RVator's Log

Newsletter of the Twin Cities RV Builder's Group

March 2019

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Upcoming Events

Twin Cities RV Builders Spring Meeting:

May 4, 2019 – The new SteinAir hangar, Faribault, MN.

See page 7……

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Minnesota Wing
Van's Air Force

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Shop Notes

- Doug

YouTube can provide all sorts of aviation entertainment on these cold, unflyable winter days. How many times have you stumbled across those crazy videos of airliners landing in some obscene crosswind? Some are downright scary. The Boeing 757 that I used to 'rassle around had an official 90 degree maximum crosswind component of 29 knots. Each year during recurrent training, we had to prove we could accomplish the task in the simulator. But that is just a fancy computer and you could figure just how to work the controls to get it on the runway. The real world was another story. I can recall only once tackling a screaming 90-degree crosswind like that in the real world. I believe it was about 22 knots across the runway and it was a challenge. That's when you earned your pay.

What about the RV world? The chatter on the Van's Air Force website sometimes pushes into the realm of "fake news." I have seen posts something to the effect "… yeah, I can tackle a 20 knot 90 degree crosswind in my RV… fill-in-the-blank… and it's no problem." There was a recent post talking about flying an RV-12 in a 40-knot wind. What!!??? Could there be "slight" hyperbole here or are there dummies out there that delight in pushing the laws of gravity and physics. What you see on VAF sometimes can taken with a grain of salt.

My personal RV experience in high winds is just like any light airplane. It is just that… a light airplane. A couple thoughts on the subject:

A DAL 757 rockin' and rollin' at Vegas on a windy day.

First of all, RV's have great aileron controls. They are crisp and exact which makes lateral corrections quick and effective. The rudder is reasonably effective but limited versus the "amount" of aileron available. The RV-4 and RV-6 with the small vertical fin and rudder would limit one's crosswind ability. The taller tail and rudder on the -7 and -8 improves this but one is still rudder limited. A plus is the fact that the quick stall characteristics of most short wing RV's result in the airplane staying on the ground once it has stalled. A nice trait on a gusty day. But what the airplane will handle compared to what the pilot can handle are two different things. Our trip to Glacier Park a couple years gave several examples of this.

Jean and I left on day one of this trip at mid morning. It was early summer and a cold front had just passed. The surface wind on departure was about 15 knots down the runway so not an issue but as we climbed the wind picked up. We leveled off at 4000 feet to lessen the headwinds. Even then we had 50 knots right on the nose. It was clear and smooth but the 115-knot ground speed was discouraging. Our first intended stop was Aberdeen, SD. By the time we got to the Alexandria area I was getting concerned about the winds at ABR. It was 270 degrees at 30 knots with higher gusts. They have a runway 31. Maybe a more macho pilot would press on and hope for the best when we arrived but us taildragger pilots chicken out easily. We decide to divert to Fargo and stop there for fuel. The winds were still howling at 30 knots but at least down the runway. It was somewhat wild but workable. The winds died down as we headed further west but the return trip would tax us again.

On the way back we stayed overnight with friends in Billings, MT and left in the morning with a planned stop in Mobridge, SD. Of course now the wind was howling out of the north and MBG's paved runway is 30. They have a north-south grass runway, which I considered. Calls on Unicom resulted in no answer. I'm leery about landing on an unknown grass runway with those little tires and wheelpants. I thought I'd give it a try on 30, as there were really no good diversion airports with a north-south runway anyway near us. We managed to get it down in one piece on 30 but it was a challenge. At the FBO, I finally tracked down the guys how is "supposed" to man the Unicom and asked about the grass runway. "Man, it's a good thing you didn't land on it," he said. "It's all full of gopher holes and we don't use it." Hmm… Guess they don't how to issue a NOTAM.

The bottom line is that when you get out on a long cross country especially out west where airports are fewer and widely scattered, you may not fine a nice big runway conveniently pointed into the wind. Be proficient in your RV and (dare I say it?), go out and practice crosswind landings. They are not necessarily fun, but it's a necessary skill that easily gets rusty and when you need it, you need it!

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No, No, No!!!!!

- Doug

Six months after I finished by RV-4, I had arranged to have it painted at Wipaire at Fleming Field. The January appointment was made and finally the day came for me to make the short flight to SGS and hand it over to their shop with the intention to turn my 11 year project into a thing of beauty. The 10 minute flight came off without a hitch and their staff was ready and waiting for me to roll it into their warm prep hangar. Once inside, my task was to remove all of the removeable "stuff" in preparation for paint.

I had just got out my tool box and I had settled down to remove the wheel pants when I heard a very distinct "snap." "What was that?" I asked myself as I looked around the airplane. I glanced at the canopy and my heart sank to the very bottom of my soul. A crack!!!!!!!!!! I couldn't believe it! It was at least 6 inches long coming up from the side of the canopy. It dawned on me that the planned paint job had come to a screeching halt. I told the shop manager what had happened and cancelled the project. Totally dejected, I gathered up my tools, had the crew open the hangar door and flew back to Lake Elmo.

Three months of work later, a new canopy, canopy frame, fairings, etc, etc was installed and I was back in the air. The old cracked canopy sits to this day in my hangar covered in dust.

In case you didn't notice, it has been cold lately…. really cold. RV canopies that have not been installed properly DO NOT LIKE cold temperatures. The issue is that you really don't know if you did everything right when you built your canopy. Realize there can be BIG difference in thermal expansion and contraction between the plexiglas canopy and the frame it is attached to. Thankfully my RV-7 canopy has survived the past 7 years with tempeatures down to -5 degrees and no ill effects.

Just this past month, a RV-9A has been undertgoing an annual instpection at the maintance shop at Lake Elmo. The airplane is being sold as part of an estate sale. It's rather rough and has a long history of going through many owners. After a very expensive annual, it was returned to it's unheated hangar supposedly ready for sale by the broker. A few days later, the broker asked to have the airplane rolled into the heated shop hangar to be inspected by a potential buyer. It was -20 degrees outside. Guess what???? It was in the hangar no more than 30 minutes before EIGHT cracks appreared and essentially trashed the ccanpy. A new one is being installed as I write.

There is LOTS of talk on canopy cracks on Van's Air Force. The more one reads, the more one begins to realize that just why one canopy cracks and one doesn't is an ongoing question. Many have bonded their canopies to the frame with SikaFlex which eliminates drilling holes entirely. Yet oddly, there have been rare reported cracks in SkiFlex installations. If you have the canopy installation ahead of you, it is one of the more "intenses" aspects of RV construction. Consider:

1. Be sure you have a warm shop when you make the "big" cut. I cranked up the heat to about 85 degrees. I used Van's recommended cut-off wheel in a electric drill (I think an air powered die grinder runs too fast).

2. Smooth and polish all of the edges to as a fine of a finish as possible.

3. Use only a plexiglas bit to drill any holes in the canopy. Make them oversize as per Van's instructions. For sliders, be sure the hole at the top of the canopy for the latching handle is oversize. Use only Van's recommended rivets to attach the canopy to the frame. Don't snug up tight any screws that are used in the assembly (such as the canopy sides). De-burr and polish all holes. You do not want to have any stress risers anywhere. Consider bonding the canopy in place with SikaFlex.

Our nice heated hangars in the north country are great but consider the temperature change between a warm hangar and a sub freezing outdoor environment. And lastly, those overhead radiant heaters are nice but it's a bad idea to roll your frozen RV under a radiant heater.

PIREP - Carb Ice

- Andrew Hightower

2003 RV-6A N181A
O360 (Carbureted) CS
960hrs TT AF/E

Date: March 8, 2019 - 5:20pm
Flight: 05C (Chicago) to KSGS
Duration: 2h10m
OAT -8C

Purpose: Day trip - business meeting

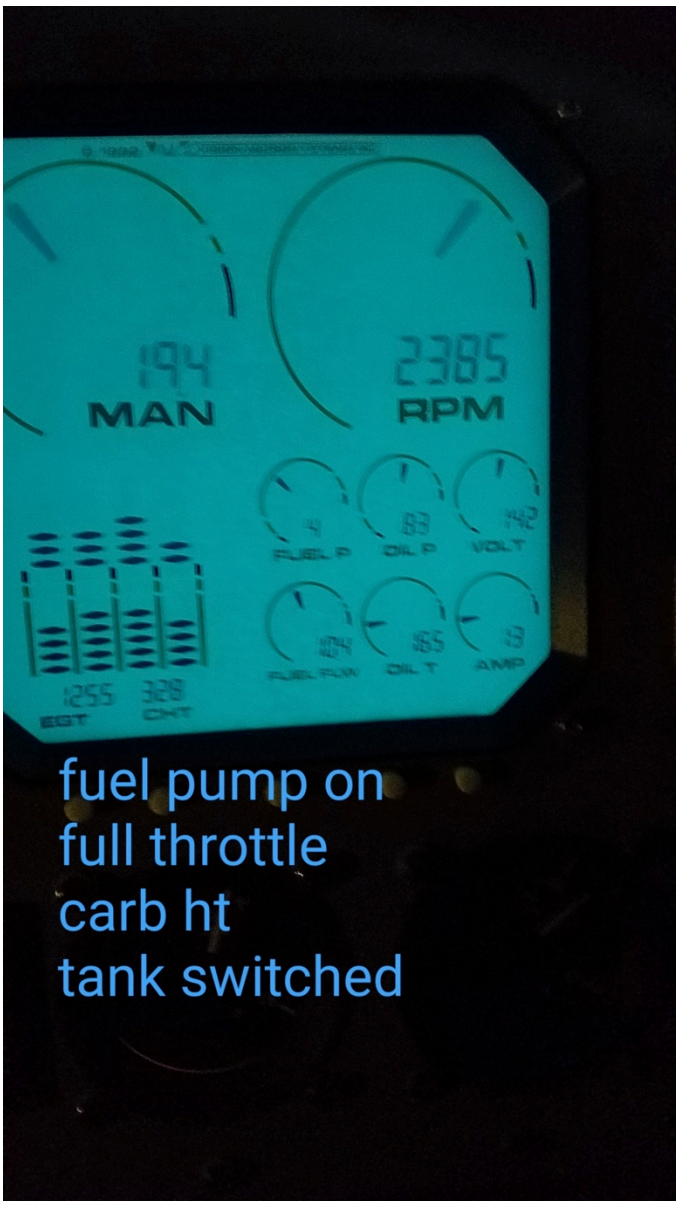
Conditions: Clear, high ceiling, winter storm building to the south (60 mi), no visible moisture. VFR flight.

Trip Summary:

Run-up, takeoff, cruise and first 1/2 of flight - normal. Oil temp a bit low but the new normal for winter flying with current winter oil cooler setup. Oil temp was 167F at cruise.

This picture was taken about 1 hour into the flight. A beautiful night for a flight. Would you expect carb ice?

First indication of carb ice was speed dropped from ~154kts to 135kts. RPM stayed constant (as would be expected) but manifold pressure dropped from 24 to 19. By this time it was completely dark. Landing options limited and still +20min south of Red Wing. I checked carb heat, switched tanks, mixture, throttle, verified all cylinders firing, fuel flow, fuel pump and all with no changes.

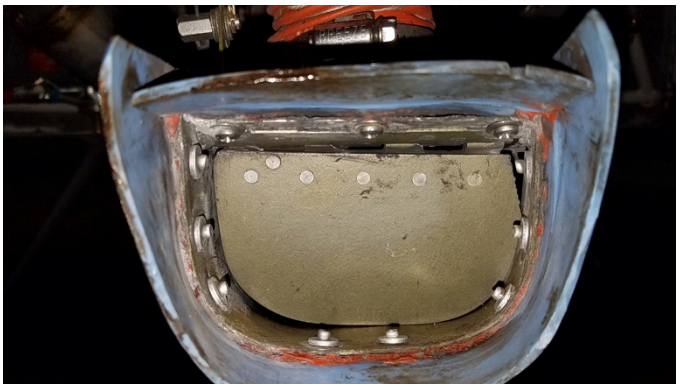


Watching the manifold pressure closely, I had to decide to divert or continue to KSGS. I called my A&P (John Quilling and he answered!) and we discussed the possibilities. He also had me cycle the prop slightly to see if oil had congealed in the oil cooler. Prop cycled, no obvious problems there. Manifold pressure stayed low but steady so I continued to KSGS. I kept the throttle in until I knew I had the field made. I was little hot in the pattern, which is not the way I would recommend making your first solo RV night landing. The situation had my full attention but the reality of the situation gripped me when the engine died on roll out.

Diagnosis:

After talking with Tom Berge I went back the next day (in light rain and around 2F) and with the cowling off I heated the carb then ran the engine. It started up fine and repeated run-up tests showed no issues. I ran it for about 10 min. Assumption is that I had a case of clear-air carb ice.

Contributing Factors:



As you can see from the picture of the carb heat flap above, I knew I had gaps in the flap valve along with wear in the piano hinge. My plan was to change this out at my May annual. Delaying this repair was nearly a very costly decision. In retrospect I did not have a significant RPM drop at carb heat run up testing. I have read that engine oil temps on the low side can also impact the build-up of carb ice. Tom also thought that at cruising speed, the ram-air could force the flap open if the cable is allowed to slip back from fully closed position. Between my worn valve and not knowing to look for a loose cable, the cards were stacked in the favor of me not being able to get rid of carb ice once it had started accumulating. Looking closer at temperature dew-point spreads may have also made me more sensitive to the possibility of carb ice.

Another Surprise:

I removed the air box to replace the flap valve and to my surprise this is what I found. I assume some of this may be from my return flight and the rest from my light rain run-up testing but I was SHOCKED at the size of the block of ice I found.

Lessons Learned:

There were several contributing factors to the significance of this event. The poor (maintenance/performance) of my carb heat system. My lack of experience with ***clear-air*** carb ice (I had never seen it in my RV). Below normal engine oil temperature. Night flying reduced some of my emergency options. And finally, I had skimmed over the dew-point spread in my pre-flight planning.

All in all I have learned a lot from this experience. Moreover, I am happy to share this experience in order to help remind us all (myself included) to listen to those little voices that guide us to learn more about our planes and about ourselves in our quest to be better pilots.

ED note:

Back when I was actively instructing in Dayton, OH, a private pilot renting a Cessna 172 from a competing flight school, made a miraculous night forced landing in the parking lot of a large regional shopping mall. Other than a broken wheel pant, the airplane was unscathed. The engine ran fine after the fact and the engine failure was attributed to carb ice. The pilot said his instructor told him that Lycoming engines don't get carb ice so ignore that carb heat knob! Not so!! Granted Continentals ice up easier, but Lycomings can fool you under the right conditions.

This or That and other Irrelevant Thoughts

- Tom Berge

Hearing and reading pilots thoughts on what makes the perfect airplane is an interesting experience. So many opinions from so many experts makes me to wonder why the questions get asked at all. In our amateur built universe, the choices are endless and while my choice works for me, perhaps not for you.

Tip up or slider, tail wheel or tri-gear, tandem or side by side, yellow or any other color, Chevy or Ford? The options are endless as are the opinions expressed about the value of each. May I share my opinion? It really doesn't matter. With so many choices, certainly something will appeal to you. Not the next guy, but certainly to you. Glass or steam gauge, fixed pitch or constant speed, who cares? As long as it flies and gets you where you want to go, that's all that matters.

I read the online forums occasionally and inevitably these questions arise with claims made supporting this or that with all the reasons why and if you don't agree, well I guess you are flawed in some horrible way. Pay no attention to the trolling. Pick what you want and enjoy it. Understand though, that with each and every choice there are tradeoffs.

With all the different RV's I get to fly, I'm exposed to many choices made and have no option but to adjust. Tip ups "see" better, but leak over the radios, sliders can taxi open on hot ramps but leak in the baggage area. Tail wheels look cool and go faster; tri-gears don't care about the wind too much.

Yellow? Well those are fighting words and if you don't like it look away. I recently read a post about the length of the control stick. The consensus was long is better. I think short is better. I pin my hand on my leg and fly as smooth as anyone out there. My advice is leave it long, fly a few hours then decide. It can always be cut shorter, but gluing it back is a bit more complicated. Just make sure it doesn't hit any of the controls. Yes, I've had to order new parts because I cut too much off, darn it!

Chevy or Ford? Audi baby, nothing better!

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TC RV Builders Spring Meeting

Saturday, May 4, 2019, 10 am

Stein Air's New Hangar
Faribault Municipal Airport, Faribault, MN

Stein Bruch and his crew at SteinAir have invited us to celebrate the opening of their new avionics facility at the Faribault Airport. Many of us have helped to build this new hangar by funneling a good portion of our meager incomes to SteinAir in exchange for a stack of Garmin goodies that are bright and sparkling and also keep us from getting lost and able to talk to anyone who wants to listen!

The "new" SteinAir as of March!!!!!

Details and directions will be forthcoming via email, as we get closer to the date. But in the meantime, put it on your calendars and plan for a great morning learning about the future plans for Stein Air!! Any questions send Doug a note at dcw@mnwing.org