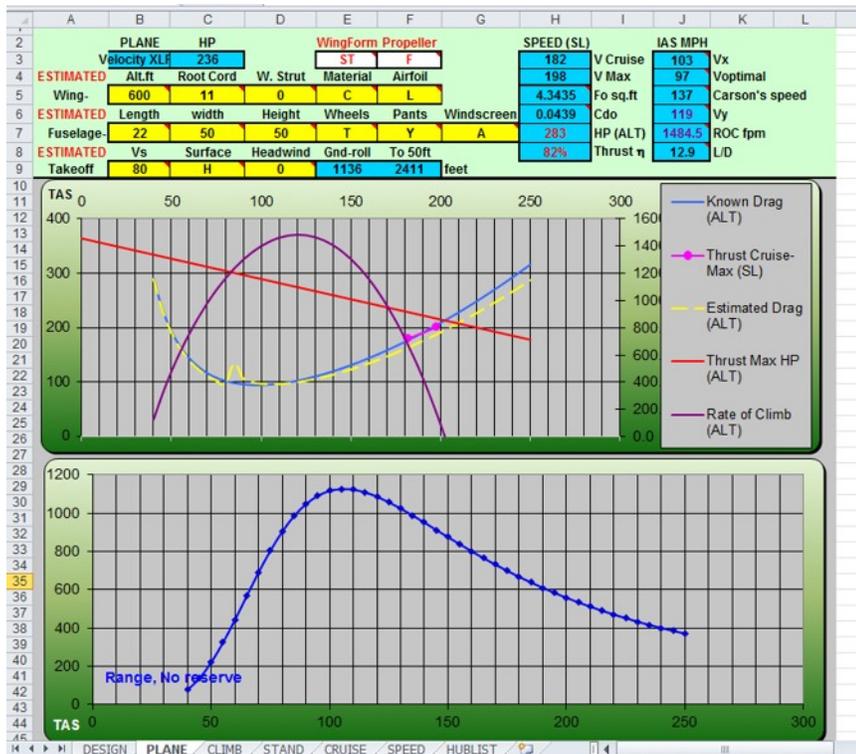
| | | |
|-------|------------------|--------------|
| 76.22 | D Climb P 77.26 | Min CR= 1.06 |
| 74.35 | D Stand. P 79.59 | Min CR= 0.97 |
| 72.48 | D Cruise P 81.92 | Min CR= 0.88 |
| 70.07 | D Speed P 85.46 | Min CR= 0.77 |

Output

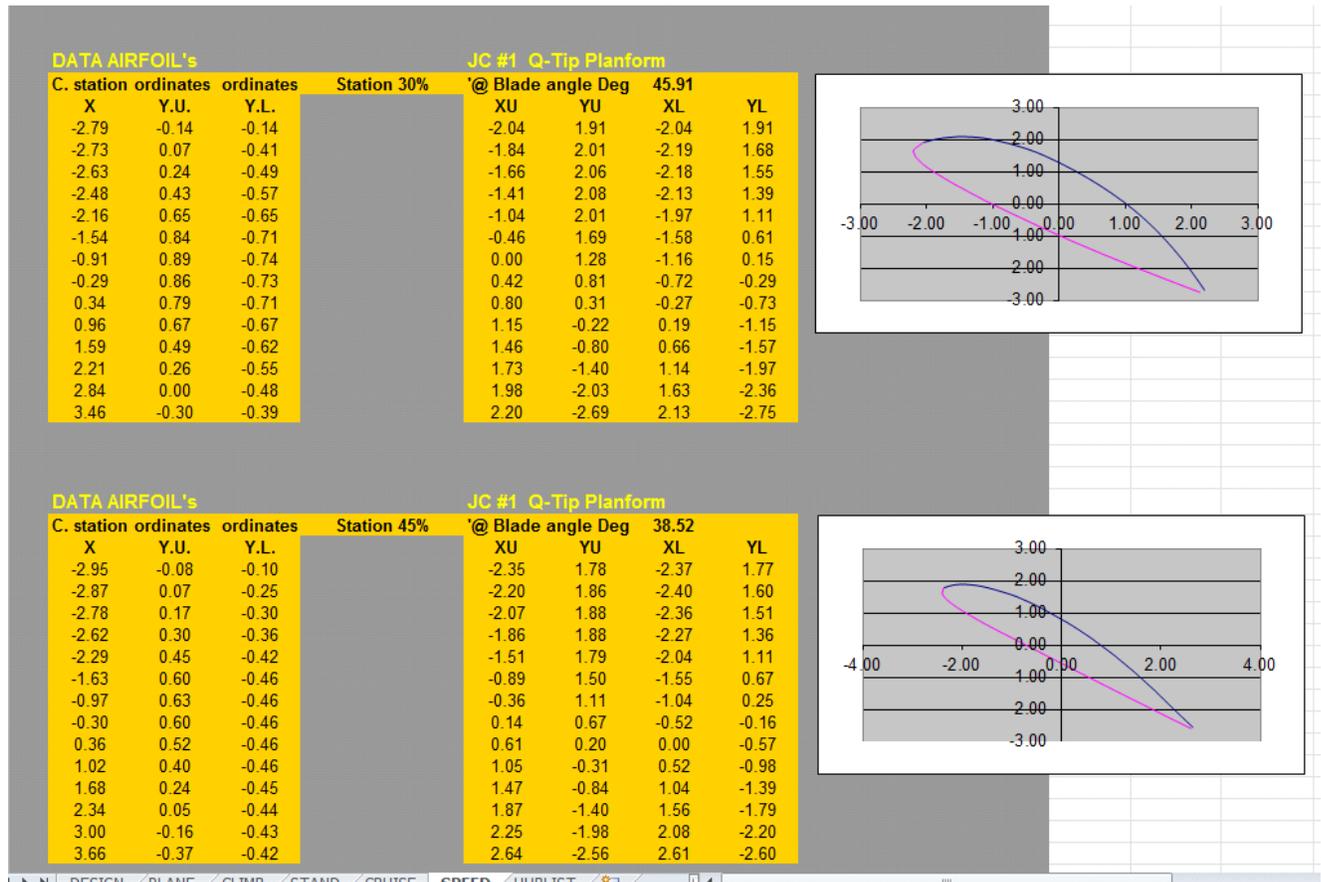
Create .txt files 22

| | | | |
|----|----|----|----|
| SP | R | 1 | I |
| 18 | 19 | 20 | 21 |

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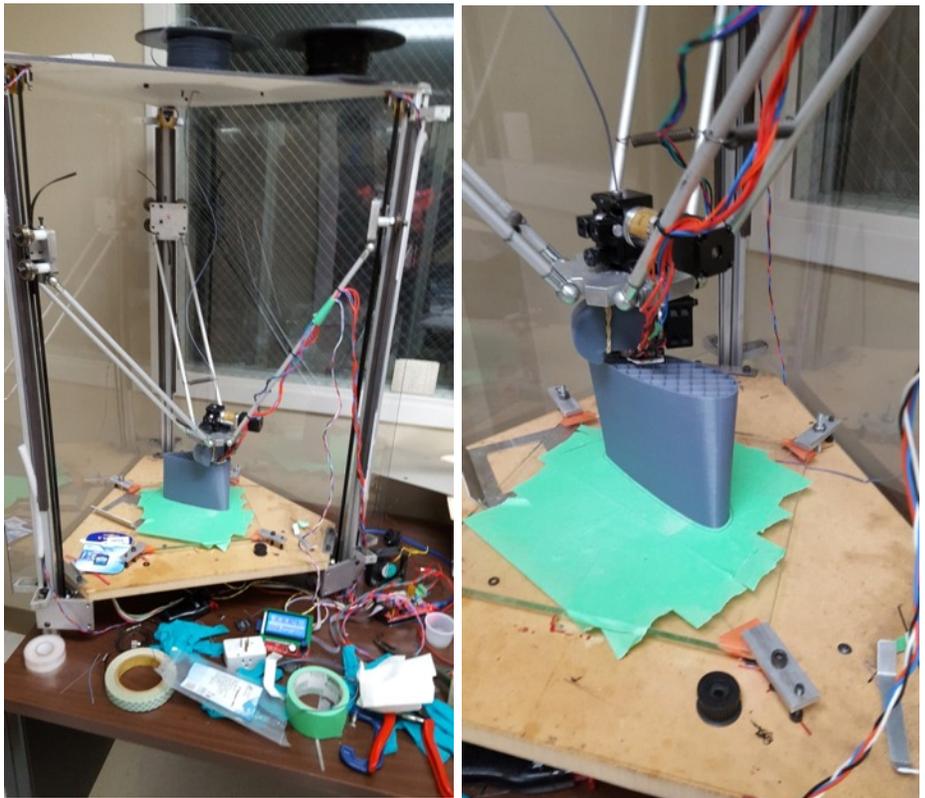
STL files are files used to show what a part looks like without giving too much information to the person receiving it. It basically is a format that helps to keep your data from being stolen or copied easily. That may be too much info so for a basic description a STL file is the standard file used in 3D printing. Now the STL file is put in a slicing program. The program I have been using is called Cura. What this type of program does is it slices the STL file into layers of specified thickness. Once the model is sliced, the software then generates Gcode that the printer uses to guide it along the path of each layer.



The Printer

This is my Delta style printer. Delta printers are known for being able to move very quickly. I personally like this style printer because it uses a non conventional way to move the printer head around. All three cars on the tower move at the same time to position the printhead along the Gcode path. Now, this takes a lot of processor power and since all three stepper motors are moving at the same time to get the print nozzle in the right location on a continual basis, it can almost be mesmerizing to watch it move. Now I built it using an arduino control and marlin software. All of this stuff can be found on the internet and the support groups are really helpful.

I started to make my printer 4 years ago and like most of my projects, they are living objects that are always evolving. I currently installed a new Rearm board on it. The Rearm board is basically a new, faster processor that prints faster and more accurately. Like I said before, the processor has to move all three motors at the same time, so a faster processor really helps out a bunch. The printer does not have a heated bed, so I have to print on green painters tape. For some reason green tape works the best.



Now some facts:

It takes each section about 6-18 hours to print.
Color of the print material did not make a difference.
Material used is PLA
Printing temp 205C
Layer thickness .2mm

Bonding the Prints Together

I used hot glue and tongue depressors to align the printed layers together while the epoxy cured. Once the epoxy cured, the prints were inspected to see that all three prints were identical. Once I was sure the prints were good, they were fully sanded to a rough service to aid in the bonding of the carbon fiber lay-ups to the prints.

I need to be very careful with the prints at this level, they are not strong and can be easily broken.



First Print



First and Second Print



I cut 2 layers of bid and 2 layers of uni-carbon fiber, wet them out individually, and lay them on the prints. I found it best to do each layer of carbon separately because uni and bid do not move in the same direction when wet and getting them to lay flat is critical. After each wetted out layer is applied to the print, the blades are then put in a vacuum sealer bag and vacuum sealed. The vacuum pulls most of the air out and squishes the layers onto the prints. Then the prints are left overnight to cure. Do not attempt to heat the layup under the vacuum. The PLA will not be strong enough and will collapse. Once the layup has cured it can be heated to post cure it.

Here you can see a before and after the vacuum sealed parts. Notice that the trailing edge of the carbon fiber blade has a very nice lip on it. This lip is left on after trimming as it is what bonds the front and back layers together. Doing the vacuum bagging really helps to seal the print without any air voids and creates a solid one piece layup.

After all 3 blades were vacuum bagged, it was time to attach them to the hub. Each blade has a $\frac{3}{4}$ inch hold in the base to help with alignment to the center of the hub. My hub is 6 layers of Birch. I machined in 3 holes at 120 degrees apart on the center of the hub and inserted lugs in them. I bonded the blades to the hub with shaped sides up. The reason I do this is because I cut three small angled templates that are the correct angle for the position on the blade and bond them to the backside of the blade. These

templates are used to control the pitch of the blades. Now all of this is assembled on a large flat table. I used a come along strap around the tips of the blades to pull it all tight. Each of the blade tips needs to be exactly the same distance from each other and the templates need to be sitting flat on the table.

Now that the blades are attached to the hub, more layups can begin.

Layup Schedule Carbon Fiber:

Vacuum bagged layup:

1. Bid full length 34"
2. Uni full length 32"
3. Uni full length 32"
4. Bid full length 32"

Hub mounting layup:

1. Uni 50% length of blade 23"
2. Uni 25% length of blade 17"
3. Bid 15% length of blade 15"
4. Bid 15% length of blade 15"
5. Big 10% length of blade 10"

Tie blades together layup:

4 layers of bid the width of the hub running from 4 inches down the back of each blade and up 4 inches on the front of the next blade.

Total of 3 separate layups



All bid is cut at a 45 degree angle. Uni all fibers run along the length of the blade.

After all three blades have the layups applied on one side, I added an extra $\frac{1}{4}$ inch layer of epoxy and glass fibers to the hub faces. This gives me a base that I can machine down to a flat surface without cutting into the carbon fiber layups. I also finished the layups with a layer of Peel Ply. This does a few things. First, it shows me if I have added enough resin to the glass. Second, it pulls all the end fibers down. Third, it makes for a nice surface for bonding to, which makes for less sanding.

Once the first side is cured, I flip it over and repeat the same on the front side of the propeller.

The next step is to add 4 layers of carbon bid that runs from 4 inches up on the backside of one blade to 4 inches up the front side of the next blade. I did this to add strength to the hub intersection. Now once all the layups are done, I used Mirco bubbles and alpha epoxy as filler to give me a smooth uniform surface for painting.

After I had done all the machining of the bolt holes and the center hub, I did a post cure of the hub by putting it on a hot plate at 160 degrees for 4 hours. I did this to the hub mount side only because I have found from doing other propellers that the heat from the hub will soften the glass and it will take much longer to get the propeller bolts to hold their set torque. I torque the prop to 18 ft/lb.

Here is what the final product looks like. I have flown it 5 hours so far. With time, I will fly it more and get some good data on its performance. The basic data so far is cruise speed of 165 knots, climb seems to be a little better than my speed prop. It also weighs in at 6 lbs less than my wood core propeller.



If you have any questions, you can contact me at velocityxlfg34@gmail.com

I wish I had more pictures to show of the process, but I lost most of them when my tablet died. :(

Some will ask why do I build my own propellers. First, I like to build things! Second, I like to build things!! Third, I have been able to test different propeller styles and performance at a minimum cost. The cost for this propeller was just under \$500 in materials. It is only that expensive because I chose carbon fiber instead of glass. A glass propeller would only cost around \$300 to make. I like the carbon fiber because it is much stiffer than glass and if done right, it is much stronger.

My plans for the future are to make a variable pitch propeller using my printer process.

Web sites that I have gotten info and ideas from:

http://www.ez.org/pages/alwick/index_files/Page874.htm

<http://k0lee.com/propfab.php>

ATC PRIVATIZATION - A THREAT TO YOUR FLYING!

EAA is actively working on Capital Hill to fight one of the most significant long-term threats to the general aviation community ever proposed. The ATC privatization proposal contained in the Aviation Innovation, Reform and Reauthorization(AIRR) Act, H.R. 2997 would be disastrous for GA.

The proposal would separate the nation's air traffic control system from the FAA to be managed and operated by a not-for-profit corporation. The corporation would be run by a board of directors comprised of system stakeholders economically dominated by airlines and other commercial and labor interests, leaving general aviation to be marginalized over time. This means that GA access to airspace, the availability of ATC services, funding for rural airports, charting, weather services and flight service, will all be at the discretion of a private industry board heavily weighted in terms of influence to the airlines and associated interests. This is not just about whether or not there are user fees for GA, which currently there are not. It is about the future preservation and health of the entire GA system of access and infrastructure we enjoy today.

Though there are many positive provisions within the AIRR Act, this disastrous ATC privatization proposal outweighs them all. Members are encouraged to contact their Senators and Representatives and tell them that any ATC privatization proposal should be removed from the AIRR Act before it is considered further.

EAA statement for the record on ATC Privatization: [Read full statement here.](#) [Read executive summary here.](#)

MODERNIZE NOT PRIVATIZE

We need **YOU** to tell your congressional representative **NO** before it's too late.

Visit www.ATCnotforsale.com **TODAY!**

Editors Note: Please note it could NOT BE **EASIER** to contact your congressional representatives. Go to the website www.ATCnotforsale.com and they already have a letter put together for you and will deliver it to the U.S. House and Senate based on your address. I did it and it literally takes 30 seconds to fill out your name and address and hit "send". I have already received confirmation from Representative Adam Kinzinger, Senator Tammy Duckworth, and Senator Richard Durbin. Please take a few minutes out of your day to do this!

2017 Chapter 95 Calendar of Events

Here is the current calendar of events. Some things may change, so continue to keep checking the calendar. If you have any other ideas, please contact Mark Molle.

September

22 - Chapter Meeting 7:30 pm, Warren & Linda Roddy treats

October

7 - Chapter 95 Young Eagles at Joliet Airport 9am - 2pm

14-15 - Red Bull Air Races - Indianapolis, IN

27 - Chapter Meeting 7:30 pm, Bill & Mary Jo Shain treats

November

17 - Potluck and Chapter Meeting 6:30 pm

December

09 - Ugly Christmas Sweater Party - Pizza party/Movie night

Project Update

Congratulations to Larry and Jacque on getting their Viking engine hung on their Zenith 750 project. Brian DePung and Matt Trofimchuck were able to give Larry a hand and got the engine hung on Sunday, Aug 27th. One more thing to cross off the list. Looking good Larry, keep moving along and it will be flying in no time. :)



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NEXT MEETING: Friday, Sept 22, 2017 at 7:30pm

Location: Morris Airport

Look forward to seeing everyone there!!!!

Visit our website at <http://95.eaachapter.org>

Do you know someone who might be interested in joining our chapter? Please bring them to our next meeting and let them see what we are all about. Membership dues are \$25.00 per year.