



# RVator's Log

Newsletter of the Twin Cities RV Builder's Group

## September 2007

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### Upcoming Events

**Sept 22:** Minnesota Wing Family Picnic and Fly In at Sky Harbor Airpark. See page 8 for all the details

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**Minnesota Wing  
Van's Air Force**

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## Shop Notes

-Doug

For those of us up here living on the frozen tundra for a good portion the year, we know summers go by way too fast. For me, summer is divided up into two definable portions: before Oshkosh and after Oshkosh. This was my 37<sup>th</sup> year attending the biggest aviation event on planet (even flew to Rockford a couple years before the first Oshkosh event). You have all read the hyperbole about the EAA convention. Numbers like 1/5 of the entire airplanes in the county show up (I don't know if that is true, but I read it somewhere once). Ten zillion rolls of toilet paper consumed... you know all the numbers. Personally I have always been overwhelmed by this entire event. You certainly can't see it all so I often end up not seeing what I really wanted to see in the first place. I have yet to get really "involved" in Oshkosh. I am sure volunteering would be fun. Riding around on a cool little Honda motorbike looking really important might be fun. But I don't... I just walk around and try and see as much as I can in the short time I have.



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Each Oshkosh seems to come around faster. This year I am alone. Jean chose to stay home and work (good... helps pay for the gas!) In years past, traipsing around the grounds had been a family tradition. In times BK (before kids), we marched up and down the rows and rows of airplanes, literally looking at every classic and antique on the field (that was also BRVs.. before RVs). Arrival of #1 son did not hinder us much. Craig was 10 months old when he attended his first Oshkosh. We pushed him around in his stroller all day and put him to bed at night snuggled amid pillows and blankets in a closet of our UW dorm room (hmm.. early child abuse?) With arrival of #2 son Dale, we strapped them into their car seats in the back of the 180 and put more miles on our strollers. Many great memories of decadent breakfasts each morning at Blackhawk Commons and then standing in line waiting for the bus to show up amid throngs of raucous Aussies who always are having a great time no matter how early the hour.

This year I walk past those little Pedal Planes on display and there are all those little ones peddling away just like our kids did 20 years ago. Makes me feel really ancient sometimes to think that so much of my life has been focused around this fly-in. I have all these pictures of our kids standing in front of P-51s and colorful biplanes and perfectly restored antiques. They don't come to Oshkosh anymore. School, jobs, other interests and commitments seem to take precedent. Usually when I get home, I show them pictures and they say they wish they had been there. But time marches on.

By Wednesday, I am ready to leave. One last quick run through the Fly Market to see if I really need a pair of \$10 sunglasses or a bundle of a thousand ty-raps in day-Glo orange. Back at the airplane, I struggle getting my tiedowns out of the dry Wisconsin ground. A quick glance at the chart and I crank up, and follow the flagman out to a loping line of idling airplanes waiting to depart. I slowly taxi past the airshow line marveling again at how Oshkosh (oops, AirVenture) has changed and yet how it has remained the same. Finally I work my way up to the top of the line on runway 36L, a wave from the controller in the pick shirt, and I am gone. A quick right turn to the southeast and I level off at 800 feet AGL, speeding along the Wisconsin lakes and farms just getting away from the frantic traffic buzzing in and out of the airport. Finally 10 miles to the west, I climb up to cool air, punch the TruTrak for home and click off Oshkosh #37. I'm tired. I'm sunburned. But of course, I'll be back next year.

## Bob Miller wins Bronze Lindy!

- Doug



For the past 6 years, Minnesota Winger member Bob Miller of Casselton, ND has been quietly plugging away on his RV-8. We sometimes lose track of our "out-state" members, but Bob would send me an occasional update and it appeared from the early days that this was going to be a pretty special RV. Bob's labors were justly rewarded last month with his winning a Bronze Lindy at AirVenture 2007. This award is noteworthy in that Bob is the first Minnesota Winger to win a major award at the EAA convention. Bob tells his story...

"The process that ultimately resulted in the birth of N127M began in 2001. At the Oshkosh fly-in of that year, an order was placed for an RV-8 tail kit. Three months later the horizontal stabilizer was in the jig, and being riveted together at the Casselton Regional Airport. By mid-spring all six tail surfaces were completed, and attention was shifted to the fuselage. The completed tail surfaces were fitted to the fuselage in October of 2002. Lycoming had announced the IO-390X concept at AirVenture 2003 and, since the fuselage was making progress, an order was placed for the new 210 hp engine.

The wait for the new engine turned out to be interminable, delay followed delay, and to fill the days, work began on the wing panels during the 2002-2003 winter. By mid summer of 2003 the wings were test-fitted, and the airframe was placed on the gear. Lycoming announced that the engine components had finally come together in December of 2003, and the engine was shipped directly to Barrett Performance Engines in Tulsa so that Monty could work his well-known magic on it. I traveled to Oklahoma for the first engine runs, and to record its operation in the Barrett test cell.

By mid 2004 the engine was mounted, and I disregarded the well known, "90% finished, 90% to go" rule, and made the optimist's declaration that I'd be flying by autumn! Why not! It "looked" like an airplane didn't it? As it turned out, we missed that proclamation by over two years!



Trips to the Aerotronics avionics shop, Custom Aircraft's paint shop, Oshkosh's vendors, AIC's upholstery facilities, and Aircraft Spruce in Peachtree city occupied the next 26 months. In September of 2006 "N127M" emerged from its hangar cocoon for engine runs. To my absolute amazement it started at the first touch of the starter, ran like a sewing machine, and just sat there, ticking over with all parameters in the green.

Taxi tests followed, and then on December 9, 2006 we pushed the throttle full forward and for the first time and, LEFT IT THERE. I don't recall the much-proclaimed "RV grin" from

that day, but I do distinctly remember how impressed I was at the performance. The safety crew on the ground had been briefed to expect a turn to downwind, leveling at about 1,500 feet. In actuality, my first, forced, glance at the altimeter revealed 4,500 feet and climbing! The undeniable indication here was that the pilot had been spending too much time in a 172! A rigorous flight test program began immediately, concluding in late spring of 2007. The aircraft was then partially disassembled and transported to the paint shop for final work on the fuselage. On Wednesday, July 25, now named "Dakota Boy" the aircraft made its 67th flight...all the way to Oshkosh, Wisconsin. It returned from there on Sunday, a bronze Lindy tucked in the aft baggage compartment. The experience has been very rewarding!!

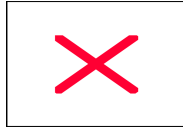


*I am with the angels and just completely happy.*

— Bertrand Piccard, Swiss pilot of Breitling Orbiter 3, first to balloon around the world, 20 March 1999.

## More First Flights

It's summer in Minnesota and what better time is there than to make the first flight of your RV. Here are some of the latest accomplishments by our membership:



### Paul Hove (RV-7A):

On June 26<sup>th</sup>, Paul Hove's RV-7A made its first flight from Lake Elmo. Doug Weiler was at the controls and all systems worked fine (except for an inop airspeed). A rather pronounced heavy right wing was discovered shortly after takeoff but that was later corrected. Currently N347RV has about 10 hours of test time accumulated. Paul's -7A has a slightly souped up 0-360 putting about just over 190 horsepower swinging a Hartzell blended-airfoil constant speed prop.



Doug Weiler touching down in Paul's RV-7A

### Travis Hamblin (RV-7A):

My RV-7A, N107XX, took almost 3 years and 2 months to build. She weighed in at 1101 pounds, unpainted, but otherwise fully equipped. On August 5, 2007, DAR Richard Marr completed his inspection and issued the airworthiness certificate. My first flight was August 9, 2007, and it was GREAT! She flies hands off, easily trimming out with no heavy wing or other undesirable flight characteristics. I haven't got around to recording any performance numbers, but she performed exactly as expected and is definitely very high performance. Surprisingly enough, the engine temperatures were all normal! I have already started my squawk list with no major issues to fix. I did have a little oil leak (which I have partially resolved) and the autopilot roll servo is not working right. Trutrak is going to replace the servo under the warranty.

N107XX is equipped with a Lycoming IO-390 and a Hartzell

blended airfoil constant speed propeller. The engine was built by Barret Precision Engines and hit 219 hp on the dyno! I have the Dynon EFIS and Engine Monitoring System with Van's airspeed and altimeter as backups. I went with the Trutrak dual axis autopilot, which is coupled, to a panel mounted AvMap EKP-IV moving map GPS. I installed a complete Flightline interior kit, which makes the cockpit a joy to sit in!



Travis (l) receives his airworthiness certificate from FAA DAR Rich Marr

### Jack Blomgren (RV-8):

Jack began working on his RV-8 in July of 1998 and by 2001 he had the tail surfaces and wings completed (in the process he also built a shop to house the project). In June of last year, he trailered all the innards including engine prop, fuselage, and all the associated "stuff" to a hangar at the Red Wing, MN airport.

The first engine start was last November and then a pre-FAA inspection by some of our MN Wing members to get some of the bugs cleared away before the certification inspection by Tim Mahoney.

Finally after all the paperwork was completed, Tim signed off N8VZ and test pilot Tom Irlbeck made the first flight on July 2<sup>nd</sup> of 2007. Tom reported, "It flies straight and true and the Aerosport engine runs great!"

As of August, Tom has logged 36 hours and the engine has broken in as it should. There have been a few glitches with engine instrumentation but basically they have all been minor issues. Jack has been taking dual from Tom and he is learning all the nuances of RV flying (like it is REALLY fun!!!)

*Do not let yourself be forced into doing anything before you are ready.— Wilbur Wright*



Jack and his new RV-8 at Red Wing, MN

## Road Trip to Big Sky

by – Pete Howell

My brother has a nice condo on top of the mountain at Big Sky and he was nice enough to ask me to bring my son out from Minneapolis to do some fly fishing and hiking. I jumped at the chance and thought this would be a great chance to see how the RV-9A does on a long XC. In short – it does just fine!



I began the planning by buying all the charts and turning on the weather on my Garmin 396. I then made a flip-map for easy cockpit management by copying images from Skyvector.com.

On Thursday morning, I loaded up my 14 yr old son Ryan, my camera, and some 100LL and off we went. Departed KANE at 6:30 am - First leg was KANE to 3P3 for gas. We stayed low at 3000 ft to avoid the 40Kt headwinds at 6000 and above and enjoyed a smooth, but slow ride to 3P3 (Mott, ND). Mott is a little ag strip with a brand new gas pump and cheap 100LL. Not much there, but it had all we needed. Ryan caught grasshoppers while I gassed up. We relieved our bladders and off we went. Our tally: 15 min on the ground, and 12 less grasshoppers to ravage the crops.

Our next leg was Mott, to the Bozeman Pass, and then on in to BZN. No offense to those in the Dakotas or Eastern Montana, but we were sure glad we had the XM radio along (not much to see out there), but A 41-year-old dad and a 14-year-old son can agree on ESPN radio, CNN, and the XM comedy channel to pass the time. The headwind became a cross wind at Mott, so we climbed to 8500 ft and leaned the engine aggressively. I

am lucky that my O-320 runs very well LOP with dual electronic ignition, we were able to get 150 kts TAS on 5.9GPH. There were times when even at 8500 ft you could look out in any direction and not see many (if any) signs of life. We had a great time laughing at the XM radio and chatting with controllers. The lady at Billings Approach was very friendly.

Soon, the flatlands of the Dakotas ramped into the mountains of Montana as we approached the Bozeman pass. The pass is wide and low, and posed no problem at all. Before we knew it, the tower at Bozeman was vectoring us around some traffic and into a pattern entry. I'll admit I was high on base, but when he called me as traffic to a Tomahawk as "Experimental on very high right base" I was slightly offended. The RV-9A slips very well, so I threw in a full slip and came down like an elevator. I got a "nice work 9PH" for my effort. The trip totaled 5.5 hours flight time, and 765 NM. We tied down at Arlin's at the suggestion of "the other Doug Reeves" from Van's Air Force - they did a great job for us.

My brother picked us up at the FBO and we headed off to Big Sky. My brother and son fished the Gallatin River and caught some trout while I snapped pictures. We hung out with my nephew, I hiked about 10 miles with my sister-in-law to a place called Beehive Basin, and we all ate way too much. Saturday, we hiked in the awe-inspiring Grand Tetons National Park and drove through Yellowstone. Moose and elk were shot (on CF cards). We had a great time.



Son Ryan in pursuit of the wily Montana trout

We got up Sunday morning at 5am and headed the 45 miles to KBZN. At 6:30 we were loaded, pre-flighted and off the ground, headed for the pass. I could see on the Dynon we had a nice tail wind, so we went up to 9500 for the trip home. Once we had the engine leaned out, the GPS said 163kt and the EMS said 5.7GPH(33 smpg woo hoo!!). I asked Ryan how his bladder was doing, and he indicated thumbs up. We headed for the fuel stop at Britton, SD and cranked the XM radio. A new controller at Billings approach was very interested in

the -9A. We talked engines, ignitions, and props. He was very interested in our fuel burn..... as he was heading to OSH in a few weeks. We had a great chat .

Just past Billings, I checked the Dynon EMS and it continued to show us with 8 gallons remaining @ destination if we went straight thru to Minneapolis (KANE). The 396 indicated there was no weather in front of us and the metars confirmed good conditions along our route of flight. I called Flight Watch to give a pIREP and have them confirm the weather... Hmmm....The float sensors agreed with the Flowscan, so I again asked Ryan about his Bio-situation. He was good to go as good gets, so I hit the direct button, punched up KANE, and we cruised straight home. 764 NM, 5.1 hrs, 28 gals, and a smooth ride the whole way. We made it back in time for baseball practice.

Some observations:

- XM WX on the 396 makes the trip a whole lot better. We were able to see, plan for and avoid some small storms, and the overall WX awareness is great.
- XM radio was great for listening, starting conversations with the boy, and generally passing time
- The isolate switch on the intercom is very nice, b/c after 5 min of "plane talk with Billings approach" the boy wants to listen to the XM radio again. So I turned off the boy (pilot isolate) and continued talking to approach while he listened to some obscure baseball stats on ESPN radio.
- The -9A with an O-320 is a bit slower than the O-360 birds, but the economy is very good.
- Electronic ignition lets you run very lean, especially at altitude
- Handling with CG towards the rear is different, not bad, just different, especially in the flare, I had to remember what it felt like from phase 1.
- 5 hours in a side-by-side RV is not bad if the people involved are not too big, and a lumbar pillow is nice after a few hours.
- If your bladders can handle it, flying leaner and slower can get you there as quickly as rich and fast by saving a fuel stop.
- In the ear headsets are very comfortable for long flights, I have Clarity Aloft, but I'm sure Quiet Technologies or others are just as good.
- Grapes, pretzels and water are good snacks in flight.

- O2 is nice up at 9500 (11,500 density) Thanks Bernie!

- An autopilot makes the trip easier while snacking, reading maps, playing with the GPS, etc and really helps with fatigue. Just turn it off to have fun hand flying every now and then.

- A teenage boy with an iron bladder as a traveling companion is priceless.

It was a great trip; I hope the first of many. Next destination: Cleveland to check out the lakefront airport and show off the plane to some high school buddies.



Moose of the Big Sky. All made possible by an RV -9A

## **Amateur Built In-the-ear-style Headset**

*-Pete Howell*

Those of you unfortunate enough to know me well understand I am a frugal type, and I enjoy the challenge of making things myself (I guess most of us do). One thing I really splurged on when I finished the RV-9A was a new headset. In the past, using passive or ANR headsets, I would always get a headache after about an hour of flying – it really limited my enjoyment of cross-countries. I had read the reviews of the In-the-ear (ITE) units and they sounded as if they might give me some relief. So I bought them, even though my inner cheap guy told me it was crazy (\$425 on sale!). Well, after 175 hours, I love them, I absolutely love them, but I still think they cost too much! I studied them, and realized with the new components available for the ipod crowd, I could make a clone of them pretty easily for my #1 co-pilot, my daughter Kate.

Many of the ideas for this headset came directly from an arti

*The Americans cannot build aeroplanes. They are very good at refrigerators and razor blades. — Hermann Goering, German Air Force Minister to Hitler, 1940.*

cle posted on [www.cozy1200.com](http://www.cozy1200.com). I had other design ideas at first, but these guys had it right from the start. I have to give them credit.

Let's get started. The ITE unit is essentially 3 things:

- 1) A head worn mic,
- 2) Special earphones that use foam tips (comply tips) that fit inside your ear to block out cockpit noise,
- 3) A control box with leads for connection to the aircraft and a volume control



Let's make our own. Here are the parts you will need.

- a donor headset (cheap and ugly will work just fine) I used an old Flightcom
- a set of Shure E3G earphones – about \$120
- a Shure PA235 volume control \$9
- a small (2"x3") project box from radio shack \$3
- a 1/8" stereo jack from radio shack \$2
- about 18" of leftover hinge wire from your RV kit \$3
- assorted wire, heatshrink, solder, tools \$2

### Head Mic

First order of business – find a mic. I identified the mic ITE uses as similar a Sennheiser HS2-5, a top of the line (\$300+) unit literally used by rock stars singing on stage. I love my daughter, but she doesn't need a \$300 mic to tell me I bounced the landing. My first thought was to use a good pro-quality head worn electret mic like the Shure PG30TQG that I found at [www.proacousticsusa.com](http://www.proacousticsusa.com) for just over



\$30.

I ordered this mic and tried it, but the output was just too low for the cockpit. So I ended up returning this unit and making my own using some leftover hinge wire and the mic from the donor headset. I bent the hinge wire to the same shape as the ITE headset to fit my head. Then, I removed the mic and the lead wire from the donor headset and attached it to the bent hinge wire with some heat shrink. Use a 2-conductor wire to go from the headset to the junction box we are about to make.



### Junction Box

The junction box is nothing more than a place for all the wires to interface. I drilled holes in the project box for:

- The two jack cables I took from the donor headset
- The 1/8" stereo jack
- The wire that runs to the head mic we just made

The wiring is simple – the little (0.206) plug is for the mic – the wires pass through the box and get soldered to the mic wires from the head mic. Polarity does matter on the mic wires, so if the mic does not work, just switch the wires around. The big jack (0.25) is the headset jack – these wires get soldered to the 1/8" stereo jack that is put through the side of the junction box. The stereo jack came with instructions, but you will need to play with the wires to determine which lead is which before you solder the wires in place - I used a multi-meter. Button up the box (it screws together) and let's move on to the earphones.

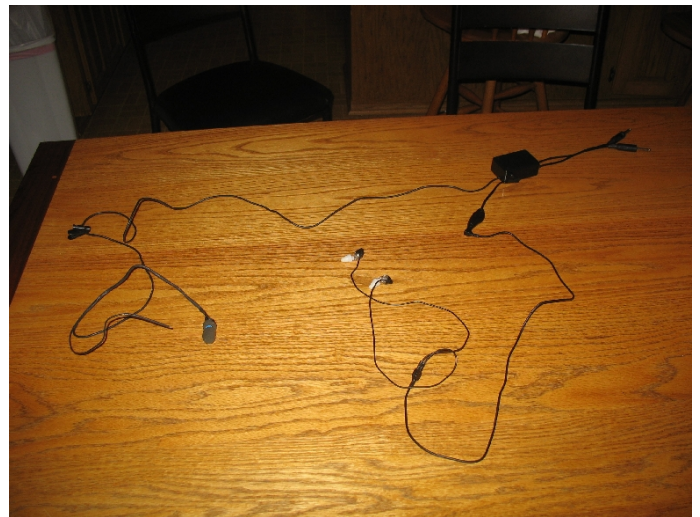
*It only takes two things to fly, airspeed and money.*



the radio. Go ahead and do a radio check. If it all checks out, go for flight, with another headset available as a backup. I took a flight from KANE to do pattern work at KSTP and I felt the unit worked very well. ATC was quite happy with the results and they just wished I would quit asking how the radio sounded. You will need a clip on the mic wire to keep the mic wire immobile; otherwise it will move the mic when you twist your head.

### Conclusion

You now have a rough clone of the \$475 Clarity Aloft headset for about \$130. The mic is not rock star quality, but it cost a lot less and works fine. The earphones were expensive, but they will work great on your ipod, too. I velcroed the junction box to the passenger sidewall of the RV-9A and it looks just great. Here is the complete unit on the kitchen table:



### Earphones

There is new generation of earphones for the ipod crowd that have become popular because they very effectively block external noise. They are expensive, but these



earphones work very well in the cockpit. I used the Shure E3G's I found on line for about \$120 @ [www.earphonesolutions.com](http://www.earphonesolutions.com). They are very high quality and have heavy-duty cords that don't tangle easily. I added a volume control for \$9 from <http://earplugstore.com> that will allow matching of the volume with the other headset in the cockpit. Just plug the volume control into the junction box 1/8" jack and plug the E3G's into the volume control. That's it, you are done.

### Testing

Plug in the cords to the aircraft jacks and put the head mic on. Put your preferred tips on the earphones (they come with several) and put them in your ears. Position the mic then fire up

I like these units for 4 reasons:

- They are quieter than all but the very high \$\$ ANR units
- They don't need batteries
- You can wear big, floppy, goofy hats while wearing them
- I don't get a headache after an hour of flying

Good Luck! Drop me a message if you have questions.  
pete.howell@gecko

*Being an airline pilot would be great if you didn't have to go on all those trips.*

Minnesota Wing – Van's Air Force  
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New Brighton, MN 55112-3454

First Class

***It's That Time!!!! -- Minnesota Wing Annual Picnic  
And Fly-In***

**Sat. September 22, 2007 – 1 pm**

**Sky Harbor Air Park (1MN8)**

**N44 31.7, W093 19.5, FGT (115.7) 218 degree radial, 9.0 nm  
3137 Cass Trail, Webster, MN 55088**



Yes, fall is in the air and there is no better way to wrap up the flying season than our annual MN Wing family picnic. Bring the kids, moms, dads, friends, and relatives and enjoy the hospitality of Hank and Janice Geissler and the neighbors of Sky Harbor.

The format will be the same as in the past but the club will cover all the expenses. Just bring a dessert or salad to share and enjoy the day. We'll provide the brats and beverages and all the necessities. If you drive, bring a lawn chair for relaxing under the trees. Fly-ins are welcome of course and RVS are ESPECIALLY welcome!!! Monitor 122.9 for traffic advisors and fly responsibly and safely. (please avoid the farm and home just south of the approach end of runway 12). Any questions, please call Doug Weiler at 651-398-1184.

See you on the 22<sup>nd</sup>!!!!!!!

**Driving directions:** From Minneapolis, south on I-35. Exit at the Elko, New Market exit. East on Cty Rd 2 then south on Cty Rd 46. Then west on Cty Rd 3. You will cross I-35. Take the second entrance to Sky Harbor. Follow the driveway to Hank Geissler's home at 3137 Cass Trail.

**If lost, please call Doug at 651-398-1184 or Hank at 952-652-2676.**