



RVator's Log

Newsletter of the Twin Cities RV Builder's Group

December 2008

In this issue...

Flight of SPII	...2
Kevin flight his -6	...3
Iowa Breakfast	...3
Cheapo Plenum	...5

* * * * *

Upcoming Events

December 13: Join us at SteinAir in Lakeville, MN and learn about the latest EFIS systems. Just in time to add to your Christmas list!!

See Page 8 for details...

* * * * *

**Minnesota Wing
Van's Air Force**

Pres: Doug Weiler, 651-398-1184, dcw@mnwing.org

Sec/Treas: Jim Lenzmeier, 651-633-8488, jlenzmer@msn.com

Shop Notes

It has been just a little over two months into the retirement phase of life and I think I am beginning to settle into a routine. In one respect it is kind of cool not to have a daily schedule anymore but on the other hand it is a definite change of one's perspective on life. My "sphere" of activities are much more limited. No more driving to the airport, jumping on an airplane and flying around the country. No more van rides to the hotel in the middle of the night. I don't care anymore about the weather in Seattle or New York. Nor do I concern myself as much about what goes on at NWA (or is it Delta?) Life is simpler but certainly different.



The usual routine is up in the morning, go for a run at the Y, head over to one of the local coffee shops with my laptop, read the paper, check out the emails, and see what's happening in the RV world on Doug Reeve's VAF website. Then generally, back home to the shop by mid-morning and start work on the RV-7. My ambitious (and probably naive) plans to work 5-6 hours a day on the new project have been hard to meet. There have been more "distractions" than I had anticipated but most of them have been welcome.

I have spent a couple weeks flight-testing Bernie Weiss' new RV-7A (see page 2). New airplanes are fun and Bernie's is especially well equipped so it has been enjoyable flying off some of the initial test time. I was also consumed for a week or so doing the annual on the RV-4 and also sidetracked in September preparing for our retirement party. Speaking of that gathering, many of the RV folks attended and I do want to sincerely thank all of you who came. It truly was one of the most memorable days of my life.

Tom Berge and I have been working together tweaking Bernie's airplane and now that it is just about finished, Tom will be more available for building assistance. If anyone needs some motivation from a true expert, give Tom a call. He is available for short or long term periods and I can guarantee you that with his guidance, your project will get pointed in the right direction REAL fast. Contact him at **612-418-9500** or n69tb@comcast.net.

I was talking with my insurance man Scott Smith the other day regarding the AIG insurance issue. The aviation end of the business seems to be generally unaffected and they will be continuing to cover RVs through their subsidiaries. He did relate to me the importance of being current as you approach the completion of your project. Generally the insurance company will require a certain amount of dual instruction in an RV to obtain coverage. Most of the time this seems to be around 5 hours with an instructor but that can vary dependent on total experience,

licenses and ratings, age, and regency of experience. For us senior citizens (well actually if you are over 65. I have a few more years to go), they like to see 40-50 hours of flying per year to secure favorable rates. Be glad we fly RVs. He told me of a gentleman who spent \$750,000 to build a turboprop Lancair IV only to find out it is uninsurable for him based on his 500 hours total time and no turbo-prop experience. Simple is good.

Lastly, I found a really cool website that overlays METARS and TAFS on Google Earth. Here is the link: <http://www.2ld.de/wx2kml/>. Follow the directions and enjoy!!

The Flight of Sky Pig II

- Doug

As of today this writing, Van's website counts 5951 RVs that have been completed and logged their first flight. And undoubtedly each one has its own unique story. First flights are the culmination of years of sacrifice of time, money, relationships and other interests that are relegated to "second" place. Bernie Weiss' RV-7A took to the air for the first time on September 21 with yours truly assigned as Joe the Test Pilot. When Bernie started his RV, I can recall a lot of doubts as to whether he could really succeed with this seemingly monumental task. I think most first time builders are equally intimidated. Even a so-called "quick-build" appears overwhelming at first.

It wasn't too long before Bernie formed a strong friendship with several Minnesota Wing members including Pete Howell, Alex Peterson, Tom Berge, and Peter Fruehling. With their help and encouragement, the project began to take shape. For the last year, Tom Berge and Bernie have worked to iron out all the myriad tasks of engine, avionics and related systems. Bernie's day job leaves little time during the week so nearly all of their work was done on Saturdays.



N527DB is powered by an American Engines IO-360 with dual Lightspeed electronic ignition. The plan all along was to build a capable IFR cross-country RV so the end result sports a dual Chelton EFIS system, Garmin avionics, a Tru Trak three-axis autopilot, XM satellite weather and a luxurious Aero Classic leather interior. Super-painter Dan White applied the pearl metallic paint with blue and gray trim. It is nice!!

So I know you are waiting for the back-story to "Sky Pig II" (aka SP2). Bernie also owns an E33 Beech Bonanza and for the past several years he has been tagging along with us to our various pancake-seeking excursions. I think it was Alex Peterson who first coined the nickname "Sky Pig" for Bernie's Bonanza. We were all just envious of that smooth, quiet Beechcraft with room for 4 in stretch-out comfort. But at 15 gallons per hour to feed the 300 hp Continental, it was a little big of a gas "hog".

As the final touches were being put on the RV-7A, we were placing bets as to the final empty weight. The airplane was loaded with LOTS of goodies so it might be a little on the "meaty" side. I think I guessed 1175 and Tom, Alex, Peter, and Pete all wagered somewhere in the upper 1100's. Well the final tally was 1218 so Pete didn't waste any time in christening it "Sky Pig II" and whipped up the rather cool logo. Fortunately Bernie has a great sense of humor and is still speaking to us all!



It takes a village to build an RV. Here it is: Alex Peterson, Bernie Weiss, Pete Howell, Tom Berge, Doug Weiler

Kevin Flies his -6

- Kevin McCormick

You hear and read stories about first flights all the time and it keeps you motivated knowing that some day you will get that opportunity to experience that exciting moment.

I watched my father make the first flight in three planes that he had built and I had the opportunity to make the first flight in a plane he designed and built. Needless to say it was exciting but I still could not wait for the day I flew the plane I built for the first time.

The day finally came in October of this year. It was a cool but calm fall day. I was on my lunch hour and decided to go to the airport and do some fast taxiing, not really planning to make my first flight, but knowing I was totally comfortable with that possibility. I had pretty much decided that I did not want anyone there for my first flight. Right or wrong, I did not want any distractions, nothing or no one to worry about other than flying my plane. A fast taxi is extremely easy to turn into a flight; a little backpressure and you are airborne.



The plane flew straight and level. I climbed up to 3000 ft and circled the airport twice. My goal when I built the plane was to keep it simple and light, therefore no electric flaps. So I was not very happy when I pulled that handle and it would not hold in more than 10 degrees. Not the end of the world, plenty of runway; I will just use more. Gliding over the numbers things got worse. I could not get the engine to idle down to less than 1100 RPM. I used every foot of that 3800 ft runway.

It was everything and more than what people say it is. Every chance I have I sneak down to the airport to fly. It doesn't matter to me if it is only 15 minutes. It is by far the most exciting plane I have ever flown.

I have since put 5 hours on my plane. I had to increase the notch size in my flaps and repair the idle setscrew on my brand new carburetor. I also installed CHT on all four cylinders. I am hoping we get some nice winter days so I can get my 40 hours flown off, get my plane painted and start making some fly-ins this summer.

An Iowa Breakfast Run

- by Dave Cheung

As I am driving to the airport and come within 2 miles of it, I notice that Doug is passing overhead. He likes to get an earlier start because he has the slowest airplane. The next airplane that I would guess to take off is Dave McCurry in his Monoplane. It is the next fastest. I will see him take off as I park my car in front of my hanger. There are a few others that join us but seem most of the time it is the 3 of us. There are some occasions when it is a solo flight to Sully, Iowa for whatever reason, out of town or babysitting grand babies etc.

Arriving at the airport, I pull N822DC out of the hanger and turn it towards the taxi way and then walk back to the hanger to close the door. I climb in and go through my startup sequence. Master on first, fuel selector to my fullest tank, the right one. The fuel pump comes next and while the gas is being delivered to the carburetor, I put on my harness and turn on my GPS. The headphones are next. I push the mixture handle in for full rich mixture. Next the ignition switch is turned on and I turn the key switch to start and push my primer to send some gas to my number 1 and number 3 cylinders, yelling 'clear' as I do so.

The Lycoming engine kicks over in just a few turns. The idle setting is 1000 RPM and I flip on the strobes. Up comes the oil pressure and the fuel gauges begin to register. The oil and cht temperature takes a few minutes to register. Radio is next, followed by a tuning to airport weather. The wind direction will determine which runway I will use. The instrument switch is turned on and then I raise my flaps. I announce my movements and I start my taxi to the appropriate runway. I confirm with a quick look at the windsock located at the center of the airport.

Most days we go to breakfast are just beautiful days with little wind in the early morning. Today is no exception. We have ventured out on less than perfect days and we seem to make it out there just fine. Clouds just make the day's flying more interesting and the occasional shower washes the dust off the wings. Morning ground fog makes the earth look like a white fluffy blanket covers it.

I taxi to the end of the runway and start my checklist. Engine to 1700 and test the magnetos and check the vacuum. Fuel

pump in the correct position, altimeter, GPS and artificial horizon are set. The seat belts secured and the canopy is locked.

Check the time and the Hobbs meter. I look at the sky to see if there are any unannounced airplanes coming in for a landing and I make a general call to let anyone in the area of my takeoff and direction of flight.

A gentle tap on my airspeed as I roll down the runway and as I get to 65 mph. The pavement and stripes move in front of me as the taxi lights in my peripheral vision move faster and faster. I hold gentle backpressure on the stick and the nose begins to elevate and then the rest of the plane follows. I keep the speed at 100mph and get about 1200 feet per minute climb. There is the most exciting part of the flight as I lift off and become airborne. I make a quick check on my gauges to make sure everything is where it is supposed to be. If by some chance a meter is not where I want it to be then I would forego breakfast and head back to the safety of the runway. Today everything looks good and I turn towards the south and align with the GPS to Sully.

I level at 2500. I start looking for my usual landmarks, Marshalltown City Hall, the train tracks, the Iowa River, the water towers and the high school's round auditorium then hwy 30 and the radio towers that are located beside it. I look outside to my left and see the sun shining on my unpainted wing. There have been days when I think the wing needs to be painted instead of polished because of the glare. Maybe one day I will get around to doing that but I am having just too much fun flying. I know of guys who will make a plane picture perfect and not fly them. I guess I built my plane to fly and I will one day get around to make it look prettier.

Sometimes I will tune in the Des Moines approach just to see what traffic is in our area. I don't get too concerned because we rarely get much traffic where we fly. We pretty much have the airspace from Marshalltown to Sully all to ourselves.

The water tower south of Laurel is passing under my right wing and I see Red Rock Lake off to the left. I see some combines in the fields and harvest is in full swing below me. It is great to see the farmers cutting away what might be an emergency runway for me. I think that it is very considerate of them. Hope I never have to take them up on their invitation.

Newton is off my right quarter and Interstate 80 is right in front of me. I see the elevator at Sully 10 miles ahead. As I cross over the highway, I switch over to Sully Unicom and announce my location and intention.

I start my decent to pattern altitude as I get to 5 miles of the airstrip. If there is other traffic, inbound, I will make a slow 360 to keep out of their way till they are down. I announce my intention to land. A left base to 8 is my usual entry and I am about 800 feet above the ground with a 500 foot per minute decent. My engine is slowed to 1500 rpm and I start slowing to 100 mph and then extend my flaps to 10 degrees.

I turn final and align myself to the runway and power down to 1200 and start adding more flaps. I slow to 80 and keep it there till I have the runway made and drop the rest of the flaps and pull power. As I flare, I pop a bit of power and then the tires gently touch mother earth and I keep my nose up and start to tap my brakes. The grass is most always well groomed and reasonably dry. I pass the parked planes and come to a stop, turn around and head over to them.



I park on the side of the runway, which is about 15 feet from the road to town. No fences or gates or locks to deal with here. I go through my shut down ritual. Mixture out, switches off, fuel off, key out, canopy unlocked, seatbelts and headphones off. I make sure I have my wallet as I deplane. I leave the plane unlocked. We park in front of the office of the grain elevator. We often get cars or pickups passing by and they slow to look at our planes and us. We wave and they smile and wave back. Occasionally, someone will stop and chat with us and offer us a ride for the 4 blocks to the café. We thank them and tell them we will see them there. Very neighborly these Sullians.

We see grain haulers coming and leaving the elevator and each waves to us or we to them. I guess it is as much fun to land in their town as it is for them to see airplanes in their backyard.

We cut across the bank parking lot down a short alley past a salon called Alley Cuts and come into the center of town. The town square is right in front of us. During the summer there are antique tractor shows there. The Coffee Café is to our right and we enter. We are greeted by Tammy the owner and get some stares from some of the locals who don't know that we flew in for our expensive breakfast. We don't get menus anymore. Tammy knows our orders. Coffee is the first order of the meal and maybe a quick run to the little boys room. Have to remember that the light switch is on the outside.

The guys talk about the week, how the flight was, who wants the job of next EAA chapter president. Since I am the only non-officer at the table, I keep quiet, at least for a while. I will be the next vice president for 2009. Other locals begin to come in and some remember us and nod or wave to us. Sometimes we run into folks who have flown in from Morningstar airport in Des Moines. We would know when we see their 150's and Aircoupes on the ramp. We trade war stories and chat with the waitress.

An interesting note is that when we tell them we are pilots, Tammy presents us with a log to sign in. Seems some of the town folk don't think an airfield is good economics for the land that is used. The farmer who donated the land made sure that the airstrip is the only purpose that he intended. The log is helpful in letting folks know that the airstrip is actually being used. In truth, it is almost like having a private field for us. I recognize most of the names signed in.

Breakfast is not a hurried issue here. I think there is only one cook. My usual order is called the Farmer's Wife. I think it was intentionally named. It consists of 1 pancake, 1 egg and bacon or sausage. It is enough and won't change weight and balance in the plane by too much. On busy days I will get the pancake first followed by the egg and meat. Depends on the mood of the cook. No problem, the coffee cup never seems to get empty.

Meal over, we settle up and make one last dash to the little boys room and head out toothpick in mouth for the walk back to the airport. Seems the walk back is always longer than coming. I guess when you're hungry you want to get there faster. There are more trucks and cars so more waves. We get to the planes and say our goodbyes or see you back at the ranch.

The start up is the same as before and whoever moves first is the leader and the rest follow to the end of the runway. I set my flaps to 10 degrees. I line up when it is my turn and start my roll. Hold stick back lightly and get off the ground around 55 mph. I level off to build airspeed and up I go. I have to remember to take off the flaps. I have been known to fly home all the way and wondered why I was so slow. Flight planning 101.

I switch frequencies when I hit the interstate wishing that I didn't have to get home so soon. I call my 10 miles and finally land with out issue and make the first turnoff. Short field practice.

As I taxi, I open my canopy and feel like master of the skies. I stop in front of my hanger and lean the engine out, flip up the canopy and just sit there with a grin. Great breakfast.

El Cheapo Plenum

By Pete Howell

Those of you that have seen my articles here before know that I am a bit of a tinkerer and a real cheapskate. I like taking good ideas and seeing how I can do them myself, (and maybe save a few dollars in the process). I know if I were to count my time, I'd never come out ahead, but I have fun and Doug pays me an obscene amount for every article I write!! I have applied this logic to varying degrees with things like headsets, nav lights, landing lights, interior lights, canopies, O2 systems, trackers, and even such forbidden topics as LOP operation. I am happy to say they all have worked out well for my 375 hours in the air and many more hours doing shade tree engineering.

My latest thoughts were around a building a plenum for engine cooling. The cooling for the O-320 in my RV-9A has always been OK, but I thought it could be better. So I set out to copy some plenum designs I have seen here and on the web. My only criteria were to make it reversible in case I liked the baffle seals better, and it had to be cheap to make. I only have about \$60 into the design, so I think I have cheap covered. The reversible design worked out OK, too, but I think it led to a less than optimal inlet design.

Here is the finished product:



I started with a sheet of 2" styro insulation from Home Aviation Depot and started shaping with a surform and 40-grit paper. The goal was to have the plenum fit inside the standard baffles sides and use the same holes as the baffle seal for mounting.



I needed to add a second layer to add depth where the ramps slope down. I just used spray adhesive to hold things together.

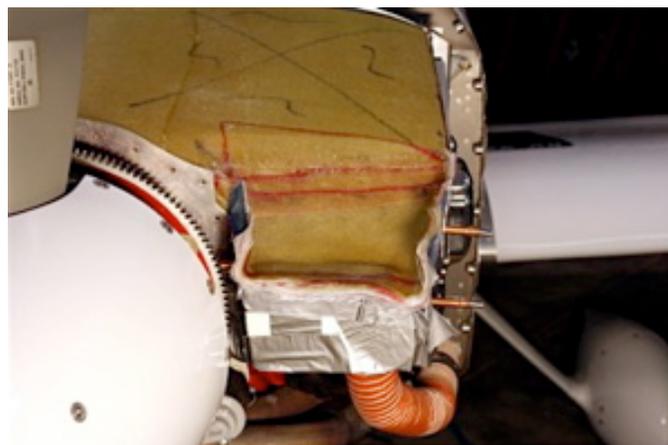


Shape, fit, repeat. I tried to smooth things to a nice contour. When I got close, I started fitting the upper cowl for clearance. I did need to remove the upper inlet ramps that were glued to the cowl top. Once it was shaped and I got a good fit, I blew off the styro dust and covered it in packing tape, and paste waxed it for good release from the FG lay-up.

I mixed up the EZ Poxy (it has good thermal properties when post cured) and applied 5 layers of 9 oz cheapo FG cloth I found on sale at the Depot.



After it cured, I popped it off the mold, and trimmed the edges. Then, I fit it to the baffle sides. I made some plugs the side of the inlets and used them to mold the ramps in place right on the plane.



Here is the plenum trimmed, fitted with nut plates and installed. It is sealed with speed tape for initial evaluation.



And a final view after painting – Bernie Weiss' awesome Sky Pig 2 enhances the background view.



I sealed the edges with black silicone and it looks pretty nice. How does it work? Well, it does seem to cool the engine a bit better. On hot days, I can climb longer before I hit 400 CHT and back off. The cylinder temps are nicely evened out with the exception of #1 that needed a blocker. After that was installed, the temps are really balanced across the cylinders at cruise. Speed has increased 10 kts. Alex Peterson and I have decided that you always claim 10kts on a drag reduction project. In reality I don't think it made a difference because the inlets were not resized. That may be the next project, so no real speed increase to report at this time.

Like I said earlier, my quest for reversibility led to less than optimal inlets. These mimic the stock Van's openings. The new design will have smaller inlets and less sharp corners to stall the airflow as it enters the plenum. It will also require substantial FG work on the cowl, so it might be a while before I do it.



Temps balanced nicely on the trusty Dynon EMS (this pic was taken before the #1 blocker was installed.)



Was it worth it? Qualified yes- no great transformation occurred, but it does run cooler and there is room for inlet optimization and area reduction that should lead to better cooling and less drag. Maybe I'll get that 10kts..... I did have fun and learned a few things, too. And for an aviation project, it was cheap.....

Watch for Part 2 when I rework the inlets...

Project Photos

http://picasaweb.google.com/fly_rv9A/Plenum#

http://picasaweb.google.com/fly_rv9A/Plenum2# captions here as well

Set 2 has some captions.

Materials List

EZ-Poxy

<http://www.aircraftspruce.com/catalogs/ezpoxy.php> 1.5 qt is plenty = \$35

FG Cloth

http://www.3m.com/us/auto_marine_aer...ml?itemNbr=576 5 packs on clearance = \$15

Damaged Foam Sheet from HD = \$5

Shop hardware and leftover paint = \$5

Questions?

Email me at trackker.ant at gmail.com

Minnesota Wing – Van's Air Force
65 15th Ave. SW
New Brighton, MN 55112-3454

First Class

Minnesota Wing December Meeting

**Stein Air Inc., Lakeville, MN
Saturday, December 13, 10:00 am**

**21170 Eaton Ave, Suite A
Farmington, MN 55024**



Just because the economy is in the tank doesn't mean you can't dream about that instrument panel. It's been a couple years since we had a meeting at SteinAir and that is a lifetime in the avionics world. Stein will update us on the latest goodies for your RV plus there will be plenty of time to check out the new gadgetry including the new Garmin 696.

AND... if you want to order any item from their shop, place your order ahead of time and enjoy a discount if you pick up your merchandise at the meeting. Give them a call (651-460-4730) and tell them you will be picking up your order at the RV gathering on the 13th.

And as usual... coffee, donuts, and other goodies.

Questions: call Doug at 651-398-1184 or SteinAir at 651-460-4730

Directions: Go south on I-35 to Lakeville, MN. Exit at 185th St. Go east to Kenwood Trail which becomes 202nd St. W. Turn right at Cedar Ave and then left on 212th St W. which is also Lakeville Blvd. Go past Pilot Knob and turn left on Eaton to 21170, suite A.