

SONERAI NEWSLETTER

JAN-FEB-MARCH 2006

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MIKE THEN'S SONERAI IILTS

One thing we haven't seen a lot of on the cover of this newsletter is the Sonerai IILTS, and as popular as those plans are, it's a little surprising. But, here's a nice one. Mike's airplane is pretty much a bone stock IILTS. It looks nearly identical to the prototype that John Monnett introduced to the public back in 19xx. The wide stripe is even green. Read more about his airplane and its first flight inside.

HAPPY NEW YEAR!

Welcome to 2006. I hope Santa was good to you, and brought you all the stuff needed to get your Sonerai in the air this year.

This is the beginning of my tenth year as full-time editor and publisher of the **Sonerai Newsletter**. That means that in the last nine years I've assembled and sent out 36 issues consisting of a total of 288 pages of stuff about the Sonerai. It's been fun putting this newsletter together four times

a year, and I hope to do it for a little while longer. I hope, too, that it continues to be of value to you. As always, I'm looking to make the newsletter better, so don't be afraid to drop me a line with any ideas or suggestions for improvements.

Another milestone coming up this year will be the 20th anniversary of the first flight of my Sonerai IIL, N99FK. I never thought, when I was building her, that I would be still be flying her twenty years later. I've taken her to OSH 18 times, and Sun-N-Fun three times. She's been a good machine, with no

major airframe problems, and only a few minor engine hiccups. I suspect that I'll continue to fly her for a long time (or at least as long as I'm capable of climbing in and out).

So, anyway, I hope that 2006 allows you to get your Sonerai project airborne (or at least make some major progress on it), and if you are already flying, to continue to enjoy flying these great little airplanes.

SONERAI NEWS

- Great Plains News: The December 2005 issue of the **Beetle Flyer** is now out. Lots of stuff, including many Sonerai parts, is on sale thru January 16. And Steve tells me that he has a lot of inventory in stock. If you didn't get a copy in the mail, go to www.gpasc.com for more info.
- 2006 Fly-In Schedule: Here's a list of the big ones this year. Make plans now to go to the one nearest you:
 - USSAE, Sebring, FL 1/12-15
 - Sun-N-Fun, Lakeland, FL 4/4-10
 - SWERFI, Hondo, TX 5/12-14
 - Golden West, Marysville, CA 6/9-11
 - Rocky Mountain, Watkins, CO 6/24-25
 - Northwest, Arlington, WA 7/5-9
 - AirVenture OSH, Oshkosh, WI 7/24-30
 - MERFI, Marion, OH 8/25-27
 - Virginia, Petersburg, VA 9/30-10/1
 - 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, sent me cash, check, or money order for \$25.00. Postage is included.
- Back Issues: **Sonerai Newsletter** back issues are now available in three forms. The first is a 3-1/2" diskette which contains 209 of the newsletter articles (text only) published by Ed Sterba from 1987 through 1995. It costs a mere \$10.00. The second is a CD which contains complete copies of all of the newsletters published from 1996 through 2004 in a ".pdf" format. The cost is \$50.00. 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 2004 (That's 42 issues!). If you want any of the above, send me a note requesting the

ones you want and a check for the correct amount. Postage is included.

RENEWAL TIME!

Yep. It's that time again. It's time to send \$14.00 to keep the **Sonerai Newsletter** coming to your mailbox. Check out the mailing label on the envelope that this newsletter came in (assuming you haven't already tossed it out). If it says "PD05", you need to send money. If it has a "06" or "07" you're good to go. So, please make your check or money order out to "Fred Keip" and send it before you forget. Thanks.

LOOKING FOR SOME HELP

As usual, this is my annual plea for input for this newsletter. Please send photos of your airplane, and any innovations that you may have developed. I'm really in need of airplanes to feature, like Mike Then's airplane in this issue. 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.

As an incentive, when I publish one of your articles, you'll get the following year's subscription to the **Sonerai Newsletter** for free. For their contributions to the 2005 newsletters, I'd like to thank John Avent, James Gay III, Ivan Martinez, Scott Plischke, Dave Wilcox, Ron Wright, Mike Welch, Tom Hubbuch, and Tom Warren. You guys will notice that you are now good through 2006.

MY FIRST FLIGHT By Mike Then

Well, after more than 12 years of part-time construction on my Sonerai II LTS, I performed my first flight on September 24, 2005. The good news is I landed safely. Unfortunately, I cannot report the flight went without a hitch, as I developed high oil engine temperature, a 3-4 second engine sputtering, and had at a heavy left wing.

The day turned out to be ideal, with the temperature at 82F and light/variable winds. I did the engine run-up per my operational procedures developed to date, and took off on 25 at Greene County airport, OH. Roll out was straight/steady as experienced in the taxi test, which I limited to 45 mph. I rotated at 65 mph; lift-off was clean and provided sufficient lift to climb out of ground effect without hesitation. Upon lift-off, the plane started

in a left roll. I immediately countered with right yoke and maintained the right-of-center yoke position the remainder of the flight.

I climbed out straight at 90 mph, making a left turn about 450 ft AGL as I planned to climb above the airport to 3000 ft AGL. I momentarily leveled off to check left and right rudder movements, and was surprised to find out how positively controllable the rather small rudder is. I continued climbing and scanned the instruments to find the engine oil temperature quickly climbing to 230 F/red line. I leveled off at approximately 600 AGL and monitored the oil temp. During taxi test earlier that day, the oil temp rose to 200, and cooled to 140 before takeoff. The oil temp always rose during taxi tests, as I figured that was normal without sufficient airflow through the cowl. I aborted my initial plans and decided to stay in the pattern and set up for an approach. By this time I was at an extreme high and short base position, with one aircraft rolling to depart. I throttled back and turned from base to a very high and left of center final. While in a left descending turn, I noted the ball was way to the right. I tried "stepping on the ball", as the more I stepped on the ball with right rudder, the more the ball moved to the right on the inclinometer. Huh? Am I misunderstanding some flight fundamentals? This gave me a very uncomfortable and uncontrolled feeling with what I was doing with the plane. I entered no rudder input and the plane somewhat straighten out parallel but left of the runway center. By this time I was over the numbers and still about 100 feet AGL. Oil temp was holding steady at redline. I elected to perform a go around as I was very concerned about my understanding of aircraft control and still had much altitude to lose. I was also fast, as I quickly transitioned to a go-around climb at 90 mph. Climb out was straight.

I was going to turn cross wind at approx 400 feet AGL, the engine sputtered. By this time, oil temp was exceeding red line. I played with the throttle a little, and started an immediate 180 degrees for the airport. The engine had power; the sputtering was less pronounced and was not getting worse. I made the decision I needed to expedite a landing before the engine quit. An aircraft was departing the opposite direction, as I was on a 45 degree path to the center of the runway. My oil temp was at 245 F. I was concentrating on controlling/landing the plane, and really do not recall scanning the instruments past this point. I was concerned about control at low altitude, as I experienced during my last approach. After passing the departing aircraft, I tried turning to line up with the runway. I had control though I was uneasy with how the control felt to me (possibly

because of the constant right yoke input; probably because I had no other alternative!) and lined up parallel to the runway, but in the grass. I did not recall my airspeed; I wanted to put it on the ground. I straightened the aircraft up maybe 10 feet AGL. I do not recall floating nor landing hard. I remember pulling the stick back and making the aircraft slow down /stall. It was a good feeling to be on the ground!

My aircraft was built to plans, with the addition of a starter, comm radio, transponder, 250 cold cranking amps motorcycle battery, horizontal trim system (like yours per the newsletter), intercom system, power adapter for a handheld GPS, and Energetics differential brakes. The plane is configured with an auxiliary fuel tank, and running a GPAS 2180 VW engine with an AeroCarb and electronic secondary ignition. As expected with all these goodies, my empty weight is a heavy 644 pounds so I am using airspeeds more on the gross end for the LTS (I also weigh 195 lbs). No 100LL was used in the aux tank for the first flight. Most of my components I bought from GPAS, and Steve has been very helpful and patient in answering my questions. I certainly appreciated your answers to my ignorant questions at fly-ins over the years.

After flight investigation revealed the first "clue" of my overheat problem was incorrect baffling. My baffling does not shroud the cylinder areas which seems to be the popular baffling system today, but I used the style that was popular on Sonerais pre 1990. Unfortunately, I did not have a sufficient air flow escape area on the backside of the oil cooler. Not sure how I overlooked that, but I did. In looking at old pictures I took at uncowed Sonerais at fly-ins confirmed the baffling snafu.

I drained the oil, with nothing special to note other than the typical small debris (aluminum) one expects to have at the 10 hour period. I confirmed that with Steve. Also, in looking at old newsletters, I learned that 245F was not detrimental and one could expect temps to be that high if not using an oil cooler. I re-engineered the baffling with anticipation that was my problem. For what it is worth, I am using standard 30-weight auto oil.

As far as the engine sputtering, Steve thought it was the carb set up. He thought possibly the carb was adjusted lean, and sent me some adjustment procedures developed using a posa carb. I pulled the plugs and sure enough it was running lean. I thought I had it setup correctly, but I obviously did not. Since I have the nose gear, a float type carb is not an option. Just to be safe I will perform a compression check, but as of this writing I have not done that yet. Since I have dual ignition, it makes

sense the sputtering is fuel related. However, I am running two blast tubes to my mag (that siphons off some air for the secondary ignition coils), but do not have an exhaust from my mag housing. I have seen in some newsletters guys installing a fan on the backside of the mag housing. Do you suggest an exhaust vent of some sort?

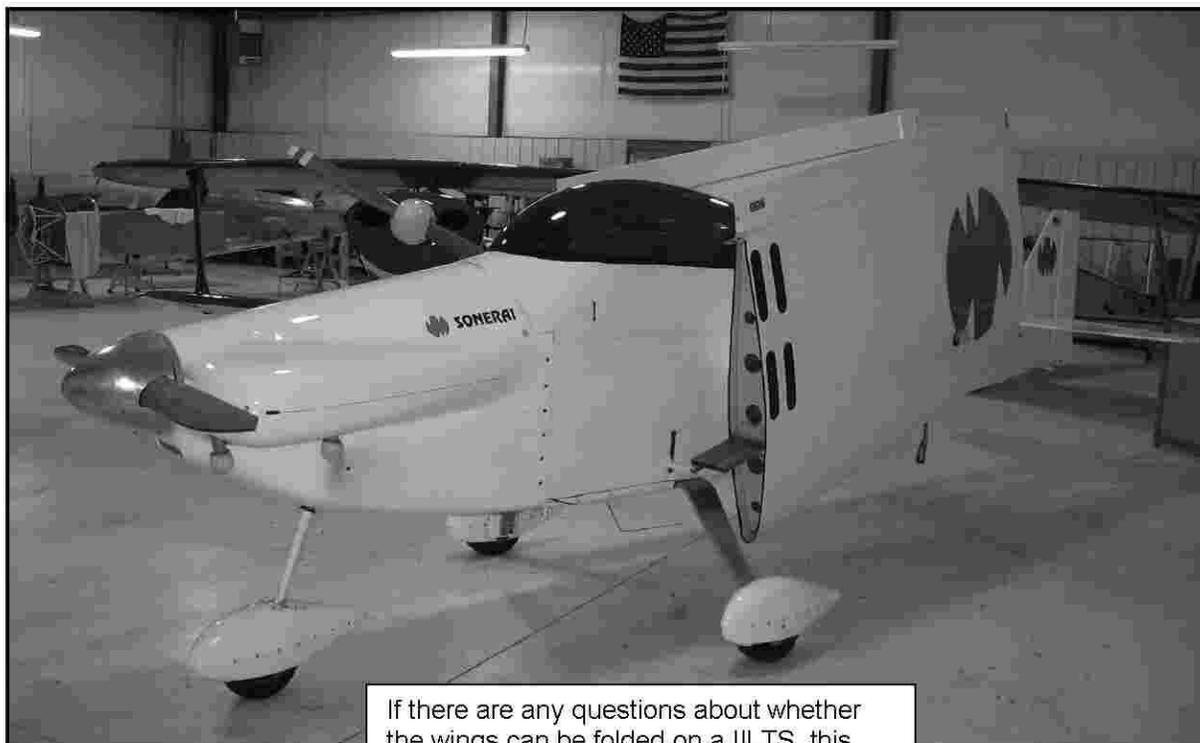
The root of my left wing heavy lies with, I believe, the fact my right aileron has a 3/8 inch twist in it, with the twist creating more lift at the root of the wing. I rigged the ailerons to have a 1/4 inch drop at the center of the wing on each side, given the uncertainty flight characteristic of the twist. I believe I have two options. One is to re-rig the ailerons so I have less lift created on the right side. Maybe 1/4 inch at the root area? Second option is to add washers to bring down the trailing edge of one of the wings. I would think that would be the left wing to create more lift, and I believe the washer addition is probably the safer option for the second flight. Also, on my right wing, I have a small gap (1/4 inch) between the leading edge of the wing and the fuselage fabric. I did not think that was a real factor, since it seemed to track straight. But thought I would mention it.

All in all, the flight was bittersweet. After such a long time in the building process, is now a real

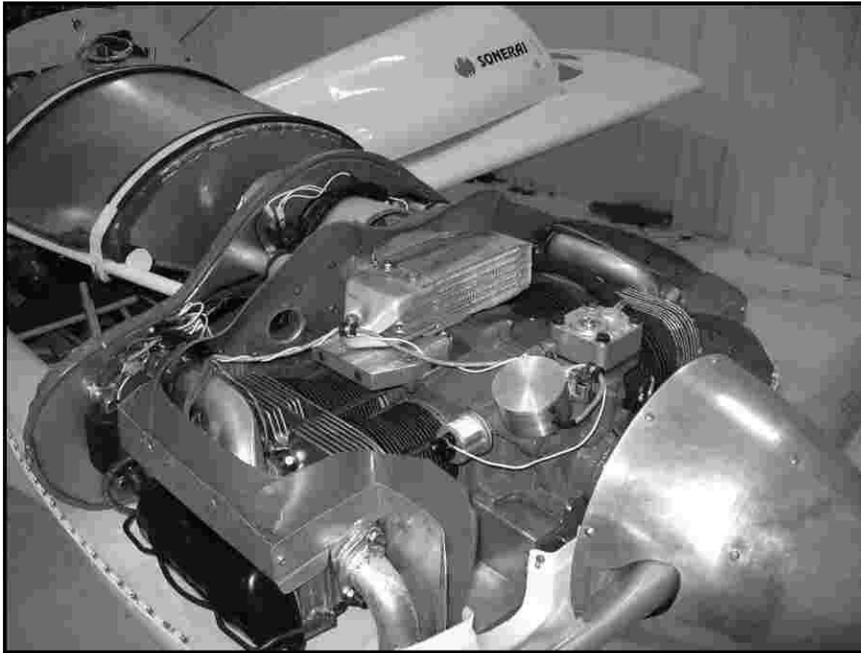
airplane! However, I have some work to do; some on the plane, some for me in more flight preparation. Although I have received stick time in a RV-6 and RV-8 which helped me prepare with control sensitivity, I need to be better prepared for the adverse yaw on this plane and with coordinated rudder. In my left turn, I should have been adding left rudder. Fundamentals I now understand after the fact. I guess I got away with that in C-152s and P-140s, as they are not REAL sport planes.

I feel I have been rambling about the flight and debrief, but I am interested in your thoughts Fred. Additionally, for those of you who may have a similar configuration, I would suggest putting the battery behind the pilot and not in the empennage. My weight and balance works out, but I need to have 6 gal min in my main tank with full aux tank. A battery location behind the pilot would help with that W&B issue. This winter I'll make my electrical diagram "pretty" and send it to you, as it maybe helpful to someone.

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If there are any questions about whether the wings can be folded on a IILTS, this should answer them.



A clean GPACS 2180 installation. Another nice example of plenum-style baffling.



And another clean and simple VFR cockpit, with all the necessary controls easily accessible by the pilot.

FUEL TANK SUPPORT TUBE FIXTURE

By Dave Bubolz

I spent more time than I care to admit trying to set up some jiggging for the fuel tank support tubes until I finally hit upon the adjustable units shown in the pictures. After these were installed the job went very quickly. The little piece of welding rod in the center is a height gauge and not part of the support structure. Maybe some other builders could benefit from my "eureka" moment.

Dave Bubolz
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dabubolz@umich.edu



MY FUEL TANK By Mark Thomas

Not surprised, I'm looking at the third year of work on my Sonerai IIL. This last summer saw a considerable slow down in my progress due in part to the fact that most of the work needed to be done has to be done at the hangar. Looking around the hangar one day for some part of this project that I could work on at home, I settled on the fuel tanks.

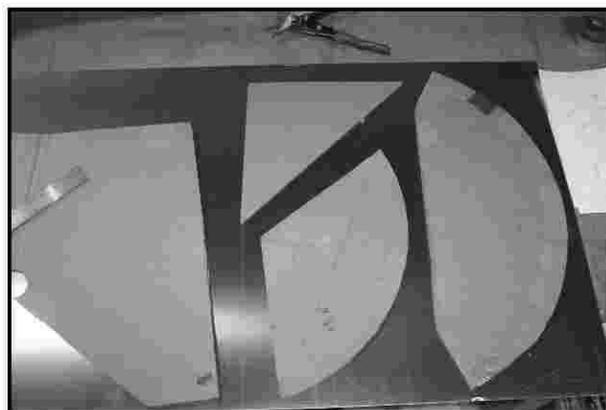
My project came with two tanks. A rectangular auxiliary tank, and a normal looking main tank. My first task once I had the tanks at home was to fill the main with water and measure its true volume. I was disappointed when the total was only 8.5 gallons. Since I was never too pleased with the size of the welds, I resolved to make a new main tank. According to our editor his tank holds 10.5 gallons. He also has an extra tank on the floor in front of the passenger seat. I decided to make a six-gallon tank that would sit on the front seat, and be easily installed or removed for that trip to Oshkosh.

The photos supplied show the process I employed to make the main tank. First, I had to find a way to fit a larger tank. It appeared that between firewall and instrument panel there wasn't any room to spare. I soon noticed that the shielding box around the magneto had been made larger than was necessary. I gained about an inch and a half after I made a new box. At the other end, I minimized the area allowed for instruments, and gained about an inch. That long bodied encoding altimeter, the previous owner gave me, will have to fly with some other airplane.

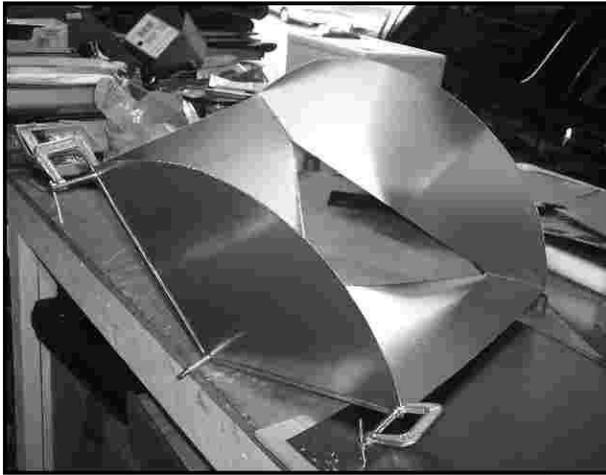
Next, I made up a cardboard dummy. This cardboard tank fit well enough that, after purchasing some 5052 .040" thick aluminum, I cut, formed, and clecoed. I assumed that by doing all this fab work, I could easily save some dollars. I reasoned that a professional welder could make quick work of it. Unfortunately, I didn't save much. The weld shop I used charged about fifty dollars an hour. The total charge for the two tanks was about \$500. At least that included a pressure test, and the owner did the welding. He said that .040" thickness was a bit on the thin side. He thought .050" would be better. Great Plains sells the main tank for about \$400. So you decide. If you know someone who is proficient welding aluminum, the potential for greater saving is possible, but be sure he is more than good!

The new tank holds about 10.6 gallons. The fuel cap is centered only because the original was that way, and the cowling access cover has also been cut to fit the original tank.

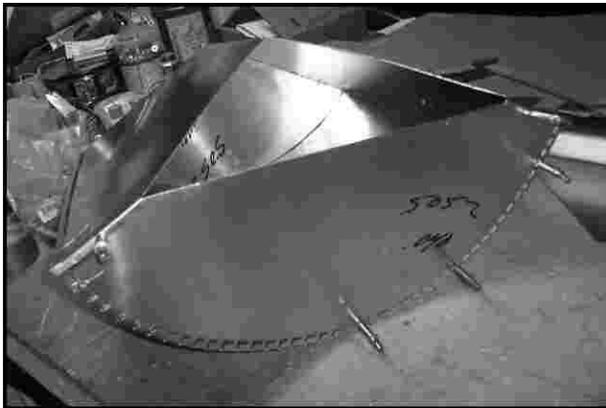
Mark Thomas
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Flat Pattern Layout



Initial Fit-up
Note the flanges at each of the joints.



More Fit-up



Ready to Weld

FRED'S TAILWHEEL ASSEMBLY

There have been a few questions about the tailwheel configuration on my airplane. Hopefully, the photo and the following notes will provide some detail:

1. The push-pull rod is made from 3/8" O.D. x .035" wall 4130 tubing, with two AN490HT6P threaded rod ends welded in the ends. Two Heim HF-4 rod end bearings with AN316-4 jam nuts are installed on the ends of the push-pull rod.
2. A piece of 1/4" bushing stock is welded in the rudder horn at the proper angle. It is inboard of the rudder cable attach point.
3. The tailwheel swivel is fabricated per the original Sonerai II plans except that the axle has been dropped 1" to provide better ground clearance for the swivel attach nut.
4. The steering arm on the swivel was heated and twisted to match the push-pull rod angle.
5. Everything is assembled using AN4 bolts and AN365-428A elastic stop nuts. Spacers made from 1/4" bushing stock are used to allow the rod end bearings full motion, and large diameter safety washers are installed to keep the bearings on if they fail internally.



DIRECTORY 2005

ISSUE	TITLE	SUBJECT
JFM '05	1000 Hours and Ice, Hmmm...	Misc
JFM '05	It's Renewal Time	Misc
JFM '05	E-mail Update #7	Misc
JFM '05	Can I Get a Little Help Here?	Misc
JFM '05	John Avent's First Flight/Avent	A/C Report
JFM '05	Canopy Installation/Gay	Canopy
JFM '05	Follow Those Plans/Martinez	Commentary
JFM '05	Directory 2003	Misc
AMJ '05	Goin' to Sun-N-Fun?	Sun-N-Fun
AMJ '05	Sonerai IIL N994SP/Plischke	A/C Report
AMJ '05	Canopy Installation, Part 2/Gay	Canopy
AMJ '05	To IFP/Wilcox	Traveling
JAS '05	Lookin' Forward to OSH '05	Oshkosh
JAS '05	Ron's "New" Sonerai IIL/Wright	A/C Report
JAS '05	Canopy Installation, Part 3/Gay	Canopy
JAS '05	Midwest Sonerai Gathering	Misc
OND '05	Oshkosh 2005	Oshkosh
OND '05	Mike's Sonerai IIL/Welch	A/C Report
OND '05	IIL Follow Up/Avent	A/C Report
OND '05	Bushing Positioner Tool/Hubbuck	Tools
OND '05	Another Spark Plug Story	Engine
OND '05	Midwest Sonerai Gathering	Misc
OND '05	A NACA "Smile"/Warren	Cowling

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!!

WANTED: Sonerai II mid-wing or low-wing taildragger, preferably with a 2180 VW. Bob Campbell, 112 Chestnut Street, North Reading, MA 01864 (1/05)

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-rmf-1@swbell.net (2/05)

FOR SALE: Revflow 32mm carb, complete with air filter and ram air tube. \$60US Please email Tony @ umgibso1@yahoo.com if interested. (2/05)

FOR SALE OR TRADE: Aerosport Quail. All metal, high wing, cantilever. 11 gal fuel in wing tanks. Cruise 105mph on 3.5GPH. Built in 1977, in storage 15 years. 450 ttaf, 44 hrs since VW rebuild. Easy entry, just raise the door and sit down. Tri gear. \$9,500, includes new GPSIII and IcomAR5. New slick mag. Lic till Oct. May take

Sonerai2 original or project trade. Jack Cupp, Phoenix, AZ 85032 602-788-9117, jack@xoomup.com (3/05)

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. \$16,500 Fred Ninneman, 816-353-1161. (4/05)

FOR SALE: Magellan Skystar Plus handheld GPS, with moving map, aviation database, 12 volt DC power chord, remote antenna adapter, and yoke mount. Works great, but can no longer get database updates. \$50. Fred Keip, 262-835-7714, fredkeip@aol.com (1/06)

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)



Paul Mombourquette's Sonerai II Following His First Flight

I got this email from Paul after his first flight: Hi guys, just a note to let you know we flew the first flight of our homebuilt Sonerai, "Ms. Mombo" on Veterans Day, down at the Moriarty airport. It was truly awesome. She handles fast and crisp, the engine operated without fault and the second touchdown after a good bounce resulted in a straight ahead rollout. The short flight of twelve minutes puts ninety percent of the risk behind us. Thanks a bunch for the words of encouragement over the eight years it took complete, Paul