

ON THE FINAL

EAA CHAPTER 25

MINNEAPOLIS / ST PAUL, MN

JANUARY 2005

Legal Eagle Taking Shape

September - December 2004

by Pete Gavin



We last reported on Frank's LEU project in September. At that point, he had framed up the tail feathers and completed the ribs and spars. For this update, I visited Frank's project again and included material from his building log. As you can see, he has made a lot of progress over the past few months.

Note: Frank has enlisted the help of Howard Longpre throughout this project.

Constructing the Wings

The most visible accomplishment since September's report has been construction

(Continued on page 4)

December Museum Tour/Christmas Party

On December 19th, Chapter 25 members gathered at the Golden Wings Air Museum at Anoka County Airport for a private tour of their unique collection of vintage aircraft. Later, members headed across the field to member Dan Carroll's hangar for the 2nd annual chapter Christmas party. Dan was a great host, and everyone brought food or drink *(Continued on page 3)*



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Cleared for Takeoff

by Pat Halligan



HAPPY NEW YEAR!

Around the holidays I received a number of e-mails from members and they all said something to the effect; we're glad we belong to an active chapter and we think the officers are doing a good job. I thank you for the kind words and rest assured we do spend some of our waking hours thinking about how to make a good chapter even better.

Last month in our newsletter we looked back at 2004, now let's look ahead. We'll start with the web site. On New Years Day I sent out an e-mail that Jeff Coffey had the site up and running. Jon Cumpton got the ball rolling and then Jeff did the design work. It looks wonderful, so check it out at www.eaa25.org, keeping in mind we still have some fine tuning to do.

The city of Lakeville will open its second high school this fall and we plan to offer a scholarship to the new school, in addition to the one we already offer at the original high school. You should be very proud your chapter is doing something about education, instead of just talking about it like a lot of politicians.

The Sonex airplane will be getting closer to its first flight as the year progresses and we will need to form a flying club with chapter 25 members in order to know who will be flying the plane and when. A membership in the "flying club" will be one way to keep flying affordable without putting your first born up for adoption. With the flying club, nobody will be able to walk around the hanger and say they can't afford to fly.

We will continue to fly Young Eagles every third Saturday of the month. Hopefully more members will become involved and discover the joy of bringing a smile to a youngster's face as they go for their first airplane ride.

Sport pilot/light sport aircraft will continue to grow and we should see a new group of aviators interested in flying and interested in our chapter. We've been adding approximately two new members each month and I expect that number to increase. Our new membership coordinator, Rich Monteleone, will be working hard to make sure our guests and new members feel welcome. Please go out of your way to introduce yourself and make everyone feel welcome.

We will need to become more involved in community issues, like the mess at Crystal Airport, because in a roundabout way these events affect all of us. We will need to attend meetings and hearings to stay abreast of these issues. How many of you know that on December 20, 2004 the M.A.C. doubled the square foot storage rate at Airlake?

We are considering a private pilot ground school at our hanger during the summer months that would be free for our members and their kids/grandkids. I need your input as to your level of interest as a student, instructor, etc...

I will continue to work hard at getting an interesting guest speaker for each monthly meeting, because I figure if you're going to take time out of your busy schedule to attend a meeting, the least I can do is make it enjoyable. For the past two years my "old" V.P. Jeff Coffey has made the meetings very enjoyable when I've been out of town and I want to say "Thanks Jeff, you did a wonderful job." You all know my new V.P. Jon Cumpton and his passion for flying and for our chapter, so as a team you know we are going to keep right on having fun.

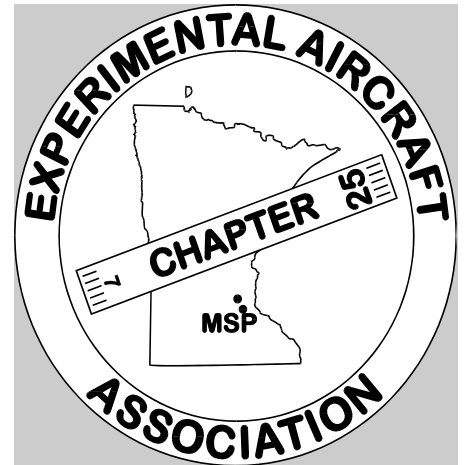
How was that for a quick look ahead? I could write about more subjects, but my space is limited so we'll talk about them at our next meeting or in another column.

Looking forward to 2005, Pat

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ON FINAL JANUARY 2005

On Final



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Visit our website at eaa25.com

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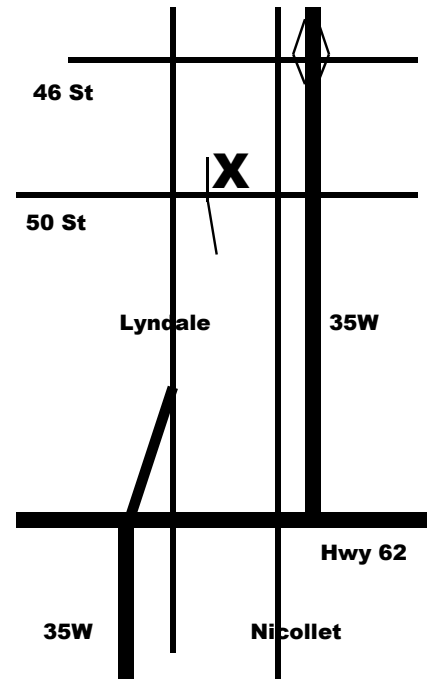
This Month—Jan 19th—Washburn High—6:30 pm

Meeting starts at 6:30 Free coffee & snacks

Speaker—Our speaker this month will be Brent Behn, Midwest Regional Director of OurPLANE, Corp. OurPLANE is an aircraft management company that manages fractional ownership on factory new aircraft for GA pilots. They also offer an executive program aimed at small and medium sized companies. OurPLANE was developed by two pilots from London, Ontario who became frustrated with the traditional methods of ownership and renting. Their company manages all of the details of aircraft ownership - fueling, maintenance, hangarage, insurance and cleaning, etc. - so the pilots can relax and concentrate on flying.

Directions to Meeting: From the South: Left exit 108 from 35W at the Crosstown. Continue north on Lyndale Ave to 50th Street. Right turn and proceed 3 blocks. Turn left into the school south parking lot. Enter south door #9, meeting down the hall on your right.

From the North: 46th street exit from 35W, turn right. West on 46th street to Nicollet, turn left. South on Nicollet to 50th, turn right. West on 50th past the Junior High School to the Sr. High School 2 blocks west of Nicollet. Turn right into the school south parking lot. Enter at south door #9, meeting down the hall on your right.



December Tour/Party

(Continued from page 1)

to share. This event replaced our normal December meeting, and although there was not much business to report, everyone had a great time. Dan promises to continue this new “tradition” again next year. Thanks to Jon Perry and Jon Cumpton for sharing these pictures.



ON FINAL JANUARY 2005

Legal Eagle *(Continued from page 1)*

and rigging of the wings. He has assembled the ribs onto the spars and constructed the remaining wing parts – the diagonals, D-sections, and leading and trailing edges. Frank says, “Getting all of these pieces cut to correct size and properly aligned and glued in place was like putting together a puzzle.”

They fabricated 18 false (foam) ribs for the leading D-section. For these, they called on Marv Getten’s experience and used Marv’s special electric foam cutter. This is a homemade saw that uses a long wire to cut through multiple foam blocks at the same time. This ensures that they are of uniform size and shape. The leading edge consists of .8 mm plywood. Howard’s recommendation was that they make female forms to hold the plywood in place with straps while gluing to the leading edge ribs.

The aileron structures are built as part of the wing then cut loose for final assembly. They employed this same form and strapping method to apply their D-sections. The aileron pockets were strengthened with more plywood and closed out with poster foam-board material.

Frank commented that “Howard is a real treat to work with, and so capable...his machinists background is conveniently put to good use on the project.” Brass bushings were inserted in the outer aileron hinge blocks, and added into the design at various places. Both wings and ailerons were then finish sanded and varnished. Everything is now ready for the covering phase.

Rigging the Wings

The way the wings were originally designed, the leading edges of the wings were offset by about 1/8” front to rear. This made it simpler to make up the wing attachments, but then the sections covering the gap between the wings would be slightly skewed. Frank corrected this by rearranging the attach brackets so that the leading edges came out lined up. This allows the sheet metal covering the gap to be square with the wings.



The initial wing alignment test was performed out on the lawn. Frank & Howard then moved the fuselage and wings into the living room for the rigging process. The initial trial assembly did not go smoothly. Both parasol attachment posts on the fuselage were slightly miss-aligned. It was impossible to get the bolts in both fore & aft brackets and through the posts at the same time. In the past, Frank had made several email and newsgroup submissions to the builder’s support group. This was the first time he actually grabbed the phone. After talking about the situation with John Bolding, there was only one option. Howard built a jig to help align and re-locate the parasol posts. Frank borrowed an acetylene torch to apply heat and bend the posts into position. They came out perfectly aligned.

They then built wing scaffolding and utilized a self-leveling dual laser to level the wings. The procedure was to level the wings, then move each wing tip up 3 inches for dihedral. They then affixed the forward strut attachment hardware. Instead of using the round struts per plan most builders are going with streamlined. Frank ordered streamlined struts from Carlson Aircraft. This project has all the basic attributes; translated this means there are gotcha’s. Howard had fabri-



Legal Eagle *(Continued from page 4)*

cated the strut attachment hardware per the drawings. He found a place that did aluminum welding. They did a great job...problem was they only needed to have a seven degree angle, not fifteen. The wings and struts are now rigged.

The original design with the round struts required jury struts to keep the main struts from vibrating. These are not required with the streamlined struts, but Frank still intends to install them for extra strength.

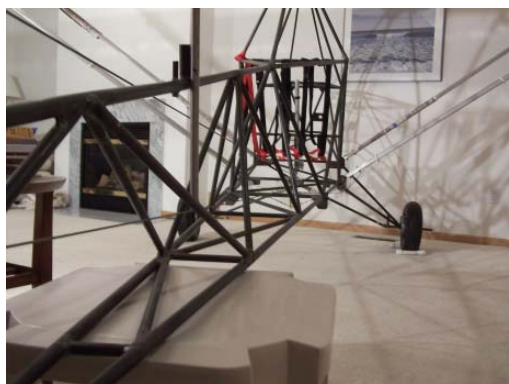
Flight Controls

The control system mounts via nylon plate standoffs holding a one-inch aluminum tube that is positioned horizontally between stations 2 and 3. Brackets and guard shields fabricated out of AL sheet secure the 2 1/2" pulleys called for in this control system. There is a riveted control stick shroud that mounts on the horizontal tube, and a control stick installed with bolt, washers, etc.

The elevator cable that goes through the horizontal tube is designed to pass by the bolts that go through the tube. Frank's plane will use sailboat rudder and tiller blocks for the elevator and rudder cable fixtures through which the cables must pass to the tail. He is using a small brake lever from a local bike shop to activate the brakes. The lever was designed for 7/8" diameter handlebars, which was ground out to 1" for the control stick. A single hand lever will close both brake bands simultaneously; thus the brakes provide no directional control.

Once again, Howard has applied his creativity to Frank's ultralight. He has fabricated most of the aileron bell cranks, rod, pulley guards, and spacers used throughout. He made some neat 1/4" nylon/plastic stand off fasteners for routing the cable via brass fairleads fore and aft of the rear strut. These were machined such that each half will contour to the shape and screw together over the streamlined struts.

Frank borrowed the Nicropress tool (belonging to EAA Chapter 25), a cable cutter, and No-Go gauge from Chris Bobka. Wasting no time, they quickly fabricated aileron and elevator control cables to final length with turnbuckles for fine adjustment. Getting the cables cut to exact length can be a real challenge, and took more than one attempt in a couple of cases.



These are now installed and ready to go. The day I visited they were starting on the rudder cables.

The fuselage still needs a few tabs welded to the fuselage for rudder pedals, standoffs



and fairleads. Bert Sisler has agreed to help out with the welding once Frank decides on their final placement.

Fuel Tank

The tank is constructed of fiberglass and 1/4" PVC foam. Frank's was crafted by making a mock tank out of 1/4" plywood from which the top laminate could be easily formed. The mold was lined with poly and tested for volume. The box was then disassembled and the pieces used for patterns in cutting the foam. The seven separate pieces of foam were laminated with the fiberglass on both sides. The box (minus the top) was glued together with epoxy. All inside corners were given radiuses of floc and more fiberglass which actually is both the structural and sealing surface, the epoxy is covered as most fuels will attack it.

After the box was constructed Frank installed the finger fuel strainer in the outlet. The filler tube is actually a household sink drain PVC tube. It goes in the tank's top before installing the top. From Frank's experience working on his father-in-law's Express project...he sealed the inside joints of all mating surfaces along the top with floc. The next challenge was finding a way to apply the same floc seal to the inside joints where the sides meet the top. He prepared curved strips of fiberglass and bonded them along the inside of the tank where the sides meet the top. He then filled the gap between the curved strips and the sides with floc, wetting every surface down with resin before pressing the top into place. The cover was weighted down with whatever ballast Frank could apply. It's all done, and nice and light. It will be holding roughly 36 lbs. of fuel.

Engine

The engine was ordered from Hummel Engines while at Oshkosh. Delivered mid-October. It is a 1/2 VW full case upgraded to 1200cc. It has Nicosil aluminum cylinder walls keeping temperature down which translates into more horsepower. It comes with an Aerocarb carburetor, tuned manifold, exhaust, and a rotor-less distributor. It's rated at 45 HP,

(Continued on page 6)

Pat's "State of the Chapter" Report

Dear members,

I thought it would be of value to give you an idea of our finances at the beginning of each year. Kind of a state of the chapter report. You will be happy to here we are doing fine.

We started the year (2004) with \$7414 in the bank and we ended the year with \$7420. In between January 1st and December 31st we spent a few dollars.

We spent about \$2000 on hangar insulation. (Roof-doors etc...)

\$500 on the mezzanine.

\$500 on the scholarship.

\$500 for our gas hookup, a meter etc...

\$300 for EAA summer camp.

And \$6000 toward the hangar as we paid the loan down from \$20000 to \$14000.

There were a lot of other expenses like utilities, printing, insurance etc... that I didn't break down.

As you can see it takes money to keep the chapter running. I want to thank you for your donations, paying your dues and helping with the fund raiser. When everyone does a little, we can accomplish a lot. If you have not paid your 2005 dues, please send a check to Rich Monteleone at this time.

Again "Thanks" for being a part of chapter 25,

Pat the Prez.

Legal Eagle (Continued from page 5)



and will probably be turning a 60 x 20 propeller. The engine has been run in a stand prior to shipment.

Fuselage Main Gear

The fuselage is standing on the main gear, and the wheels, tires etc. fit well. The design calls

for compression springs over one of the cross support tubes, as one tube slides inside the other. Frank chose to use the stronger 1000 lbs. per inch die spring option. Some LEU builders have used valve springs from a diesel truck. From the advise of previous LEU builders, these springs are pre-loaded 1/4" (or about 250 lbs.) Frank described the brake and axle work that remains.

Future Plans

Frank appears very eager to tackle the fabric and covering task, but will probably wait until the weather warms up. This generates a lot of fumes and one needs to be able to move a lot

Remembering the J2

from Lee Hurry

When I heard that the EAA may be planning to make a J2 from their museum available for sale, I passed the information on to Lee and asked what he could tell me about that model..Here is Lee's response.

I well remember the J-2 and flying it. Our modern ultralites must be very similar, except the Cub has less power for the weight. The single ignition only makes 37 hp (the very scarce dual ignition version makes another 3 hp, but either way it's underpowered and thus many have been converted to 65 Continentals which makes it a pretty good plane, lighter than the later J-3.

The rudder has no aerodynamic counterbalance so one must coordinate it well. It can't handle much wind and no brakes makes ground handling much like float plane handling.

I recall Mankato had an above ground gas pump so one had to gauge the wind direction and strength when coming in to refuel. Cut the power the correct distance for the roll up or sometimes circle the pump so as to head into the wind to approach it.

Rate of climb on a hot day with 2 aboard was immeasurable. On cool days it was acceptable; one usually flew less than 500' anyhow.

I bought two partial planes from Jim Southworth at Chetek, Wis. I restored one as an early J-3 with 65 Lycoming and the other as a homebuilt Kustom Kub with a hinged door like a PA12 and T-craft ribs and an 85 Continental. I was covering this one when the regs for transponder etc came in so it was sold into southern Wisconsin. The other was bought locally and resold quickly, I believe. That's when I sold my Jensen strip hangar too.

The J2 was a great little airplane—would make a great chapter project!

of fresh air through the workshop. Most of our members know Frank...he loves to say "I am 90% finished, with 90% yet to go!"

One challenge that he is open to hearing about your experience with, is what to do about a tail wheel spring? Frank's drawn up a sketch of what he thinks is needed, and is trying to find a shop that can fabricate it out of SAE 1050 - 1095 mild steel.

Stay tuned—more to come!



Call for Volunteers

from Jon Cumpton

I've had a great time volunteering at Washburn. I think the best thing has been that I have learned something from the kids and they from me — they knew how to read and interpret the Sonex plans, I had some experience with tools they didn't.

Whether you are an experienced builder or someone who is just interested in seeing how an airplane is built, you guys need to visit Washburn. Just find a way to fit an hour (9:30-10:30 am weekdays) into your schedule. Most of the kids are dead serious about the course, so don't worry that you've got to babysit anyone!!

As chapter members, this opportunity has just fallen in our laps, courtesy of Peter. Try it, you'll like it!!

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SPONSORED BY THE WISCONSIN WING OF THE ER-
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THE NATIONAL AERONCA ASSOCIATION

(LET'S SEE WHO HAS THE MOST PLANES SHOW UP)

NOTE: SPECIAL PERMISSION IS REQUIRED TO LAND.
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7814 TO RECEIVE THE REQUIRED DOCUMENTS

COST: \$50 PER PERSON FOR FOOD AND LODGING



ON FINAL JANUARY 2005



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Chapter Events and Fly-Ins

Jan 19 Chapter 25 Meeting
Washburn High School 6:30pm
 (See directions on page 3)
Future meetings 2/16, 3/16, 4/20
5/18, 6/15, 7/20, 8/17, 9/21, 10/19

Jan 15 Grand Rapids Mn 11a-2p
 (GPZ) Ski Fly-In & Chili, runways open for skis. 218/244-5658.

Jan 15 Winsted Mn (10D) 11a-1p
 9th Annual Chili Feed Fly-In
 Russ Paschke 320/485-3720.

Jan 16 Hayward Wi (pvt) 9a-3p
 Ski Fly-In Bkfst, so end of Big Round Lk, Grand Pines Resort
 122.8 Mike 715/462-3352

Feb 5 Brodhead Wi (C37)
 Groundhog Chili Fly-In. Runways not plowed. 262/374-0465

Feb 12 Elbow Lk Mn (Y63) 10-2p
 Ski Fly-in food and fun, lake or

runway. Odell 218/685-5100
Feb 12 Walker Mn (pvt) 10a-4p
 Ski Fly-in Leech Lake 122.9
 land SE of city park Food
 Eric 218/244-5658

Feb 19 So St Paul Mn (SGS) 11-1p
 Ski Fly-in Jeff 612/849-5940

Feb 26 Hinckley Mn (04W) 8-11a
 Bkfst 320/384-6488

Feb 27 Warroad Mn (RRT) 8a-1p
 Ski Fly-In Bkfst Skis land on Warroad River 218/386-1818.

Mar 6-8 Fargo ND Holiday Inn
 Upper Midwest Aviation Symp.
 kasowski@aero.und.edu.

Mar 24-25 St Paul Mn
 Mn Aviation Mtce Tech Conf
 Radisson Riverfront Hotel.
 800/857-3922.

Apr 12-18 Sun N'Fun 2005 (LAL)



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Stuff for Sale/Wanted

Wanted: Rebuilt low time engine for my PA12: 108, 115, 125 or 135 HP would be acceptable. Jan (grounded supercruiser) Berghoff cell 952-994-4114 home 952-829-5914 office 507-357-6565.

For Sale: pair of new headsets from Sporty's, model Air-680, \$120 ea. New. Plus Flight Gear carrying bag, will sell both headsets plus bag for \$75. Pat 651-452-7050

For Sale: From Stan's Skybolt—Lycoming HO360-B1B 180 hp engine, conical mounts, Ellison throttle body, 60 amp alt., oil sump heater, Christen inverted oil system, JPI engine analyzer, 15 hrs since Buldoc overhaul, \$17,500
 Also, McCauley 74-56 prop 15 hrs since overhaul incl. chrome spinner \$1,500
 Email Stanflays@aol.com or call Dave at 651-423-4912

For Sale: 29'x34' homebuilder's shop with walkout rambler attached. Burnsville, joins Skyline park. 3 bdrm/fam rm/dbl garage. \$279,000. Pat Green 952/890-3514

For Sale: 1/10th share in J-3 Cub & hangar at MIC. Low cost flying.
 Call Dan: 612/991-6392 for specifics.

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Chapter 25 2004 Month-Yr Treasurer's Report

	Begin-Balance	Income	Expenses	Ending-Balance
January	7,414.07	1,988.55	1,723.42	7,679.20
February	7,679.20	640.00	2,538.91	5,780.29
March	5,780.29	1,202.00	1,835.67	5,146.62
April	5,146.62	522.75	1,165.44	4,503.93
May	4,503.93	58.78	1,339.07	3,223.64
June	3,223.64	1,647.83	1,090.08	3,781.39
July	3,781.39	399.24	176.31	4,004.32
August	4,004.32	633.12	404.42	4,233.02
September	4,233.02	2,297.40	1,236.84	5,293.58
October	5,293.58	7,039.44	3,233.88	9,099.14
November	9,099.14	890.00	704.06	9,285.08
Dec to date	9,285.08	816.00	2,681.00	7,420.08
Total for Year		18,135.11	18,129.10	

Submitted by Ron Oehler, Chapter 25 Treasurer

Note: Int free loans & hangar payoff to M. Gulbrandson removed from Inc & Exp Dec 5



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 Aviation Medical Examiner

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