



RVator's Log

Newsletter of the Twin Cities RV Builder's Group

September 2019

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Upcoming Events

Twin Cities RV Builders
Fall Fly-in and Cookout

**September 28, 2019 –
Stein Air, Faribault Airport,
Faribault ,**

See page 7.....

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**Minnesota Wing
Van's Air Force**

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

Sec/Treas: Peter Fruehling
612-578-3333, email:
peter.fruehling@comcast.net

Shop Notes

- Doug

N722DW is now coming up on 780 hours total time. It has been a pretty reliable traveling machine and the glitches have been few and far between. As pilots we all want a safe and reliable airplane. No drama is a good thing and as I look back at my airline career, I was blessed with very little drama. 10,000 hour plus flying the big machines and I really cannot recall any really noteworthy flights. Being a flying bus driver was generally pretty routine.



Not so much with corporate flying. Many professional pilots love the variety and personal interaction of corporate flying. Plum positions with flight departments like 3M and Target offer stability, good pay, and a sense of comradery that differs greatly from airline flying. I spent 11 years flying for several companies in Dayton, Ohio. It was always something different and one memorable trip comes to mind.

I was flying for Dayco Corporation in the mid 1980's. We we had six pilots, a Beech B100 King Air and a IAI Westwind. It wasn't a big flight department by some standards, but generally pretty well run. Dayco was (and still is) a major manufacturer of automotive rubber products (fan belts and hoses and such). At that time they also made interior upholstery for Chrysler and Volkswagen. After a couple years flying captain on the King Air, I was checked out as co-pilot on the Westwind. A derivative of the old Jet Commander, the Westwind was a low-slung, turbofan bizjet that carried 8 passengers, cruised around .78 mach and with its distinctive tip tanks, had pretty good range.

Dayco had an upholstery plant in Chihuahua, Mexico and the Westwind had flown down there on several occasions with some of the other crewmembers. I was happy to see I was scheduled as co pilot on the next Mexico trip. I'd be flying with



Yours truly and Dwight at the Pancho Villa memorial

Dwight who had been a captain on the Westwind for a year or so. This would be my first trip south of the border.

A few days later we departed for the non-stop flight from Dayton. Dwight had flown this trip before so he basically knew the ropes. As we neared the Mexican border near McAllen, TX, we were handed off to Monterey Center. I gave them a call in my usual professional pilot voice, "Monterey Center, Westwind 249 Echo, flight level 350." No answer. Tried them again. No answer. After a couple more tries with no response, I went back to the previous frequency for Houston Center. "Just keep calling them," Houston said. "They'll answer eventually." We motored along as I

kept calling them to no avail. After about 15 minutes of trying, suddenly Monterey Center came alive in a heavy Spanish accent. "Ah, 249 Echo this is Monterey. Cleared to land." Hmm... what a minute. We were still 200 miles out and at 35,000 feet. I guess they do things different in Mexico!

We landed uneventfully at the Chihuahua airport. As we taxied towards the terminal, we dodged chunks of concrete scattered about the taxiway. Let's say the conditions of the airport were a little substandard. As we pulled up to the terminal building we were waved into position by a distinguished looking gentlemen in a full military uniform with braid, epaulets, medals, hat, sunglasses... the whole bit. "Who's this guy," I asked Dwight. "The Airport Commandante", said Dwight, "If we keep him happy, he makes things happen."



Westwind N249E. Sleek and low slung. You're sitting about 2 feet from the ground. Kinda like a turbo-fan go-kart!

We shut down and were warmly greeted by the Airport Commandante. He herded our passengers and us promptly into the terminal building and into the customs office. Dwight carried a small briefcase. As the papers were signed and stamped for the new arrivals, it dawned on me the briefcase was full of cash. Ah, so that's how things work south of the border. No wonder the Airport Commandante was so happy to see us. So were the customs "officials." The appropriate distribution of greenbacks was accomplished resulting in smiles all around and we were good to go. The airplane was secured and we were on our way.

and things looked a little tense. Signs and banners were everywhere extolling the qualifications of the various candidates. Lot's of soldiers milling around with M-16 as well.

We spent a couple days in the city. Dwight and I decided to hire a driver/tour guide out of the hotel to learn more about Chihuahua. I don't recall our guide's name but he seemed a friendly and informative chap. We quickly learned that Mexican revolutionary general Pancho Villa is revered as a local hero having been Governor of Chihuahua state from 1913 – 1914 and fought many battles in the area during the Mexican Revolution. His claim to fame was that he led a raid on the United States in 1916 when President Wilson withdrew his support of Villa. By the time we got back to the hotel, our guide was beaming in his adoration of Villa and we had such a good time that we gave him \$20 for the tour. Our guide was incredulous and fell over himself thanking and thanking us. He was so grateful he offered the "loan" of his sister for the night! Hmm.. we politely turned him down since this didn't seem like a wise move at the time! We found out later that if he made \$20 in a month, he'd be rolling in dough! No wonder he was happy!

The next day we went out to the Dayco plant with our passengers and had an interesting tour with the plant manager. Each morning workers filed into the U.S. industrial park (there were a half dozen U.S. companies that also had plants there). Dayco provided breakfast before they started their shift and it was a clean and modern place to work. The plant manager said it was cost effective to ship upholstery materials down from Detroit, have the workers sew up the seat and carpet kits for \$2 an hour and ship them back to the assembly lines up north.

Our last day we were scheduled to leave in the morning so Dwight and I got to the airport early to get the airplane fueled and ready. It didn't take long before I saw how things worked. The gas truck pulled up with half dozen guys crammed in the cab. They all got out and watched the main man roll out the hose, open up the fuel door, connected the hose and then the process came to a screeching halt. Everyone just stood there in silence. Dwight knew how the game was played so he pulled out a wad of cash and started "lubricating palms." Once everyone was smiling, the pump was turned on and Jet A began flowing.

After we got our gas, we walked over to the terminal to wait for our passengers to show. While we were fueling the Westwind, a Cessna 206 had landed and was now parked on the ramp. Four rather stern soldiers with M-16s were guarding it. We were just dumb American pilots and since the 206 was between us and the terminal we just strolled past it. That apparently was maybe not a good plan as the soldiers lowered their weapons and pointed them menacingly in our direction. We didn't get too close to the 206 and scooted into the terminal. The Airport Commandante didn't seem too upset. He said that the 206 was full of gold bars and was week-

ly run from the federal bank in Mexico City. Once our passengers arrived we gave the 206 a wide berth back to the Westwind but the military still was not smiling and eyed us suspiciously as we buttoned things up and taxied away.

The trip back was uneventful and I learned that money talks south of the border. I have a friend who is an international Gulfstream captain for a large company in Minneapolis and he says they still carry a small briefcase of cash to smooth the way in certain countries. Good old American cash keeps the wheels turning!

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TCRV Builders News

From Ed Wright (in July):

An update on my progress: I finally have the canopy frame finished; just a few more tweaks until I'm satisfied. About 20 hours and a little frustration invested but we all have to go through the process. This weekend I'll be starting on the canopy fitting, that is if it is hot enough, otherwise I will wait for another heat wave. It's probably not that critical but I don't want to take chances. Last weekend a fellow pilot stopped in to introduce himself and to ask if he could lend a hand when I need it. Didn't take me long to agree to that. Where I live there is no one with experience bucking rivets and he has the experience having worked on an RV-4 with a friend. His name is Scott Meister who lives in Michigan and about every two weeks flies into Grand Marais airport, hops in his airport car, drives up to Saganaga Lake, which is a couple miles past me. He then hops in his boat and motors out to his island where he has a second home. I'll sure appreciate a hand with the bucking. I hope you guys and gals enjoy your fly-in this weekend.

From Rich Macrafic (in June):

It is with mixed blessings for me to announce the newest RV flyer. My wife completed her transition training in our RV-7A with master Tom Berge. Why the mixed blessings? She can now recognize my piloting mistakes and I have to share the flying!!! Kidding aside; I am a proud hubby!



Lord, If You're Up There . . .

...from Aviation Week & Space Technology 01/29/2007, page 66. By David L. Lawrence

ED Note: RV transition instructor Tom Berge has encountered a wide variety of pilots in conducting checkouts around the country. This article was authored by one of Tom's recent students David Lawrence, retired director of the Raspet Flight Research Laboratory at Mississippi State University.

Just a routine test flight, . . . but I think I'll wear my own parachute today.

I would be flying that sleek ultra-light sailplane parked on our ramp at the Raspet Flight Research Laboratory, an aeronautical research unit associated with Mississippi State University,

continuing a series of fairly innocuous aileron-roll tests. Yes, the airplane had a built-in ballistic recovery system (BRS)--a parachute packed into a compartment just aft of the cockpit--that could be deployed during an emergency to save the aircraft and me.

But the modified Windward Performance "SparrowHawk" (which we had dubbed "LightHawk") had suffered a broken rudder cable a few days earlier, and the BRS hadn't been fully tested yet. Consequently, my flight test manager and I decided that wearing my Strong Parachute Model 305 might be a good idea. After all, one doesn't become a 63-year-old test pilot by ignoring gut-level warnings--and my innards were talking to me that day.



The all-carbon-composite Windward Performance "SparrowHawk" sailplane features a sparse cockpit with an instrument panel integrated into a side-hinged canopy. Pilot David Lawrence (above, seated) was ejected through this panel, canopy and nose section, after the aircraft's wings broke off during a flight test. Credit: RASPET FLIGHT RESEARCH LABORATORY

In retrospect, I should have listened better. That little inner voice and other signs were definitely there.

After I strapped into the sailplane's cockpit, the canopy hadn't closed quite right, but I could see the latches and they looked secure. I convinced myself that the canopy was latched properly and pressed on with my mission. But there was a reason that canopy didn't work, and I should have stopped right there. I didn't listen to that little voice, even though I knew better.

Airborne, I completed a series of roll tests at various speeds, keeping all but the lateral control neutral and letting the nose drop, as planned. I had just finished a 50-kt. test point, eyeballing the left aileron to keep it deflected about two-thirds of full travel. I remember thinking; I need to start the recovery [pull-up] sooner. Airspeed builds rapidly in a nose-low attitude.

During the next test point, I noticed that, as airspeed increased, aileron deflection appeared to decrease, so I moved the stick farther to the left to compensate. A bit miffed by that discov-

ery, I wondered if that variation in aileron deflection had occurred on earlier test points, possibly skewing our data.

I was rolling through a 90-deg. bank and noted airspeed was increasing rapidly. The fastest way back to wings-level would be to continue the roll, so I held the stick to the left--but told myself to be careful. Noise from airflow over my canopy meant the airplane had to be approaching the "red line" or never-exceed speed of 123 kt. Glancing inside, I saw the flight-test airspeed indicator we'd installed for these missions only read about 105 kt. Still, the airplane was very nose-low--and it was talking to me. It definitely felt like we were faster than 105 kt.

Unbeknownst to me or our test team, that nonstandard airspeed instrument had a built-in stop that prevented readouts above 107 kt. I'd never heard of such a thing, so had no idea I was actually diving at 162 kt. indicated airspeed (KIAS), a fact we later confirmed via the onboard data system. Now in a 45-deg. nose-low attitude, I gently tugged on the stick, pulling only 2.5g as we passed through 7,600-ft. altitude.

I heard a loud explosion--the wings snapping off--but never had time to absorb such critical information. The left-wing spar immediately snagged the BRS-activation lanyard, deploying the BRS safety parachute and instantly decelerating the SparrowHawk. Unfortunately, the seat and I didn't. Still strapped into the molded composite seat, I blasted through the instrument panel, canopy and nose of the sailplane. The seat and I were outside in a flash. One second I was in the airplane. The next, I was looking up at my feet, hearing my flight suit flapping in the breeze.

There was a lot of debris around me, and a shoulder strap was smacking against my right side. Am I free of the seat? Am I low enough to pull the ripcord? Funny how the human mind works in a life-threatening situation. Somehow, my old Air Force training grabbed center-stage, and high-altitude ejection procedures raced through my mind.

Still falling face-up, I appeared to be clear of the debris and I saw no sign of the seat between my legs, so I pulled the parachute's rip cord. No comforting jerk, though.

I looked up to check my chute and saw a piece of the airplane's canopy rail snagged in the risers, which were twisted in a tight bunch. Air could not get into the chute's canopy, preventing its inflation. I repeatedly yanked on the risers, trying to untangle them, only too aware that I was still falling like the proverbial rock.

And I couldn't look down and see the ground, thanks to the twisted bundle of chute risers bunched under my chin. This is BAD, I thought. I'm going to hit the ground before this chute opens! I kept trying to untwist the risers, even though it seemed impossible, thanks to that snagged piece of canopy rail.

Finally, I looked to the sky and said, "Lord, if you're up there today, I could sure use some help." About 500 ft. above the ground, the chute's canopy opened partially. The risers were still twisted, so I couldn't steer the chute, but with both hands grasping the riser bundle, I tried to relax as I crashed through the tree-tops. A thought flashed: This is going to be a hard landing.

My next recollection is lying on the ground, amazed. I can't believe it! Nothing feels broken! Thank you, Lord! I unstrapped, stood up, confirmed that all my bodily parts were still intact, and walked out of the woods. I was standing in the parking lot of Trinity Presbyterian Church, facing a giant cross. Stunned, I stared at the cross, acutely aware of why I was still alive.



I walked to a nearby road and tried to flag down a passing car. Thanks to several cuts on my face and shins, my tan flight suit was covered in blood. I had to look like Hell. People waved, but nobody stopped. Waiting, I noticed my broken aircraft overhead, descending slowly under its BRS chute. A safety-chase plane circled it, the pilot radioing grim news to our ground-based test control team. I later learned that the chase pilot had reported that I was no longer in the sailplane, and he didn't see another chute anywhere. No wonder; mine had barely opened, just above the trees.

Finally, a gracious driver gave me a lift to the Raspet facility, where very surprised colleagues stared, unbelieving. They had concluded I was a goner.



In retrospect, we could have avoided that accident if we had taken note of any number of several warning flags. Even though test data on previous flights had been telemetered back to the ground station, we hadn't reduced those data, because all our flights had been absolutely unremarkable. Nothing had happened. But if we'd reviewed those data, we'd have recognized that actual airspeeds had reached 150 kt. or more during several nose-low recoveries, even though the in-cockpit flight-test airspeed indicator never topped 105 kt.

I later returned my faithful Strong Model 305 parachute to its manufacturer, asking that it be repacked. Ted Strong, the company's owner, called and asked several questions, then observed that the chute's skirt was torn so severely that it never should have opened at all. Whether the chute was damaged when it caught on the trees or was torn during the initial deployment is unknown. From my point of view, a combination of my repeatedly yanking on the risers and a goodly dose of timely divine intervention partially opened that chute's canopy just above the trees, saving my life.

A few lessons learned: There's no such thing as a "routine" test flight, or a part-time test pilot. Pay attention to your gut-level feelings. Reduce data from every flight, not just those that exhibit anomalies. And finally, ask and ye shall receive a little help from on high, when you really need it.

David L. Lawrence, director of Mississippi State University's Raspet Flight Research Laboratory, was chief test pilot and program manager for Piper's PA-42 Cheyenne III, the Chilean T-35 "Pillan" trainer and the PA-48 "Enforcer," a turboprop-powered close-air support prototype derived from the P-51 fighter. He later served as program manager and test pilot for Tracor's QF-106 target aircraft program, as well as the QF-4 program manager prior to being named president of Tracor Flight Systems.

"For those who fly....or long to."

Yes, they will break!

- Doug

Having a repairman certificate for that RV you built is a MAJOR plus. No one knows your creation better than you and if something breaks, generally you know how to fix it. Will something go wrong someday? ABSOLUTELY I guarantee it will. No matter how carefully you build and maintain your RV, the more you fly it, the more things vibrate and shake and something will go haywire. Our resident RV guru Tom Berge told me a long time ago that you must look at everything you install in your RV and stop and ask yourself, "When that doo-dad breaks someday, and I have to troubleshoot it or remove it for repair, can I do it? The process may not be fun, but you have to make it doable."

Tom inspects a lot of RVs under construction and it is surprising how often he sees some component that will be impossible to remove for repair after the skins are all riveted on. Can you easily unplug some electrical item in or under the instrument panel? (Tom has seen items hardwired in place... do you plan to cut the wires to remove it?) Early in the game in building my RV-4 (and later my RV-7), Tom advised to attach electrical components under the panel with nutplates and cap screws. You CANNOT remove something up under the panel laying upside-down and backwards using two hands. Here's my story confirming that fact:

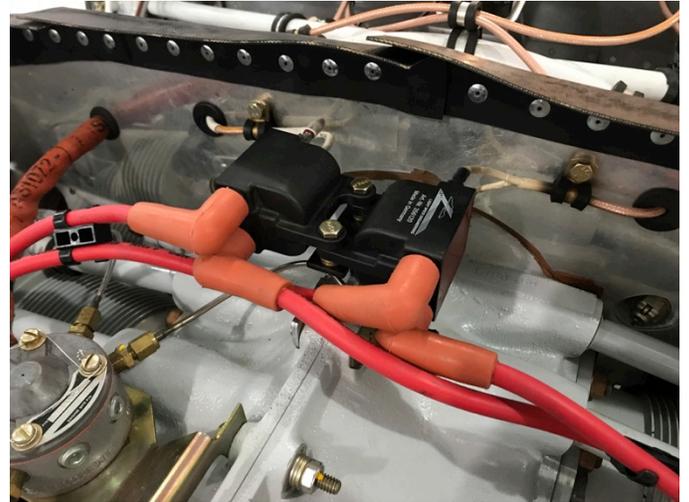
For the last few months, the reception on all of my radios has been deteriorating. An increasing amount of static was in the background on all received radio transmissions. Initially I messed around with squelch settings and such but it became apparent that it was an ignition issue. I have a dual Light Speed electronic ignition system, which after 780 has been flawless. Something was now amiss.



Cap screws and nutplates... a lifesaver!!!!!!

Klaus Savier at Lightspeed advised it must be a high voltage "spark" causing this annoying RFI. I had just replaced all the ignition wires and spark plugs. I reseated all the plug wires at the plugs and the coils. I checked voltages and grounds going all through the system. I determined it was the "left" system as when I ran on the "right" system, the RFI was gone. I decided to swap the EI CPU units left and right. That's when I appreciated Tom's advice. Lying upside under the panel, I was able to remove the CPU boxes rather easily because they were held in place with cap screws and nut plates. Thank you Tom!

BUT...that didn't help the problem. The very last thing to check could be the ignition coils (the "left" CPU fires the top coils and top plugs.) Fortunately RV-6 owner Nancy Burkholder had a set of 2 old coils removed from her engine when she converted to P-Mags. I borrowed her coils, removed my coils and installed hers, started up the engine and the noise was gone!! Finally the problem was found. Checking resistance across the large terminals of my coils found one of them with dramatically different resistance than the others. I ordered a new coil and finally my radios were crystal clear.



Ignition coils... they look so innocent!

After hours of flying, things vibrate and shake loose. Tom recently observed lower than normal voltage on his secondary alternator. Digging around it turned out to be a small amount of corrosion on a connector. He cleaned it up and problem solved. A couple days ago, I was out flying my RV-7 and landed at Lake Elmo and taxied up to the pumps to get gas. After fueling, I turned on the master switch to start up and the airplane was totally dead! WHAT? My airplane is not supposed to break! We got out the tug from the FBO and towed it all the way bank to my hangar.

So what could it be? Bad master switch solenoid? (I've had that happen). Total short of the main battery? (I've had that

happen too.) Scrunching up under the panel again, I barely touched the master switch connections and power came to life! More digging and it turned out to be a bad spade connection in the ground wire at the switch. For 8 years it had been securely ty-wrapped in place but something finally vibrated loose. A new terminal carefully crimped and all was well.

The moral to the story... it will break!! Think ahead during construction. Never install a component without asking yourself, "Can I get that thing out of there??" Because someday you will have to!!

TC RV Builders Fall Fly-In and Cookout

Saturday, September 28, 2019, 12 noon

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



This fall we will be back as guests of Stein and his staff at their new facility at the Faribault airport (KFBL). If you missed our meeting at Stein's during the spring, make plans not to miss this chance for another inside tour of their new hangar, service, and parts departments plus learn how they build those beautiful instrument panels.

Everyone is invited whether you fly an RV, spam can, or even have to drive! Lot's of good food and fellowship is on the agenda. See ya then!!!



For fly-ins:

Program your magic GPS with direct to KFBL. The Stein Air hangar is located on the north ramp at the east end of the airport.

For drivers:

Go south on I-35 and exit at the Shieldsville, Rte 21 exit. Go west and you'll see the airport entrance immediately on your left.

Lost.... Call Doug at 651-398-1184



