



Mark and Susan Elyea of Garden Prairie, IL with their Best Overall Sonerai award. Their aircraft also garnered the Best Paint Job for it's beautiful workmanship.

Other winners included:

Best Interior ----- Dennis Brannon
Most Innovative ---- Bob Scannell
Longest Distance -- Derrick Mackie (Ontario)
Early Bird ----- Bob Jaeger

Forums/ Dinners/ Sessions

Welcome to the Oct issue of the Sonerai Newsletter. This has always been the Oshkosh issue and this year is no exception. We had 16 Sonerai's to the 1992 convention which is about our best since 1988 when we had 18. The weather was good in Oshkosh most of the week but a front made it difficult for several of our "regulars" to get there from the South. I ended up flying in Wednesday late afternoon and was glad of the decision after a rainy Thursday closed off most of the Wis./Ill. border area for a while. Thanks to the those of you that were able to persist and get through.

Those with Sonerai's in attendance were:

Bob Scannell	Bill Nelson
Dave Patterson	Mike Huff
Derrick Mackie	Tim Buechle
Fred Keip	Dale Severs
Lica Doane	Ed Sterba
Mark Elyea	Bob Jaeger
Jim Smith	Dennis Brannon
Jim Phillips	Lou Novak

We had our Sonerai Forums as scheduled on Saturday morning on the back porch of Homebuilder's Corner and then Monday afternoon in the Tents. Attendance was good at both as always. For an "old, low tech" aircraft we seem to be holding our own on interest. We should be able to have the "back porch" on Saturday again next year but it's too soon to give a date for the "Tent" forum.

This years Sonerai dinner was attended by about 110 devotees and a few stragglers looking for a good time. "Camp followers" might be a better term, but they were easy go get along with. John and Betty Monnett were our guests of honor again this year. John's thought to us all dealt with his flight in a P-51 and the realization that we really didn't have anything to be envious of when it came to the thrill of the "first flight". I personally have been thrilled several times by my Sonerai, even after that first flight. We are scheduled for Butch's again next year on Monday night. Make your plans now!!

Re-Up for 1993

It's that time of year again to sign up for 1993. Sorry, limited scholarships only are available due to the Federal Budget Crunch. Cost is \$12.00 as in the past. We'll have another Re-Up notice go out Dec. 1, 92 so most of you can wait to keep earning interest on your money until then. The Sonerai N.L. floppy disc is \$10.00 also. I have been gradually getting a second disc with the last year's N.L. on it. (Oct.91 to present?) but will probably not put that out for a while. The second one won't be an additional \$10.00. I haven't figured out how to work them both yet. Refills ??

--- Yes, it could happen ---

Let's see, how do we get into this one? What would happen if you connected up your pitot static system slightly wrong? Let's say you forgot to hook the airspeed indicator into the static line. Well, I don't use the fuselage wing fold tube for my static system as shown on the plans, I just have a plastic plug in the back of each instrument with a small hole drilled in it to slowly let cabin air in and out. It has worked fairly well for these past years other than a little bounce in rough air. It can be lived with.

Now, what would happen if, in hooking up all those complicated gauges we tend to install in our Sonerai's, you go the altimeter connected into the pitot system instead of the static system??? It could happen, you know. What would your altimeter read in various flight conditions?

At the start of the takeoff run it should read normal field elevation. But, as you accelerate down the runway the pitot air getting rammed into the altimeter case would tend to collapse the sealed aneroid capsule that is the heart of the instrument and make the altitude read low. It would be getting extra pressure applied to it and make the instrument think it was at a lower altitude. How low? Not much yet.

As you are climbing out at 80 mph the altimeter would now start to wind up in altitude but from the artificially low reading it gave before you left the runway. O.K.? You level off at 2000 MSL and go to a cruise speed of 125 mph. What

is your actual altitude, or how far off is the altimeter? Ah, the big question.

Figuring out how far off the altimeter is isn't all that hard if you know what pressure you are getting out of your pitot tube. My little aircraft instrument book shows that 125 mph is equal in ram air to .58 in. of HG. If we use the rule of thumb of 1 in. of HG per 1000 ft. of altitude, then we would have an error of 580 ft. approximately. But, is the altimeter reading higher or lower than our actual altitude?? Since the aneroid capsule is a sealed unit and the static system (in this instance, pitot system) is actually just feeding air into the case, the pitot air will cause this case air to be .58 in. of HG or 580 ft. higher in pressure. So, the 2000 MSL the altimeter is showing is 580 feet higher than you really are. (You may have to follow the logic through one more time.) You are at 1400 MSL not 2000 MSL. Not a good situation under certain circumstances.

But wouldn't you notice the problem on takeoff? Well, 80 mph is about 200 ft. of error, and you tend to be a little busy on takeoff. The airspeed gets my attention more than the altimeter. This could happen.

A Note From Jim Smith
8800 E. Harry Apt 901
Wichita, KS 67207

Just a little note to let you and the other Sonerai Jockeys know that the funny yellow one made it back to Wichita just fine. Just a few rounded off numbers for the trip:

1300 miles round trip
6.7 hrs to the Big "O"
5.7 hrs to Wichita
40 gals. of fuel
32 miles per gallon
\$ 60 for fuel
105 mph avg. including T.O./climb/landing
1700 cc engine @ 3200 RPM

Had a great time and really enjoyed meeting all the Sonerai people (those that flew in and those that didn't).

P.S. Built and installed your cylinder head cooling box last weekend, haven't flown it yet.

Just One Backfire

Mica Doane flew his Sonerai II into Oshkosh this year from Oklahoma and appeared to have a pretty good time for the week. He had a little tinkling sound from the back of the engine compartment that I suspected was the magnet caps on his alternator. So he pulled off the top cowl and we all listened and I was convinced that was what it was. (When he gets home it apparently wasn't after all.) Well, you can't be right all the time.

So on Wednesday it was time for him to go home. Except that after a few minutes in the air, the engine began to run rough and after a short while it gave out a good backfire and then began to run very rough. He was able to get it back to Oshkosh in one piece and took it over to the aircraft maintenance and repair area on the south end of the field. One of the intake rubbers up on the top manifold had been blown open (off the casting) so he did a good job of fastening them both securely in place with safety wire wraps. This done, he did a careful inspection of the whole engine installation, checked the Posa for a turned needle, checked for water in the fuel and a number of other things. A run up showed no problem so a decision was made to try another flight.

This time there was no backfire but the engine ran rough enough for him to return to the field again which is where I came down to give it a look. Mica has dual ignition on his engine - a 4016 Slick and a 009 distributor up front with an optical point replacement kit. My first thought was the 4016 since I had one start to miss and eventually end up crossfiring itself into a good backfire on takeoff years ago on my airplane. Every time I said "miss" however, we always came back to the dual ignition -- how could it let an ignition problem develop? But, if there was a crossfire coming from the magneto it didn't really matter if the distributor was doing its job or not. You still would get the improper ignition causing the backfire. In this case it was strong enough to blow

the intake manifold open which of course really caused some rough engine operation. Even his foam air filter disappeared somewhere over Wisconsin.

One of the things we found while looking the problem over was some water in the fuel drained out of the gascolator. There also seemed to be a lack of fuel flow out of the fuel quickdrain. This was remedied by adjusting his fuel pressure regulator a bit and then doing an engine runup to get the mixture right.

Well, I had to go home on Thursday and Mica left on Friday with a friend flying his wing. After draining out all the fuel and refilling with new stuff, the end result is the engine ran fine all the way home. Was the problem fully solved? The change of fuel seemed to do the trick. A shot of water into the carb would tend to make the burnable mixture very lean possibly causing the backfire, but only time will tell on this one for sure.

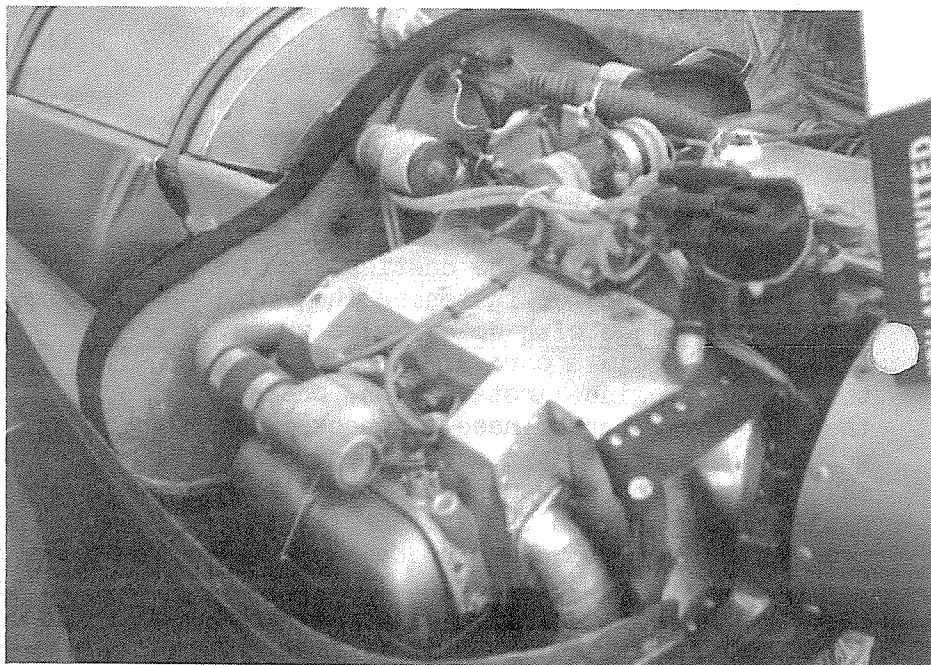
Tri-Gear Nose Bushings

A number of people have asked about the rubber bushings or donuts to be used in the Tri-gear nose strut. This came up at Oshkosh during our Sonerai Club Forum at the Homebuilders Corner. I didn't know the answer but as usual several other builders did. Suggestions ranged from printing supply companies to companies that make dies for metal stamping/forming. I found that the Kindt-Collins Company in Milwaukee or Cleveland sells replacement rubber rollers for sanding equipment in 2 1/2 or 3" O.D.s with a 3/4" I.D. in a length of 6" for between \$18.00 to \$25.00. It sounds like you would get more than a year's supply from one length. It would need to be cut to the length needed and the center hole increased, but the diameter would be right on. Any other suggestions would be appreciated.



Mica Doane
leaving for
Ontario, CAN

Mica's Engine
Baffling
Method



John Atkinson's
Sonerai Cockpit
First Sonerai GPS ?

Mag coils and Plug Gaps??

One of our most esteemed Sonerai pilots and magneto experts decided to go the automobile spark plug route this summer just prior to Oshkosh. He recommended using very high quality spark plug wires and possibly resistor-type plugs to help with radio noise. This is the path I still plan to go this Fall when I find the time and a spare distributor cap.

Anyway, the new plug leads were made up using these good components and new VW spark plugs were purchased. Now, the spark plug gap recommended by VW is .024" to .028" for the battery-coil ignition system used on the car. The decision was made to leave the plugs at that gap and give the wiring harness and plugs a test run on the magneto bench. The larger than normal plug gap should make the spark nice and hot for better firing purposes. (Remember, our mags normally like .016" to .019" gap).

Well, this was done and the sparks were happily jumping around and the magneto hummed it's normal thing for about 20 minutes when the action came to a sudden stop! It seems that the coil of the magneto had suffered heart failure and quit. It was also abnormally hot. The reason was deemed to be the additional load put on the coil by asking it to produce a hotter, higher voltage spark than normal to jump the larger than normal gap.

This seems to be the case with my magnetos over the years although not to the final extent suffered by this coil. Whenever my Sonerai's spark plug gap got up into the .025" range, I would have a good chance of a solid miss developing. The higher than normal compression ratio of my engine (9 to 1 compared to the car's 7.5 to 1 approx.) made the mag put out a higher energy level in order to bridge the larger gap.

How can you make life easier for your magneto? Well, take it out to dinner at least once every two weeks, keep it cool with nice blast tubes and keep the plug gaps where they belong for a magneto regardless of the type of plugs.

A Note from Bob Baird
451 Pence Rd. Sp #7
Yakima, WA 98908

I finally got Sonerai II LS airborne after too many years of great times building and unbuilding from the firewall forward to fit the C-90 engine. (Greatly modified cowl.) But it still looks like a Sonerai.

It flies with slight back stick pressure but I have a trim tab for help. The rudder is effective from the runway up and needs careful use. Thought at first I may not have had enough pitch but it will turn 2500 RPM on T.O. and show 1000 FPM on a 90 degree day at 1766 foot elevation, and goes real well.

I told you before that I made adjustable toe brakes for the "Go kart" type and so far are not too bad. They will hold 1700 RPM for the mag check. Sooner or later I'll have the real things. (Hydraulics)

Another worthwhile change was to put Oil-lite bearings in the aileron assembly instead of the tube in a tube arrangement.

If you want I can send pictures-- so far I haven't trimmed the airplane, it just has the three coats of Stits Corvette Grey which is hard to see against the sky.

Won't make Oshkosh this year so have a great time. Sonerai II LS N435 FS

Ed's comments -- Yes Bob, it would be nice to see pictures when you get your final paint scheme installed. One comment though -- this "mag check" thing you talk about, -- doesn't the engine just quit when you shut the mag off. I heard in the old days when people used to have dual ignition that it was some sort of ritual, -- but I have never seen it done for a long time. Maybe if you get to Oshkosh next year you can show us how it is done. Just for posterity, you know.

The following was received from John Giordano at 6916 Brentwood Dr. NE Cedar Rapids, IA 52402. I'm not sure what the moral of this story is either other than the fact that it pays to let your fingers do the walking?

I recently had a problem with my Sonerai that dogged me for weeks. My experience might save you a lot of trouble.

N2EX has always started faithfully (190 hours now), so I was a bit perturbed when it wouldn't start one beautiful evening when I wanted to go flying in the worst way. I cranked and cranked until the battery wore down (I have an electric starter), then charged it and cranked some more.

The next evening was a repeat of the first. This was getting frustrating.

On Saturday morning I launched into the fuel system, thinking perhaps I got some bad fuel, as our airport tank was beginning to get down to the dregs. Sure enough, the gascolator produced some water and grit, so I took the tank out, flushed all the lines, drove to another airport for fresh fuel, and put it all back together--even the cowling. I was absolutely sure I'd found the problem, but the universe wasn't through with me yet. You guessed it.

After missing a Saturday evening chapter fly-in and a breakfast on Sunday, I was ready to sell the airplane for scrap.

On Monday evening, I took the fuel tank out again in order to get at the magneto. I found a build-up on one side of the points. Ah hah! This was surely the problem! A mechanic friend replaced the points as well as the rotor assembly. He said the brass contact was a bit loose. (I didn't tell him I'd once turned the prop while a timing pin was plugged in the back of the mag.)

I put the airplane all back together and tried to start it. No dice. If anything it was even worse. It wouldn't even begin to fire.

The next day I took the plugs out, cleaned off some grime and lead, and checked the spark at each. They were all firing. But I **finally** got it to start after grinding away awhile. It flew just great; I figured the problem was a combination of dirty plugs and the magneto points.

The universe still wasn't finished dicking with me yet. During that flight I landed at another airport several miles away. When I tried to start to return home, guess what? I borrowed a battery charger and ground away for hours to no avail. I tied the Sonerai down outside and walked six miles home in utter frustration.

The next day it rained all day on my airplane. As we're in the midst of a severe drought in eastern Iowa, and it hasn't rained in 2 1/2 months, this was too much.

It was then I called your newsletter editor. Check the plugs, Ed said. Sure, I responded politely. I already knew the plugs were firing, so that advice didn't register as a major item.

Just to humor Ed, though, I checked the plug gaps and found most of them in the .022 range. Normal gap is .016 to .019. Mike the mechanic was watching, of course, and shook his head. "I figured you'd have enough sense to have the right gap," he said. "I didn't want to insult your intelligence the other night." Mike cleaned the plugs with his super-duper plug blaster and said he even checked the plugs under compression.

Why do you have to check the plugs under compression?," I asked. He looked at me as if I were a complete imbecile and explained that a plug might fire OK outside the cylinder but fail when it's under compression.

The Sonerai started on the second blade just like it always did and hasn't burped once since. There's a moral to this story somewhere, but I'm having too much fun flying right now to think about it.

JUNE 11, 71

WEIGHT AND BALANCE FORM

Aircraft Name SONERAI II Serial # 1650 Registration# N 89 ME
Owner's Name MARK ELYEA
Address 6536 Prairie St. City Garden Prairie State IL Zip 61038 (P.O. Box 81)
Datum 100" Forward of wing leveling Top Fuselage Longeron
EMPTY WEIGHT CALCULATIONS (First subtract oil, if any)

ITEM	Scale Reading	Tare	Net Weight	Arm (inches)	Moment (in. lbs)
Left Wheel	252	1	252	98.25	24759
Right Wheel	249	1	248	98.25	24360
Auxiliary Wheel	30		30	264.5	7935
Less Oil			-5	60.5	-302.5
Fixed Ballast					
Empty Weight			525	Total Moment	56757.5

EMPTY WEIGHT C.G. LOCATION: 108.11 inches

Empty weight c.g. = $\frac{\text{Total moment}}{\text{Empty weight}} = \frac{56757.5}{525} = 108.11$ inches

EQUIPMENT INSTALLED AT TIME OF WEIGHING:

Item	Type	Weight	Arm	Moment
Wheel Pairing	20mm x 20mm (2)		98.25	
Spinner	20mm x 20mm	46.5		
ELT	ELT 102A	12.00	103	1936
2 BATTERIES	MOTORCYCLE	10	146	1460

FORWARD AND REARWARD C.G. EXTREMES

Most forward C.G. loading

Item	Weight	Arm	Moment
A/C Empty weight	525		56757.5
Oil	90	60.5	5445
Pilot	134	120.00	16080
Passenger	230	110	25300
Fuel	60	84	5040
Baggage			
Totals	919		99964

Forward C.G. 109.1 inches

CG = $\frac{\text{Total Moments}}{\text{Total Weight}}$

C.G. LIMITS: Forward limit is 108" in 15% Rearward limit is 116" in 29%

MAXIMUM LOADING:

Pilot & Passenger (with chutes)	315	LBS.
Baggage, maximum	14	LBS.
Fuel, maximum	60	LBS.
Total	392	LBS.

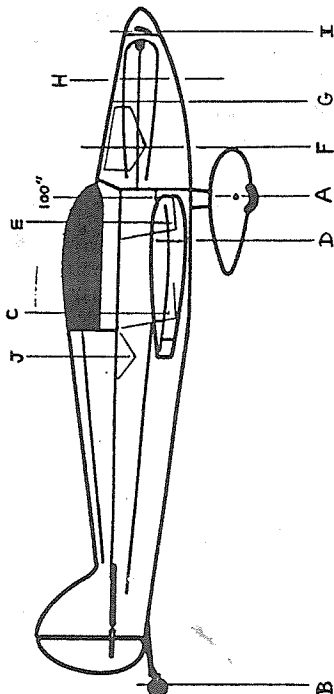
MAXIMUM ALLOWABLE WEIGHT IS: 925 LBS.

COCKPIT PLACARDS: Required only if weight limitations are necessary.

FUEL: 6 LBS/GAL.

OIL: 7.5 LBS/GAL. — 1.875 LBS/QT.

0" DATUM



SONERAI II L, N89ME WEIGHT & BALANCE DATA		
STATIONS	ARM	STATIONS ARM
A: MAIN LANDING GEAR	98.25 "	I: SPINNER OR PROPELLER 46.5 "
B: TAIL WHEEL	264.5 "	J: BAGGAGE SLING (9" BEHIND REAR SEAT TUBE) 154.5 "
C: REAR (PILOT) SEAT	134 "	
D: FRONT OF MAIN SPAR	116 "	
E: FRONT (PASS.) SEAT	110 "	
F: @ OF FUEL, 11 GAL. CAP.	84 "	
G: FIREWALL	68.5 "	
H: @ OF ENGINE	60.5 "	

LEVEL: TOP FUSELAGE LONGERON

C.G. LIMITS: FORWARD IS 108" (15% OF WING) REARWARD IS 116" (29% OF WING)

LOAD FACTOR: STATIC TESTED TO 9G+ AND 6G- AT 750 LBS. GROSS

Weights and Balances

I thought we had gone through this sort of thing (Wt. and Bal.) in the Newsletter before. Even though we didn't, there is enough talk about the Type 4 engine to warrant a look in that direction anyway. Mark Elyea gave me copies of his weight and balance sheets at Oshkosh this year noting that he put the leading edge of the wing at sta. 100" to make all the numbers come out positive. I didn't do it this way so my fuel, oil and passenger weights require a little more thought (negative numbers). Mark's empty weight C.G. came in at 8" from the leading edge, mine came out 7" back. Mine however, was before I had radios, baggage tray, wheel pants and a few other things. On Mark's most rearward calculation, he had a 90 lb pass. and 40 lb of baggage. If you left off the passenger but kept the 40 lb baggage it would put you at 16" aft of the leading edge, which might be a handful, so that sort of explains the use of the forward seat for baggage in a lot of Sonerai's on long XC flights.

Now, what about that Type 4 engine in your Sonerai II? The word I get from Great Plains is that the Type 4 weighs in at 30 lbs more than an 1834 cc. But you may have to be a bit careful about the total weight if you go from a bare bones Monnett Electro-X casting to the Diehl Supercase with flywheel and starter. They make the difference almost 45 lbs. more than simple Monnett conversion. Adding 30 lbs. at the engine station moves the C.G. about 1.5" forward while 45 lbs. makes it 2.2" forward.

Since Mark and I both come in with a Fwd. C.G. loading at 9" from the leading edge, either weight would put us forward of the 8" forward limit. It would take about 7.5 lbs. of weight in the tail to balance the 30 lbs. in the nose or about 11 lbs. to balance the 45 lbs. addition. So now the 30 lbs. becomes 37.5 lb and the 45 lbs. becomes 56 lbs. Well, you wanted to go to the larger engine to carry more weight or climb better, but there is a price to pay as always.

Trip the Flow ???

I had a talk with Buzz Lauritzen at Oshkosh last month about his propeller. Buzz flies an RV-4 150 hp that is a past Oshkosh Grand Champion. He had occasion to remove and refinish his propeller (not one of mine) to get it looking good for the Convention and in the process used his normal Centauri paint to put an 8" band of color on the tips and then flat black on the pilot's side of the blades. Since this prop has the urethane leading edge material like many props these days, he decided to mask that area off since rain tends to eat the paint away quickly any ways. The paint came out to his normal good quality.

The first flight after returning the aircraft to service showed a problem however. His propeller now had noticeable vibration, the maximum RPM was off several hundred and the top speed dropped over 20 mph!! This all seemed to occur from the rework of the propeller since nothing else was done. His understanding of the problem caused him to immediately take fine abrasive to the paint edge left from the masked off leading edge and work the airfoil back into contour. Once the paint edge was faired in, his performance returned to it's usual specifications.

This example seems extreme in it's results but other people have commented on a performance change from propeller edge tape (Harry Fenton for one). We all remember the Q-2 article in Sport Aviation a few years back that had the aircraft staggering into the air from the paint striping running from fuselage to wing tip. Maybe it is a good idea to keep that in mind when playing with the critical first 30% of our airfoils.

Gary Eichorn of 4680 S.E. Glenridge Tr. Stuart, FL 34997 would like to find a source for Stainless Steel exhaust pipe and flanges to weld up some exhaust pipes for his Sonerai. Any Ideas? 407-287-3912

***** ** WANT ADS ** *****

For Sale -- Sonerai II N176EM TTA 81 hrs
TTK 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 I Project: Welded
fuselage-tail-controls--primed-- spars,
caps, ribs and sheet stock, some hardware.
Manuals and video. \$1700.00

Bob Schank 313-697-7057 home

Wanted -- Aerospace Propulsion Power-
plants Book 4th Ed. Cargnino and Korvinen
---or let me know where to get one.

Bob 313-697-7057

For Sale -- Canopy for Sonerai II, bronze
standard size \$165.00 + ship

Bill Rossman 1754 Parkview Cr.

Palmyra, WI 53156 414-495-4370

For Sale -- Sonerai II 1850 Monnett conv.
427 hrs. TT, 35 hrs. on top OH, wing mod.
Genave radio, Sterba prop, asking \$7000.00

James Mc Dougall 13950 Oxnard St.

Van Nuys, CA 91401 818-782-9031

For Sale -- Sonerai II L 170 TT, 20 on
new engine, 720 Comm, Loran, excellent
workmanship Asking \$10,000.00 firm

Dale Severs 221 Southridge Dr.
Gurnee, IL 60031

Wanted -- Sonerai II Stand. or Stretch
Finished or project

Mike Agin 614-872-4201

For Sale -- parting out Sonerai II LT
airframe repairable, some wing damage,
HAPI 1834 w/ starter, with trailer
asking \$2000.00

Jim Poole Box 2483

Boone, NC 28607 704-963-4091

For Sale -- Sonerai II midwing 177 hr.
TTAE, new -- tires, tailwheel spring,
paint and fabric. Must sell \$6000 OBO

513-378-3040 after 4 PM

Wanted -- HAPI accessory case, preferably
with starter and alternator. Will
consider complete engine. Have Monnett X
casting and Posa carb for sale. Looking
for used Ellison throttle body.

Bill Essenberg 608-637-2571 days
608-637-2663 eve.

For Sale -- Sonerai II 1834 HAPI 100 TTAF
with S-wing, folding wings, dual ign.,
starter, gen. Health forces sale. Asking
\$6000. Dave Zeidler 516-868-8827

For Sale -- HAPI 55 hp 70 hr. TT POSA,
hyd. lifters, starter, stub exh, dual
elec. ign, Sterba prop, oil press & temp
tach. \$2600 or best offer.

John Mitchell 402 S. Hickory
Shannon, IL 61078

Wanted -- Right wing for Son. II L and
landing gear for Son II.

Jerry Van Nort 719-738-1290 day
719-742-3746 nite

For Sale -- Sonerai II midwing w/ 1700
Monnett conv. needing to be rebuilt.
Aircraft partially disassembled. \$6000.

Tom Freeman 708-526-3180

Wanted -- 5/8" main gear, S-wing kit,
taper pins, fabric, canopy, interior kit,
wheel pants for 5.00 X 5 and 11.4 x 5
Lamb, rubber donuts for tri-gear, rivets
and misc. hardware.

Darwin Mc Kinney 610 S. 318th Pl.
Federal Way, WA 98003 206-839-6531

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Sonera! News

