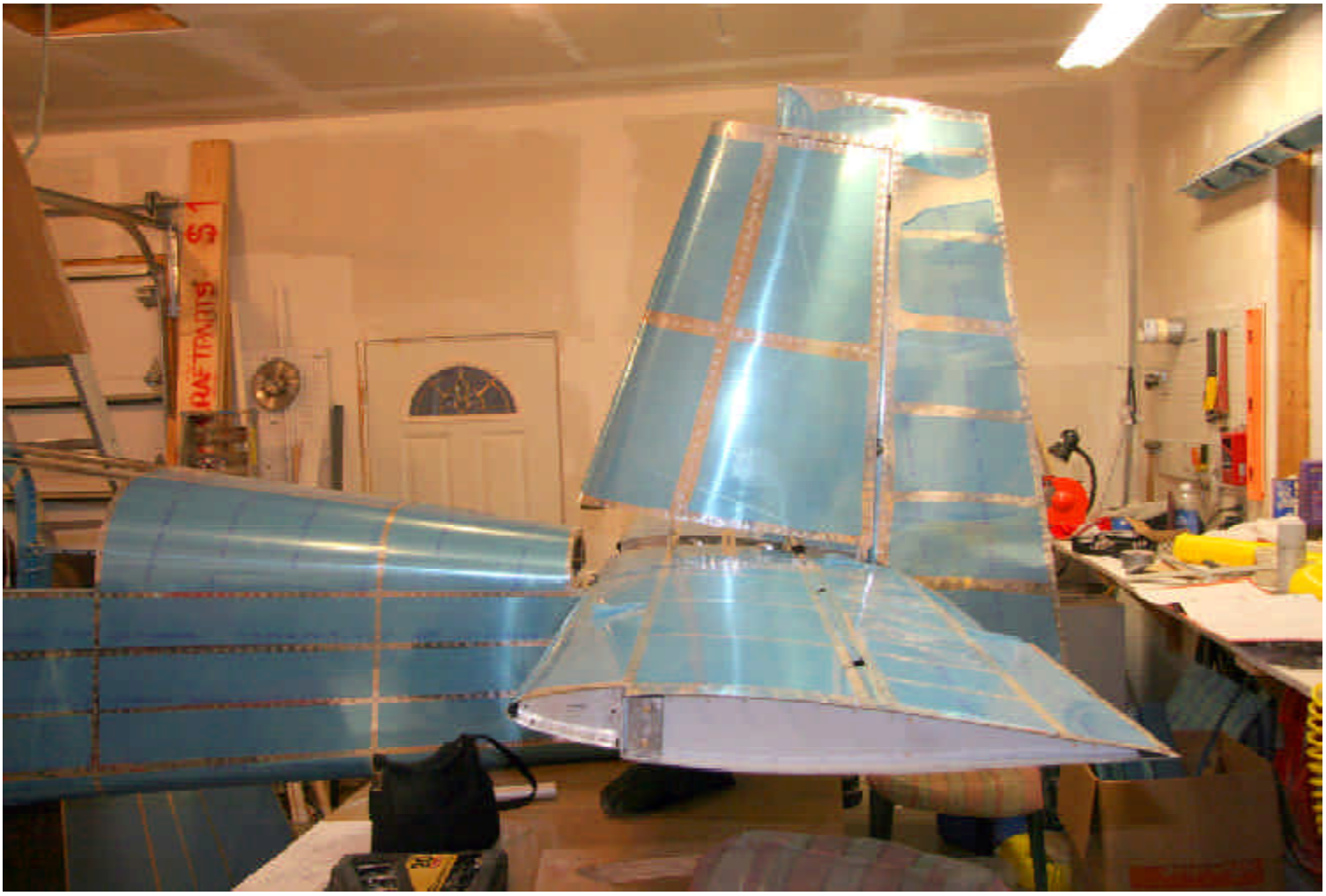
EAA CHAPTER 32 NEWS

Jim Bower, Editor

January, 2006

HAPPY NEW YEAR!

As usual at this time of year, we hope all of you had a great Christmas or Hannukah (or whatever), and are raring to come back to the ARC on January 22nd at 1:00 for a potluck lunch (bring $3.00 to help cover food, etc.) and the first meeting of 2006. There will be a program, but as we go to press, it is still a surprise.



RV-10 Progress

Scott Nichols says: "Finished the Empennage and starting on the wings, now. Thanks for all of the support and education (Karsten, Gale, Jim B., Mr. Bill, and all). I am really enjoying this and excited about the progress."

EAA Chapter 32 Meeting Minutes
November 20, 2005

Vice President Bill Jagust called the November meeting to order at 2:00 with the Pledge of Allegiance and a welcome to all.

The Smartt Field runway extension was discussed. Bill said he attended the November 14th meeting of the St. Charles County Council. There were some 20-25 airport supporters in attendance, but were outnumbered by a horseshoe throwing club. He asked for our continued support at the November 28 meeting.

It was announced that the annual Christmas party will be held on December 3, 2005. Due to the guest speaker providing his services for free, the ticket prices hit a new low of $12.00. Volunteers to help clean up and decorate the ARC on the 27th were solicited.

Donations to get Bill Blake's name on the Memorial Wall were within reach of the required $350.00, so the Chapter will make up any difference. The money needed to be sent in soon in order to get Bill's plaque on the wall by the 2006 AirVenture.

The Chapter sent a memorial for Roger Moore's son, who passed away in October.

Ernie Buzard earlier discovered that the bbq grill was in dire straits, so we asked for a vote on replacing it. The members approved a maximum expenditure amount of $700.00 (we are expecting a really good grill). Rick Galati volunteered to research grills and purchase a new one.

The large storage box is halfway painted, thanks to the Saturday ARC elves.

Gary Kasten volunteered to assume the telephone hotline duties from Ted Boerding. Thanks for doing a great job all these years, Ted!

Treasurer-elect Jim Hann said we threw our name in the hat to host the Ford Tri-Motor tour next year. There are some pretty stiff requirements (a hangar with an 80-foot wide door, for one), but if we work together with the Alton chapter, we might pull it off.

The meeting adjourned at 3:05 pm so the members could participate in a weight-and-balance demo, using Dave McGougan's newly re-engined Ridge Runner. Good reports from that effort!

A welcome "guest" at the November meeting was Dave McGougan's Ridgerunner

mr. bill masterfully conducted the November meeting, giving his undivided attention to the business at hand!

Dues are Due!

The chapter voted at the September meeting to hold the yearly dues at $60 for 2006. Please give or send your money to our new treasurer, Jim Hann. Make him WORK!

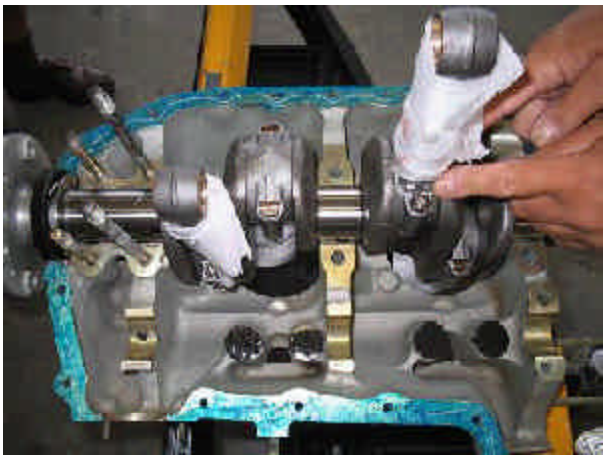
The Major Overhaul Part III (The Last Chapter)

by Rick Galati

The ubiquitous Continental O-200 engine has powered countless aircraft and has been in continuous production for more than 40 years. Rolls Royce even manufactured the proven and highly reliable design during a 1960 thru 1980 licensing agreement. Replacement parts and services for the modest 100 H.P. power plant are plentiful and widely available. Undertaking any major engine overhaul is no small task and not to be taken lightly. In my particular case, this was made possible by drawing upon the knowledge of more than a few persons experienced and well versed in O-200 mechanical detail. The previous newsletter articles described the disassembly process and what was found upon casual visual inspection. Virtually all of the engine parts were sent out for a far more detailed and professional analysis. Following critical inspection and refurbishment, the major engine components including the crankshaft, camshaft and engine case were returned and the reassembly process began in earnest.

Upon receiving the refurbished crankshaft, machined to a standard undersize dimension by Aircraft Engines and Accessories Inc. in Dallas TX., it was securely bolted to a vertical engine stand, greatly easing the next step, installing the piston connecting rods. An undersize bearing kit, including 2 main bearings installed inside the case and a 2 piece bearing set installed on each of the four connecting rod assemblies were required to properly mate with the newly reworked crankshaft. The four connecting rods were bolted to the crankshaft in both a specific journal assignment and forward/aft orientation. At first glance, it appears you could simply reach for any seemingly identical piston connecting rod and bolt it into place onto any random journal on the crankshaft, but this is not the case. Each connecting rod is subtly numbered 1, 2, 3, or 4, has a forward and backside face and a tiny orifice machined into one side of it that squirts oil at an angle towards the connecting rod positioned next to it. Omit this subtle but crucial detail and you can be assured key engine components will not receive adequate lubrication and premature engine wear becomes a virtual certainty.

After the four connecting rods were bolted onto the crankshaft with special attention paid to applying the correct torque values to the rod bolts, the crankcase/connecting rod assembly was temporarily removed from the engine stand and carefully reinserted through a newly refurbished case half already prepared with the camshaft and hydraulic lifter assemblies set into place. The case seam was given a light dressing of Hylomar, a



type of aerospace gasket sealant and a length of string was placed onto its sticky blue surface. It is that unassuming length of string (sold with a Continental part number) that serves to prevent leaks between the rejoined case halves. After bolting the case together with the crucial internal components installed inside, the engine assembly was gingerly and temporarily relocated onto the engine stand once more. The aft accessory case is a magnesium casting and was prepared by installing the engine driven oil pump to it. That pump is little more than two intermeshing gears and a retaining cover plate installed within a walled casting. The accessory case was then permanently attached to the rear of the engine case. The refurbished pull type starter and generator were then bolted into place on the accessory case. We decided that the magneto installation would wait until a bit later. Three brand new and one very slightly used ECI Titan cylinders were then bolted to the engine. At that point, and to my chagrin, it was discovered (after an illuminating phone call to Aero Inc. in Granite City) that new cylinder assemblies DO NOT come equipped with factory new rocker arms. Unexpectedly, I had to remove the existing rocker arms from the just replaced cylinders and have the parts magniflux inspected, the

contact surfaces reground and polished and finally, new bushings pressed into all 8 of them. The work was quickly and professionally documented by IA Warren Morrow, of CAS located at the Bowling Green Mo. Airport. That unexpected cost was $140. The second surprise with the installation of the new cylinder assemblies was the discovery that the original pushrods driving the newly refurbished rocker arms were not long enough to meet maximum gap standards with the new cylinders installed and therefore, could

not be used. Oversize pushrods were now required. The pushrods are little more than a length of steel tube with a rounded nipple pressed into to either end. The pushrods are available in 3 different lengths. Yet another call to Aero Inc. confirmed that oversize pushrods are commonly required with the installation of new ECI Titan cylinders. I soon learned there are several technical details that come into play which determine correct pushrod length. There is a synergistic relationship shared of the camshaft lobes, lifters, rocker arms, and cylinder valve seats, all of which interact with one another. Each of those components, while meeting its own published tolerance limits, may well be of a dimension that varies from one seemingly identical part to another. Correct pushrod length is determined accordingly and thus essentially becomes a custom fit. In my situation, the required oversize pushrods were priced at $44 each. Requiring 8 of them was a significant and unexpected purchase. After sometimes frustrating delays waiting for proper parts to arrive, the engine finally came together but the last major surprise eclipsed them all.

While documenting the part and serial number of every data plate on every accessory installed on my engine, veteran IA Tom Lansden discovered my Cessna 150 was long equipped with an unauthorized magneto and he simply could not sign off on its continued use. A considerable search of the logbooks could not account for its original and highly dubious installation. There is any number of ways to handle such a situation but in the end, I elected to purchase a factory new Slick (now owned by Unison Industries) 4301 magneto and its cost with shipping was $527. The price was based on a $150 exchange for the improper, though serviceable 4251 magneto (core) that was technically unacceptable for use with my engine. Finally, with the correct magnetos in place, the units were timed to the engine using a standard A&P's "buzz box." I then installed the exhaust system, oil tank, carburetor and heat box. The task of bolting the various components to the engine was made far easier taking advantage of the portable engine stand's 360 degree range of accessibility. Finally, the engine was ready to be reinstalled on the airframe. An engine hoist was rolled into place, the 0-200 attached and the engine was lifted up and positioned adjacent to its longtime mount on N3107X. Unlike the sometimes tedious and frustrating effort required to coax an engine onto a more geometrically complicated Dynafocal mount, an O-200 practically lines itself up when mated to the Cessna 150's simple and straightforward engine mount. After bolting the engine into place, the baffling was reinstalled. The ignition harness was routed to the various sparkplugs. The engine control cables and primer line to the carburetor "spider" assembly were reattached. All electrical connections were reestablished and the battery reinstalled. Most of the old hoses exhibited at least some wear and/or signs of brittleness so were summarily replaced. All new fuel and oil hoses were cut to length and installed. I reused the perfectly acceptable original hose end fitting hardware from the discarded hoses. In addition, I opted for new "Skeet" hose which is a more costly upgrade to common "Scat" hose found in most heat muff installations because it contains an extra rubber ply that encapsulates the steel wire internally within the hose.

Finally, the engine was filled with 6 quarts of Shell mineral oil. Together, Tom and I reviewed the suggested engine break-in instructions as published by the cylinder manufacturer. ECI suggests a pre-oiling procedure followed by a very short initial ground run to minimize the chance of harmfully glazing the cylinders. This was accomplished by removing the four spark plugs from the top of the cylinders and cranking the engine over with the magnetos off and the starter motor engaged. This procedure allowed the oil to circulate around the engine, essentially "pre-oiling" it. The airplane was then wheeled outside in preparation for its initial ground run. With the spark plugs re-installed, the moment of truth was finally at hand and we were now ready to start the engine for the first time. Tom cautioned me to make certain the oil pressure rose immediately and if not, to cut the engine within 20 seconds. To my delight, the engine fired up with very little effort. That was a gratifying moment, especially when the oil pressure moved "into the green" within

mere seconds. Following a one minute ground run to check engine parameters and visually spot check potential leaks or other obvious problems, the cowls were attached and flight testing loomed.

Starting the engine once again, I taxied to the active runway using as low an RPM as practical. During the routine mag check I discovered the engine would not run on the right magneto, and when selected, backfired something awful! I immediately taxied back to the hangar with some concern. Tom quickly discovered we simply allowed that magneto to fall out of time when we inadvertently rotated the engine about its crankshaft while still installed on the vertical engine stand at some point during the initial timing procedure. I learned on a typical Continental installation, unlike a firing sequence used by Lycoming, the left magneto fires the lower spark plugs and the right magneto fires the top plugs.

Adjustments were made, the magnetos timed anew and in less than an hour, we were once again ready for flight. Finally, the engine run-up procedure proved normal. For engine cooling purposes Tom instructed me that upon rotation, to maintain an angle of attack as low as possible consistent with obstacle clearance. He further suggested I maintain redline RPM for at least 20 minutes. I left the ground with RPMs well short of redline but Tom relayed through a handheld radio that the RPMs would eventually increase as the piston rings seated in the new cylinder assemblies. After applying full throttle and lumbering down the runway, I was instantly refreshed on how sluggish acceleration is in a 100 hp C-150, especially when compared to my 160 hp RV-6A! Upon rotation, I slowly climbed while orbiting counter-clockwise around Greensfield constantly aware of the gliding distance back to the runway and sure enough, the engine gradually began to run stronger. After approximately 10-12 minutes of flight I had to retard the throttle slightly so as not to exceed redline. In fact, during the flight I found I had to continuously throttle back as the engine gained in its newfound strength and ended the 1.0 hour flight with more than adequate throttle reserves before achieving redline. Upon landing, the cowls were again removed and a thorough examination followed. Tom pronounced the engine properly broken in. Subsequent test flights proved to be trouble free. All in all, I learned many valuable and fascinating lessons while deeply involved in my first major engine overhaul.

Taking that tired engine apart piece by piece and rebuilding it as virtually reborn again was a satisfying and rewarding experience. The final cost of the overhaul came in slightly exceeding $6000 largely because of the unexpected magneto purchase. I could easily have shaved several hundred dollars off even that final cost by reusing many of the old but service-able parts and hardware items.

As outlined in the previous articles, an engine MOH can run the gambit from bare bones airworthy to extensive yet still meet enough criteria to claim “0” SMOH. What I invested in can be considered quite extensive and well beyond the normal comprehensiveness of an average engine overhaul. In fact, after everything was said and done, Tom reasoned that if I was going to go to all the trouble to overhaul that engine, I should overhaul its perfectly acceptable carburetor as well. Before you know it, we removed it from the engine once again and with a $210 overhaul kit purchased from Aircraft Spruce, completely refurbished it to like new standards after a few hours work in his home shop! Tom simply loves to teach. I am truly grateful for friends like IA Tom Lansden who selflessly contributed his unbridled enthusiasm, mechanical knowledge, legal endorsement, and considerable time and effort to make my MOH experience possible. In the course of his official responsibilities, Tom filed four separate 337 forms (legally necessary to account for the new cylinder exhaust valve technology), and assembled a comprehensive documentation package complete with color coded tab markers, detail photographs, AD references, yellow tags, and invoices smartly organized into a ring binder that would give any critical observer a warm and fuzzy feeling of conscientious complete-ness. His efforts helped me ensure some lucky future owner can anticipate many, many years and possibly well past 1800 hours of economical flying fun. It is now time to pass the torch. With a flying RV-6A and now an RV-8A under construction, there is simply no room in my life for 3 airplanes. I hope the future new owner of N3107X has as much fun and adventure with the endearing little 2-place airplane as I did spanning 17 years and nearly 1000 hours warming its left seat.

From the President's Desk

Into the New Year

A blessed and happy new year to all of you!

I would like to express my gratitude to all of you for entrusting me with the presidency for the coming two years.

This is a great honor for me. I have had the chance to see other EAA chapters and non-profit organizations from the inside and EAA Chapter 32 is truly special.

We are incredibly lucky to have a perfect confluence of location, resources and people in our chapter.

The great spirit of so many different talents that all pull together to support each other and the chapter in our various EAA endeavors is hardly comparable.

It is usually a lot of the work of the chapter officers that keeps a chapter going and brings the momentum of the members to bear.

Therefore I would like to take this opportunity to thank Laura, Bill and Gale for their tireless efforts over the years.

In essence, I joined this chapter because of its great members and their accomplishments and because of the warm welcoming attitude these three outgoing officers brought towards me.

It is going to be a challenge for me and Dave and Jim to continue their great work.

Only YOUR help will make it possible.

The Midwest Aviation Conference and Trade show is the first project we tackled together and with the help of eight volunteers, it was a success.

Question of Water

The headline of one of our online discussions was nice and catchy: water water and not a drop to drink.

As the guy who scrubbed all the porcelain in the ARC for the second year I must agree that our water quality is not the best.

It is certainly not appealing that the H2O smells like raw sewage already when we pipe it into the building.

The most worrisome yet is the line from the water analysis: "Bacteria: too numerous to count"

That means to me that our water is a liability. Do not wash your hands if you have a cut and make sure no one drinks the stuff.

The water issue has been portrayed as an overpriced luxury that could be solved just as well with bottled water.

We could go back to the 55 gallon drum that "someone" has to fill and that feeds all faucets and installations. Let's not re-visit the jokes that were made about "someone" in the last few hundred years.

Let's look at we have so far? Through the work and dedication of a lot of good people we have the ARC; the center that provides a lot of us with many "luxuries" we do not have at home. Tools, a large heated space, a meeting point - just to name a few.

Running water is one of the items we do not desperately need, but you could also cut the grass with a sickle.

I propose that we look at filtration systems that are capable of cleaning our water up a good bit.

If we have bacteria in the well, at least kill it so as not to endanger the casual visitor.

The solution to that should not be a service contract for thousands of dollars, but a filtration system WE purchase and install.

Therefore, the initial cost should be lower and the monthly cost will be smaller by far than with a commercial unit.

Our ARC is a dream-come-true on many levels, and a monument to our members, let's not skimp on that last detail.

Karsten

Learning As We Go - "THE THINGS WE SAY"

mr.bill

I sat in the flight crew room at O'Hare Airport waiting for my special assignment. Special because a reserve pilot is only used when the line crew will be arriving late due to weather or the airplane has a mechanical problem at an out station. Whether due to weather or a mechanical problem the ready reserve crew is called into action by the crew chaser. The crew chaser has the power of the airport public address system and your cell phone number to call and alert you that you are now flying a trip to so & so and back. This notice could give the ready reserve crew a two minute or two hour notice so one must be ready. When the original line crew arrives in Chicago they will resume the remainder of the trip.

We have a "new" crew chaser. Well, she is new to our department. In her 18 years of service she has worked at every position. Her last position was airport ramp and gate control coordinating when the planes can push back from the gate and then exit the ramp onto the taxiway where O'Hare ground control gets us to the runway. The ramp also controls the inbound planes to the ramp from the taxiway then into the gates. If you ever have waited for a gate this was the lady juggling the jets on the ramp and taxiways giving the permission to enter and exit. Remember at O'Hare you DO NOT STOP while taxiing.

Leaving the STRESS of those jobs behind and finding peace and quiet behind the crew chaser computer in the quiet crew room (a 40 by 60 foot room with flight planning computers, 10 Lazy Boy recliners, several round tables, and two-eight seat plastic picnic tables) she now is in the presence of those pilots. Her words were, "You guys talk funny." Listening closely I have heard these statements……

THE THINGS WE PILOTS SAY:

Well, we cheated death again!

Man, I greased her on!

Man, I painted it on!

We were at the FBO. (Is that the wife of TBO.)

I have a double II. (Is that two eyes in one socket.)

TWA- Thousands Wondering Aimlessly

TWEagle- TWA employee at Eagle

Beagle- an Eagle employee

DELTA- (Don't Ever Land There Again) More about this next month!

TED- All that is missing is U N I

TED- the end of UNITED

CONTINENTAL- The proud airline with the Golden Parachute! (Making reference to the golden globe on the airplane's tail.)

EMBRAER 145-Ticking off 50 people per trip! (There are 50 seats.)

DELTA- We're learning to fly, and it shows!

OZARK AIRLINES- Known as KRAZO (Ozark backwards.)

ALASKA AIRLINES- Owner painted picture of his mother in law on the tail. (It's actually an old male Eskimo.)

WATER LEVEL LINES- Blue Horizontal lines on tail of the old US Airways Jets.

FLOWBACK- Opposite of a "flow up." A pilot that flowed up from the commuter airline to its major airline. More flowed down than flowed up!

RETIREMENT PLAN- The thought of retiring with 60% of what you were making per month when working.

AGE 60 - When you have to retire with that "Retirement plan."

PBGC Plan- The retirement plan that pays you only 10% of the above because your airline is in bankruptcy.

AGE 65- The (soon to be) new age to make up for the above financial shortfall of the PBGC plan.

How do you make a small fortune in aviation (other than being a lawyer)???

Start out with a big fortune!

Yes, we do talk funny. Give us a public address system and a new base city for the airline and you'll hear.. "Folks we have you safely in St. Louis in twenty minutes!" That would have been great if we were going to ST. LOUIS!!! Oops! Based in Chicago now!

The ultimate faux pas had to be the captain who announced on the flight from Los Angeles to St. Louis... "Folks we're flying over the vast waste land of New Mexico." Ding Dong! (No pun intended.) The abin interphone rings from the flight attendant. Captain, the governor of New Mexico is on the airplane!!!

(Doh!) "Ahhh folks the captain here sorry about that but we are presently over the vast wasteland of rizona. We will soon to be flying over the great state of New Mexico. Have a great day!"

Meet Daisy Mae

Just after the first day of the year, your friendly editor received the following note from a proud builder:

Hi Jim ..... I live in the S.W. corner of the state, in Shell Knob (Table Rock Lake) and have just finished an all wood biplane of my own design, that I have named Daisy Mae . She has flown twice with no problems or trim changes needed. I just wanted you and your members to know that I have also finished my book - The Making of Daisy Mae. It is 8 1/2 x 11 and contains over 200 pages of design and construction info written in an easily understood format. If you feel it appropriate to mention at your next meeting, I would appreciate it. My web site is at the end of this email and covers a lot of models as well as 27 pages on the construction of Daisy Mae.

This link: http://users.mo-net.com/shirl/BookPage.html

will connect you to the pages specifically about the book, along with some notable quotes and testimonials. I am also including a picture of Daisy, just before we disassembled her and took her to the hanger (at Neosho-private strip)

I am an EAA member but not a member of any chapter due to family health reasons.

This book may also be something you could use in your fund raising activities (cafe express) as I have room for discounts. ..... Thanks for your consideration! Marv Reese

INFORMATION HOTLINE
314-286-9932
CALL THIS NUMBER FOR INFORMATION ABOUT UPCOMING EVENTS

Check out our fantastic Web Pages at
WWW.EAA32.ORG
Laura Million, Web Designer
While you're there, take time to join the Yahoo Groups to help you stay abreast of Chapter happenings!

TO:

EAA CHAPTER 32 NEWS
Jim Bower, Editor
10350 Toelle Ln.
Bellefontaine Neighbors, MO 63137

Officers and Committees

President		
Karsten Kessler	**314-205-9393**	**k_kessler@sbcglobal.net**
Vice President		
Dave Deweese	**636-939-3974**	**davedeweese@hotmail.com**
Secretary		
Jim Bower	**314-869-8971**	**jimbower@hotmail.com**
Treasurer		
Jim Hann	**314-322-7993**	**linerdrivr@aol.com**
Flight Advisors		
Al Donaldson	**636-745-8311**	
Bill Jagust	**636-926-0171**	**BSARJ@cs.com**
Tech Counselors		
Bob Jude	**636-946-2282**	**bobjude@charter.net**
Gale Derosier	**636-724-4735**	**kgderosier@sbcglobal.net**
Communications		
***Newsletter:* Jim Bower**	**314-869-8971**	**jimbower@hotmail.com**
***Webpage:* Laura Million**	**618-288-7099**	**lmillio@siue.edu**
***EAA Hotline:* Gary Kasten**	**636-970-1838**	**gkasten@mail.win.org**