

SONERAI NEWSLETTER

OCT-NOV-DEC 2006

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SONERAI'S AT OSHKOSH '06

Here are the four Sonerai's that came to AirVenture Oshkosh 2006. From front to back, there's Jeff Lange's Sonerai I, "Ugly Duckling", still in grey primer. Then, there's the always-present Sonerai IIL belonging to yours truly. It was her 19th visit to OSH. Next is Jay Warren's Sonerai IIL. And the fourth is Roger Godfrey's Sonerai IIL. See more info on these airplanes inside.

OSHKOSH 2006 REPORT

Every Oshkosh EAA convention for me is unique. I've been to each one since 1974, and had my Sonerai there for 19 of the past 20 years, and every year something different happens that makes that year's event memorable. This year was no exception, and in fact, there were a bunch of things that will make this year stand out in my memory for a long time.

Things started out fairly normally. I drove up on the Saturday before everything started to get my campsite set up. My friends, Fritz and Maggie Jorgenson had secured a nice site for me in Paul's woods back on July 6th, so the walk to the grounds would be relatively short and we'd be camped in the shade, but I paid a \$450 price for the privilege. I think this will be the last year I reserve that far ahead. Shoot, for the five nights I was there, it came out to \$90 a night to sleep in a tent! Anyway, I digress. (Cont'd on page 4)

SONERAI'S AT OSHKOSH (CONT'D)



Jeff Lange's Sonerai I

Jeff brought his airplane from all the way from the east side of Wittman Field, since he resides in Oshkosh. He has recently replaced the original 1850cc VW with a new 2110cc VW and a very short Prince P-tip prop. His goal, obviously, is to go very fast. We're waiting for a performance report.



Jay Warren's Sonerai III

Jay flew up from Evansville, IN. The airplane has a Revmaster 2100 VW with a Sterba prop. This was a very noisy photo (Note all of the T-28's performing their run-up in the background).



Roger Godfrey's Sonerai III

Roger trailored his airplane in from Ottumwa, IA. He only had about five hours on this configuration, and didn't want to fly it to OSH, yet. The new configuration consists of a longer Riblet-airfoil wing, and a raised vertical stabilizer and rudder. The airplane has a 2180cc VW. Note the fairings on the landing gear legs and the joint between the gear and the fuselage.



Yours truly in my standard OSH pose.

Jay Warren sent me this photo. That's me leaning on my Sonerai III in its Oshkosh display configuration. The gentleman on the left is Roger Godfrey. As you can see by the prop tags, my old bird has been around for a little while.

Sunday morning, I flew the Sonerai from Burlington (BUU) up to OSH via Juneau (UNU), Ripon, and Fisk. Normally, that early in the morning, the trip takes about 45 minutes with a minimum of complication on the Fisk approach. This year was different. I was about half way from Ripon to Fisk when Fisk Approach informed everyone that the airport was closed until further notice, and that those of us between Ripon and Fisk had to fly the holding pattern around Rush Lake. There were only three of us in that position, so around the lake I went. In all my years of bringing N99FK to OSH, this was a first.

We ended up going around the lake twice, and then, after about twenty minutes of moseying along at 105 mph, we were told to proceed to Fisk. I was sent east for an uneventful landing on 36L, and ended up parked in the usual place in the "Automotive Engine" row in front of Homebuilder's Headquarters.

Roger Godfrey was already there with his orange and white "fat-wing" Sonerai IIL, N49RG. He had trailered the airplane in the day before. The next day, Jeff Lange brought his gray Sonerai I, N1463J, over from his hangar on the east side of Wittman Field. And finally, Jay Warren flew in with his dark red Sonerai IIL, N10VV, from Evansville, IN. So, we had four Sonerai's all together; a nice turnout.

I spent most mornings with the airplane, and had the opportunity to talk to several of you. It was fun to see old acquaintances again, and to make new ones. The Sonerai builder's Forum was on Wednesday, was well attended, and provided another "highlight". For some reason, the PC that EAA provides for giving PowerPoint presentations wouldn't read my CD, so I had to wing it, and ask everyone to use their imaginations. Everyone seemed to enjoy my ramblings, so I'd like to thanks everyone for coming. I think next year I'll borrow a laptop from someone, just to guarantee that everything works.

On Thursday evening, Jeff Lange hosted his annual Sonerai Picnic at his hangar. Unfortunately, I only got to spend a short time there, as I got a call from my sister just as I sat down with my first brat, and had to go see my mom at her nursing home in Oshkosh. (We had just moved her there the Sunday before, for health reasons, so my week was punctuated with helping to make all the arrangements. Another set of circumstances that'll make this convention stand out.) I was really hoping to spend the evening talking Sonerai's and apologize for not being able to do so.

Because of the "Mom" situation, I cut my convention stay short by a day and flew home Friday morning, and then returned with my truck to retrieve the camping gear, to spend the rest of the day with her.



B-1B on AeroShell Square

Still, all in all, OSH 2006 was still a good time. I always enjoy the camping with friends, all of the different airplanes including the B-1B "Bone" which I had the opportunity to do some engineering on back in 1972 and 73, and everything else that is EAA AirVenture.

See you there, next year.

SONERAI NEWS

- Great Plains News: There's not a whole lot "New" at GPASC this fall, but Steve and Linda say they have a huge stock of cowlings and canopies that need new homes. They are also having a sale on the short press-fit prop hubs that work well with the Sonerai II "EV" cowling. Check out their website at www.gpasc.com or call them at 402-493-6507.
- First Flights: There have been two first flights reported to me since the last newsletter:
 1. Juergen Thiesen reported the first flight of his Sonerai I on July 31. Juergen has the first Sonerai I in Germany. He has supplied me with some interesting photos and commentary on the carbon fiber seat, throttle quadrant and radio mount he installed that I will have in a future issue.
 2. Densil Baker reported the first flight of his Sonerai II on September 27. The flight went well, although his oil temps were a little high. Congratulations to Juergen and Densil! It's great to have two more Sonerai's in the flying population. I hope you guys enjoy flying them.

- 2006 Fly-In Schedule:
Here's a list of the remaining big ones this year. Make plans now to go to the one nearest you:
 - SERFI, Evergreen, AL 10/6-8
 - Copperstate, Phoenix, AZ 10/12-15
- Sonerai Wing Construction Manual: There are 18 pages of text, 85 photographs, and 12 drawings, as well as a complete materials and a tools list. If you have an older set of plans (The manual is now included with the plans, so you new plans holders already have it.) and would like your own personal copy, send me cash, check, money order, or PayPal (at the email address on the front page) for \$25.00. Postage is included.
- Back Issues: Sonerai Newsletter back issues are now available in three forms. The first is a CD which contains all of the complete newsletters published by Ed Sterba from 1987 through 1995 in ".pdf" format. It costs \$40.00. The second is a CD which contains complete copies of all of the newsletters published from 1996 through 2005, also in ".pdf" format. The cost is \$50.00. If you buy both CD's, the package price is \$75.00. And finally, there are also hardcopy back issues for \$3.50 each. I have the last two issues from 1994, and all of the issues from 1995 thru 2005 (That's 46 issues!). If you want any of the above, send me a note requesting the ones you want and cash, check, money order, or PayPal for the correct amount. Postage is included.

AEROBATICS IN MY SONERAI II MIDWING

by Gordon Eslava

I known many of you are building your Sonerai's with the thought of flying some basic aerobatics, and I often get questions about performing aerobatics. Unfortunately, I haven't gotten into the sport (yet), and can't give any good advice. But, here's a piece that Gordon posted on the "Sonerai Aircraft" Yahoo group last year that answers a few of those questions.

Well, I got my freshly repacked parachute back a couple days ago and donned it to fly off the aerobatic maneuvers for my flight test program. It was a clear day, wind from the north at 11 knots. I decided to start at 5000' with a hard deck of 3500. I flew all the maneuvers into the wind. I was within 1 mile east of a grass strip a mile from my home. After losing power flying a hammerhead, I decided an airport was a lot better landing area than the dirt road I was looking at last time. Here in the

Northwest there are a lot of hills, trees, mountains and water. To prepare for this I just had 2.5 hrs ground instruction and 2 hrs dual in a Pitts S2-A.

I started some coordination exercises with 'Dutch rolls', Chandelles, and Wingovers. These are good because the Sonerai controls are so sensitive, you can do these fast or slow to control the flight and keep from being 'ham-handed'. I like the Sonerai because of this, but every time you throw it around, you lose energy. I used wide open throttle and 140 mph as my entry speed for all the maneuvers and probably varied +/- 10 knots. Since this is close to full power flight, it doesn't take much of a dive to achieve it.

Rolls:

Rolls are probably the Sonerai strongest suit. With those full span ailerons, it rolls faster than the Pitts. But because of the lack of inverted systems, the rolls must be kept positive, you do this by centralizing the stick on the up line and not trying to hold the nose up in the inverted position. The flight path for the rolls is that of an arrow shot from a bow, it is an arcing line. First line up with a point directly in front and use it as your reference point. Dive for speed, just over 140. Pull up so your feet are on the horizon, neutralize flight controls at this climbing attitude. You only get a split second at this spot before you start losing speed, this is the time to make sure your ball is centered. Add hard aileron and light rudder until you are back to upright. That was fast. You typically don't need hard aileron, but you don't have to coordinate a lot of rudder if you roll fast. If you slow down the roll (not so much aileron), you will find it much more smoother but harder to coordinate, add light rudder as you start the roll, then you will need a lot of rudder as you come back to upright, there is plenty of rudder for this and if you roll it slower you can follow the nose around your reference point. Point rolls are fine but take a lot of rudder management to stay on point and follow it around. Each knife edge position will be a hard slip with almost full top rudder to keep the nose from dropping. While in inverted, don't push the stick forward or you will pull negative and your motor may quit. Remember the arcing flight path will allow for the nose to drop. I practiced rolls left, then right, then left, right, left, right. If you do them right you will come out on altitude and speed every time. If you don't start with a climb first you will lose altitude quickly. When I rolled left, right, left, right, without a pause or climb, I went down to 3500' by the time I was done. After all the rolls, I saw 1-2.5 positive g's.

Loops:

Loops are also strong in the Sonerai. It is also the maneuver that can make you nauseous. It is important to keep a reference point, as the nose passes the horizon, look out to the sides until you can look over your head and see the ground again. Be sure to look out both sides, or you will roll towards the side you look. Again dive to just over 140, and pull to level flight and make sure your ball is centered. Hard pull, not quick or jerky until just past vertical, then ease off on the elevator to let it float over the top. At inverted, level your wing with aileron and continue the loop while you start to add more and more back pressure to return to level flight. It doesn't take a lot of rudder use to keep the ball centered throughout the loop. Elevator use is the most critical. Make sure you pull hard enough to start, if it starts to buffet, relax the pressure. I saw .5 to 3.5 positive g's in the loops, some pulled real tight and others big and round. Control the airspeed on the way down with the elevator, you should end up at the same starting airspeed and altitude.

Barrel Rolls:

This was the hardest maneuver for me because the Sonerai rolls so quickly. The barrel roll is a loop and roll flown simultaneously, so that means the roll has to be flown in the same time as the loop. That means a slow roll rate which makes it easy to misuse the rudder. I started out flying little horizontal spirals that finally got bigger and bigger until I got a few right. I also pulled 4 g's trying to pull the loop harder and making it as fast as the roll (wrong).

Clover Leafs:

After flying the loops, this maneuver was a delight. It is flown two different ways, either a 1/4 vertical roll on the upline or on the downline.

Cuban 8's:

Without inverted systems, the Cuban 8's are flown a little different, instead of rolling at midpoint of the 45 degree downline, you need to roll just after starting down from inverted. Here you will be glad for all those ailerons, because even at the low airspeed, the plane will roll willingly right back to upright on your 45 degree downline.

These are the maneuvers I have flown so far, but there are others I'm sure the Sonerai will do. I'm no expert by any means, but it seems the plane is able and willing to allow me to learn more. I flew 45 minutes of aerobatics, which physically pushed me and I got sloppy near the end. I did stop for a few minutes once to let my oil temp to come back down below 220. I remember the 4g grunt, but the rest were relatively easy. I did a complete inspection

before and after the flight and found nothing unusual or loose.

Gordon Eslava
Bremerton, WA

FAQ (Frequently Asked Questions)

Having been in the business of editing and publishing the **Sonerai Newsletter** for the past ten years, and by default, providing the builder's support during that time, there are a lot of questions that I get to answer again and again. So, here and in future issues, I'll highlight some of those questions, and provide the answers. Hopefully, that'll help reduce the number of questions (but I doubt it). Here goes:

Question: When I look at the drawings of the fuselage tubing layout, I can't determine which is the proper direction that the diagonals go that fit between the two top longerons and the two bottom longerons. How do I determine what is correct?

Answer: The drawing of the fuselage tube layout is done using the standard American drafting practice called 3rd Angle Projection. In 3rd Angle Projection, each view is drawn so that it will appear as if you are looking directly at that side from the outside. In the case of the fuselage layout, the bottom view is drawn as if you are looking UP at the bottom of the fuselage, and the top view as though you are looking DOWN at the top of the fuselage.

Question: What is the correct method for installing the Lycoming rubber bushings used in mounting the engine to the fuselage, or engine mount?

Answer: The Lycoming 71032 rubber bushings that we use to help isolate some of the engine vibration from the rest of the airplane are made with a 1/2" diameter hole thru the center. The plans call for the use of 3/8" AN6 bolts to hold the engine to fuselage or engine mount. To accommodate the diameter difference, it is necessary to fabricate four bushings using 1/2" OD x .058" wall 4130 tubing, or standard 3/8" bushing stock. The bushings must be 1-1/2" long. They are inserted into the Lycoming bushings, and then Lycoming STD619 mount washers are installed on the front face of the bushings. These washers are about four times as thick as a standard AN large diameter, and will not deform when the bolts are tightened. The proper bolt torque for the AN6 engine mount bolts is 175 in-lbs.

Question: Why do the plans call for silver solder to secure the large washers on the control stick torque tube assembly? Can I just weld them on?

Answer: The two washers are basically thrust washers that keep the torque tube assembly from sliding forward or backward when you pull back, or push forward on the control stick. These washers must be flat so that they fully contact the front and rear surfaces of the rear torque tube bearing block. Silver solder is called for to minimize the heat input into the joint so that the washers won't warp. If you were to weld them all around, they would warp away from the bearing block. Silver solder and flux is available at most good hardware stores.

Question: What are the short pieces of 7/8" OD tubing used for that are welded to the bottom cross members of the fuselage?

Answer: The 7/8" OD x .058" wall x 3/4" long pieces of tubing are used to mount the Piper cable fairleads that guide and support the rudder cables on their way back to the rudder horn. These fairleads are made of nylon, and come in two halves with a mounting clip. Aircraft Spruce (p/n 05-05500) and WagAero (p/n M-035-000) have them.

STARTING By Bob Barton

Bob sent this item to me back in 2005. It's a great primer on starting engines that use the floatless slide-valve carburetor.

I had an opportunity last week to help a friend start his newly built Corvair engine, which he is putting in a Zenair. It has a snazzy new carb that reminds me of the old Posa Super-carbs, with mixture control et al.

He has a 66" Warp-drive prop that could be used to slice roastbeef at a deli, so we used only the starter.

We began with a freshly charged jumper battery and ran it down without so much as a poop. So we put the battery on the charger and broke for a cup of coffee.

Back at the airplane, we continued, and the engine also continued to demonstrate no tendency toward life. Now I would not like you to imagine that we are dense or anything, but we decided to check the timing, Viola! No fire! He had been turning on a

secondary ignition system that was not yet wired up. Also, I noticed that we were spilling a generous pool of gas on the driveway.

We went to lunch to allow the battery to recharge again and to let the thing dry out a little. When we got back, I had a brain storm and said, "Let's try the old VW starting procedure."

1) Open the mixture control (which includes a fuel shutoff) 'till a little gas drips out of the carb, then close it.

2) With throttle wide open and ignition OFF, pull through eight blades.

3) With the throttle cracked and ignition ON, crank it. When it starts, quickly open the mixture control to let the gas flow.

It started and ran immediately.

I have (as I am sure you have) communicated with several people who have had problems starting engines equipped with carburetors with no float bowls. What you have to remember is that when the gas is on, the gas flows, making it very easy to flood the engine.

I switched to a Zenith which has a float-bowl; thus the gas flows only when the engine needs it.

Well that's my thought for the day, Bob Barton

Happy

Holidays

Fred

WANT ADS

These Ads are provided as a service to you, the subscriber, and are free of charge. I only ask to be informed when the Ad is no longer valid, and needs to be removed. Thanks.

TAPER PIN REAMERS & WING RIB LIGHTENING HOLE FLANGING DIES FOR FREE LOAN. Brown & Sharp #3 and #5 for AN386-3 and AN386-5 taper pins. \$150 deposit, shipping one way ~ \$5. Free loan for 14 days, \$2 per day after that. David E. Wilcox, 517 E. Saratoga St., Gilbert AZ 85296. dwilcox@ispwest.com

SPECIALTY WELDING CAN SUPPLY YOUR COMPLETELY WELDED SONERAI FUSELAGE AND OTHER WELDED COMPONENTS. Contact Greg Klemp at *Specialty Welding*, W6461 County YY, Neshkoro, WI 54960, (920)293-8089 or (920)293-8007 (Fax)

RACEAIR DESIGNS IS AVAILABLE FOR YOUR FABRICATION AND RESTORATION NEEDS. Contact Ed Fisher, (330)856-7520, raceairdesigns@hotmail.com. Over 30 years experience in dope, fabric, welding, and sheet metal. Numerous awards including 1991 and 2004 Oshkosh Grand Champion Ultralight. No job is too big or small. Need a fuselage welded? Give Ed a try!!

FOR SALE: Sonerai II with 8 total hours of flight time. It has been garage

kept the entire time. It has a production date of Feb 1982. It has an air cooled 4 cyl. 70 hp Volkswagen engine. Engine has been turned over from time to time to keep it from seizing up etc. Charlie Barnes, cell # 469 853-6472 or email at tx-rmef-1@swbell.net (2/05)

FOR SALE: Sonerai IILTS w/ 100 hp liquid-cooled Rotorway engine. 67 hrs TT, covered with Stits Aerothane. Always hangared. A good flyer. Reason for selling: too many birds in the roost. \$15,000 Fred Ninneman, 816-353-1161. (2/06)

FOR SALE: Sonerai II. Fuselage complete; 2 sets of tail feathers; landing gear with disc brakes; tailwheel; 2 sets of wing tips; cowling; wheel pants; rebuilt 1850 VW with alternator, posa carb; many extra parts. \$2500. Joe Kelly, 10141 Flagstone Rd., Brooksville, FL 34601, 352-796-9793 (1/06)

WANTED: Sonerai I complete airplane or well-along project. Solid workmanship and light weight. Bill, machouse3462@sbcglobal.net (2/06)

FOR SALE: Monnett Electro-X engine mount, \$150; alternator for Electro-X

mount, \$25: GPASC Y intake manifold, \$25. Jordan Klein Sr., 352-288-6060, jordan.sr@comcast.net(3/06)

WANTED: Misc Sonerai 2 Parts. Landing gear, Hydraulic brakes, Cowling, Fuel tank, 2180cc Engine, Tail wheel, Prop, Spinner, Wing spars, ribs. I am building a 2 Stretch. Tim Patterson baja74vw@aol.com or 701-746-1312 (4/06)

FOR SALE: Sonerai IIL, TT316 hrs, TSTO 145 hrs, 1834 VW 60 hp @ 3400 rpm, A&P owned, always hangared. Must sell, \$8500 obo. Lycoming O-235-C1, runout and disassembled, \$2000 obo. Ken Christian, 660-263-7937. (4/06)

FOR SALE: Sonerai I project. Approx 80% finished overall, have most parts to finish except cover. For more info write to this address: Dan Maiott, 13152 Washburn Rd., Otterlake, MI 48464 with mailing address and phone. Would consider trade for Mini-Max project. Approx value \$3700 - \$4000 (4/06)



Pete Yeo's Sonerai IIL

As you can tell by the registration, Pete hails from Great Britain. Walton on the Hill, Staffrd to be exact. The airplane is painted light blue, and has an 1835cc VW.