

SONERAI NEWSLETTER

APRIL-MAY-JUNE 1999

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(AFTER 6PM CDT)



LARRY SPICER'S SONERAI II

Your editor has a soft spot in his heart for this airplane. It was originally built by my good friend, Ken Flaglor, of Flaglor Scooter and replica Gee Bee Y Sportster fame, and it was Ken's encouragement and advice that helped me get my IIL finished. Larry has recently installed a high performance 2180 in the airplane, and tells me that with its original prop it will cruise at 170 mph at 8000 feet while turning a little over 4000 rpm. He's planning to put a coarser pitched prop on it to get the rpm's down while keeping the speed up. By the way that's Larry's lovely wife, Vesta, with his machine.

SUN-N-FUN 1999

Spring's got to be here. Sun-N-Fun is less than a couple of weeks away, and those of us up here in the north woods are itching to get some serious aviating done. It's been a long winter, and yours truly hasn't gotten in nearly as much flying as I'd like. But I've gotten in some. This past weekend (I'm writing this in mid March), the Sonerai and I passed a milestone of sorts; we now have 600 hours on the Hobbs. My, how time flies.....

Anyway, back to Sun-N-Fun. I hope many of you are planning to come. It runs from Sunday, April 11, to Saturday, April 17. As usual, I'm planning to be there. I just don't know exactly how I'm getting there. The current plan is that Keith Tridle, my hangar partner, and I will fly his newly restored Cherokee 140 down, but there is still an outside chance that I'll bring the Sonerai down for a second time. We'll see.

We've got a number of things lined up for you to do when you come down. First, I'll be hosting the Sonerai Builder's Forum at 1:00 PM, Tuesday April 13. I don't know which tent yet. Check the program. Bring your questions and comments, as I'd like to make it a technical "give and take" discussion. Secondly, the annual Sonerai Dinner will take place at Vito's on Wednesday, April 14, at 7:30 PM. Dean Mc Ginnes told me that the place is under new management, but most of the kitchen staff is the same and the food is as good as always.

Thirdly, Steve and Linda Bennett will be holding their Annual Great Plains Aircraft Supply Customer Appreciation Party Monday Night, April 12, after the air show in the Forum Tent area. Stop by their booth and let them know you're coming. And finally, Steve will be doing his daily VW engine buildup/teardown in the workshop area every day. If you'd like to see how the VW is put together, stop by and spend a couple of hours.

SONERAI NEWS

- **FIRST FLIGHT:** Wes Blake from Canby, OR flew his Sonerai IIL, N436WB, on October 5, 1998. Wes' airplane has a Revmaster engine and a rear-sliding canopy of his own design. Congratulations, Wes. (See Wes' first flight report on page 3.)
- **FIRST FLIGHT:** Jack Locamy from Camarillo, CA flew his Sonerai II, N2261G, on January 9, 1999, after a six month restoration. Congratulations, Jack. (Jack has written a great, long article on the restoration and first flight that I hope to publish in an upcoming issue.)
- **Nose Wheel Springs:** Got a note from Jeremy Monnett. Sonex Ltd. now has available a stainless steel spring that replaces the rubber sleeves used on the nose gear strut on the LT and LTS. The price is \$35.00 and should be on the shelf by the time you read this. If your interested, call Jeremy at 920-231-8297.
- **Sonerai Shirts:** I got a really nice, hand-painted tee shirt from Jas. Andrews, P.O. Box 57, Devlin, ON P0W 1C0, Canada (807-486-3710) Jas. Is building a Sonerai, and would like to provide customized tee-shirts to anyone who would like one. The cost is \$25.00. Just send your name, N-number, model of aircraft, color, and a color photo of your airplane.
- **Back Issues:** **Sonerai Newsletter** back issues are available in two forms. A 3-1/2" diskette which contains most of the significant newsletter articles published by Ed Sterba

from 1987 through 1995 is available for a mere \$10.00. There are also hardcopy back issues for \$3.00 each. I have the last two issues from 1994, and all of the issues from 1995, 1996, 1997, and 1998. If you want any of the above, send me a note requesting the ones you want and a check for the correct amount. The postage is included.

PHX-LAX-PHX IN A SONERAI

by Dave Wilcox

The first flight of my Sonerai II LTS was April 3, 1997 from the 11,000 foot runway of Williams Air Force base, aka IWA. I finished out the year with over 180 hours on the Hobbs, and about 650 landings. It's ready for new tires. I just don't have much to write about regarding incidents or problems: attribute that to the nose dragger configuration and the Continental A80. I've had the weight up to 1050 pounds. On that cool day my 170 pound friend Dan and I climbed out of Sedona AZ to 9000 feet at a final rate of about 300 feet per minute. We continued on to Payson for yet another helping of God's country, not to mention a decent cup of coffee. Solo, I'm getting about 135 mph indicated flat out. 2500 rpm cruise yields about 110, and 800 feet per minute climb (on a good day). Cruise fuel consumption is an honest 3.5 gph. My near term plans are to add wheel pants and experiment with new props. I'm going to start with 62x62, currently 58x58.

During my family's Christmas vacation to Mexico City (relatives) my 11 year old son Patrick received an offer that couldn't be refused. His uncle, an airline captain, invited him to return to the USA in the cockpit of a 727. I won't say whether he got any "stick" time or not. The only catch was getting him back home to Phoenix from LAX. Would it be America West, Southwest, or SONERAI West?

Well, LAX is probably just a little too much for my little plane: ATC might mistake me for a sea gull. I decided to fly into Fullerton, about a 45 minute drive from LAX. It was the morning of 12/31/97 when I decided to go. I called to get a rental car dropped off at Fullerton, but the agency was closing early so it didn't look like it would work. To my rescue came Mr. Bill Griggs, manager(?) of AFI Aviation at Fullerton (714-773-0741). He called the rental agency and worked everything out for me. Also, the overnight tie-down was free. What service!

I took-off out of Chandler at about 12:45, weaseled my way through the south side of the PHX TCA to Buckeye, and then climbed to 4500 feet. After 1.7 hours I landed at Blythe CA for fuel. 20 minutes later I was up and on my way through the Palm Springs TRSA, where all those wind turbines are. They were all dead stopped: no wind. Good thing - I'm told that 60 mph headwinds through Banning pass are not that unusual. As it was, the Sonerai sped along at a respectable 135 mph ground speed. Coming into the valley is breath-taking. The land turns from desert brown to beautiful green hills bordered by 10,000 foot snow capped mountains on both sides... Wow!

I thought Phoenix airspace was complicated... LA is a nightmare. First I tuned in March Air Force base to make sure nothing was being catapulted out at me as I crossed their centerline. My altitude was fine to over-fly Riverside class D, then south slightly to avoid Chino where the smog started, for a due west approach into Fullerton, just missing John Wayne and El Toro class C shelves. Once in the smog, all you can see is straight down. I think you could get lost in closed traffic. I had preprogrammed my course into a Magellan GPS 2000, which by the way is a fantastic unit for \$130. With the GPS I found Fullerton with no problem. I would have never found the airport without it. Visibility could not have been more than 2 miles. Touched down at about 3:10 PST (gained an hour).

Picked-up my son, toasted the new year with el Capitan, spent the night in a \$36 flop house where we could see the midnight Disneyland fireworks display, and blasted out of Fullerton on New Year's Day at about 10:30 MST (never changed my watch). The air was practically clear: what a difference the morning makes! 5500 msl was my cruise altitude going home. Ground level varies from about 100 to 2500 feet along the way home, provided you dodge the mountains. Ground speed wasn't quite as good, about 125. Gas again at Blythe at \$.50 more per gallon than Chandler, and home by 2:30. (You've got to be pretty cheap to complain about the price of gas when you're only buying 6 gallons.) A total of 7.4 hours Hobbs time: a very memorable trip.

Freditorial Comment: After this little warm-up trip, Dave and his son flew the Sonerai to Oshkosh '98 via Michigan. These little airplanes can be used for long cross-countries, with a little planning, a lot of persistence, and a good seat cushion. Thanks for the nice article, Dave.

FIRST FLIGHT OF "FLY'N MISTRESS"

by Wes Blake

Oct. 5, 1998

**OR40 (Dietz Airpark) 1000 Sunny Clear 50/46
Calm 30.30**

90% decided by 0800 that flight would occur today. After showering and by 0900, 98% sure. Mamma Cat (my devout hangar cat) insisted on going out to the hangar with me. Door unlocked, she decided a preflight was necessary. Jumped into the cockpit. Crawled forward. Must have been OK. She emerged then took another walk down the tail cone. When she surfaced she announced all was OK with the same word she always uses for most of her conversation. Sat waiting on the roof of the canopy. Must have decided I was serious because she jumped down when she saw I was going to push the airplane outside. Was a little worried when I closed the hangar doors. She scrambled into the attic.

I did a walk around. A little apprehensive. Knew it had come to this one day and decided this was unquestionably the day. Now 100%. Climbed in. sat there for about a minute. Switched on the fuel valve. Set the altimeter. Then the G-meter. Hooked up the shoulder harness and seat belt. Snug. OOPS. Forgot to turn on the master switch and magneto switch. Loosened. Accomplished. Tightened again. Closed canopy. A look around, not a real loud "Clear" cause no one was within 500 feet. The Revmaster engine was a little cold upon start. Smoothed out after 30 seconds. Sat waiting for my nerves to be re-assured. Nice sunshine coming through the windows. Well, here we go. A nudge on the throttle sent her off the apron and onto the backyard, then wing overhang area. A quick look up and down the runway. No traffic. Headed north. Ideal conditions, except no wind. Would like to see 5-10 knots but the wind gods didn't agree. I'll do it without their help. the north end of the runway came up fast. Had to loosen shoulder harness again to reach Mag switch to check: left-right-both. That's OK. No excuses left. Rolled her onto the runway. Knew I was going to do a high speed ground run first to convince myself that all was going well. It did. Got down to the south end of the runway in record speed. This is good. Didn't see any witnesses out yet to embarrass me if all didn't go well. All systems go. A slow taxi off the runway at the south end, a look for traffic again. This is it! Back on the runway. Throttle forward, nice and smooth. Tail came up in 4-500 feet. Knew I had to wait for the rest of the airplane to catch up. Saw my yard whizz by (1000 ft.) Saw the half way point marker

on the runway go by (1200 ft.) Not in the air yet but committed. Wish I had 5-10 knot headwind now. Decided to ease back on the stick a little. She was hesitant, but... Walla... Holy AvGas!... She flies....SHAZAM!

First flight occurred at 10:00 AM. Returned at 10:20. Left the ground after a 1250 ft. run northbound. Initial climb went from 500 fpm at 60 knots during liftoff to 1200 fpm at 80 knots on climbout. Kept a straight out climb till 1000 msl. Left turn over intersection of Highway 99 and Mulino Road. Continued climb downwind to 3500 feet. Throttled back about $\frac{3}{4}$ inch (throttle travel.) No change in RPM. Throttle back 1 inch. (total throttle travel is 4 inches.) RPM went from 3000 to 2800. Cylinder head temperature (#3 cylinder) at 3500 feet had reached 400°, within the 450° allowed. Did a right turn toward Mulino airport. Need to practice on how to turn, 'cause the ball on bank indicator was all the way to the left. This is like driving an Austin Healy Sprite. Promised myself that I wouldn't take her past 100 knots this first time. I've been accused of going too fast on a first date. She sure wanted to try it though! Throttled back to 2000 RPM to attempt a stall. Now headed northwest. What little breeze there was, was from the northwest. Throttled down to 1200-1500 RPM. She stalled at 45 knots indicated. Gentle. Nice level drop forward was delightful and manageable. Recovers nicely straight forward. Oil temperature rose to 180° during flight (red line is 220°.) Oil pressure stayed 40+ PSI (below 10 PSI would be a problem.) a couple more practice turns to see how she handles. Very agile. Now for a landing approach - 70 k. downwind and final. Over the road at 60 k. Too high, chopped power, glides great! Touchdown (long) 900 feet down the runway, landing south. Moderate braking slowed the "Fly'n Mistress" for a turn back before 2000 ft. (Our total runway length is 2650 ft.) Left the ground with 9 gallons of fuel and returned with 8. Revmaster engine ran well. Directional control on the ground very good. In the air...the pilot needs practice. Airplane does what you tell it to do. Quick response to your demand. Sensitive.

On final and taxi back to the yard witnesses were present. Richard Dopp at Peterson's yard. The tenant at Breitbarth's with a camera on a tripod. Guess snapping pictures. Made a wide turn to deliberately go close to her camera. I waved. She waved (I think.) Headed for the concrete apron. Shut her down. All switches off. Bill Trumm was the first to appear with his hand out ready to congratulate. Then Dopp. Both before I could get

out of the machine. Bowcock showed up, too. Then Harlen Veenker pulled up in his RV8. Jumped out and shook my hand, too. A colloquial review to all was a good debriefing for me. How am I going to remember all of what happened in just 20 minutes? The airplane looked good. Except for the mud on the bottom of the wings. No parts missing. Social debriefing took about 30 minutes. Mamma Cat showed up during the social debriefing and told all standing around something. Used the same word she always uses. Acted like she was responsible for the whole event. Seemingly, maybe. At least in part. When I went into the house, my attention diverted. There was a very large frog (estimate 4-5 pounds) at the front door staring me down. Almost like one of my old friends from the grave had sent him to let me know they had been watching. Don't think I'm crazy. Just made up that interpretation. Nevertheless, there was actually a very big frog at my doorstep. Had to go out later to verify it. Still There! Chatted with Bill Trumm outside again for 15-30 minutes. Told him about the frog but by then the thing had gone to a flower bed. Thank Marvel that it was in the flower bed, 'cause Bill may have thought I had been using a strange drug. He was witness to the frog and the flight.

I now know how fun it is to test fly. Curious things happened before and after the flight, too.

SKINNING THE WINGS

This is the fourth in the wing building "How-to" series. We finally get to close up the wings by installing the wing skins.

With all of the major internal components complete, it is now time to make preparations to enclose the spars and ribs with a skin, and make wings out of them.

Step One: Building the Fixture

A drawing of the fixture is shown on page 19 of the II plans and the back page of the IILTS plans. This drawing shows a fixture for building the RH wing. To build the LH wing move the leading edge hole at the top of the fixture to the other side of the centerline. An alternative that I used was to build both ends of the fixture the same. The hole locations should be defined from the rib layout drawing that we developed back in the first of the series. (The dimensions on the fixture drawing aren't exactly correct.) This allows building both wing panels without making any changes to the fixture at all. It is absolutely necessary to securely attach the fixture rigidly to the floor and the ceiling

so that it can not move. You will be pushing on the fixture a lot while drilling and riveting, and you don't want the wing moving around. Use a plumb bob to establish the vertical chord centerline in two planes, and use a four foot long carpenter's level to locate the spar support points and the hole locations in one end of the fixture relative to the other. Now, go to the hardware store and buy two very straight pieces of 1-1/2" pipe and one piece of 3/4" conduit. They should all be very straight.

Step Two: Installing the Spar/Rib Assembly in the Fixture

With the help of a friend, place the assembled wing structure into the fixture. If you use the symmetrical fixture, it will be necessary to use a 5/8" thick shim to support the tip end of the main spar and a 1/4" shim at the tip end of the rear spar to keep the spars level. Next, insert the two 1-1/2" pipes through the 2" holes, and the 3/4" conduit through the 1" holes. With the wing basically aligned, clamp both ends of both spars securely to the fixture. Again, you don't want anything moving while you drill and rivet. Next, using a small square, verify that the main ribs are perpendicular to both the main spar and the rear spar. Then, verify that the nose ribs are perpendicular to the main spar, and with pieces of masking tape, secure them to the conduit. What you should have is an assembly that looks like photo 1.



Photo 1 - Wing Fixture

Step Three: Install Pitot Tube in RH Wing

When the RH wing is in the fixture, it will be necessary to install the pitot system before the skin goes on. Mount the pitot tube block on the inboard side of the tip rib with the pitot tube centerline on the chord line of the rib. Install the pitot line from the block to the root end of the wing by routing through the tooling pin holes. Open up the holes with a chassis punch, and install grommets to protect the pitot line. I used 1/4" Tygon for the line, and 3/8" O.D. x .035" wall tubing for the pitot tube.

Step Four: Installing Wing Walk Supports in LH Wing

When the LH wing is in the fixture, be sure that you install the wing walk supports that are shown on drawing S-20 for the IILTS. If you're building a IIL with the 11 rib wing, you'll need a copy of this drawing. Just send me a stamped, self-addressed envelop and I'll send you a copy. If you're building the original 9 rib wing, send me the s/sa envelop and I'll send you a sketch of the wing walk I used.

Step Five: Installing the Folding Mechanism

At this point, if it's not already done and you're planning to use it, the wing fold mechanism should be installed. Make sure that the clearance holes cut in the ribs are large enough to clear the fold support tube welded to the side of the fuselage. Also, insure that the sliding tube has sufficient travel to allow the wing to be installed and pinned to the fuselage.

Step Six: Installing Wiring

If you plan to install navigation lights, landing lights, and/or wing tip mounted strobe lights, now is the time to install the wiring. Make sure that it is well supported and is mounted in grommets as it passes through the ribs.

Step Seven: Cutting and Forming the Skins

You'll need to make a total of four skins. For each skin start with a piece of 0.025" 2024-T3 Alclad sheet, 48" wide by approximately 100" long. This length allows the skin to extend past the rear spar a small amount so that it can be trimmed to the correct length after it is fitted to the wing structure. Make sure that the ends of the skin are trimmed square to the long edges of the sheet.

To form the leading edge radius, start by bringing the trailing edges of the skin together to form a large teardrop-shaped loop. Drill and cleco the trailing edges together using an 1/8" bit and 1/8" clecos. (By now you will need to have collected 300 to 500 1/8" clecos and a cleco pliers. The

more clecos you can get, the easier it will be to attach the skins.) Be sure that the edges of the skin are in line so that the leading edge radius "crease" ends up being perpendicular to the edges. Next, lay the skin down on a clean, flat, carpeted surface, and take a clean 2x4 (or 2x6) board about five feet long and lay it across the skin just ahead of the trailing edge. Keeping the board parallel to the trailing edge and perpendicular to the sides of the sheet, work the board toward the leading edge, using your body weight to form the leading edge radius. Make a template of the radius (it's 0.50") out of some stiff paper or cardboard and check the radius as you get close. Be careful not to get the radius too small. The sharper the radius, the nastier the stall.

Step Eight: Wing Rib and Spar Rivet Line Layout

Using a sharp felt-tip pen and a flexible straight edge, draw the centerline down each of the rib flanges, and along the rivet centerline on each of the spar flanges. You will use these lines later to help align the skin and ribs.

Step Nine: Skin Alignment and Drilling

(The following method is the one that I used. It is not the only way, and you certainly aren't constrained to do it this way, but it worked well for me.)

Start by installing the outboard, or tip, skin. The first thing to do is to put a line of 1" wide masking tape on the inside surface of the skin at each of the rib locations. Be sure the centerline of the tape is lined up with the centerline of each rib. Also place tape in line with the spar flanges. Next drape the skin over the wing structure mounted in the fixture, and align to the center and tip ribs. Make sure the leading edge is in the correct position and clamp the skin down at the trailing edge and at the main spar flange. It will help at this point to make a couple of 3/4" plywood female templates of the front 8" of the airfoil that you can slide over the skin to hold the leading edge in the correct location, and to help hold the skin tight to the ribs.

Now, unclamp the bottom skin, lift it away from the ribs, and reach up inside the wing and draw the outline of each rib and the spar flanges on the masking tape with a felt-tip pen. It will help to have an assistant on the outside of the wing maintain some pressure on the skin to hold it snug against the ribs. Once the top skin is marked, reclamp the bottom skin, unclamp the top skin, and mark the bottom skin. Now, remove the skin from the fixture and lay it flat on a piece of clean carpet with the inside facing up. Layout the rib and spar

hole patterns on the masking tape, using a 4 foot long straight edge to keep the rivet lines straight. Using a clean 1x6 board as a back-up, center punch each hole location (an automatic center punch works really well at this point) and drill with a 3/32" drill. Do not drill the holes for the center rib. These will get drilled when the inboard skin is installed. Deburr all of the holes and remove the masking tape.

Now place the skin back on the fixture and realign, making sure the leading edge is positioned properly, and the holes drilled in the skin align with the centerlines drawn in Step Seven. Using a #32 bit, use the holes already in the skin as a template to drill the holes in the rib and spar flanges. You will want to start at the leading edge and drill in a 45° pattern. In other words, drill the first hole at the leading edge of the tip rib, then the second hole in the tip rib. Then drill the first hole in the next rib, followed by the third hole in the tip rib, then the second hole in the next rib, followed by the leading edge hole in the next rib over. As you can see, you're drilling hole along a 45° line. Be sure to install a cleco in each hole as you go to keep the skin tight to the ribs, and make sure there are no wrinkles in the skin. It helps to have an assistant hold a small wood block behind the rib flange as you drill each hole to make sure the flange doesn't move.

Once the top skin is drilled, repeat the process for the bottom skin. Then, repeat the entire process for the inboard skin, making sure you have proper alignment and overlap at the center rib. Because the inboard skin overlaps the outboard skin, it will be necessary to make some small .025" thick shims to place over the 3/4" conduit at each of the inboard rib locations to position the skin correctly. After both skins are completely drilled and clecoed, be sure to scribe a line on the skins along the rear spar flange for later trimming of the skin to its final length. Also, mark the location of the folding support tube holes and the pitot tube hole.

Step Ten: Final Skin Prep

Remove both skins from the wing, and deburr all of the holes in the skins, the ribs, and the spars. Then, dimple all of the holes, using a set of 120° dies for the Cherry "N" rivets or 100° dies for the bucked AD rivets. Next, trim the skins to the proper length by cutting to the scribe marks made in the last step, and cut the holes for the fold support tubes and the pitot tube. And finally, Alodine and zinc chromate prime the interior of the skin, if you want. Remember to apply only a light transparent coat of the chromate.

Step Eleven: Final Skin Installation

Start by clecoing the outboard skin in place. A cleco in every third or fourth hole will be sufficient. Next, cleco the inboard skin in place. Be sure to remove the tape holding the nose ribs to the 3/4" conduit. At this point, you need to make an entry in your airframe log, signing the wing off as ready for closure. It would probably be a good time to have your local EAA Technical Counselor take a look at everything as well, and make a note of his visit in your log book. The FAA inspector will look for this stuff.

Now, you can start riveting. You'll probably want to do the top skin first, particularly if you're using AD rivets. Rivet the skin using the same 45° pattern that you used to drill the holes. If you are using the Cherry "N" rivets, dip each one in zinc chromate primer before you install and pull the rivet. This will help with corrosion protection, and will lock the mandrel bead in place. Be careful not to install rivets at the hinge locations in the rear spar, and do not install the rivets at the tip rib until the tip is installed.

Step 12: Wing Tip Installation

The wing tip is designed to be fitted between the wing skin and the tip rib. You'll need to carefully slip the tip between the skin and the rib (This can be a bit of a pain.) and position it properly. It will help to put a number of pencil lines 5/8" in from the edge so that you'll know how far to slide it in. Once located, mark each of the rivet hole locations, then remove the tip. Put a hole at each mark that is roughly the outside diameter of the dimple in the skin. This will allow the skin to lie flat on the tip. A Dremel tool with a conical shaped grinding bit works well here. Now, relocate the tip and rivet in place with Cherry "N" rivets.

Do all this stuff to a LH and a RH wing panel, and your wings will be ready to install on the fuselage. All that's left are the ailerons, and we'll build them next time.

E-MAIL, E-MAIL, E-MAIL

I've gotten a number of requests to publish a list of the e-mail addresses of those of you who have them, so you can communicate with each other and help each other out. A great idea. So, here are the ones I've been supplied to date:

Don Archangeli (IIL-1835)
scalywag@concentric.net

Dave Bilgri
dbcpa@pwerweb.net

Wes Blake (IIL-Revmaster)
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Dan Bohn (IILTS)
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Chuck Orange (IILS)
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Kevin Smith (I)
ksmith@interhop.net

Gary Zahn (IILT-2165)
gzahn@vbe.com

As you can see, my name and e-mail address are not listed. That's because I'm still working on it, and when I get it set up I'll let you all know. Also, if you'd like to get added to this list, let me know.

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.

Air Schank Going Out Of Business Sale - New and used Sonerai parts, Engine parts, Tools and hardware, New and used instruments. Call or write for 5 page list. Bob Schank, 35 Clarence St., Belleville, MI 48111, (734)697-7057 after 5 pm. (3/98)

For Sale - 1600 VW engine, 0 TT. Disassembled - all new parts. Complete engine. Mexico universal AS41 case, Case inserts. Case machined for Great Plains Force One Prop Hub. Has Force One Hub Parts. Dual Port Heads. Forged counter weight balanced crankshaft. Balanced pistons and rods. Pauter performance cam. Horz oil cooler and adapter plate. \$1900 Bob Schank, (734)697-7057 after 5pm (3/98)

For Sale: Used Bogie tailwheel and Monnett tailwheel caster with 2-5 1/2" springs (needs the chains) \$25.00, New unmachined Monnett "Electro X" casting \$100.00, Used Monnett Sonerai I fuel tank (needs cleaning) \$55.00, Used pair of axles, 3/4" shaft, 5 3/4" long \$4.00, Used fuel shutoff valve \$5.00, Used set of rudder pedals asm. with toe brakes (see Sonerai I drawing page 11 and 15c) \$20.00, Used Sonerai I torque tube asm. (see drawing page 5) \$40.00, New (4) 87.5 cylinders and pistons \$75.00. You pay the shipping. Bob Schank (734)697-7057 (2/99)

TAPER PIN REAMERS FOR RENT - Brown & Sharp #3 and #5 for AN386-3 and AN386-5 taper pins. \$1.00 per day for both reamers, \$150 deposit. David E. Wilcox, 517 E. Saratoga St., Gilbert, AZ 85296, (602)231-5824 (1/98)

Wanted: Sonerai I, Prefer flying, but call on any type. Jack Spring, 248 Jack Spring Ln., Kentwood, LA 70444, Home (504)229-8297, Work (504)344-1533. (2/99)

For Sale: Sonerai II kit. Welded airframe with tail feathers, flight controls, and gear. 1835 cc VW with Electro-X mount (10 amp alternator), 4016 Slick Magneto, Posa carb, propeller, spars finished, Super-Vee cowl, fuel tank, most instruments. \$2750.00 OBO Zeke Zechini, (703)707-1949(work), (703)830-1046(home), or mark.zechini@lmco.com (1/98)

Wanted: Any Sonerai parts to help add to Sonerai/KR-1 Museum, tax deductible. Call or write: Tom Hall, 658 S. Abbey Ave., Springfield, MO 65803, (417)862-3837 (1/98)

For Sale: Sonerai IIL w/ 75 hp Lycoming 0-145-C3, Magnum Ivo-Prop, ground adjustable, 12 gal wing tanks, S-wing, new 3/4" Grove landing gear, new canopy, improved cowl, 60 hrs TT. Flies great

at 3.5 to 4 gph! \$9500 OBO. Call Craig Merrill, (803)521-4577 (2/98)

Wanted: Engine/project for Sonerai II, prefer 2180 w/ dual ignition but will consider all. Jeff Newlin, 12173 E. 1700th Ave, Hutsonville, IL 62433, (618)563-4456 before 10 PM central. (1/98)

QUALITY RIBS L.L.C. SELLS COMPLETED RIBS FOR SONERAI AIRCRAFT. Contact Great Plains Aircraft or Quality Ribs L.L.C. direct at (602) 892-7189 for a brochure on the company. (2/98)

For Sale: Complete VW intake system, professionally built with a Rajay turbocharger, heads, and Posa carb. \$600. David Fitzjurs, (501)963-6037 after 5 pm CST. (2/98)

For Sale: Sonerai IILT on gear (easily converted to IIL), Trim system, controls & rudder cables in, Fuel tank, pump, and all plumbing included. Built per Monnett to stay light. Project 95% complete. Bubble canopy needed. Panel done, instruments in. Lots of hardware. Spars done. 1 wing 75% finished on steel jig. Junker engine on fuse for cowl fitting. New pickled 1914 VW with all plumbing except carb. New Sterba prop. This is a very nice and complete project. Too much to list. Will consider parting out. Bob Wood - Sheboygan, WI, (920)803-9205 (work), (920)803-9206 (fax), (920)452-4095 (home) (2/98)

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) (2/98)

For Sale-Two Sonerai Projects, 1850 cc VW, four 150 hp inverted Tiger inlines, new Sterba Sonerai prop, stock Subaru EA-81, Sonerai cowlings, canopies, etc., Hatz biplane wings, center section, and fuel tank, Christen Eagle ailerons. Will happily trade or negotiate within sane boundaries. Also have 2 1/2 runway acres on Arizona Airpark, M. Lee Wachs (707)463-0467 (3/98)

For Sale: Sonerai I - Very nice single place, five minute wing fold design, \$3000, one hour south of Oshkosh, (414)626-8726 or (920)533-4379 (4/98)

Wanted: Any Sonerai IIL (S or T) Call (352)628-1027 (2/99)

For Sale: Sonerai IIL, 80% complete, fuselage, control surfaces, and canopy bow

welded, flush-riveted S-wings w/ wing walk, cowl fitted, all VFR instruments, zero-time 1915 cc Great Plains VW engine w/ oil cooler and Elison carb, 5/8" gear w/ hyd. brakes & wheel pants, seats & cushions, I-Com intercom, ELT, fuel tank, BRS chute ordered, flight manual and construction manual, excellent workmanship, Must sell, \$10,000 OBO, call Jerry Kennedy, (405) 733-4932 (4/98)

For Sale: Sonerai IILT, 95% done, needs covering, all parts to finish, 1835 cc reman. VW, prop, instruments and flight controls installed. \$5000 (541)564-8153 (4/98)

Wanted to Buy: Set of wings for Sonerai II, and Sonerai II mid-wing fuselage. Call Tom Hall, 658 S. Abbey Ave., Springfield, MO 65803, (417)862-3837 (4/98)

For Sale: Sonerai IILT, flying condition. Nose gear mount, heavier landing gear, Loran, dual ignition. Needs annual. (919)787-9497 (2/99)

Wanted: Sonerai. Prefer single place Sonerai I. Must be well-crafted, well-cared for, hangared, and in good condition. John Borra, 3327 Willow St., Hays, KS 67601. johnborra@media-net.net, (785)628-0658 (2/99)

For Sale: Sonerai IILT project, on gear, tail surfaces covered, HAPI 1835 w/ Diehl acc. case, alternator, starter, & mag, new Zenith carb, prop & spinner, fuel tank, instruments. Wings assembled exc. ailerons. Canopy & cowl mounted. \$3750. Also, Super Vee prop hub assy and cowl. Loris Mandel, (918)343-0697 (2/99)

For Sale: #5 Brown & Sharpe reamer, used one time. \$25.00. Also, RTN100 tubing notcher, used on one project. \$100. Call Gene at (501)394-3412. (2/99)

For Sale: Sonerai foot step. Professionally milled to plan dimensions. Drilled, threaded, includes mounting tab and bolt. Bob Wood (920)452-4095 (2/99)

For Sale: New HAPI tapered prop hub, \$100; Factory rebuilt German late 1600 case, line-bored .010 under, in the box, \$150; Steel billet counterbalanced crank, standard, like new, in the box, \$200; 1600 VW engine-late block, counterbalanced crank, special cam, valve train, balanced, Force One hub, includes rare straight-cheeked Sonerai I cowl, firewall, engine mount, & S-I plans, \$2800; Tennessee Props 50x33, new, \$100; call Elliot Willoughby, (502)477-2466 (no collects) or write, 2323 Hochstrasser Rd., Fishersville, KY 40023. (2/99)