



## Get Your Tickets NOW!

### Chapter 95 Annual Holiday Banquet

**Saturday, January 14, 2017**

**Morris Country Club  
2615 W Route 6, Morris, IL**

**Cocktails - 6:30 pm  
Dinner - 7:30 pm**

Now is the time to get your tickets for the Chapter 95 Annual Holiday Banquet. This is a time for FRIENDS, FUN, and FOOD and is open to EVERYONE and ANYONE! You do not need to be a chapter 95 member to attend.

You can get your tickets at THIS FRIDAY's chapter 95 meeting or by contacting Jacque Nawojski. If you do NOT plan to attend, please contact Jacque anyway and let her know.

Dinner tickets are \$35.00 per person.

Cash bar will begin at 6:30pm with dinner at 7:30pm. As Treasurer, Jacque Nawojski, will again be selling the Banquet Tickets. She will have them available at the October and November Chapter meetings or you can mail her a check. Banquet tickets are \$35 a piece. You can also write your check to include your 2017 chapter dues at the same time, if you like.

Please make out the check to: EAA Chapter 95

If you mail your check for Banquet tickets, please send it to: Jacque Nawojski, 1603 Devonshire Ln, Shorewood, IL 60404

If you have any questions, you can call Jacque at 815-741-3982 or e-mail: [jen.norton1943@sbcglobal.net](mailto:jen.norton1943@sbcglobal.net)

This is a GREAT event to CELEBRATE 2016 and LOOK FORWARD to 2017!

HOPE TO SEE EVERYONE THERE!

## November Chapter Meeting

**THIS FRIDAY, Nov 18th**

**Grundy County Farm Bureau**

**Last Chapter Meeting of 2016 &  
POTLUCK DINNER**

Please join us at our last Chapter meeting for 2016. As we all love to eat, we are combining our chapter meeting with a chapter potluck. So come out and have some good food and friendship and fun evening. The chapter will be providing the meat, please bring your favorite dish to pass!

**Elections:** We will be conducting elections for all positions - President, Vice-President, Secretary, Treasurer and 3 Board Member positions. Please consider helping out and throwing your name in the ring. If you are interested in any of the positions, please contact Glenn Vokac (his contact information is on page 9).

**Guest Speaker:** RJ Toth is schedule to be at our meeting this month to tell us all about his experience at the Air Academy Camp this summer, as RJ was the recipient of our Air Academy Scholarship this year.

**Hope to see everyone there!**

## Reminder: 2017 Membership Dues

Please remember to pay Jacque for your 2017 membership dues. Dues are \$25.00 for the year or \$35 for you and a spouse. (new this year)

You can pay Jacque at the November Chapter meeting, when you buy your Banquet tickets, at the holiday banquet in January, or send her a check anytime in the mail. The member ship form is on Page 8 of the newsletter.

Please make the check out to EAA Chapter 95. If you mail it, address to: Jacque Nawojski, 1603 Devonshire Ln, Shorewood, IL 60404.



## From The President ...



**H**i all, in November we have chapter elections coming up for all the officers and half our board members so anyone interested in running for a position please contact Glen Vokac and he will get your name on the ballot. If your term is ending please let Glen know you will be available to serve another term so he will include your name on the ballot as well, I encourage the entire team we have to stay engaged as everything is working well. President

and Treasure are two year terms, Vice President and Secretary is a one year term this year then goes back to two year terms so the change of officers is staggered. The three board member positions are two year terms.

EAA Chapter 95 is having a pot luck dinner preceding our November meeting. The plan is for everyone to bring their favorite homemade dish and the chapter will provide the meat and drinks for all to enjoy. This event was well received last year and we all like FOOD so be sure to make the November meeting. We will eat at 6:30pm and have our election / regular meeting at 7:30pm.

Holiday dinner tickets are available, see Jacque and purchase in advance as we have secured our reservation at Morris Country Club this year. Our chapter has had the party there several times in the past and they do a great job of catering a first class event.

R. J. Toth is scheduled to come this month and he will be telling us about his experience at Air Academy summer camp. Our goal is to send a kid each year to experience EAA Air Academy summer camp in Oshkosh, please encourage any youth you know interested in Aviation to fill out the application for an opportunity to win this for 2017. Applications are on our website, if you have an interested candidate get me their email and I will send them the forms. I email this information to each of the kids that flew young eagles with us this year 13-18 who are eligible to attend. Anyone interested in being on the committee to decide this year's winner/s please do not hesitate to let me know.

Signing off now until next month;

Be Safe, Healthy & Happy,  
Mark

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## Chapter 95 Meeting Minutes - October 28, 2016

Meeting called to order @ Grundy County Farm Bureau @ 7:30pm by Mark Molle with 24 in attendance.

Pledge of Allegiance recited

Secretary's report by Warren Roddy: Accepted as reported in October newsletter

Treasurer's Report by Jacque Nawojski:

Income \$0

Expenses \$0

Young Eagles Fund: \$4,181.11

Available Funds \$5,382.19

### Old Business

Red Bull Air Races at the Indianapolis Motor Speedway on 10-2-16. They were delayed for a little while, but then went ahead with the event even though the visibility was not great. The aircraft were right there in front of you at nose height. Mark recommends attending if they come back next year; he had an awesome time.

### New Business

Holiday Dinner on January 14, 2017 at Morris Country Club

Jacque has tickets available at \$35 per person.

767 Fire at O'Hare - The plane was on takeoff to Miami. Randy Michael reported it appears an engine came apart and started a fire that melted the outer half of the wing. 49,000 pounds of fuel was on board. It also looked like the aft one third of the fuselage had burn damage. There was a fire training exercise going on at the time so the fire crew was only 3 minutes away. Only people that were hurt were injured on the egress getting off the plane at the emergency exits.

November Chapter Elections - Elections are coming up at the November meeting. Mark encourages members to run either as the incumbent or as new candidates. Glenn Vokac will be conducting the election.

*(Meeting minutes continued on Page 9)*

# Building a Propeller For My Velocity XLFG

## Hand Carving

By: Ron Needham  
Velocityxlfg34@gmail.com

### PROGRAM

The program I used to generate the propeller shape is called JC Propeller. <http://www.jcpropellerdesign.com>

It is a very simple, yet powerful software which uses Microsoft Excel. Once you have entered in all the data the file needs, it generates the propeller profile to accomplish the performance that you requested.

The screenshot shows the Microsoft Excel interface with the 'JC Propeller Design™' software embedded. The software interface is divided into several sections:

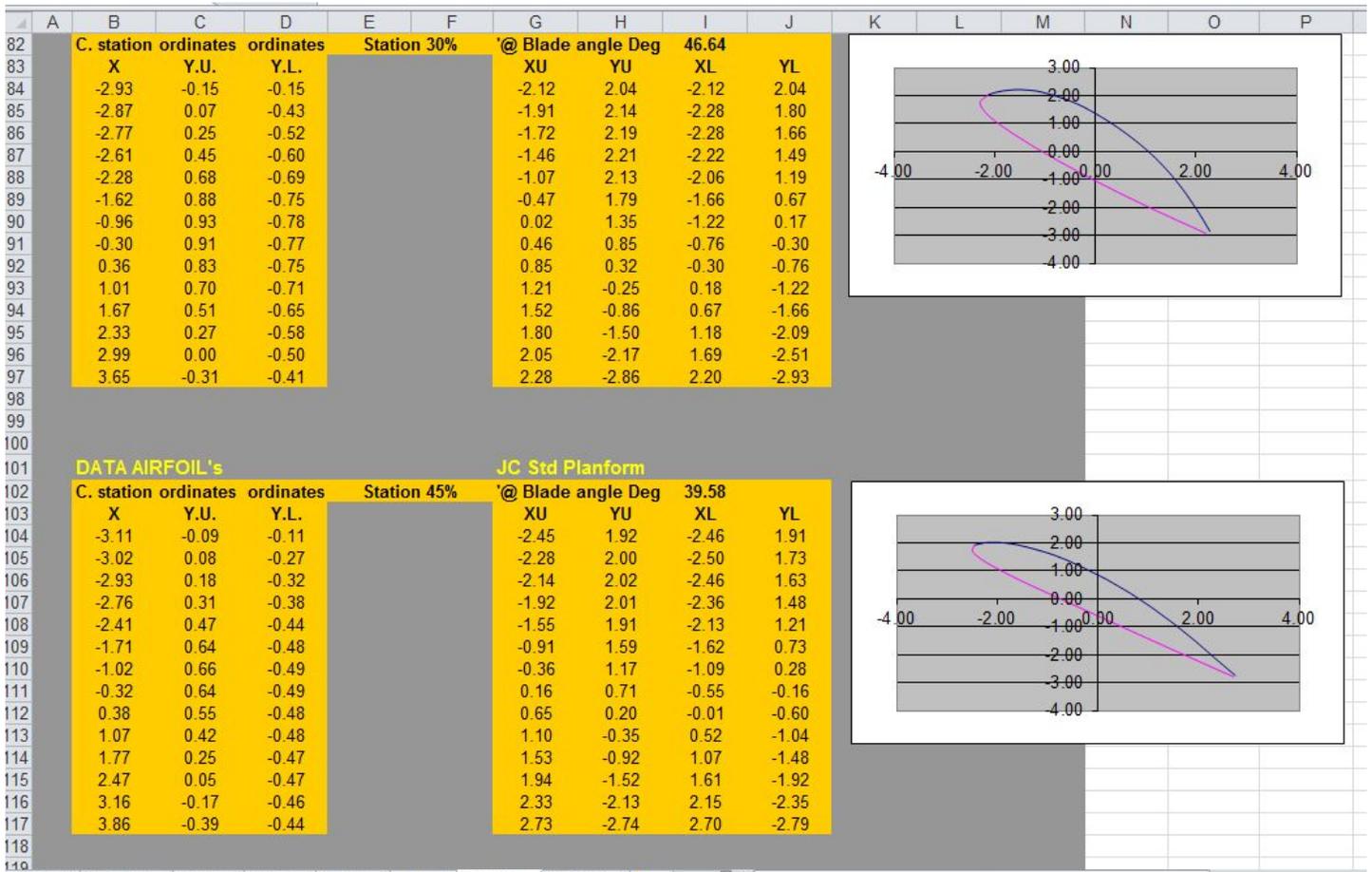
- Input Section (Rows 5-17):** A list of system input units and their values:
 

System input units	U
Airplane	Velocity XLFG
Wing Span, b (feet)	33
TOW (Lbs)	2700
Wing area S (sq.ft)	99.0
Body Interference	N
Engine	LT1
Rated HP @ Cruise (Design point)	260
Rated HP @ Max	290
RPM @ Cruise (Design point)	2500
RPM @ Max	2800
Design Speed, Cruise (MPH)	190.0
Camber Ratio (Thickness)	0.95
Aspect Ratio	4.00
Number of Blades	3
Max Allowable Diameter inch	67.65
Chose Material	Ge
Check Minimum Safe Camber Ratio	
- Final Calculation Table (Rows 6-9):**

Aspect Ratio 1.90	67.65	D Climb P	80.58	Min CR= -0.29
Aspect Ratio 2.28	67.65	D Stand. P	83.04	Min CR= -0.12
Aspect Ratio 2.66	67.65	D Cruise P	85.50	Min CR= 0.05
Aspect Ratio 3.24	67.65	D Speed P	89.50	Min CR= 0.31
- Initial Calculation Table (Rows 10-13):**

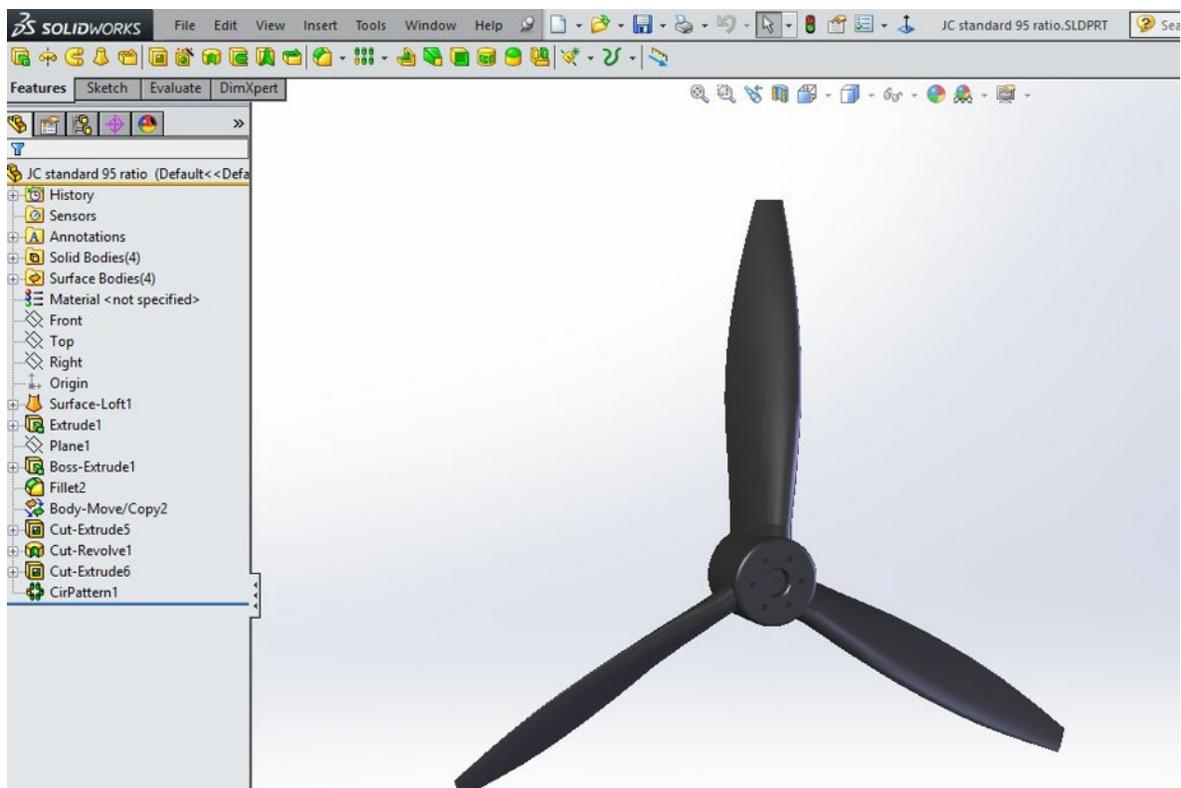
77.26	D Climb P	80.64	Min CR= 1.11
75.33	D Stand. P	83.08	Min CR= 1.02
73.40	D Cruise P	85.52	Min CR= 0.93
70.86	D Speed P	89.33	Min CR= 0.81
- Output Section (Rows 14-17):**
  - PSRU Ratio: 1.68
  - Engine-RPM: 4200
  - Max Speed: 198.5
  - Tip Speed: 826
  - D=Feet: 5.64
- Output Table (Rows 18-21):**

SP	R	0	I
18	19	20	21
- Buttons and Labels:**
  - 'INFORMATION' button (top right)
  - 'Create .txt files' button (bottom right)
  - 'This Copy is licenced to Ron Needham' (bottom center)



### CAD

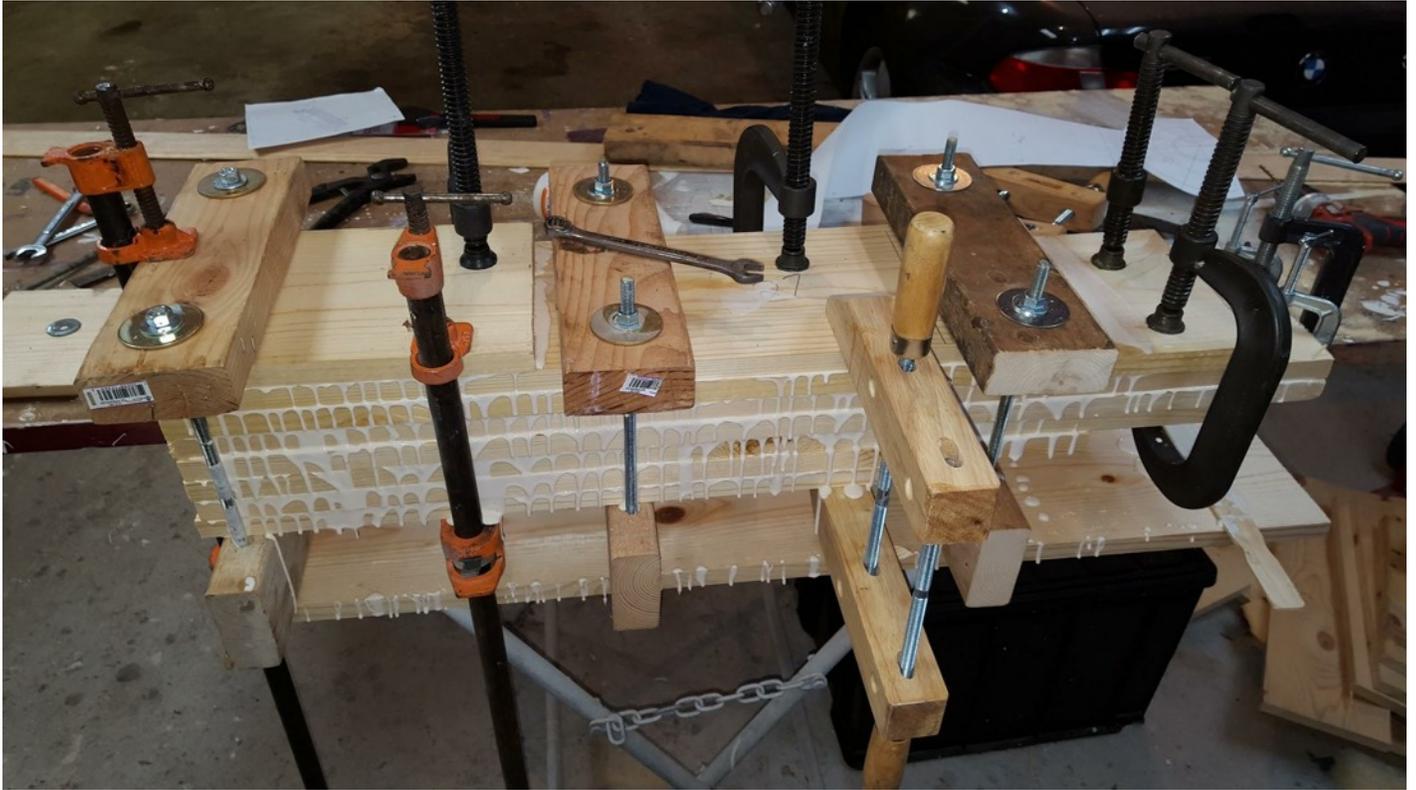
With the info from the Propeller Program, I was able to model the propeller in Solidworks very easily. This is where I was able to make my templates for cutting the propeller profiles. Using a printer and Solidworks, I was able to print out accurate templates on stiff card stock



## Building Begins

Gluing the Pine blanks together, you must alternate the grain curve. ( ) ( ) ( ) This helps prevent warping.

I found the threaded bolts and 2x4 worked best for clamping. Next time I would use more of them and less clamps. You must work very quickly, the glue set up faster than you think.



Once the glue has dried over night, the clamps can be removed. Then the outer profile or shape of the propeller is cut for each blade. It is very important to be extremely accurate with your layout lines and cutting, since this cut shape will be your final propeller shape. Some minor changes can be made, but this shape is what drives the carving of the propeller.

Now once the outer shape is cut and it is to your liking, the real fun begins. Carving!!! Using the card stock templates generated from Solidworks, I began carving.





I used a Saws All for the rough cuts. Next time I will use an electric chain saw. It would make carving go much faster. I saw a guy at Oshkosh carve a blade in under an hour.

Hammer and chisel to remove the bulk material.

Here I'm bonding the three blades together. Notice the wood wedge holding the blades at the correct pitch. The blades are not completely done with carving process yet, but very close. I left material on for fine adjustment once the three blades are bonded. Since the floor is not totally flat, I wanted to make sure I could get them back in alignment once the glue cured.



Fiberglass center hub with 1/4 diameter carbon fiber spars wrap around the hub and down each blade. So far very happy with the progress for the prop. It has taken 6 nights of carving to get this far.

Tools used:

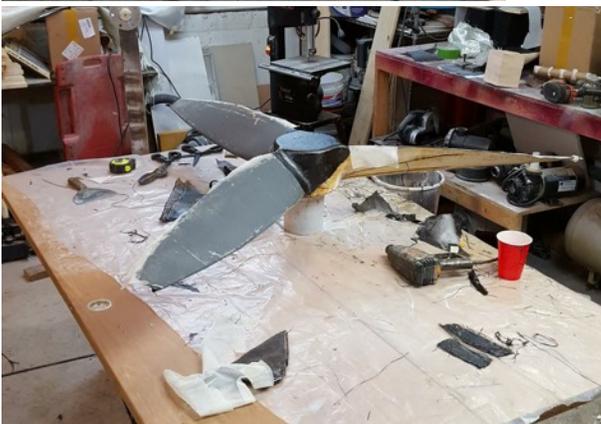
Belt sander - removes wood very fast

Hammer Chisel for the initial rough work

Die grinder with a 2 inch drum works great for carving the hub

Band saw

And a tool you must have is the Spoke Shave. Keeping it sharp can remove the wood in .010 chips and leaves a great surface.



First Carbon layups. Flat side first. Layers of glass on each side of the blades. 18 Layers at the hub.

I used 3 layers of Uni on each side and the other 3 layers are Bid. I choose to use Carbon fiber, but since it is so stiff, I wanted to make sure that there was no chance of flutter in the blades. I could not come up with a way to vacuum bag this, so I just did wet layups on plastic and then transferred them to the propeller. The wood is rough sanded and then coated with epoxy before the carbon is placed. Wrapping the glass over the leading edge onto the opposite side. Trailing edge glass is just up to the edge and cut off, not wrapped over.

Layup Schedule I used Copied off this web site: [http://www.ez.org/pages/alwick/index\\_files/Page874.htm](http://www.ez.org/pages/alwick/index_files/Page874.htm)

**Layer #1** is Bid full length

**Layer #2** is Uni-directional weave (RA 7715) full length

**Layer #3** is Uni 50% of full length

**Layer #4** is Uni 25% of full length

**Layer #5** is Bi-directional weave at 15% of prop length

**Layer #6** is Bi-directional at 15%



2 days after Flat side is glassed: Trailing edge of the prop wood is removed back about 3/8 of an inch before the shaped side of the prop is glassed. The glass is wrapped over the leading edge about 3/4 of an inch on the flat side of the blade. Once glass is stimped out, Peel Ply is added to control the glass from moving and to give a good surface to work with during the finishing process.

Finishing lots of sanding and balancing. Balancing is done on a small ball bearing hub. Amazingly accurate. A Post-It Note on the tip of the blade will swing that blade to the bottom when it is all done.



Ready to fly...

I got what I was trying for, a much faster Propeller. Cruise speed is now 168 knots (almost 200mph). The bad part is take off distance is suffering. :(

The JC propeller program calculated out exactly what to expect and it delivered!!

So the outcome:

1. Carving the propeller accurately by hand was surprising easy... Not easier than the first one I built using the Maching Center. :)
2. I am considering making another one with a bit more climb characteristics.
3. If I make another one will it be wood also?
  - A. Form core: Some certified blades are made from foam cores. I have been told by Catto propellers that they have considered it, but they like the wood core for vibration absorption characteristics. Foam would be much easier to carve!
  - B. 3D print the blades. Never seen this but it should work. Bonding the glass to the PLA material will be the challenge. The core of the propeller serves as a form and does not carry any of the load.
4. Fun to do? Yes, I love making things!
5. Cost: About \$500 in materials. The carbon fiber was \$350 or more of that cost. If I choose to make it out of glass it would have only cost about \$200.



## EAA Chapter 95 Membership Form

**Date:**

**Address change or correction:**

Yes

No

**Please check one!**

New

Renewal

**Member**

**Name:**

**National EAA Number:**

**Expiration Date:**

**Spouse's Name:**

**Address:**

**City:**

**State:**

**Zip:**

**Home Phone:**

**Cell Phone:**

**E-Mail address:**

**Certificates Held:** \_\_\_\_\_

**Children's Names:** \_\_\_\_\_

Areas of Interest ( Please check all that apply)

- Meeting and Flying activities
- Welcome and Social Committees
- Budget and Finance
- Young Eagles (Organization, Ground crew, Pilot, ect.)
- Fly-Ins, Dinners, Poker runs
- Builder's support
- Membership recruitment
- Newsletter and website
- Other (Please describe in the comments section)

**Projects, Aircraft owned, Aircraft Interests:**

**Newsletter Preference: (check one)**  via e-mail  printed U.S. Mail

Renewal and New Member Dues: \$25.00 or \$35 for Member and Spouse

Name Badge: \$7.00 each (Name(s) on Badge: \_\_\_\_\_)

Please fill out this form and send it with a check made out to **EAA Chapter 95** for \$25.00 or \$35.00 plus \$7.00 or \$14.00 for optional name badge(s). Send check and form to:

Jacque Nawojski  
EAA 95 Treasurer

1603 Devonshire Ln  
Shorewood, IL 60404

## 2016 Chapter 95 Calendar of Events

### November

18 - Potluck and Chapter Meeting 6:30 pm

### December

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

*(Meeting minutes continued from page 2)*

November Meeting Pot Luck - November 18th at 6:30pm  
Dinner at 6:30 and meeting at 7:30. Chapter will supply meat and drinks, so bring your special dish to share.

### Young Eagles Air Academy Summer Camp

Jana has the forms and information on the chapter website. We will be sending out emails with applications to eligible kids. Let Mark know if you'd like to be on the selection committee.

### Reno Air Races

Dave Miller made the trip out this year. He said there was clear visibility and you could see the backdrop with the mountains in the background. The RV racing was side-by-side on a slalom course. The Blue Angels also performed. Dave volunteered for 3 hours a day for a free pass. He had a great time.

### Guest Speaker

#### Matt Kwiatkowski

Argonne sUAS Program and FAA Part 107 Matt conducted a really interesting and interactive presentation on the new FAA regulations for Small Unmanned Aircraft Systems (Drones).

### Treats

Provided by Bill and Mary Jo Shain—Thank You!



Our friend, David Hu, from NaperAero, who has the RV-9A that John helped with the first flight, flying the Phase 1 time off, and transition training, was in a bad motorcycle accident and broke a few vertebrae in his neck. He had surgery and is doing great and back home, but this is from John and Jana visiting him in the hospital. Please keep David in your thoughts and prayers for a smooth recovery and back in the air soon.

### Chapter 95 Officers:

**President:** Mark Molle  
(815) 378-1680  
mrkmolle@gmail.com

**Vice-President:** Brian DePung  
(815) 942-8384  
bdepung@gmail.com

**Treasurer:** Jacque Nawojski  
(708) 508-2620  
jen.norton1943@sbcglobal.net

**Secretary:** Warren Roddy  
(847) 770-2501  
rcroddy@sbcglobal.net

### Volunteers:

#### Newsletter & Web

**Editor:** Jana Trofimchuck  
(815) 634-8455  
jana.trof@gmail.com

#### Technical Counselors:

Bill Shain  
(815) 634-8992  
Bill.shain@qabcc.com

Glenn Vokac  
(630) 346-0432  
glennrv8@comcast.net

Tom Ellis  
(815) 405-5082  
rv8tom@yahoo.com

#### Young Eagles Coordinator:

Bill Shain  
(815) 634-8992  
billshain@qabcc.com

Larry Nawojski  
(815) 741-3982  
lhenrynorton@sbcglobal.net

**Flight Advisors:** John Musgrave  
(217) 322-7049  
jmsgrave@yahoo.com

Nick Scholtes  
(815) 671-2512  
nick@scholtes1.com

Tom Ellis  
(815) 405-5082  
rv8tom@yahoo.com

### Appointed Positions:

**Safety Officer:** Matt Kwiatkowski  
(630) 229-2928  
Matt@kwiatkowski.com

#### Membership Coordinator:

John Limbach  
(815) 791-6620  
Johnjohnhere@comcast.net

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7900 E Chickory Lane  
Coal City, IL 60416



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**NEXT MEETING: Friday, Nov 18, 2016 at 7:30pm  
(6:30pm Potluck)**

**Location: Grundy County Farm Bureau  
4000 Division St (Route 47)  
Morris, IL**

**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.