

# SONERAI

JUL-AUG-SEP 1991

# NEWSLETTER

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Fred Flynn with his Sonerai II at Sun N Fun 1991. He flew his airplane down from Woodbine, NJ for the event. Also on hand this year with their Sonerai's were: Bob Lamb of Merrillville, IN ; Bob Jaeger of Northlake, IL ; Al Bertelmann of Harvey, LA ; Dean McGinnis of Lakeland, FL ; and your's truly Ed Sterba. A Sonerai Dinner was held again this year attended by about 20 enthusiasts. Make plans to be there next year, it's worth the trip!

Welcome to the Summertime / Oshkosh issue of the Sonerai Newsletter. As this is being written we have just had the conjunction of the three planets in the West which must be some sort of sign that The Convention will be a good one. I hope you are all getting some flying time in your Sonerai's or are able to enjoy putting them together without too many summertime distractions.

## Sonerai's at Oshkosh 91

We hope a lot of you can make it to the show for the first weekend this year. If you are flying your Sonerai in, I hope we will be parking in the same spot as usual, just North of the tower. At least taxi in with that in mind. I'll try to be there either Wed. afternoon or most likely Thurs. morning.

We have a Sonerai Builder's Forum on Saturday the 27th at Noon on the back porch of the Homebuilder's Corner on the flight line. If you haven't found it yet, stop by the Sonerai's on the flight line and get directions. This meeting has traditionally been to discuss any signi-

ficant problems that have arisen over the past year. If you have any building problems this is a good time to find out who knows what to do to solve them.

Our Sonerai Dinner is scheduled and confirmed for the same night as the last few years, namely, Monday night the 29th at Butch's Anchor Inn about 7:00 PM. The dinner is individual checks, order off the menu as before. We need an approximate head count by Monday afternoon so try to stop by the Great Plains Aircraft Supply booth in the center display building to get counted. Transportation has been a problem for some people in the past that have flown in, but we usually find some way to get everyone over there and back.

We will be doing the People's Choice Awards again this year for the Best Overall, Best Paint, Best Interior and Most Inovative Sonerai as in the past year. Make them look good for your fellow judges. Final judging must be done by noon on Monday the 29th with all awards

to be presented at the Sonerai Dinner that night. Sorry, the Best Wing Light Installation Award has been eliminated.

### New Sonerai Things

Great Plains Aircraft Supply has a new original design Tee-shirt available for all Sonerai buffs. It is basically a side and top view drawing of the II LS and II LTS. They go for \$ 6.95 plus \$3.00 shipping. See them at Oshkosh or contact Great Plains for colors and sizes.

Also available is the new Sonerai Video showing in flight stuff, engine installation, starting procedures and components available from Great Plains. The length is about 15 minutes and the price is \$ 6.95 plus \$ 3.00 shipping. All acting is strictly professional, no stunt doubles are used, no special effects of any kind. If this were Christmas, we would call this our Stocking Stuffer.

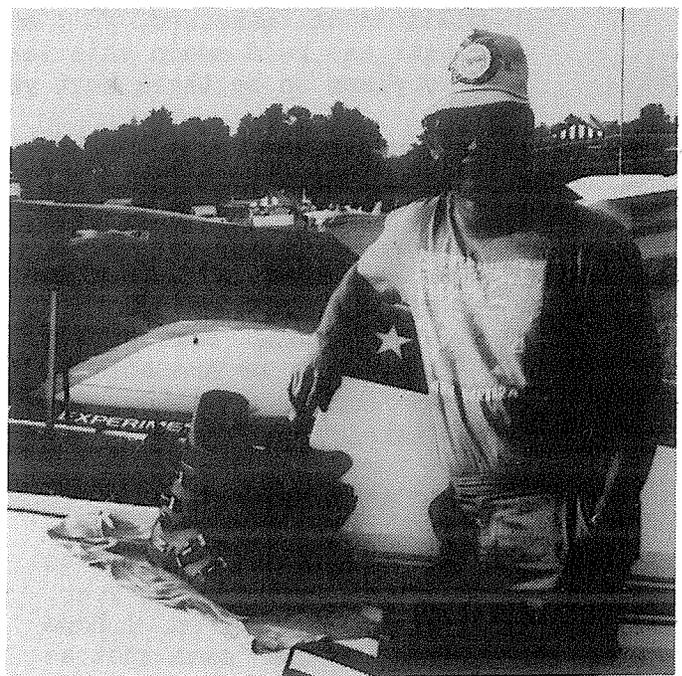
### The Results of the Carb Air Temp Probe

In the last issue of the Sonerai Newsletter I had written about my early adventures with a Radio Shack outside air temperature probe in my Posa carb. Briefly, since a lot of Sonerai people have been running their Posa's without any carb heat I thought it worth while to find out what temps were really occurring inside the carb throat. The first and only results available by the last issue of the newsletter had been run at cold and cool OAT's where we found that there was about a 15 to 20 increase in carb temp over outside air temp. There seemed to be no way to get it to run below freezing in the conditions I normally fly in. So --- that sounded pretty good, but what about flying when it got darn hot out? Were we burning very hot air with the possibility of a loss of power and/or detonation under extreme cases? Well, since Sun n Fun is over and they had record high temperatures in Florida at the time, I have an answer.

Bob Jaeger and I were cruising thru Georgia at about 3500 feet in the middle of the afternoon with an OAT of about 80 to 85 degrees heading into Valdosta, GA and I had a nice stabile Carb Air Temp. of 60 F. Not 20 degrees hotter than the

OAT, but 20 degrees cooler than the OAT. After flying home from the Chapter 153 breakfast this afternoon (June 16th), my boy and I were sitting in 85 degree air and the OAT sat on 66 degrees. Once again we were getting a 20 degree drop in temps going thru the carb. What is going on here? Why do we get a nice healthy rise when the temp is leaning towards icing conditions, and a nice healthy drop when we have too hot conditions?

This is the best I've heard so far.... When it is cold outside we are getting nice warm engine air to keep the carb temps up away from freezing conditions and when it is hot outside then the fuel vaporizing in the carburetor is cooling the probe off. The best of both worlds apparently without having to pay the Piper? How many times has that happened in your life without you getting a little gun shy. Like, when do I have to pay for all this? Anyway, I am open to suggestions about all it and I guess we all just go flying around with our Posa's knowing either they work and we like them or they don't and they are the worst carburetor in the world.



Ski boots at Sun N Fun?? Al Bertelmann shows off just some of the baggage pulled out of Dave Allen's Glasair so Al could get a ride. You can never be too prepared when flying a homebuilt. Yes, it has been below freezing at Sun N Fun but that was back when it was in January and/or April.

## Sun N Fun Number 9

One of these days I think I'll be able to sleep on the way to Sun N Fun and let the old Sonerai find it's way alone. After all these flights down there I still look forward to the trip. This year the navigation was going to be a bit different because of the loran, and I'd have Bob Jaeger to fly down with. Bob had been there in his Sonerai two years ago and felt the time was right to try it again.

We were supposed to rendezvous over Clow Airport south of Chicago since he was leaving out of DuPage Airport and we thought it might be easier not to bother the busy controllers there. That was the plan as they say, but the reality was our missing connections at Clow and meeting up in Indiana instead. Bob had his engine missing on takeoff and had to give it a couple of tries to get a good start. He later felt that it was from an overfull main tank causing our old friend "vent tube syphoning" through the Posa. Meanwhile, since I had started in Wisconsin and spent some time in orbit over Clow, it was time to press on south when he didn't show. The winds would prove to be on the nose for about 19 of our 22 total hours in the air and as it was I was in the air for over 2 1/2 hours to Huntingberg, IN. Bob arrived there about 5 minutes after me which proves how good our comm was going to be in the air for this trip, -- not too darn good.

Never having used the loran on a trip before and having an instruction manual written for people that put worms on hooks ( ie.-- a marine unit ) I got a bit confused over central Indiana when it began to show a heading to Bowling Green, KY of 60 degrees and a ground speed of 600 kts. The 600 kts. sounded pretty good for a small engined Sonerai II, but the 60 degree heading didn't jive with the chart. But then again, for a Mach 1 ground speed, maybe it was worth heading Northeast! The end result is I put my head down in the chart and eventually lurched into Huntingberg to meet up with Bob. Later on I was told that one of the

Great Lakes master stations is located in the central Indiana area and even "real" lorans get confused there. What I really needed to tell "it" was that we were now far enough south to pick up the Southeast chain of stations and it needed to have a "cold start". Once that was done we were all happy again for the rest of the trip.

A curious thing happened in Huntingberg as we were paying our fuel bills. I came out with about my normal 4.1 gal/hr fuel burn, same as always, but Bob came through at about 3.5 gal/hr. Well, the fuel truck must have made a mistake we reckoned but apparently not. Since Bob has a bigger engine, we figured he must just been doing a better job of flying than I was, and we'd even out in the end. But then again maybe not -----?

The DUAT weather looked good for our next leg on through Tennessee and as far as we could go into Georgia, so there we went. The hills between Nashville and Chattanooga were beautiful as usual without much in the way of turbulence and good visibility for a change. The loran was back to it's old 105 to 110 kts. (remember the headwinds?) and we finally found our way into Rome, GA airport about 4:30 in the afternoon. Bob's engine stopped running on landing rollout as they are sometimes known to do, and he got his exercise for the day getting back to the flight line. (Maybe that's how he got such a good fuel burn, -- he pushed it part of the way?) He also mentioned there was a slight miss part of the time but we decided to call it a day and found a room for the night. Once again Bob was able to claim a fantastic piloting effort by coming in with about the same low fuel flow. It gave us something to talk over at dinner.

The next morning's expected fog gave us time to do a little searching for the cause of the miss and gave me time to try to get his engine to burn more gas (Bob wasn't all that hot on spending more money on fuel actually). Well, the miss turned out to be a mag wire that had chafed on the back of his mag box and was grounding out once in a while. That was easily "field repaired" as they say. the fuel burn and stoppage on landing proved

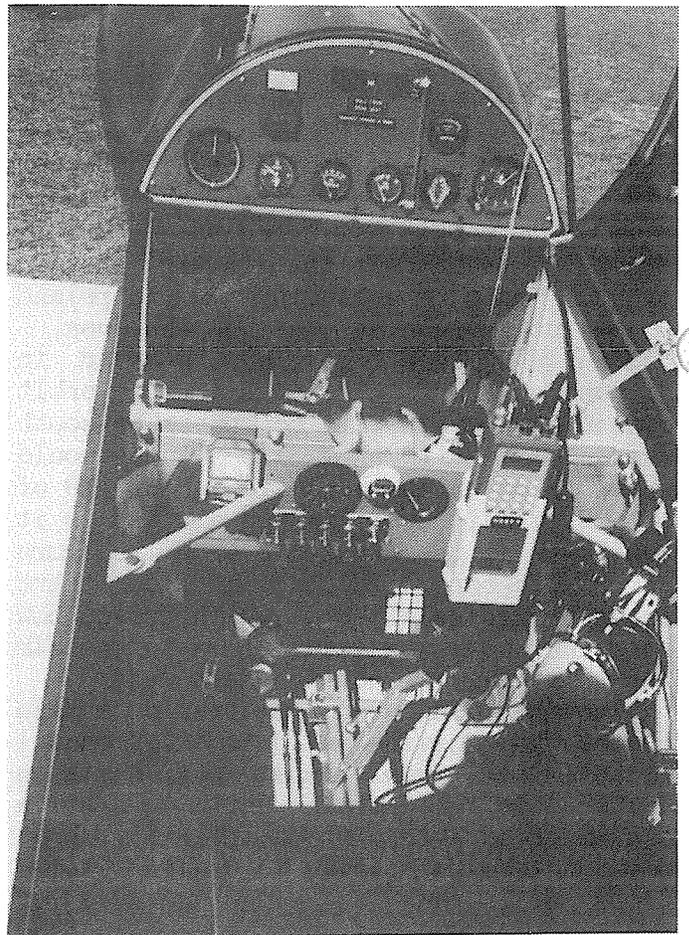
just as easy to find once the bottom cowl came off and the little cap on the Posa was removed. Of course you guessed the answer --- the mixture needle had turned about 45 degrees or so causing a loss of vortex energy at the back of the needle with the resultant erratic fuel flow. We got that locked back in place, too. A subsequent run up and the next leg of the trip showed the results of our digging around.

We had a fuel stop at Valdosta, GA where I embarrassed myself by forgetting to call us in as a flight of two -- with the resulting tower inquiry as to the intentions of the other small airplane following so closely on final. Sorry, Bob! You aren't that easy to ignore, actually. Flight Service didn't make the last leg into Lakeland sound very easy with rain showers located over the route of flight for the last 75 miles or so. Could we fly around them? Maybe, maybe not was the word. Finally, with time running out for reaching Lakeland before dark, we decided to give it a try and get as far as possible.

The rain was where they said it would be and rather nasty looking in spots, but Bob pressed on and I followed tentatively. I tried to tell him I was the "Leader" since I had the loran but he seemed to know where to go anyway. We had about 4 or 5 small rain showers to penetrate but it always proved to be lighter just beyond them until the worst of the storms sat just to the South of the Lakeland Airport. We made the normal entry over Lake Parker along with half the airplanes in the world it seemed and landed about 5 minutes before official sundown. If Bob hadn't been there I probably would have stopped a few miles short but we made it O.K. without getting too uptight. It was a little more exciting than usual to say the least. The lightning strike over Plant City while we were on final -- I can do without. We were told that half the airplanes on the field arrived within about a 4 hour time slot because of the weather.

Bob and I came home separately about a week apart. The weather still factored in the equation as before ( headwinds

anyone? ). My only excitement was knocking the ground wire off the loran while sneaking around Huntsville, AL because of low ceilings and getting erroneous reading again. Head down in the chart for the second time and figuring out which highway is which. The winds at Lake Lawn were about 20 to 25 kts. at 90 degrees for the final landing but after so much time at the stick I felt pretty competent and did all right. Bob bought a loran at the airshow and didn't get his antenna figured out right but he has been that way before and got home O.K. When is Sun N Fun next year?

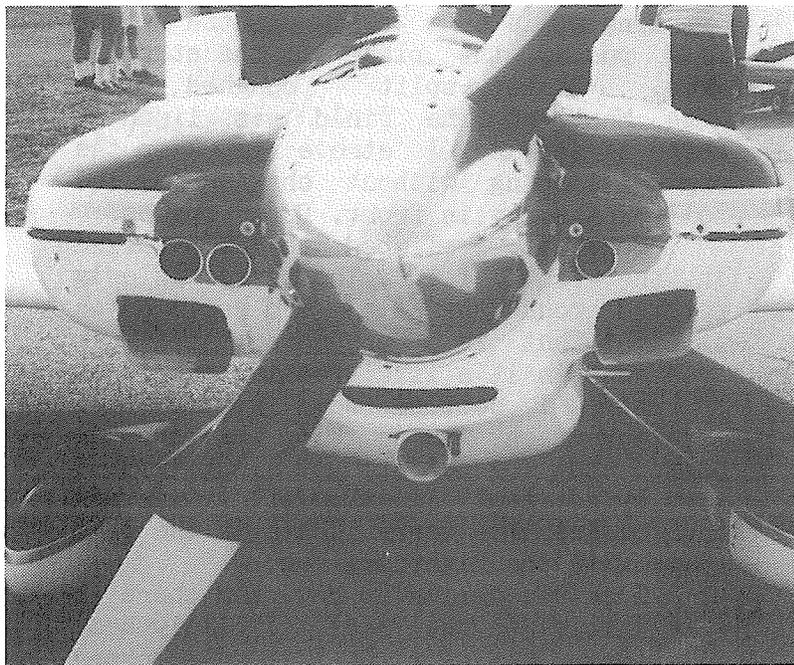


Fred Flynn's cockpit layout. He had to offset the control stick to the rear in order to clear the loran. His compass is mounted in the forward panel, I forgot to ask how well it worked in that location.

Adventures of an Also-Ran  
by Dean Mc Ginnes  
1503 Clairdale Ln.  
Lakeland, FL 33801

It is early January and things look grim. Dave Rawlings who led the Sonerai "Team" to a respectable finish in Sun 60 1990 is "hors de combat" due to "Sporty laying bent and broken in it's hanger. It will be up to me to defend the reputation of the marque against the KR's and that ridiculously fast Tailwind. A new menace has already appeared on the horizon in the shape of the Lightning Bug which was already indicating over 230 on it's 90 hp engine. Not good, not good.

The first attack was procedural. A few letters back and forth between me and the race organizer, Charlie Gray and we now have a VW class and can forget about that super-cheap Lightning Bug. There remained only the KR's to humble. Easy meat. My 153.8 mph speed would not be good enough, however, so steps were put in hand to make my Sonerai IIL "Lickety--Split" run faster. A four-in-to-one exhaust system was fabricated to help scavenge the cylinders better and also to get rid of those four stacks hanging like Spanish Moss under the cowl. The bundle of snakes came together behind the engine and under the mag -- effectively lighting a cheerful blaze under the mag and blocking the airflow to the cowl outlet. The mag was completely shielded by sheet metal to combat the radiant heat and ducting was run to keep a continuous supply of cool air. The airflow blockage was a bit more sticky. I finally fabricated an updraft cooling system complete with cowl flaps. My once simple engine compartment now resembled that of an F-16! All this Iron-mongery required a new intake manifold as the space for the "Y" casting was now taken by the exhaust. A plenum box was fabricated and a new manifold fashioned from handy sink drain pipes. Also, direct air ram was ducted to the Posa underneath the engine. All was ready for testing approximately a month before Sun N Fun.



This is the front of Dean McGinnis' updraft cooling system along with the ram air tube for the Posa. Notice the fuel vent line next to the carb air inlet. This was found to be necessary in order to equalize the ram air pressure into the carb and the fuel tank so that only gravity pressure was at work. The shape of the cylinder air inlet lips on the bottom also proved to be important.

Egad! What have I done? Instead of running faster and cooler, it runs slower and hotter! Much hammering and banging ensued. Things finally began to click at noon on Saturday, 1 1/2 days before the race on Monday. With the addition of scoops on the front, temps stayed "down" to 400-425 at full throttle. The cowls were buttoned up for the last time and some tape fairings covered the butchery on the cowl top. All was ready to vanquish the KR's.

Race day dawned with good weather, and a poor turnout in the VW class. At first I was the only one, and would have to race against the Tailwind and the Lightning Bug. Finally, two KR's entered and my path to glory was assured. One problem that tugged at my consciousness was the fact that one listed his cruise at 185 mph. Probably lying, those plastic guys are a little squirrelly.

I almost didn't get started due to flooding the engine. With Ed Sterba cranking while the rest of the ground crew pushed the plane to the starting grid, "Lickety-split" coughed into life. Most of the field was lined up ahead of me and I strove to keep the engine turning without chewing up the tail of the guy in front. Dodgy brakes.

Once off, I climbed to 1500' pulled in the cowl flaps. The speed slowly rotated around the dial and settled on 160 mph. That is 5 mph more than it has ever gone in its life! Feeling confident at last I settled down to my race strategy which was to keep the throttle pegged and try not to get lost. A BD-5 went by so fast, I thought I was anchored. Not to worry, he's in the same class with the Lightning Bug.

Turn One coming up now, and there is some garble on the radio. I barely hear "I'm down but I'm OK." It was Johnny Murphy in the Lightning Bug. He lost fuel pressure then tagged a cow on landing.

About this time I noticed that something was decidedly wrong with my own airplane! RPM was still right up there at 3800 but the airspeed had fallen to 155 and was dropping. A quick check of the cowling showed that the metal tape was coming loose, turning the fairing into an airbrake! As the speed bled off to 150, I held on doggedly as first one then the other passed me. Last across the finish, I accepted the ignominious fact that I was dead last!

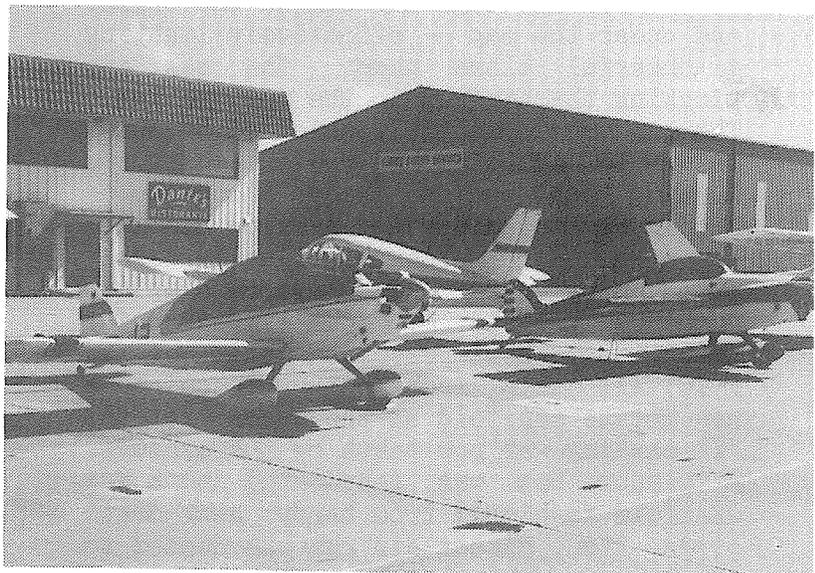
The numbers confirmed it. I had picked up .8 mph on my last year's performance so the original 160 indicated was no joke. I managed to keep up my dignity through the trophy presentation-- a little one for 3rd in VW class, (the fastest KR-2 went 187 mph including doubling back to make a cut pylon!!) and a bigger one for finishing dead last. So much for my racing prowess.

A month later, Charlie Gray sent out the official results, the engraved plaques for the trophies and the prize money, a check fell out of the envelope. I remembered getting \$25 last year for 3rd in class and expected the same. This one was for \$35, a \$10 raise. What's this? Another check? \$40 for finishing last! Let's see, compared with last year that makes a "raise" of \$50 more for doing worse. I'm considering putting that tape back on the airplane.

The End



Dean McGinnis found that the best way to achieve laminar flow into his oil cooler ducts was to place the blast tubes in front of the propeller where they would receive undisturbed airflow. We tried to tell him that the prop had to go around in order for the airplane to move, but he was so keyed up about "cooling flows" that it did no good. He is a true craftsman! The updraft air outlets are visible on top of the cylinder banks. Yes, they are adjustable in flight, but seem to reach a trailing position on their own at speed.



The First Annual Sun N Fun Fly out to Venice, FL to Dante's Restaurant. It was closed. Dean McGinnis and Al Bertelmann.

Notes from Floyd Blaine  
26429 S. New Town Dr.  
Sun Lakes, AZ 85248

Floyd's Sonerai II is highly modified from our stock Sonerai's with a 3/4" thick landing gear and redesigned tail spring assembly. Probably the main difference from most of our airplanes is his use of an Eagle I airfoil with a spar that is 7 5/8" thick versus our 6" thickness on the 64-A212 airfoil. He indicates this gives him a stronger wing as you might expect from the spar depth and allows him to incorporate tubular wing tanks of 6 1/2 gallon capacity in the lightening holes in the ribs. These in turn pump up to a 2 1/2 gallon header tank to feed the engine. There is also a mixer assembly in the aileron control to provide flapperon action giving reflex action to the ailerons for cruise and flaps for landings. He does admit that the complexity of the system probably didn't justify the time involved in making it work.

Floyd's initial flights showed the need for full aft stick in order to maintain level flight. Not knowing the characteristics of the Eagle I airfoil it may be that it requires a greater angle of incidence in order to produce the same lift as the 64-A212 we normally use. He started with the stabilizer in the full up position and ended with it down 7/8" which is just about where I have mine located at this time. Since the leading edge of the stabilizer is 1/4" smaller in diameter than the rear spar of the stabilizer we are starting with a positive angle to the stabilizer when it is full up, and then getting about 1 1/2 degrees negative at the 7/8" down location. As a lot of you know, it may also be necessary to have some weight in the tail area, commonly the gel-cell battery at about 5 lbs. near the rear inspection plate area. So, overall his change to a completely different airfoil didn't make that big a change in the rig of the stabilizer.

Floyd had a bad experience with his original carburetor which was a Posa and ended up with a Revflow from Revmaster. He apparently was using a ram air system to feed the Posa and also using 93 octane no-lead auto fuel. The difficulty other people have found with the ram air to the Posa is that unless your fuel tank vent is positioned to get exactly the same air flow as the carburetor, you can get back pressure in the fuel line causing changing fuel flows with airspeed and even aircraft attitude. In other words, since we start with only about 1/4 to 1/3 PSI fuel pressure statically, and 150 MPH adds 1/2 PSI ram pressure, the flow into the ram air inlet can overcome the very low static fuel pressure and cause fuel starvation. Dean Mc Ginnis found this out the hard way on his project when he switched to ram air. He finally had to relocate the fuel tank vent to a tube tied next to his air ram air inlet to balance out the negative effects. I have heard that the same problem can occur on other low fuel pressure installations on carbs that don't have a float bowl. Floyd stayed with his ram air system with the Revflow and it worked alright.

And Floyd's final message was a warning to anyone using auto fuel in their airplane. The fuel companies have begun selling "oxygenated" fuels in his area made with an additive called MTBE. This ether additive is seen to be a problem by the FAA in his region. Floyd's engine quit on takeoff when using this fuel and the aircraft was all but destroyed. I have been advising against the use of auto gas for quite a while since it is more prone to vaporlocking and we have such low fuel pressure. Add to this the lack of a float bowl in the Posa carb and most people eventually seem to have a problem. I know I did about 6 years ago and haven't used it since.

We had a note in a previous newsletter about using a Gates 24024 for your intake manifold and carburetor attachment with the Posa. Steve Bennett reports that in the latest edition of Gates hose catalog, this is identified as a radiator hose, not to be used in fuels. The proper material is Gates 28738 with an I.D. of 1 1/2" and an O.D. of 2". This will be a tight fit but should work. If you would like to give it a try, contact Great Plains at their St. Charles address, it's in stock.

Canopy Latches

This is pretty old stuff, but apparently we are still getting reports of canopies opening in flight, usually on takeoff when you are already pretty busy. Quite a while ago, Fred Keip had such an experience and related his method of providing a safety catch system similar to that on a car hood. It can open just an inch or so then stop. On the ground you would then slip your fingers in and release the mechanism. A great idea. Otherwise, please make some other devise to keep your canopy locking bar from moving back in flight. Mine is a little arm that is thrown over the latch bar so it can't move on it's own. And may I also recommend a pre-flight checklist that includes "canopy latched and locked". I've got one and use it. So far, so good.

Another Small Item : Throttles

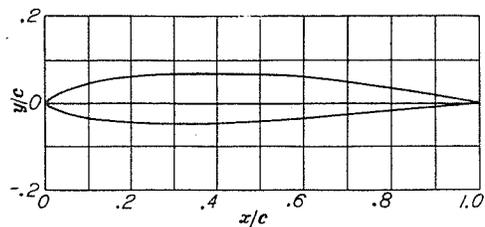
Those of you finishing up the engine controls on your new Sonerai's: may I recommend making a mechanism that can be used to control the friction on your throttle quadrant. There is nothing worse on a cross-country flight than being unable to let go of the throttle while trying to turn charts, comb your hair, etc. I used a large brass washer next to the control arm and then cotter pinned the pivot bolt to the welded bushing so that the AN 365 nut, holding the arm on, can be tightened to control friction. I don't think they make a wing nut with fine threads that is self locking, but something like that would be handy. I'm sure some of you will come up with clever arrangements.

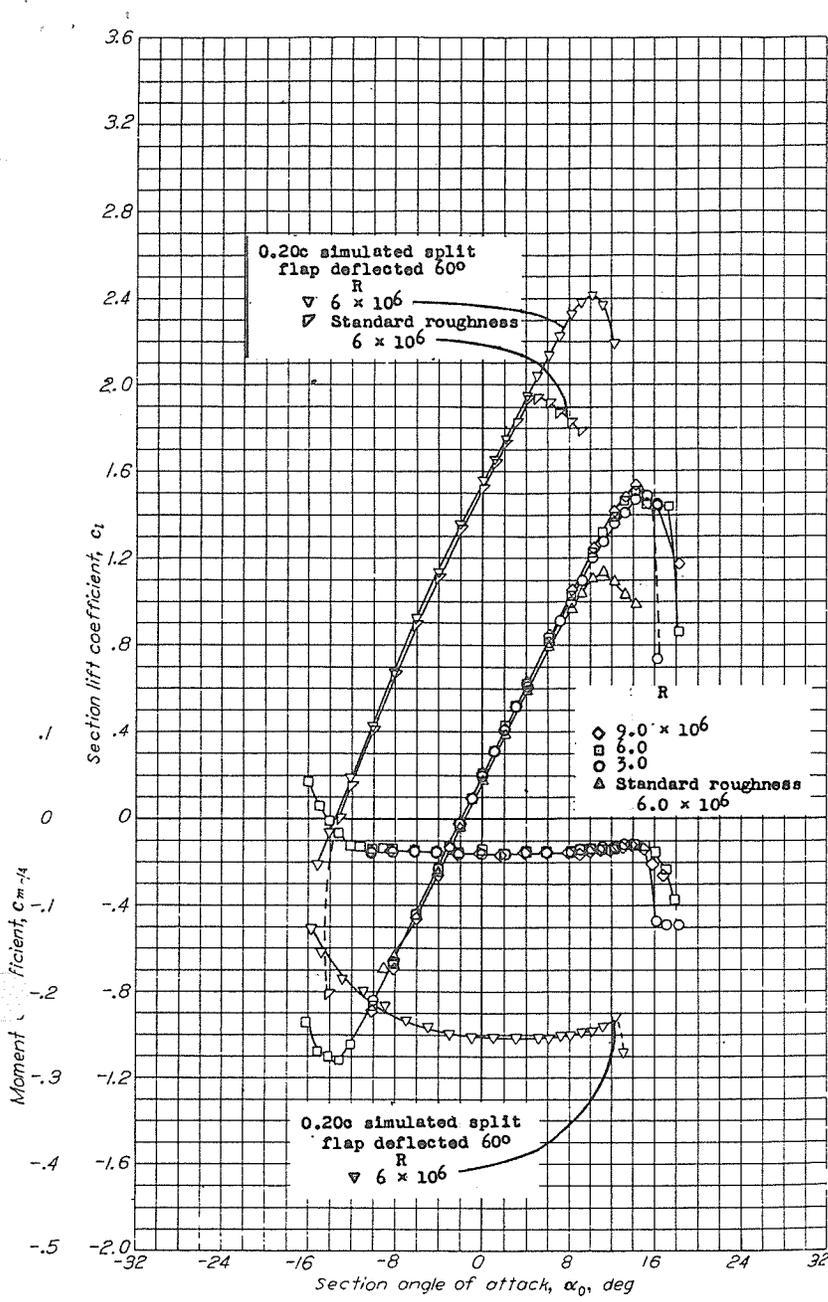
A number of new builders have inquired about the airfoil used on our Sonerai's. It's the one up above. This prompted me to get out my copy of "Theory of Wing Sections". I had one time plotted our airplanes Coeff. of Lift for a class project and thought I'd see how it stilled worked.  $L = 1/2 \rho V^2 S C_L$  is the formula to use, where L is lift in lbs. (gross wt.) -- S is square feet of wing area (84 for Son. II) -- V is velocity in ft/sec (ex. 60 mph is 88 ft/sec.) --  $\rho$  is actually rho the mass density of air (.00252 slug/ft<sup>3</sup>) and  $C_L$  is coeff. of lift (from the vertical scale on chart). We can change this for our purposes to find the coeff. of lift needed to lift our weight at a certain speed. So --

$$C_L = \frac{L}{1/2 \rho V^2 S}$$

or more simply ---  $C_L = \frac{L}{V^2 \times .106}$

If you solve it for a speed of 60 mph at 925 lbs. gross weight you get a coeff. of lift needed of 1.126. Taking this to the chart you find that this coeff. of lift needs an angle of attack of about 10 degrees. (Go across from the vertical scale to the line with the squares and circles on it, then down to the bottom scale.) If you solve for 130 mph at 925 lbs. you get a coeff. of lift needed of .240 giving an angle of attack needed of 0 degrees. What a coincidence! Just about our cruise speed. Try finding the stall speed at 925 lbs. It's not too far off.





\*\*\*\*\* WANT ADS \*\*\*\*\*

For Sale -- Sonerai IILS 2180 Monnett Conv., 55 hrs.TT, Exc. workmanship, needs prop, canopy, minor tail damage. \$5500.00  
Larry Hurley 2153 Foxhill Dr.Apt 11  
Grand Blanc, MI 48439 313-695-0414

For Sale -- Sonerai II midwing, taildragger, Hapi 1834 dual ign., Ellison T-Body, Sterba prop, Narco 830, Loran -- 360 TT Asking \$6000.00 or trade on T-Craft etc.  
Fred Kugel 810 Kensington  
Celina, OH 45822 419-586-4956 ev.

For Sale -- Sonerai II Mid-wing 1700 VW Alt., Strobe and Nav. 60 hrs TT  
Ron Pfeil W 199 N11525 Rosewood  
Germantown, WI 53022  
414-628-4716

For Sale -- Sonerai II LT 95% complete Hapi 1834 dual ign., Great Am. Prop, Trade up or down f/ flying airplane \$ 6500 or best offer  
Roy Johnson 26 Raleigh Rd.  
Framingham, MA 01701

For Sale -- Sonerai II N176EM TTA 81 hrs TTE 12 hrs. Excellent condition 1700 cc Monnett conv. Warnke adj. prop, Genave 100 radio, 519 lbs. empty. Has Monnett spar beef-up done. Asking \$6500.00  
Tom Kolb 216-257-7529  
Ed Fisher 216-428-7947 after 6 PM

For Sale -- Sonerai IILT almost ready to fly, will finish and sell with special roll-on trailer, or trade for something slower Up or Down, 2 place. My equity \$8000.00 Claude Icard P.O.Box 274  
Rutherford College, NC 28671  
704-874-2033

For Sale -- Sonerai II midwing 1835, wing mod. done, Genave Nav-Com, red with white trim, featured April 1983 Sport Aviation.  
Minneapolis, Minn.  
612-753-3245

For Sale -- Sonerai IIL Kit - all welding done, 50 % complete, 1900 Limbach engine and access. \$ 6000.00 or best offer  
303-666-5494

For Sale -- Sonerai I Project: Welded fuselage-tail-controls--primed-- spars, caps, ribs and sheet stock, some hardware. Manuals and video. \$2000.00  
Bob Schank 313-697-7057 home

For Sale -- Sonerai IILTS project, fuse. welded, have rest of kit to finish aircraft including Stits material, two fuel tanks, no engine \$ 3000.00  
Pete Fidler 708-526-3022

For Sale -- Sonerai II midwing, HAPI 1834 dual ign., starter, heater, stab. trim, under 100 hrs. excellent cond., trailerable asking \$ 8500.00  
Dave Zeidler 516-868-8827  
3490 Stevens Rd Baldwin, NY 11510

For Sale -- Sonerai IIL Kit-- all welding done, 50% completed. \$1500 + Limbach engine and accessories. Trade?  
303-666-5494

Wanted -- Monnett X-Casting  
Wally Beckett 105 Maringouin Ln.  
Mandeville, LA 70448

For Sale -- Parting out Sonerai II with 220 TT airf. & eng.-- incl. HAPI 1834 w. starter and alt., transponder, STS Loran, Ellison carb, Hydraulic brakes, STS handheld and headset, two props, & more.  
Floyd Blaine 1127 Taylor Ave.  
Godfrey, IL 62035 618-466-8996

For Sale -- Hapi Magnum engine 82 HP, hydraulics, cooler, dual Electronic Ign, 35 amp alt., Supercarb, High torque starter, Diehl case. 15 hrs TT asking \$ 4800 Also, BRS-4 ballistic parachute for Sonerai II \$ 1700  
Ray Macaro  
124 Longmeadow Brandon, MS 39042  
601-825-8067 evenings

For Sale -- New Sonerai Spinner \$30.00  
Tail spring \$30.00, Slightly bent 1/2" landing gear \$50.00, axles-wheels- mech. brakes \$50.00  
Gary Eichhorn 4680 Glenridge Tr.  
Stuart, FL 34997 407-287-3912

Wanted -- set of Sonerai I wings, either complete or as kit (damaged??)  
Mike Kellems P.O. Box 507  
Burkesville, Ky 42717 502-864-5658

# Sonerai News

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SONERAI NEWSLETTER

C/O Ed Sterba

412 S. 5th

Delavan, WI 53115

414-728-1367

## To:

FRED KEIF    FD 90 FD 91  
11428 SIX MILE RD  
FRANKSVILLE WI 53126

NOTICE: FLOYD BLAINE'S ARTICLE  
WAS ACTUALLY WRITTEN BY ----  
JOE HILLEBRAND OF SUN LAKES, AZ 85248

