SONERAI NEWSLETTER

JULY-AUG-SEPT 2003

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BOB YONGE AND HIS SONERAI IILS

This is the original Monnett Experimental / INAV prototype Sonerai IILTS, N72MX, that Bob has restored to flying status. Obviously, he has converted it to an LS. Note the Wittman wing tips (please don't ask for information to build them because there isn't any) and the cowling "beauty bump" over the distributor. See Bob's article and more photos inside.

OSHKOSH IS COMING

It's only a few weeks away, and I hope it's on your schedule to make the pilgrimage to Oshkosh, WI for the 2003 edition of EAA's AirVenture. The dates this year are from Tuesday, July 29, thru Monday, August 4. If you've got a flying machine (preferably a Sonerai), and you haven't brought it to OSH yet, you really should do it once. And why not this year?

My plan, as always, is to be there for the week, camping out in Camp Scholler. My Sonerai will be parked in the "Auto Engines" row near the "blue" arch in front of the control tower. Hopefully, there will be several others joining me there (I'm currently aware of a couple others planning to come). And don't worry if you don't have an auto engine. We'll sneak you in.

There will be several events happening during the week that you might want to attend:

- "Sonerai Builders Forum" by yours truly, Thursday, July 31, 1:00-2:15 PM, Pavilion 04
- "Selecting a Non-certified Engine for Your Sport Aircraft" forum by Steve Bennett, Tuesday, July 29, 4:00-5:15 PM, Pavilion 03
- "VW Conversions in Sport Aircraft" forum by Steve Bennett, Thursday, July31, 5:30-6:45 PM, Pavilion 04
- "AeroVee 2180 VW Engine Conversion" forum by John Monnett, Thursday, July 31, 11:30-12:45, Pavilion 09
- Sonerai Picnic, Friday, August 1, (note the date change) after the airshow, at Jeff Lange's hangar. As I noted in the last issue, Jeff has offered the use of his hangar for a picnic. The hangar is in the same complex on the northeast corner of the airport that the Sonex hangar is located. Great Plains is providing the food and soda. So, please come out and have a leisurely meal with us. All that we ask is that you let us know by mid-day on Thursday how many are coming. Jeff promises to have maps available for those who need directions.
- Homebuilders Headquarters Dinner, Thursday, July 31, 6:00-9:00 PM, at the Nature Center Pavilion. You'll need to buy your tickets in advance at the Homebuilders Headquarters. I've attended this several times, and the food and drink is always good, and the speakers interesting.
- Sonex Hangar Party, Saturday, August 3, 8:00 PM
- Finally, be sure to check out the workshop area if you need help with your welding, sheet metal, and/or fabric covering skills. And don't forget the Fly Market and the Parts Mart tent.

So there you have it. Please stop by and say hello. I'll be out by the airplane every morning.

SONERAI NEWS

✈ Great Plains News: For those of you interested in VW engine conversions, I'd strongly recommend reading Steve Bennett's series of magazine articles published in **Custom Planes** magazine starting in March 2003. This is going to be a 24-part series, so nearly every aspect of the use of VW engines in airplanes will be covered. The articles include lots of good photos as well. Good reading…

✈ Sonerai Wing Construction Manual: It is now available. There are 18 pages of text, 85 photographs, and 12 drawings, as well as a complete materials and a tools list. If you would like your own personal copy, sent me cash, check, or money order for $25.00. Postage is included. (The manual is now included with the plans, so you new plans holders already have it.)

✈ Back Issues: **Sonerai Newsletter** back issues are available in two forms. A 3-1/2" diskette which contains 210 of the newsletter articles published by Ed Sterba from 1987 through 1995 is available for a mere $10.00. There are also hardcopy back issues for $3.50 each. I have the last two issues from 1994, and all of the issues from 1995, 1996, 1997, 1998, 1999, 2000, 2001 and 2002. 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.

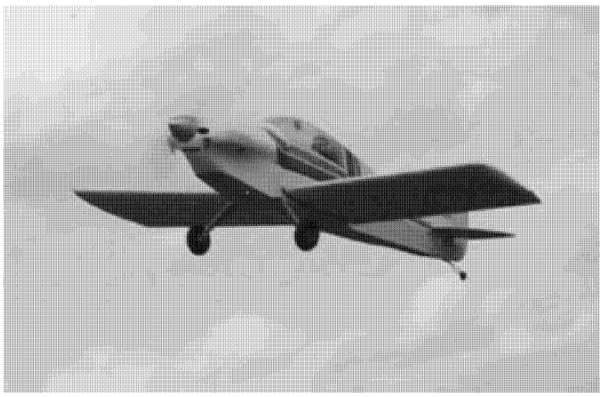
FIRST FLIGHTS

There have been two more first flights reported to me since the last issue:

✈ On May 2nd, Mike Frost of Ellenton, FL called to report the first flight of his IILTS. The interesting thing about Mike's airplane is that he has installed a Jabiru 2200 that is working very well.

✈ Jed Ricker sent the following note and photo:

I am happy to report the return to the air of N2EX, a Sonerai 2L originally built in 1988. This airplane was originally built in 1988 by John Giordano in 1988. He brought it to Oshkosh a number of times in the early 1990's. After an inflight engine failure and an off-field landing, the airplane was sold. (The engine failed apparently due to a poorly ventilated single magneto.)



Jed Ricker's N2EX

The airplane changed hands a few times and had a major rebuild, which included a Great Plains 2180 conversion kit, DUAL ignition, and a Sterba prop (I forget the measurements). I bought the airplane about a year ago, and went through it thoroughly, to verify what was already there and add a few more safety items (fuel pump, heat shielding, more ignition cooling!!)

I have over 4000 hours flight time, but only about 15 in tailwheels, and never anything as small as the Sonerai. I was nervous, but everything went fine on the first flight. Currently I have about 6 hours in the plane, and its going fine, with the usual list of fix-it items. The motor is running fine, with all temps good, except the oil running a little hot.

So far:
Max cruise speed: about 120 KIAS (without wheel pants)
static ground RPM: 3100 RPM
Max cruise RPM: 3300 RPM

The plane handles nicely, although I really wouldn't mind a bigger vertical stab and rudder. As soon as I get the motor broken in a little more, I plan to take the plane cross country. Any Sonerai/VW fly-ins in the works?

Thanks to Steve Bennett, Fred Keip, and plenty of others for countless answered questions, etc!!

Jed Ricker
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Congratulations, Mike and Jed! Good Work and Happy Flying.

SUN-N-FUN 2003 REPORT by Al Bertelmann

Well, Sun-N-Fun 2003 has come and gone, and it was good weather for the entire show. Having moved to Lakeland one month before Sun & Fun, I flew my plane into the show on opening day from South Lakeland Airport; a distance of 5 miles as the crow flies but 45 minutes via Lake Parker. As always, entering the pattern at Sun & Fun and Oshkosh is interesting and often eventful. This time, I was sequenced behind two Piper Cubs. I knew that it was slow-flight time and even at 80 mph indicated, I had to s-turn to maintain spacing. Half way between Lake Parker and the turn in point (the Orange Ball), a spam-can cut in from 45 degrees and passing 100' off my starboard wing, took my place behind the two Pipers. I clearly saw both occupants looking straight ahead and never once looking in my direction. I regretted having taken off my mini-guns for Sun-N-Fun, and was forced to make a couple of larger s-turns to re-sequence behind the Cessna. I felt sorry for the T-18 behind me but I had my hands full staying in the air and showing up in one piece. At any rate, I survived again, and after landing, taxied my plane to the display area

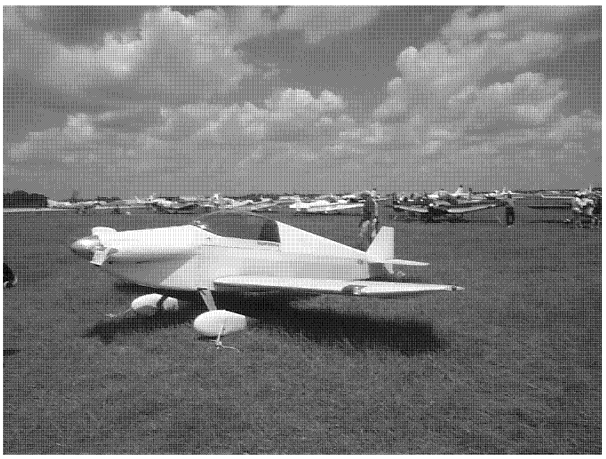
Al Bertelmann's Sonerai 2 mid-wing

The Sonerai's were sparsely represented with the only examples being my mid-wing Sonerai 2, Ray Burgner brought his immaculate Sonerai 2 mid-wing from across the airport for one day and later in the show, and Robert Yonge flew in his stretched, low-wing wing Sonerai 2. Yonge's Sonerai was John Monnett's original prototype and was the test bed for many of the Sonerai permutations (low-wing, stretched fuselage, vertex magneto, extended wing tips).

Ray Burgner's Sonerai 2 mid-wing

We were parked amongst the Zenith Aircraft and fortunately for me, there was one of them between my plane and Ray Burgner's. His plane is so attractive that I wanted to have enough distance

between them to preclude side-by-side comparison. A number of present and former Sonerai builders stopped by to chat including Bob Jaeger (building a T-18), Keith Embee (built an RV 4 and is completing an RV6), and Tommy Warren who flies a Sonerai 1 up in Atlanta (note that everywhere is up compared to Florida). Dale Travis is building a Sonerai 2 here in Florida and he stopped by to look at my plane and ask questions.



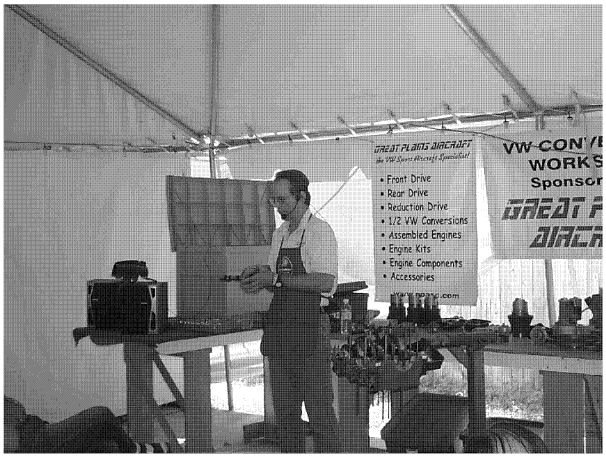
Robert Yonge's stretched, low-wing Sonerai 2

I stopped by the Great Plains booth numerous times for the first 3 days and never saw Steve Bennett. I was always told that he was off conducting an engine building forum. I was getting suspicious, but on Saturday, I finally did catch up with Steve at his forum. True to the cause, he was very patiently and completely explaining the VW engine rebuilding process to the crowd. Even after rebuilding 6-8 engines myself, I learned something new. Maybe that's why I always have parts left over.

Hopefully next year we can organize a dinner and maybe even have a fly-out lunch. My airport is close and also offers free shuttle rides from Lakeland Airport.

Following are some photos from Sun-N-Fun 2003.

Freditorial Comment: As most of you know, I couldn't get to SNF due to a serious lack of available vacation time, so Al graciously volunteered to provide this report. I'd like to thank Al (along with Ray and Bob) for holding up the Sonerai banner in my absence. Actually, the turn out was pretty good compared to last year when no Sonerai's were there. Hopefully, I can get there next year, and we can do the things Al suggests, and have a forum, too.



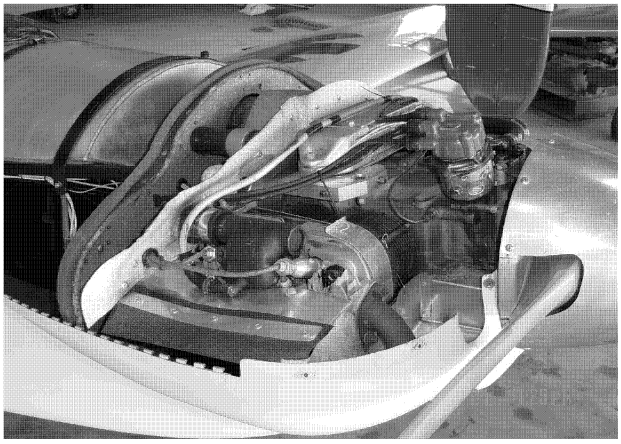
Steve Bennett talking about VW innards

SONERAI RESTORED by Bob Yonge

Here are the facts: First of all I could not have finished the project without your help, and that of John, Betty, and Jeremy Monnett, and Steve and Linda Bennett at Great Plains.

I picked up N72MX In Owassa OK, and trailered it back to Leeward Air Ranch in Ocala Fla. It was a project with a lot of mods to be made. It took one year to finish to the day. The first flight was in June 2002. It hadn't flown in over 10 years. This was John's prototype Tri-gear Stretch with first B Wing built in 1984. It was the INAV demo and was featured in **Sport Aviation** magazine in 1984.

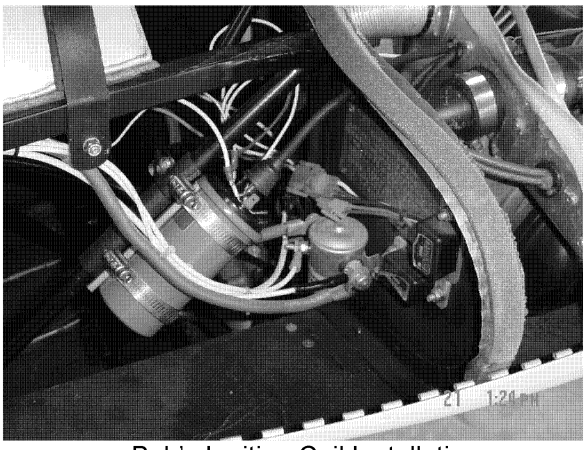
Some wonder what happened to N72MX. I heard it ended up in a court sale from INAV. Later, it had an incident. The best I can figure, it was doing a loop and the original POSA lost fuel. The engine quit, made an off airport landing, and had the nose gear collapse resulting in a prop strike.



Engine Installation on N72MX

The airframe has been stripped and recovered. A new canopy and electric system added. It was

converted to a tailwheel, with a 5/8" gear, 500-5 tires, and Great Plains wheel pants. The Azusa brakes are original. It has the original nav lights. landing lights, and strobes. The engine was rebuilt. It is the original Aero Vee 2180 off the Monex, 82MX, that set two world records. John told me it ran 186+ on two courses. It has a new SCAT crank with everything balanced mechanically, and the compression ratio was reset to 7.78 with Steve's .177 cylinder shims. It has a Bosch 009 distributor with the coil behind the fire wall, and a Slick mag. with Steve's spark plug adapters. I added an oil cooler with setback plate, and installed an AeroCarb COV-3 with #3 needle. It installed nice, and I like the cable hookups in carb body. It runs great.

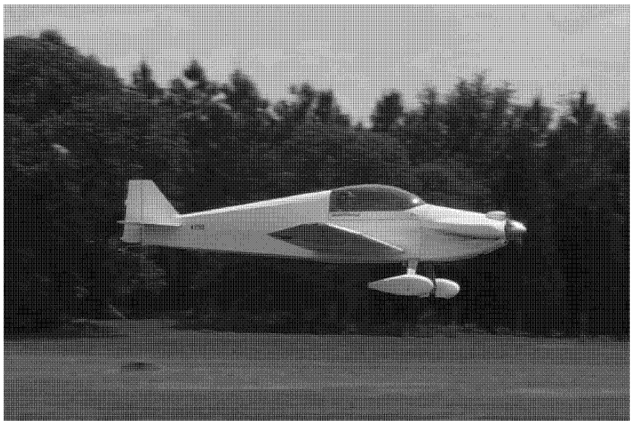


Bob's Ignition Coil Installation

N72MX has 10 gallon main fuel tank with an 8 gallon rear aux tank. Also I plan to build a 12 gallon aux tank for the front seat for a total of 30 gallons. The front tank has the pressure vent in the step forward of the wing. I also have a removable transponder with encoder.

With a new Sterba 54X50 prop, it turns a good 3300 rpm on T.O., with 3600 rpm straight and level. At 3200, it indicates over 140 mph. The carb leans out nice. The airspeed is within 3 MPH at all ranges with GPS. It lands just under 60, and flies hands off. Thank for the trim advice, as I added some washers to trim LH wing down.

The wings have Wittman wing tips. I installed an anti-spin Danforth compass (Cost $28). The airplane needed some tail weight, so I mounted the 6 D-cell ELT in the tail behind the battery, with the antenna inside the vertical fin. It has a remote on-off switch in the cockpit. I use an I-Com A4 handheld with belly antenna and my trusty Trimble GPS Pro. It's been with me all over the world in the DC-8.



Low Pass at Leeward

The Sonerai has about 270 hours. I put on 40 and is increasing fast. I fly almost every day I'm home at Leeward. Steve Wittman was my neighbor. Anyways it took 35 minutes to fly to Sun-N-Fun with 190 pound passenger. He loved it, and couldn't believe how light the controls were. Also, I flew the family Aeronca Lancer Twin to Sun-N-fun. I think there are only seven flying. It's a nice change to fly to Sonerai after coming back from China flying the wide-body Airbus for a month. Also, I owned an S1 Pitts for over 10 years. Curtis Pitts worked for my Grandfather, and he filmed Curtis' first flight in the Pitts, and later donated the film to EAA museum. My first time behind a VW was over 23 years ago in a VP 1. There are currently four Sonerai's at Leeward Air Ranch.

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SONERAI? By Joe Norris

I was just reading your April/May/June issue of the Sonerai Newsletter (another great issue, by the way) and I came across one of my pet peeves - Ivan Martinez' article about the first flight of his "Sonerai". Not that I have anything against Mr. Martenez. I don't even know the man! What struck me was, how can his airplane be called a Sonerai?

Here's an airplane that may have started out as a Sonerai. But now it's got a different wing airfoil, with the wing in a different location on the airframe, and a different tail at a different location on the airframe, and a different engine, different wheels and brakes, different canopy, etc. Added to that, it's about 150 lbs heavier than a Sonerai II should be. It's pretty tough to call this bird a Sonerai! (I'm sure John Monnett would readily agree.)

I certainly don't argue with Mr. Martinez' ability to make any modifications that he sees fit, and I applaud his efforts and determination. Further, I applaud his perseverance, and congratulate him on completing and flying his project. Certainly a wonderful accomplishment for any homebuilder, made even more special for him in view of the extra work he had to put into the modifications.

At the same time, I think he does the entire Sonerai community a disservice by calling his airplane a Sonerai when it bears little resemblance to the airplane shown on the plans, that John Monnett designed. This also raises the question of "truth in advertising" on his part should he be purchasing aircraft insurance. When he tells the insurance company that he has a "Sonerai", they will expect the airplane to be more or less like the plans show, even though they understand that no two amateur-built aircraft are the same. Unless he discloses the major modifications up front, he may be subject to cancellation or non-payment of claims should the insurance underwriter ever discover that the airplane isn't really representative of the Sonerai design.

Ok, I'll get off my little soap box now! Again, I congratulate Mr. Martinez on the completion of his project. He is to be commended! (As are all builders who complete and fly their projects!!) I just think there's good reason for builders who build highly modified homebuilts to call them something unique, as they truly are unique aircraft.

Freditorial Comment: For those who want to know, Joe is the past builder, owner, and pilot of a Sonerai II, and an all-around good guy. He currently flies a Cessna 180 and is building a Great Lakes biplane. I've printed Joe's comments, not to be controversial, but because I agree with him. The Sonerai series of designs are great little airplanes as they were designed, and I don't have a problem with builders changing them to suit their needs. But, once major changes to the configuration are made, I too feel that the name should be changed to protect the "Sonerai" name.

A COMMENT ON CANOPY LATCHES From Dave Bilgri

A few issues back (A-M-J 02) you carried an article about a canopy safety latch that looked pretty foolproof in that, after installation, required no human effort. I made a mental note install a similar latch to my LTS.

Unfortunately, my actions did not follow my intentions soon enough. While my standard checklist included the safety of the canopy latch, prior to my last takeoff I departed from normal procedure by opening my canopy while still on the ramp to verify prop speed. I was using a handheld device that indicates the number of revolutions when pointed at the prop. I distrusted the reading through the windscreen so I stuck my hand outside to take the measurement. Sure enough, I was out of my routine, talking on the radio while I brought the canopy closed and I failed to safety the latch.

Shortly after takeoff, still over the airport but with insufficient runway remaining, the canopy came open. Luckily, I had enough presence of mind to continue to fly the airplane. While still partially controllable, the open canopy had a definite detrimental aerodynamic effect. As I didn't have adequate control to return to the airport, I landed in a corn field a short distance from the airport. The landing itself was successful, however the contact with the fence line, with its trees and rocks caused considerable damage to both wings and fuselage. I walked back to the airport thinking I'd just done one of the dumber things in my life.

I was hoping to give you a report on my Jabiru-powered Sonerai but all I can tell you is it performed very smoothly for the eleven hours it was in the air. No temp or pressure problems were encountered. The prop needed to be repitched as I could only reach about 2500 rpm so I wasn't getting full power. Cruise rpm should be 3100or so. Typical cruise was 120 – 125 mph.

Dave Bilgri
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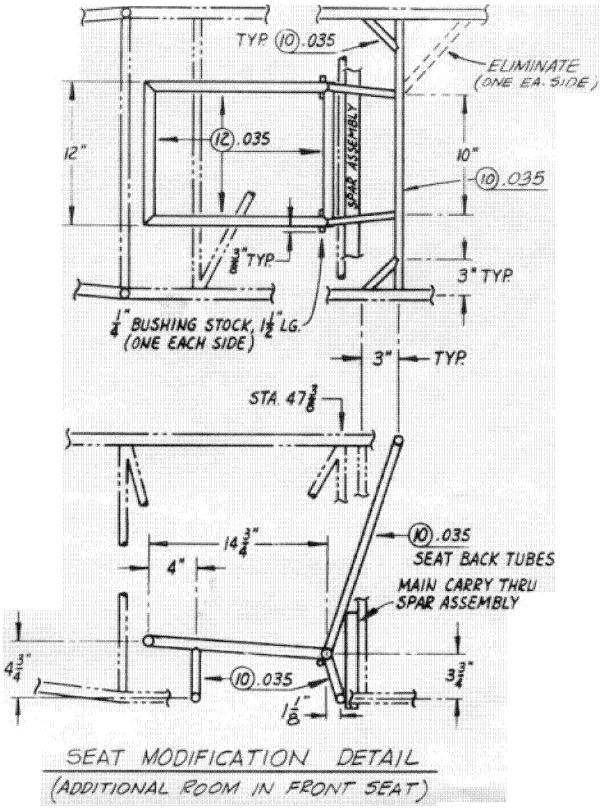
FROM THE ARCHIVES

*From the June 1984 issue of the **Monink** is an article entitled "Front Seat Modification Drawing".*

Sonerai II Low Wing builders have an option for their front seat back. The suggestion for this modification came from one of our builders: Dennis Brannon, Sonerai IIL #545 from Racine, WI who had come up with the idea for his own Sonerai!!



As shown on the accompanying drawing, the back of the seat has been sloped aft and its attachment has been modified. This offers a substantial increase in front cockpit comfort for taller pilots. Not only is it easier to get into but the reclined seating position is much more comfortable since you don't have your nose in the instrument panel! John feels that after this modification, it was almost unnecessary to do the Stretched Version. All of our prewelded fuselage assemblies now incorporate the seat modification as standard. You may want to shorten the front stick torque tube approximately 5" so the front stick is moved aft to eliminate a long reach for the front pilot.

TRUE AIRSPEED DETERMINATION USING GPS By C.W. Crane

Historically we have used airspeed and wind data to determine ground speed but with the advent of Global Positioning System, GPS, we can turn the tables and use three ground tracks and their associated speeds to determine wind data and true airspeed, TAS. All that is required is to follow these five steps:

1. Stabilize an airspeed and a heading, and record the GPS ground speed and ground track.
2. Turn approximately 120 degrees.
3. Stabilize the new heading, maintaining the same airspeed, and record the ground data.
4. Repeat steps 2 and 3.
5. Mathematically calculate the wind data and TAS.

Although the math is fairly straight forward, the use of a computer spreadsheet makes the job trivial. Figure 1 is a sample of a Microsoft Excel implementation.

It is helpful to understand the concept behind these calculations. We start by plotting the three ground velocity vectors so that their heads are at the origin of a cartesian coordinate plane. The lengths are the speed and the orientation is determined from the ground track. We then calculate the center of the circle defined by the three tails of the vectors. Now we can determine the wind vector since that is what is displacing the velocity vectors from the center of the TAS circle. As a final step, by using one of the velocity vectors and the wind vector we can calculate the TAS radius.

When acquiring the data it is important to maintain the same heading, altitude, and airspeed long enough for the GPS to stabilize but not so long as to run out of the same airmass. The actual headings are not important as any three tracks can determine the TAS but calculation error will be minimized if they can be approximately 120 degrees apart. Use the calculated wind vector and compare it to other sources for a reality check.

If you are going to use this procedure to calculate the calibrated airspeed, CAS, you will need to record the outside air temperature and pressure altitude (obtained by temporarily setting the altimeter to 29.92) at which the data was obtained. The CAS, can then be determined (from the TAS, OAT, and PA) using a flight computer. The indicated airspeed, IAS, can now be compared to the CAS found from the test to produce a lookup table for the aircraft's "Pilot's Operating Handbook".

C.W. Crane
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SEE YOU

AT

OSHKOSH

	A	B	C
1	Track 1 =	125	
2	Speed 1 =	114	
3	Track 2 =	243	
4	Speed 2 =	108	
5	Track 3 =	345	
6	Speed 3 =	118	
7			
8	X1 =	B2 * SIN((B1 + 180) * (PI()/180))	-93.4
9	Y1 =	B2 * COS((B1 + 180) * (PI()/180))	65.4
10	X2 =	B4 * SIN((B3 + 180) * (PI()/180))	96.2
11	Y2 =	B4 * COS((B3 + 180) * (PI()/180))	49.0
12	X3 =	B6 * SIN((B5 + 180) * (PI()/180))	30.5
13	Y3 =	B6 * COS((B5 + 180) * (PI()/180))	-114.0
14	Slope1 =	(B10 - B8) / (B9 - B11)	11.6
15	Intercept1 =	(B9 + B11) / 2 - B14 * (B8 + B10) / 2	40.7
16	Slope2 =	(B12 - B8) / (B9 - B13)	0.7
17	Intercept2 =	(B9 + B13) / 2 - B16 * (B8 + B12) / 2	-2.6
18			
19	WX =	(B15 - B17) / (B16 - B14)	-4.0
20	WY =	B14 * B19 + B15	-5.3
21			
22	W dir =	MOD(ATAN2(B20, B19) * (180/PI()) + 360, 360)	217
23	W spd =	SQRT(B19 ^ 2 + B20 ^ 2)	7
24			
25	TAS =	SQRT((B8 - B19) ^ 2 + (B9 - B20) ^ 2)	114

Figure 1

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 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.

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)

For Sale: Sonerai II Stretch fuselage, prebuilt spars, ailerons, Monnett ribs, fiberglass cowling, wing tips, & wheel pants, nosewheel, tailwheel, canopy, Great Plains 2180 w/dual ign., Diehl case, starter, no alt. or intake sys, some instruments. $8000. Call Steve Garn, 336-877-0318 (2/02)

For Sale: Sonerai IILS, fuselage and wings complete, on the gear, cowling, canopy, needs engine and prop. $7500. Don Jester, 417-466-3013 (1/02)

For Sale: Sonerai Parts. Complete instrument panel, Rand-Robinson 3-blade prop, Posa Supercarb, Slick Mag & harness, gascolator, 5-point harness. All new! Gary Harvey, (705)799-7448 (3/02)

For Sale: #68 Zenith Carb, $75; Monnett X-casting, $50; Monnett SuperVee prop extension ass'y, $150; Monnett single-port intake manifold, $50; Aero-Vee valve covers, $25; 2" steel prop hub & plate, $25. Jim Meier, (608)255-6773 between 8am & 5pm, or (608)849-9499 after 5pm (3/02)

For Sale: Sonerai II mid-wing, only needs paint and assembly, 1835 with dual ignition (Slick mag and Bosch 009). $5000 OBO or trade. Greg Buckley, (559)226-5992, **glbflyfun@cs.com** (1/03)

Wanted: Sonerai II for Scout project on Navajo reservation. 90% complete or flying. Robert Jorgenson, 718N300W 34-18, Blanding, UT 84511, (435)678-3436, **robertjorgenson@yahoo.com** (3/03)

For Sale: Sonerai II wing components. One kit w/front and rear spars, ailerons, cap strips, and hinges, $650. One kit same as above except w/o rear spars. Two sets of 18 ribs, $400 each. One set of 16 Quality ribs, $450. Or everything for $2000. South suburb of Chicago. L. Edwin Langeland, (708)389-6637 after 6 PM. (3/03)