



# RVator's Log

Newsletter of the Twin Cities RV Builder's Group

## September 2016

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### Upcoming Events

**September 10** - Twin Cities RV Builders Fall Fly-in and Picnic. Webster, MN.

See page 8.

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**Minnesota Wing  
Van's Air Force**

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## Shop Notes

One of the “must do” RV events of the year is the fly-in at Boone, Iowa. I’ve made this trip many times over the years and it is always a great day of RV fun. Sometimes the weather hasn’t cooperated, but this year it was perfect. Skies were clear, winds were unusually calm and you couldn’t ask for a better day.



Usually the Boone Fly-in is a chance to meet some old friends and it was great to run into Lyle Hefel in his beautiful RV-8. I have known Lyle for many years and most of you know his reputation for building some of the most beautiful RVs on the planet. I have lost track of how many he has built but I do know that every one of his RVs have been flawless and major award winners. Lyle was there with “Old Crow”, his most recent RV-8 that unfortunately had been damaged during a severe thunderstorm that hit the Dubuque airport several years ago. The roof of a hangar across the taxiway had blown right through his hangar door and his -8 inside did not fare very well. But after a major rebuild, it looks as perfect and pristine as ever.

As we chatted, Lyle walked me over to a RV-10 sitting on the ramp recently completed by his friend Chuck Weber. “Have you every heard of Jesse Saint?” Lyle asked. The name was vaguely familiar as I recall some postings on Van’s Air Force discussing Saint Aviation, which is a RV building assistance business down in Florida. Lyle had helped Chuck Weber finish up the -10 there earlier this year and told me a fascinating back-story about this RV-10.

A while back Jesse and his dad Steve had formed a company to provide technical skills and training to native tribesmen in the jungle of Ecuador. This -10 had been assembled there up to the “quick-build” airframe stage. The final finish work was done by the owner/builder at Saint Aviation in Florida. It began to dawn on me this was the same Saint family whose patriarch missionary-pilot Nate Saint was murdered along with four others



Lyle and his RV-8

by these same tribesmen back in the late 50’s. It is a rather well known story and a book and movie have been made about this tragic incident (*End of the Spear*)

When I got back home that afternoon, I did a little more research and found this article from the Ocala Florida Star-Banner. It is an amazing story:

## *Airplane entrepreneurs taking their factory to Amazon Jungle*

By Linda Carlton, special to the Star-Banner

LAKELAND - One of the favorite pastimes for thousands of pilots and pilot-wannabees gathered at the Sun 'n' Fun Fly-In is looking at airplanes - not the ones in the daily air shows, but the ones parked on the flight line. Everyone attending the last day of the week-long event at Lakeland Linder Regional Airport wanted to know what the other guy is flying, has restored or has built. They wanted to see how the other guy has dealt with those little problems that the airplane owners/builders are facing. And for one local company, the Dunnellon-based Saint Aviation, it was fun in the sun.

Many onlookers gather around to look at two Saint Aviation RV-10s. The four-seater, single-engine airplanes have gull-wing doors and aluminum skins. And some have really nice leather interiors. But many attendees seemed confused when they read one of the airplane's propeller tags that stated the plane was made in Ecuador. Saint Aviation's first RV-10 was built in Dunnellon, Florida. The rest will be built in Ecuador in the Amazon jungle.

The Saints, Steve Saint of Ocala and son Jessie Saint of Dunnellon, have spearheaded the project in an effort to help Ecuadorian tribes avoid a dependency trap. The Saint's tribe of special concern is the Waodani.

"We tried native crafts, but other tribes would imitate us," Steve Saint said on Friday. "I thought no one ever built airplanes in Ecuador. Why not?"

The seven Waodani tribesmen down in the airplane shop in the jungle earn salaries and share in company profits. The reason for the jungle concept dates back more than 50 years. Steve Saint's father, Nate Saint, was one of five missionaries spared to death by the Waodani tribe back in 1956. The Waodani also used machetes to damage Nate Saint's yellow Piper seaplane. A few years later, Steve Saint went to live among the Waodani and was unofficially adopted by one of his father's killers. In 1995, after he spent many years away from the Waodani, he returned to bury his aunt.

They told him that he, as a member of their family, needed to come back and teach them a way to deal with the outside world without being destroyed by it. For 18 months, Saint and his family did just that. A few months after the Saints returned to Florida, the Waodani tribesmen told them that they needed to see that the tribe had their own plane and pilot. That was the beginning of the Waodanis' experience building and flying aircraft.



The company has completed four airplanes.

"At this rate, we're going to have to go from two planes a year to six," Steve Saint said. "Then we'll build a bigger facility." Saint Aviation's RV-10 venture is a builder-assist program. Federal Aviation Administration rules state that pilots who build at least



Chuck Weber's RV-10

That also was the beginning of the Dunnellon-based, nonprofit corporation called Indigenous People's Technology and Education Center. Indirectly, ITEC also was the beginning of Saint Aviation. ITEC already has developed a simple, lightweight outboard motor suitable for canoes. They are currently working on an engine-powered parachute that Steve Saint calls a "flying jeep."

Jessie Saint, as well as the lead airplane-builder from the jungle completed the first Saint Aviation RV-10 last July in Dunnellon. The RV-10 kits are manufactured by Van Aircraft. As Steve Saint said, "We wanted to make sure we knew how to build one."

51 percent of their own airplane can fly it and legally maintain it without a mechanics license. The net result is that it's cheaper to fly. It's also cheaper and easier for manufacturers to market kits rather than completed airplanes. The Saint Aviation customers physically go to Ecuador and work at the shop there.

"We've already been called by the FAA," Steve Saint says. "They couldn't believe anyone would go to Ecuador to build an airplane. We said, 'Tell us the N-numbers, and we'll show you the photos.'"

For more information about Indigenous People's Technology and Education Center, visit their web site at [www.itecusa.org](http://www.itecusa.org). For more on the life of Jesse's grandfather Nate, see [https://en.wikipedia.org/wiki/Nate\\_Saint](https://en.wikipedia.org/wiki/Nate_Saint)

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## Thanks Dan Horton!

- Frank Huber

When considering what oil cooler to use and how to mount it on my RV-7A project, I referred to VansAirForce.net to get some ideas. It appeared that cracks in the baffle mounted oil coolers were a somewhat common problem, so I looked for alternative approaches. I found several builders, who had mounted their coolers on the engine mount with a Scat tube feeding air into a plenum over the cooler. It looked like locating the cooler in that location would eliminate a lot of the engine vibration and provide some cooler air to the cooler. So after I got the engine hung (thanks Tom Berge) I worked up a design for the mount. I decided on using four-inch Scat tube with a cockpit controllable air valve. This left the question of the plenum.



I checked out Aircraft Spruce for a possible ready-made plenum I could adapt to my system. I found an Airflow Systems plenum that looked close enough to what I needed, so I ordered one. Three months later it finally arrived. Unfortunately it was nothing like the plenum described in the catalog so I sent it back and moved onto plan B: make my own. Fortunately, I had read a Dan Horton post, in which he goes through a step-by-step process of making a fiberglass part. He included lots of pictures, which was a huge help:

<http://www.vansairforce.com/community/showthread.php?t=44856>

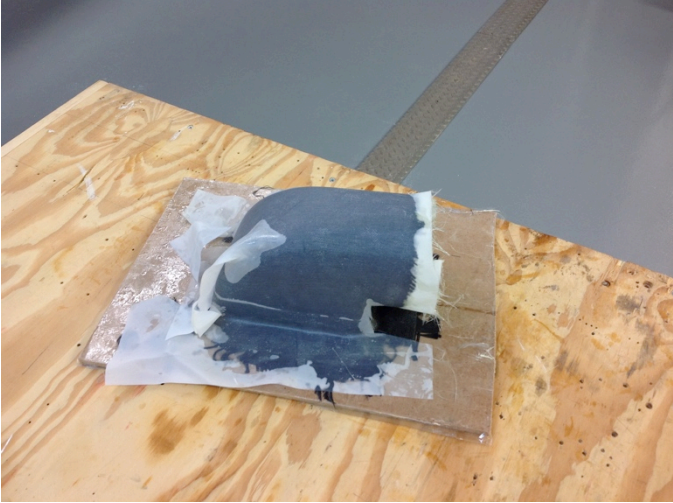
So I purchased some 2-inch insulation foam at Lowes and ordered the mold release Dan recommended from Spruce. I already had the fiberglass, carbon fiber, micro balloons and epoxy I would need for the project. The first step is to determine the dimensions of the plug. My application required two pieces of foam to be glued together. Dan recommends using

an epoxy and micro balloon slurry to glue the pieces together. Dan instructs the builder to draw the outlines of the part on the foam and then rough-cut the part with a cross cut saw and a hacksaw blade. Then use sandpaper to fine-tune the shape. Gary Specketer suggest using drywall mud for smoothing things out and adding depth where needed. The drywall mud worked well to make the opening closer to what I needed and smooth out the plug.

Once the plug was where I wanted it, I coated the plug with two coats of wax, allowing each coat to dry. Then I brushed on two coats of PVA mold release. Since my plenum needed a mounting flange, I covered a piece of hard board with packing tape, waxed it and then fastened the plug with two coarse screws. Then it was time to do the lay up with two layers of fiberglass with one layer of carbon fiber in the middle. After the layup had cured it was time to dig out the foam, trim to fit, use some micro to smooth things out, sand, prime and paint the finish coats. It took me a lot more time than Dan can make a piece, but I think it turned out pretty good and I learned something new.



Plug ready for layup



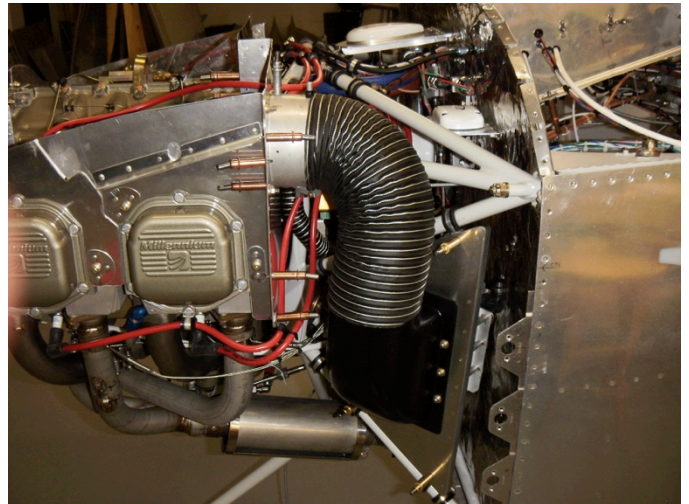
Layup complete



Primed plenum



Post cure



Ready for primer



Ready for primer

### Part 3 – Go-arounds and Engine Failure

- Tom Berge

The first article in this series covered controls and trim. Stop moving and trim the airplane. The second covered taxi and takeoff. Use your brakes for taxi and let the airplane fly off when it's



ready. Let's cover go-arounds and engine failures. I've mentioned how habits play in our everyday lives and on these two subjects; your habits need to be well formed when activated.

There are precious few reasons I'll yell at a student. Not reacting during a go-around call is one of them. When I'm instructing, I tend to not grab the stick any more than necessary. As a result, I let students dig a pretty



deep hole and when the approach has collapsed and safety is in doubt, I'll call for a go around. There are three very distinct actions a go-around requires, all pretty much at the same time. Number one is full power. You can tell when you're at full power when the throttle stops moving forward. Don't slam it in so fast as to stumble the engine, you need it working right now. Number two is right rudder. The three evil forces of P-factor, slipstream and torque are all trying to turn you left. Number three is slight forward stick. What, forward stick? Let's see, if you've trimmed for approach speed and you shove in full throttle, what will the nose try to do? Rise up? Absolutely, it'll rise up. Don't push so much as to stop the climb, just stop the jump. And come to think of it, there's a fourth item as well and it's commit to the go around. No wishy-washy actions at this point. And that is hint number three. During an emergency, commit to your actions and act.

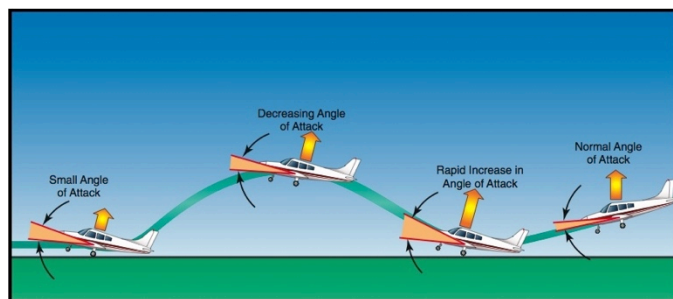
I read accident reports to learn from others misfortunes. When the narrative mentions a go around, I know how the sequence of events will unfold. Said pilot initiates a go around, climbs sharply, drops a left wing and crashes somewhere on the left side of the runway. I wonder why? No right rudder causes left drift and without action to stop the nose rise, they stall. Of course hesitating on power application kind of prevents the go part of the process. As for flaps, RV's can climb to pattern altitude with the flaps hanging out. Establish a positive rate of climb, watch your airspeed to not exceed VFE, clear all obstructions and then if desired, retract the flaps and try another approach.



been performing just collapsed and a successful landing is in doubt. Perhaps you dropped it in from the heavens and Pilot

So why go around? How about obstructions on the runway such as deer, airplanes and people? Another reason could be the perfect approach you've

Induced Oscillation is in full force. My general rule is at the top of the second bounce: go around.



If after a bounce, all you see is sky, go around. And speaking of PIO, the best way to stop it is stop moving. For some reason pilots have it in their minds that the closer to the ground they get, the more they should be moving the controls. The fact is the less you move, the more stable the plane is. Don't put in a control input to fix the previous input, that's what starts PIO. Engine failure practice is fun, actual failure not so much. I have a process that I use that hopefully starts to form a habit and builds confidence at the same time. I recall during my initial pilot training the instructor would unexpectedly pull the power, I'd respond and then he would call off the "test" about 500 feet AGL saying I would have made it. My process is a bit more informative since we'll actually land. Nothing quite the same as proving we'll make it and it's the close to the ground experience that's an eye opener. No, I don't do this in any old farm field when a perfectly good runway is available. I'm not crazy! The first attempt or two may not work out but most students want to continue until success is achieved because heck, it's a ball.

There is no surprise "engine failure" during this operation. Everyone knows what's coming. We'll set up 5 miles or so from a



suitable quiet airport at 3500 AGL at cruise power. Two miles out I call engine failure and the student pulls the power. So what to do? First thing is pitch for best glide and trim. Second is finding a place to land. Out on the horizon is not the place to be looking. Best place is underneath you, so drop a wing left and right to see if something is there. Hey, look there, a runway. For the third task, most will say to attempt a restart, but I think is better choice is heading to your landing spot. It would be a shame having a perfectly good landing spot a couple of miles away and then drift out of range while trying to restart the engine. I just read an article about an engine failure in flight and the pilot, having an airport made, decided to lose excess altitude over a lake instead of the airport. I think perhaps he didn't understand the "gravity" of the situation. Fourth task is the restart attempt. Have a flow established such as boost pump on, carb heat/alternate air, mixture full rich and switch tanks. Don't have a jerky flow. Go from right to left or

left to right, either way works. Number five is communicate, mayday, mayday, mayday.

Anything below 1000 AGL, commit to the landing. This is not the time to be distracted from the task at hand. As to the engine out glide, I use glide ratio. My constant speed, short wing RV has a glide ratio of 6:1. For every 1000 feet of altitude, I can glide 6000 feet or 1 nautical mile. Not very far. Figure out what your RV does with your prop combination and memorize it. An example is initiating the engine out exercise at 3500 AGL; my glide is about 3.5 miles. This does not include altitude needed for the approach. I like to set up over the approach end of the “field” and circle down, noting altitude lost per turn. This gives me an indicator of whether I have enough altitude for another turn. This is all done flaps up and best glide. Keep your energy up. Your normal approach speed won’t work here because you won’t have enough energy for the flare. The task is the touch down at minimum speed, not approach at minimum speed. Now there are many variables so set up a routine and practice, practice, practice!

The next installment of this series is the thing everyone wants to learn. How do you land an RV and make it look pretty to those at the airport restaurant? The answer is obvious. Land a long ways from those prying eyes!

## Important Preflight Insurance Tips for Van's Builders

*-Jennifer Cummins, Gallagher Aircraft Insurance (from Van's Air Force)*

Many Van's builders are caught off guard by the often stringent training requirements and cost of insurance for the first year of flying coverage. A higher potential for loss drives insurance companies' strict requirements, but with knowledge and planning you can meet their conditions. We'd like to offer some pre-completion advice to those of you still in the build phase.



Van's Aircraft are proven aircraft with eight insurance companies vying for your business. However, out of those eight, only four offer coverage during the fly-off period without cov-

erage restrictions. The fly-off period generally comprises the first 40 hours the aircraft will be flying after you complete it.

The fly-off hours required could occasionally be lower depending on the propeller and engine — an RV-12, for example, only requires five hours.

### Pilot Hours

Minimum pilot hours are an important factor in the process of insuring a recently completed plane. Required hours vary depending on which model you are building. It can be quite shocking to complete your aircraft and be ready to fly, just to be told you do not meet the insurance companies' minimum pilot requirements. The information below shows our suggested minimums for ratings and hours. Note these suggested minimums will not necessarily exclude you from getting quotes, but are just recommendations to acquire the best price your first year.

**RV10** - Suggested minimum certificate/ratings: Private pilot  
Suggested minimum total logged hours: 300  
Additional suggestions: Have an IFR rating

**RV12** - Suggested minimum certificate/ratings: Student  
Suggested minimum total logged hours: Varies  
Additional suggestions: private license preferred

**Other A models** - Suggested minimum certificate/ratings:

Private pilot  
Suggested minimum total logged hours: 100  
Additional suggestions: N/a

**Tailwheel models** - Suggested minimum certificate/ratings:

Private pilot  
Suggested minimum total logged hours: 200(15 tailwheel)  
Additional suggestions: 250 (25 tailwheel) preferred

Next, make sure you understand the different kinds of coverage available.

- Ground and Flight quotes provide hull and liability coverage while the aircraft is flying, taxiing and on the ground.
- Ground Not in Flight quotes provide hull coverage only while the aircraft is taxiing (off the active runway) and while on the ground. The liability portion of the coverage applies while flying, taxiing, and on the ground.
- Ground Not in Motion quotes provide hull coverage only while the aircraft is not in motion (under its own power). The liability portion of the coverage excludes passengers.

### Dual Instruction

Another variable that inevitably comes up is “How much dual instruction am I required to complete?” We suggest you con-

tact us for full flight insurance quotes well in advance of the time you'll need them — three to six months, as a rule of thumb — so you can gauge the time and expense of training requirements. Once we work with you to select an insurance carrier, you will know how much dual instruction the insurance company requires. The quote may also list solo requirements, which you must fulfill in your aircraft prior to carrying passengers. Once you receive the quotes and select a carrier, you can start planning transition training. As you probably know, FAA regulations state that you cannot complete the training in your newly built aircraft. The four insurance companies that insure the fly-off period understand this and typically provide some leeway on the model in which you train. All training, however, must be done in a Van's aircraft. If you plan on training in a model that you are not building, it is advised that you verify instruction in the planned model will be approved by the insurance company. Understandably this is a lot of information to digest, especially when completing the aircraft is your first priority. By planning ahead, you can make the transition from workshop to cockpit smooth. As Gallagher Aviation's two dedicated Vans specialists, we invite you to call with any questions or concerns you may have.

*Ed note: Jenny can be reached at 855-538-VANS. Another excellent insurance resource, which many local RVer's use is Scott Smith at Skysmith Insurance (800-743-1439)*

## The Tax Man

-Doug



Yep, I know. We all love to complain about taxes. I'll try not and open that nasty bucket of works more than I have to, but ponying up to the taxman has been the bane of modern civilization for a LONG time (guess who was the most reviled person of Roman times? The tax collector or course!)

We moved to Minnesota in 1988 and owned a Cessna

180. We came from Dayton, Ohio and at that time, Ohio was about the most tax-friendly state you could ask for. Property taxes were low, state income taxes were reasonable and we seemed to enjoy all of the usual amenities afforded by our state and local government. Good roads, good schools, and I never heard anyone complain. Then we moved to the Land of 10,000 Taxes (oops... I meant Lakes). Everything seemed to double. Car license tabs were WAY higher, property taxes were twice that of Ohio, but I guess that was the price of living in beautiful Minnesota (we moved here in summer.... little did we know what happens around here in January!)

We had lived here about two months and I kind of forgot about registering the 180. I finally got around to contacting the Minnesota Aeronautics Department to find out what I needed to do. The first thing they asked was whether I had paid sales tax on my airplane? Well, no... I had bought the 180 in Ohio four years ago. Ohio didn't charge any sales tax on airplanes, cars, and boat transactions between private individuals. The Ohio aircraft registration fee was \$3 a seat per year (a whopping 12 bucks for my Cessna). I was shocked when the friendly Minnesota tax lady said I might owe the state of Minnesota 6% of the sale price of my airplane for the privilege of having Minnesota air molecules flow over my wings. Plus she was going to charge me a penalty because state law says the sales tax must be paid within 30 days of the aircraft being based in Minnesota.

I was not too happy about this and had some rather pointed discussions with the Minnesota Department of Revenue. We went around and around a few times over the phone, but they finally let me off the hook when they decided Ohio had their own set of tax rules and they would honor them out of the goodness of their little revenue generating hearts.

So what is your tax liability as the builder of a RV aircraft in the Gopher state? Since we are all 100% honest when it comes to paying taxes (!!!), you have two choices. First you can subscribe to the "pay-as-you-go" plan. Most of the bits and pieces of our projects are ordered on-line. Be sure to keep track and pay the state the appropriate tax amount for each purchase (many on-line suppliers now charge sales tax with each order). When you buy the big items like the kit, engine, avionics and so on, again pony up with each purchase if you are not charged specially at the time of sale. Obviously this requires your personal and painful initiative to keep those checks flowing to St. Paul.

OR.. you can procrastinate (like I did) and put off the inevitable until the last moment. When your RV is finally finished and you are tying up all the loose ends before your first flight, Minnesota requires the airplane be registered. Go the Minnesota Department of Transportation website and download the Aircraft Registration Application and Sales/Use Tax Return. Here you will fill out all of the required information to become a legal consumer of Minnesota air molecules by calculating the dreaded "use tax."

Allow me to quote the form:

**Home-built Aircraft:** If you buy a kit or parts to build your aircraft and the seller does not charge sales tax, you owe use tax. Put the cost of the kit or parts on line 1 of section 3.

I read this as paying use tax on the price of the kit **OR** the parts. Guess which one is less? After paying use tax on two RV projects, the "revenueers" seemed perfectly happy getting my check based on the KIT price.

Just sayin'.....

Twin Cities RV Builders Group  
12 Island View Lane  
North Oaks, MN 55127

First Class

## ***Twin Cities RV Builders Fall Family Picnic and Fly-In***

**Saturday, September 10, 2016, eatin' starts at noon**

**Sky Harbor Air Park (1MN8)  
N44 31.7, W093 19.5, FGT (115.7) 218 degree radial, 9.0 nm, CTAF: 122.9  
Cass Trail, Webster, MN 55088**

How does the summer slip by so fast? EAA AirVenture always seems the half-way point and now it's time for our annual fall picnic. But that is a good thing as this is the high point of the RV year! Believe it or not, this is our 27<sup>th</sup> gathering!! So why mess with a good thing? The plan is the same. Our guests are the Furhmann's and the residents of Sky Harbor. Bring your family and friends plus a salad or dessert to share. The grill will be cranking out brats and all the other necessities will be provided. A free will offering will be collected to cover the incidentals.

Fly-ins welcome of course!! Unicom on 122.9 and please fly SAFE!!!! Look for the friendly parking crew.

More details on the website at [www.mnwing.org](http://www.mnwing.org)

Directions are: **Minneapolis, south on I-35. Exit at the Elko, New Market exit. East on Cty Rd 2 then south on Cty From Rd 46. Then west on Cty Rd 3. You will cross I-35. Take the second entrance to Sky Harbor (Cass Trail). Follow the driveway to the Furhmann's on the left. You can't miss it!**

**If you have any questions or you get lost en route, please call Doug at 651-398-1184**

