SONERAI NEWSLETTER

JAN-FEB-MARCH 2008

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THE SONERAI II IS 35 YEARS OLD!

At the 1973 EAA convention in Oshkosh, John Monnett first displayed this airplane, N2MX, to the world. It was built and flown in less than a year, following the introduction of the Sonerai I in 1972. This photo was taken by your editor at the 1977 convention, and I carried it, with a spec sheet taped on the back, with me for several years to show interested people what I was building. This airplane is painted in the classic Monnett "sassy grass" green, and had a 1700cc Monnett SuperVee conversion, and a Warnke ground-adjustable prop.

Of course, that means that the Sonerai I design is now 36 years old. I apologize that I didn't celebrate the 35th anniversary in the 2007 newsletters, but I didn't realize the significance of 2007 until I read Jim Cunningham's new book, ***John Monnett – From Sonerai to Sonex****, last fall.*

Anyway, on behalf of Sonerai builders everywhere, I'd like to thank John for designing a line of really fun-to-build, and fun-to-fly little airplanes. ***THANKS, JOHN!!!***

HAPPY NEW YEAR

As I write this on the last day of 2007, it's a cloudy, gray day that's not really fit for flying here in southern Wisconsin. The ceiling is less than a thousand feet, and the visibility is about 3 miles in mist and fog, with the temperature at about 30°F. It's definitely not a good day for taking the Sonerai flying, which is too bad, as I had hoped to get one last flight in before the end of the year. But, it makes it a good time to look back at the past year, and forward to 2008.

As you are all aware, 2007 was a year of change for my IIL. She got her old 1807cc VW replaced by a nearly new 2180, and new Sterba 52x46 prop. The performance increased about as much as I had hoped, and she continues to run well. The change-out started at the end of March and was completed at the end of August, which meant she was out of commission for about five months. Of course, I didn't do any flying during that time, so my total logged time for the year was only about 29 hours. That meant she didn't get to Sun-N-Fun or OSH, although I did get to the Old-Fashioned EAA Fly-In at Rock Falls, IL in September, where I received the "Grand Champion Plans-Built Award". I was pleased.

2008 will be my 12th year as editor and publisher of the **Sonerai Newsletter**. That's 44 issues so far, and hopefully I have a few more left in me. Since the bulk of the articles in 2007 were related to the engine and its installation, I'm planning to do several articles on all the rest of the stuff behind the engine. For starters, there will be an article on firewall construction, followed hopefully by one on the wing fold mechanism, and then one on cutting and fitting the spinner. If you have any other ideas for "how-to" articles, please send me an email, or send me a note along with your renewal check.

Of course, I'm planning to have the airplane at Oshkosh this year, and I'm thinking seriously about going to Sun-N-Fun in April (I just haven't decided if I'll try that trip again in the Sonerai, or if I'll fly down on the airlines). Plus, I'm definitely going to try to get to Air Force Museum in Dayton this year. That's been on my "to-do" list for quite a while, and I now get enough vacation time to do it.

So, I hope your holidays were enjoyable, and that you have a great new year building and flying your Sonerai.

SONERAI NEWS

- Great Plains News: The new *Beetle Flyer* is out but will not be sent out in the mail this year. Go to *www.gpasc.com* and download a copy. Interesting news, new products, and lots of sale items.
- First Flights: See Bill Evans' report elsewhere in this issue. Please remember to let me know when you fly your bird for the first time. Photos are good, too.
- 2008 Fly-In Schedule:
  Here's a list of the major fly-in's for 2008. Make plans now to go to the one nearest you, and show off your Sonerai:
  - U.S. Sport Aviation Expo, Sebring, FL 1/17-20
  - Sun-N-Fun, Lakeland, FL 4/8-13
  - Golden West, Marysville, CA 6/6-8
  - Virginia, Suffolk, VA 6/14-15
  - Rocky Mountain, Watkins, CO 6/27-29
  - Northwest, Arlington, WA 7/9-13
  - AirVenture, Oshkosh, WI 7/28-8/3
  - MERFI, Mansfield, OH 8/25-26
  - Copperstate, Casa Grande, AZ 10/23-26
- 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, sent 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 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 2007, 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. I have the last two issues from 1994, and all of the issues from 1995 thru 2007 (That's 54 issues!). Contact me for pricing, and I'll make you a deal. As usual, I accept cash, check, money order, or PayPal for the correct amount. Postage is included.

IT'S RENEWAL TIME, AGAIN

That's right, it's time to renew your subscription to the **Sonerai Newsletter**. It's still only **$15**. So, before you throw it away, check the mailing label on the envelope. If it says "PD07", you'll need to send me money. If it says "PD08", or higher, you can put your checkbook away. As usual, I accept cash, check, or money order. Please make the check or money order out to "Fred Keip" and mail it to me at the address on the front cover. For those of you who don't wish to deal with the Postal Service, I now have a PayPal account. Use the email address on the front cover. And thanks again for your support.

FREE SUBSCRIPTION OFFER CONTINUES

That's right. Just like last year, you can get a one year subscription for FREE. Just send an article along with photos of your airplane, and any innovations that you may have developed. When I publish your article, the following year's subscription will be on me. I'm really in need of airplanes to feature on the cover. And, of course, articles on anything Sonerai related are really appreciated. Send them to me via email or snail mail, in electronic or manual formats. I can work with them all.

For their contributions to the 2007 newsletters, I'd like to thank Jeff Lange, Ivan Martinez, Bob Barton, Bob Quick, and Doug Johnson. You guys will notice that you are now good through 2008.

BILL EVANS' FIRST FLIGHT by Bill Evans

Bill and I have been in conversation about his Sonerai IILS project for quite awhile. He even stopped by my hangar one evening last summer while he was on a "train" vacation here in the states. You see Bill is also big into live-steam model trains. Anyway, congratulations on the first flights! I hope you have a lot of fun with your machine this coming summer.

I bought Sonerai IILS, S/N 0072LS, 18 months ago. The VW engine had been replaced with a Jabiru 2200A engine. The aircraft log books indicated some repairs were made after a VW engine quit in flight. That owner sold the airframe, yet scrapped the remains of the engine. I expected to put about 50 hours work into the aircraft before flight. The engine hour- meter indicated about 50 hours, so this engine was not actually new but is broken in. The compression is great, however it burns no oil and has no leaks. .

In reality I have put more like 1000 hours into completing the aircraft and sorting out a number of "squawks". I did a full inspection at the time of purchase, which resulted in perhaps 90 squawks to be rectified. Accomplishing this resulted in the expenditure of around $3700 for parts, equipment and a little expert labor for the Bing carb.

I towed my Sonerai IILS, C-FPGS, to St Lazare Airport about 7:30 this morning. (We means Bill Evans, the owner, and John Wyman, the test pilot.) It was 8°C (cold enough). Yet we were warmly welcomed by Jack Brown, the airport manager. About 9am we were joined by Bill Wyman, John's dad. We three assembled until about 2pm, did a ground run and went for lunch. Some of us fly better with a decent lunch.

During the course of the day, a number of other pilots and friends dropped by. Alain De Hondt sent me a very nice email Sunday night. Daniel Huneault brought me a spare starter, and other things.

C-FPGS Ready to Fly

The Jabiru engine in the Sonerai is still hard to start cold, but once started it runs like a Swiss watch. I had asked John Wyman to be test pilot and do the first flights for me. He and his dad own a number of aircraft including a Pitts. Substantial flight time in a Pitts is a good qualification to fly a Sonerai. Sonerai is neither Cessna nor Piper.

I need a better cold start technique. Also, I had not remembered that the Sonerai took that long to rig: six hours. Maybe it was partly the cold. I hope it goes much more quickly the next time, say two hours. True, Test Flight preparation is much more than assembly and rigging.

There was a 24 mph wind from the west, which meant the east-west runway but it's also only 1700

ft long. Not much room to stop if you have to reject at Vr. Those high-power ground runs are important.

The ground run did go well. Mag drop was perhaps 30-50 rpm. The Jabiru idles at 800 rpm. Takeoff power is 3100 with an optical tach. I need to reprogram the VDO tach because it indicates 900 rpm high.

CHT was about 400F but the probes are on #3 & 4 spark plugs, which hopefully accounts for it. The CHT is the same for both sides. EGT isn't yet recorded but perhaps 1200F. During ground runs in warmer weather I've had the EGT to 1300F. Today was a cold and windy day. The oil temp never went above 180F and held 40 psi all the time. I worked a long time to plan and install the oil cooler on the firewall just above the cowl flaps. Today ,we left the cowl flaps open the whole flight time.

I asked the test pilot to hold takeoff power until he had circuit height and was in a position to glide to the runway. I am very pleased that the oil cooler on the firewall performed as intended. It gives me 2.5 liters/quarts of oil instead of 2. The oil is Shell 100W.

A few taxi runs were made, but not above say 40mph. That caused the tailwheel rod to snap off. I suspect the turns were too quick and on a rough area of the turf taxi strip. I'll make up a new rod tomorrow. No real harm has been done.

The takeoff into a stiff wind required 1000 feet on turf. It lifts off at 60, takes maybe 4 seconds to reach best ROC, then climbs out at 90 very nicely. I don't have a completed Climb Report yet, but will send the results along when I do. The weight at takeoff was 768lbs. That's 538 lbs+10gals fuel + 155lb pilot. Say 763 lbs. I am hoping the single pilot rate of climb will be 700-1000 fpm.

The controls are very sensitive and remain useful right down to about 60mph. The stall was mild, and the buffet is reported as light. The height loss at stall (nose drop) was slight (less than 100 ft), but you have to maintain a close watch on directional control with the rudders. If you let it go say 30 degrees, it will enter a spin.

There was a low pass for the cameras at about 140 mph, and another at 70, noting that Sonerai takes a little while to gather itself when the throttle is opened. John's Pitts has 180 horses and accelerates much more quickly. My prop on Jabiru is a Sterba 54 X 48. John found it essentially to be a cruise prop. That's why I use it. The second reason is ground clearance.

The first circuit was flown at 80. The first landing on the 1700 ft strip was a little too long, and became a touch and go. The second approach saw the speed reduced to 70 during final, 65 over the fence and flare at 60. C-FPGS landed and stopped in 900 ft or less.

This first flight lasted 30 minutes. The smile was permanently pasted to my face. We did a second walk around where we noticed the missing tailwheel rod. I checked the belly and asphalt below the engine; both were dry and showed no signs of leakage. The oil level did not fall noticeably with this flight. I'll have to drain the oil separator when the engine compartment is cool, perhaps tomorrow.

The checks completed and hands shaken all around. The Sonerai was taken back up for flight #2. This was just before sunset. John Wyman again took the aircraft up to 2000 feet, and carried out a study of the flight controls and engine performance, where more than rate 1 turns and climbs are performed.

It is noted that the rudder is very sensitive in flight and this aircraft type is more sensitive than other aircraft save other aerobats and racers. Thus the application of rudder is more pressure than movement to control yaw. If you allow the yaw to run free you will be slipping and skidding all over the sky. Parts of the first flight exhibited some of this. Once the controls are coordinated and used in conjunction with the smooth application of power then Sonerai becomes a great joy and an excitement to fly.

The wind direction had changed towards the south after takeoff so a change of runway was indicated during the second flight. The landing went really well. It was noted that if you can concentrate on getting the groundspeed down to 40 as efficiently and smoothly as possible, then the chance for the aircraft to ground loop is practically eliminated.

John Wyman told me much of this and I hope I got it right. Apparently, the careful preparation paid off because there were no incidents or surprises. You'd be surprised at how many warnings come from other people about what might go wrong during a test flight. Very careful aircraft preparation ensures they don't.

I have completed the flight review (pilot's license) the government demands, but am going to be working on proficiency in taildraggers generally

and Sonerai in particular. Hopefully I can solo my Sonerai before the snow comes.

Perhaps the most important thing about a successful test flight is that it builds confidence in the airplane. I can see myself flying to all the little airports in the Montreal area in the years ahead, to the Fly-in Breakfasts and Rallies. . I can almost smell the pancakes Gerry Conrad cooks. It's 7am. Time for breakfast.

Bill Evans
Dorval, QC

HOW TO GO TRAILERING/FLYING IN 13 EASY STEPS (MAYBE)

by Ivan Martinez

I often get asked about the true feasibility of trailering our Sonerai's since the wing fold capability is designed into the airplane. There are also the questions about incorporating the wing fold mechanism into the wings after the wings have been completed. This is, of course, difficult, but Ivan's set up accomplishes the ability to trailer without the internal fold mechanism. Read on..

My Sonerai is trailered to and from the airport for every flying outing. Its hanger and workshop is my 2 car garage. My Sonerai has been trailered to and flown from 8 different airports. Some of the airports are an hour or more away. Normal highway speeds can be maintained. It takes me approximately 45 minutes, if alone, to assemble the wings and slightly less to disassemble. With help, it can take me longer, and causes me sometimes to forget things. Most of the time is taken inserting and removing the 6 taper pins.

Back when my project was started, a decision was made not to trailer the plane. Later, that was nixed and it was too late to add the fuselage and wings hardware. A new plan was devised to have the trailer include the mechanism for transporting, assembly and disassembly of the wings. Making the trailer and hardware was challenging, but it turned out more robust than the original plans design.

Here are some of the goals that had to be met:
1. Do the whole wing operation alone.
2. The plane would be kept ON the trailer while in the garage.
3. Be able to travel at highway speeds for long distances.
4. Be inexpensive.
5. Fit under the garage door.
6. Fit in the garage (length).
7. The wheel pants not hit the ramp or trailer.

I take the following steps to go flying (the picture numbers match the steps):
1. Check the plane & trailer while in my garage before departure for airport.
2. Push the trailer/plane out of the garage and attach trailer hitch to truck.

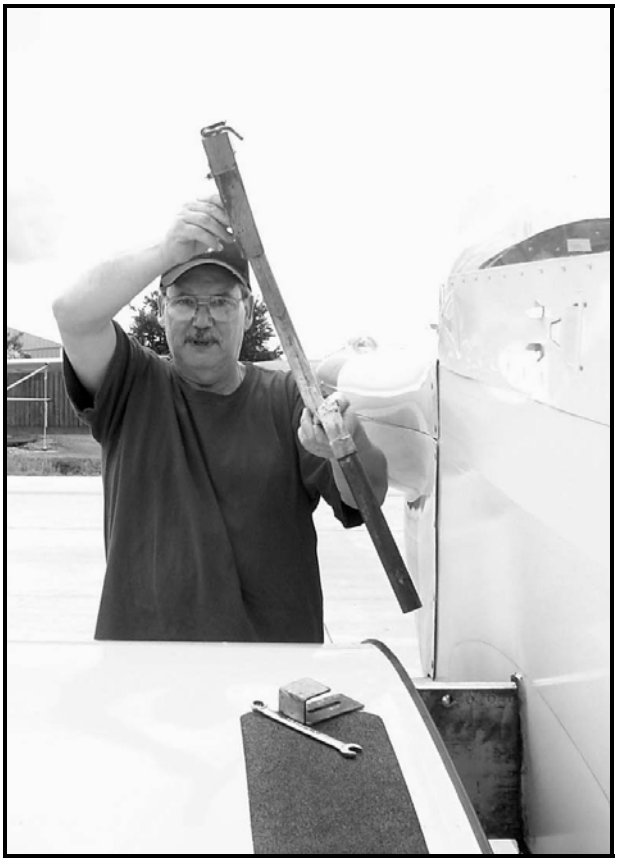
Step 2

3. Drive to airport at regular towed speeds.
4. At the airport find a level/flat place to unload plane.
5. Remove tiedown bolts from wing. Tie down bolts go through trailer wing cuff and hold wing to the trailer.
6. This next step is done in one smooth motion as possible. Pick up wing and walk around till perpendicular with fuselage. Swivel wing 90° to normal horizontal wing attitude. Slide spar/wing through the cuff into the spar box. Stop before wing hits cuff (stop about 6" short of hitting fuselage).

Step 6, Start of the Motion

Step 6, End of the Motion

7. Attach pitot tube wing to fuselage. Remove wing hold swivel cuff.



Step 7

8. Repeat other wing.
9. Slide wings the rest of the way into the spar box till wing is flush against fuselage. Make sure ailerons pins engage “gently”...don't bend the aileron outside horn.

Step 9

10. Get ramps from truck & attach to trailer. Push Sonerai off the trailer onto the flat ground. Using the boat winch, gravity does most of the work.

Step 10

11. Insert & tighten 6 taper pins (easier said than done. Takes longest to do than the rest of the operation)
12. Do the check list and go flying.
13. Reverse the process to go home.

The plusses: NO hanger fees, and the airpplane is always at home to look over, or work on.

The minuses: risk of damage while trailering, and the pain in the butt to assemble/disassemble.

Ivan Martinez
Sugar Land, Texas.

N49RG UPDATE by Roger Godfrey

I got the following update for Roger Godfrey on his modified Sonerai IIL. He’s installed wings with a Riblett GA35A415 airfoil. I’ll let bring you up-to-date.

Hi Fred: Yesterday I took our EAA 409 Chapter President for his first ride in a home built. He is a big guy and with the two of us old 49RG was going to be asked to yank off about 425 lbs. It didn't accelerate as fast and rolled out longer on landing, but otherwise it felt much like a solo flight. The biggest problem with passengers is I can't see the airspeed and altimeter. This was not the case with the old wings, it always felt like it was straining, it flew nose high and had a glide like a Motel 8.

My new wings are made much like the original Sonerai ones. The differences are as follows: The airfoil is about two inches thicker at the spar so the "C" channel is two inches taller. My wings are two feet longer so each of the cap strips is two feet longer and the set next to the "C" channel are long enough to run all the way to the wing tip. These inner cap strips are also routed to fit up snug into the inside curve of the "C" channel. We thought about several ways to narrow the channels to fit into original spar box, and all of the ideas would make the spars weaker, so we taped two inch wood blocks on the spar box, and discovered it would not bother my legs. I therefore built a new carry though box and installed it. It features two inch steel plugs driven into the .049 square tubes at the inner and outer end of the area where the wing spar tang fits; four on each side. A single central bolt holds each wing in the box. Early RV's had the same spar failure problems as the Sonerai, but the press did not jump on them near as hard. Van's fix was similar to John's, and is the one I used on these wings. Sonerai ribs are bent at a 90 degree angle and a tab is riveted to the spar. RV's butt the rib against the spar, and attach it using a half inch aluminum angle riveted to the rib and bolted to the spar. Then, between each rib they have another set of aluminum vertical angles as reinforcement, on the front and back of the spar. That is how my wing is made. I thought eight feet was plenty of aileron, so I have original length ailerons, and the inner two feet do not have a control surface. I ran a torque tube through rock maple blocks to run the ailerons. It has telescoping tubes at each end and uses heim ends for connections. This set up allowed me to put fairings on the wing roots. Faster?

It was initially a little slower top speed than the old wings, but cruised about the same speed, around 140 mph. It landed way slower, 60 mph on final rather than not being able to get under 80. It won't stall solo with power at idle, and it mushes along with airspeed on 0. It is sinking fairly fast, but I don't have a climb rate gage, so I cant tell you how fast. It does not seem to have more adverse yaw, with the longer wings, but the tail is 9 inches taller so that might cover it. It is hard to make a good comparison because I have changed engines. (1834 to 2180), added a starter, added fairings, and now changed props. I really like the lifting and climbing ability. It will easily carry anyone I can get into the front pit.

I never seem to do anything without drama, and my trip to Oshkosh this year was no exception. I had five different friends set up to drive my old camper up to Oshkosh, so I could fly up. One by one each dropped out for many different reasons. Finally I drove it up, towing a car and drove home again. The next day (Saturday) we were to go up. My wife was riding up with a friend in his camper, and I was to fly up. About 80 miles out, I lost my electrical system. No radio, GPS, or secondary ignition system. Flew back on the Mag (once I figured out where I was, don't rely too much on your GPS). The feed wire from the starter solenoid had come loose where it was screwed to the main bus (no clue as to why). I took off again, and found that the intermittent current had done nasty things to my radio; reception was a cross between Donald Duck and Elmer Fudd. I turned around again, and went back to the airport.. I called my wife and told her I would be driving up, and not to expect me for six hours. The fellow she was with suggested I borrow a hand held radio from the airport manager, a good guy we both know. His was loaned out, but he got me one from some rich guys who keep a spare in their business jet. I then decided to go the next morning. Very bad idea! It turns out Sunday morning from 8 to 10 is the busiest time of the whole convention. The ATIS wasn't working, and I nearly turned around again thinking my new radio didn't work. When I finally tried Fisk approach about ten miles out, the controller came in loud and clear and his message was, "hold where you are, all of our holding patterns are full". I spent the next 45 min. going around a cell phone tower and wondering what my unshielded secondary ignition system was doing to cell phone conversations in the area. When he finally cleared area aircraft to approach Fisk, it looked like a strike group going into Nam only bigger. I have never been that close to so many airplanes in the air before. I was an Orange RV until the last controller called me a Sonerai. Someone said she probably had an assistant who read my "N" number with a scope, and looked me up on a computer. Landing was uneventful if you don't mind making your turn to final a 75 feet and exiting the runway at fairly high speed because the controller is worried about a tri-motor running over you.

Have a good Christmas, Sonerai's Rule
Roger Godfrey
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DIRECTORY 2007

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RACEAIR DESIGNS IS AVAILABLE FOR YOUR FABRICATION AND RESTORATION NEEDS. Contact Ed Fisher, (330)518-8383, *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 IIL wings and matching carry though box, Have spar modification, Flown 50 hours. Right aileron trailing edge bent in hanger accident. $ 500. Roger Godfrey *rvgodfrey@earthlink.net* (3/07)

FOR SALE: Sonerai IILTS project. Wings and ailerons complete except for mounting the wing tips and balance weights. $3000 (current materials cost). Basic fuselage frame tack welded with remaining tube and sheet materials, $850. Will separately or as a package. Make offer. Dave Bubolz, 248-685-3114. (1/08)

FREE: Aluminum bar stock (mostly 2024-T351 from Sonerai landing gear), 1/2", 5/8", and 3/4" thick. Also, some nylon and high density polyurethane. Let me know what you need, and just pay the shipping. Fred Keip, *fredkeip@aol.com*, 262-835-7714 (1/08)

Bill Evans (with his foot on the wing) during the 1st flight briefing