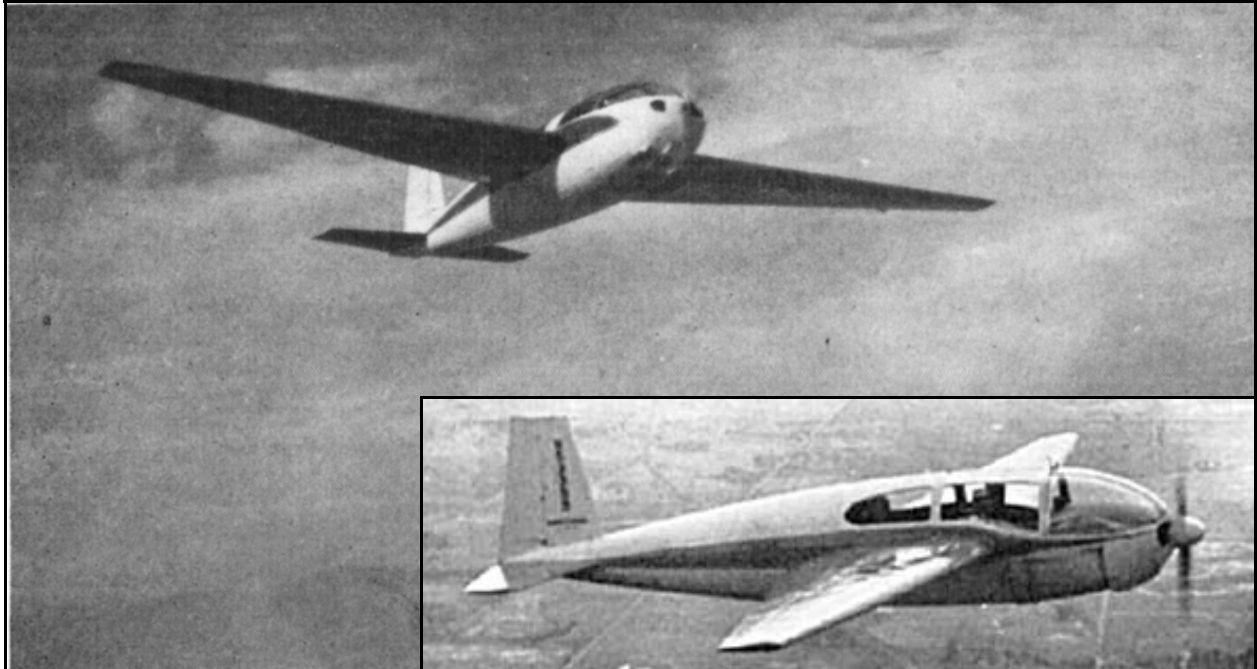




Usually Thomas Boyner is in the left seat of an Airbus A340, but other days he flies the RV-9A he built — the first to fly in Sweden

photo by Love Oborn from RV-7A SE-XLL



HISTORICAL RESEARCH

Ken Scott

Van and I both enjoy delving into odd corners of aviation history. Several years ago we decided to track down an All American Ensign Van had photographed in Oregon, back in the late 50s. It took a while, but we finally found some large pieces of one of the four ever built. We never did find the exact airplane in his picture.

*So I wasn't too surprised when Van showed up at my desk, sporting his "I've got something you never heard of" grin. And he was right. I'd never heard of the **Thalman T-4**.*

According to Van: I recently ran across a box of 1951 Popular Flying Manuals — the publication of George Bogardus' American Airmen's Association. One issue featured a short story about the elegant Thalman T-4.



I remembered a little about the airplane and its designer Harry Thalman. It was remarkable machine, particularly for its era. Remember, this was just after WW2. There were no kits and little infrastructure to support homebuilding. Yet Mr. Thalman had designed, built and successfully flown an exceptionally clean, retractable gear airplane. It could carry four people and operate out of high elevation airports, all on just 135 horsepower. In our day, we consider those who built kit airplanes that weren't pre-punched true pioneers. Well, how about guys like Harry Thalman? I'm in awe...

Harry lived in Salt Lake City, but had learned the basics of geodetic wood construction (probably before the war) from George Yates in Beaverton, Oregon. He'd used that knowledge to build a couple of original designs around a long tapered wing. His first effort was a single seater, powered by a 65 hp Vee-lie radial — by modern standards it would be considered a motor glider. Sometime later he came up with the rather radical T-4, with a buried engine and a canopy extending right to the spinner.

Sometime in the late 50s or early 60s, there were plans to put the T-4 into production at a factory in Roseburg, Oregon, about 160 miles south of my home near Hillsboro. Like a lot of other aviation projects, the proposal ran into financial problems and dropped from sight. One day, in the summer of 1960, I was working on highway survey crew. I heard an unusual sound in the sky, and looked up to see the distinctive shape of the T-4 passing overhead. That's as close as I ever got to it.

But the magazine has jogged my memory and aroused my curiosity. Harry Thalman died in the mid 60s, but there must be people who remember him and his airplanes. Who can fill us in on the story of this unique airplane? We'd enjoy hearing from anyone who can help, and sharing the results in a future issue.

BEHAVIOR MODIFICATION

VAN

I vaguely remember a TV commercial where a man rather groggily looks into his bathroom mirror and the image in the mirror receives a brisk slap-in-the-face. He then says: "Thanks, I need that!" I don't remember the rest of the commercial or the product, but that line became a popular phrase for some time. Its theme follows that of the Terry Lutz' AirVenture safety speech which we reprinted in the last *RVator*. That is: We need to look at our accident record with cold sobriety, make no excuses, take our lumps, and get busy making improvements. Maybe we need a slap-in-the-face once in a while. I believe this line is also very appropriate for the following article by **Doug Rozendaal**.

There seems to be a Gorilla sitting on the couch that no one seems to want to discuss. Given that the recent past has been a little deadly, I thought I would share one of the premises of the presentation that I give to Warbird audiences:

We have a horrible safety record in the Warbird community. Several years ago I was the Stand-Eval Chair at the Commemorative Air Force when we had a rash of accidents that threatened our insurability. We had to do something and it fell in my lap. We had a safety stand-down. (The review resulted) in annual safety training for all CAF pilots and I ended up taking it on the road. It applies equally to the RV world.

Before anybody gets wrapped up in the details of some recent fatal accidents, let's think about how we, as pilots, react to accidents. Let me be clear, this is not a thread about the details of the recent accidents.

*Wilbur Wright, in a letter to his father in 1900, said that a deliberately accepted risk was safer than ignoring or denying the risk. So let's talk about the Gorilla.... RV flying is dangerous. The bull**** we tell our spouses that the most dangerous part of flying is the drive to the airport is, just that, bull****.... John and Martha King call this "The Big Lie." If we can't be honest about this basic fact, then we are doomed to continue killing our friends or ourselves.*

Flying, the way most RV pilots do it is dangerous. Formation is dangerous, Acro is dangerous, spontaneous low level flying is dangerous. You can tell yourself that you have it all figured out, and the way you do it, is not dangerous....

Hogwash... It is dangerous.

In 2008 there were 10 fatal accidents in RVs. Does anybody think that is an acceptable number? For that number to change, we can't wish it down. Behavior must change. Some will want to look at the accident reports, but the problem is how we do that.

We read accident reports and look for the one thing that

we don't do that the subject pilot did, then we feel vindicated and say, "There, see, that guy did XXX, I don't do that, therefore, I don't have a problem." Instead we should read accident reports and say, "That guy was smart, sane, and as good or better pilot than I am and he got caught. Why couldn't that happen to me?"

Nobody ever got out of bed and said, "Today is a good day to kill myself in an airplane." Read accident reports looking for the links in the chain that you have done, or the mistakes you have made, instead of looking for the link that you perceive to let you off the hook.

What this is about is behavior modification. Only if we are honest with ourselves about the risks inherent in our flying will we change behavior. That is hard to do.... My wife has been working on me to put the seat down for over 20 years and my compliance is still fairly low by her standards.

Once we honestly acknowledge the risks, then we can develop strategies to mitigate them. That goes like this:

- Identify the risk.
- Rate the risk.
- Rate the reward.

If the risk out weighs the reward, stop. If it doesn't, brainstorm ways to reduce the risk. If we are entirely honest with ourselves about the risk versus reward, then like Wilbur Wright, we can accept the risk for what it is, or change the behavior. Only then will the statistics change.

"Behavior must change." Three little words which we know, from all forms of human endeavor, can be extremely difficult to bring about. How can we get

"Any discipline that deals with an authoritative, independent reality requires honesty and humility."

Matthew Crawford in *Shop Class as Soulcraft*.

those "marginal pilot guys" in our ranks to shape up and fly right? Remember the guy in the mirror? Thanks Doug, I needed that.

Before looking to see what the other guy is doing wrong, have a hard look in the mirror. One thing I saw in my own mirror was checklists.

I have long recognized that the use of formal checklists, or not using, is one of my shortcomings. It's been easy to rationalize away because I fly my own airplanes and am usually the only one flying them. I fly almost every day and am thus very current. I don't need checklists like "other pilots" do. A quick mental list is OK. Those words, like many similar, could become a sad but appropriate epitaph. As a result of Doug's article and a bit of introspection, I now

have checklists taped on the instrument panels of my planes. "One small step for man".

Another small step I took was to suggest regular safety talks as a part of our monthly EAA chapter meetings. This suggestion was adopted, and these talks are now being given by random volunteers. These are not sermons from the mountain, but little vignettes from the rank and file. I'm sure that some of these will contain elements of confession or testimonial. They have been well received. My point is that we must constantly be reminded about various aspects of flying safety, and to share our insights and experience with others.

HOMEBUILT AIRCRAFT SAFETY:

Probably the most thorough and conclusive aircraft accident data is to be found in the Nall Report published annually by the AOPA. In this report accidents are categorized by causal factors (flight activities) as well as types of aircraft. Experimental Amateur Built aircraft are listed in a separate category, and when compared with "single engine commercial" airplanes, their accident rate is much higher. Not a little but a lot! Depending on interpretation of data, as much as seven times more dangerous. Regardless of how the data is skewed or not, we have far too many accidents. We need to quit bickering about the exact accuracy of the data and make a major effort to improve our safety record.

WHERE TO START?

Some common accident categories are:

- Mechanical Failure
- Landing and approach to landing.
- Take off and departure.
- Traffic pattern entry
- Maneuvering
- Aerobatics.

STALLS, SPINS, LOW SPEED CONTROL

One common thread running through this list of accidents is that all of these flight conditions involve flight

at speeds in the lower end of the performance envelope. Almost all involve loss of control. Loss of control is most likely to happen in conjunction with stalls or accelerated stalls. Thus, universal mastery of low speed control could eliminate a high percentage of all homebuilt aircraft accidents.

I have spoken with transition training guru Mike Seager about his observation of the thousands of pilots he has evaluated and trained for transitioning into flying RVs. His findings? Many pilots have poor skills in the area of low speed control, stall recognition, and stall recovery. There is obviously an undeniable parallel between this observation and accident statistics.

If accident statistics are to improve, either pilots must improve or airplanes must improve; i.e., be made stall proof. Realistically, aircraft are not likely to improve significantly in this manner. Even if all new aircraft could be made stall proof, the existing airplanes would still comprise the majority of the fleet for decades to come.

Experimental aircraft experience a higher percentage of mechanical failure/power loss accidents. This is not too surprising considering that they are "homebuilt". Loss of power leads to emergency landings which require an elevated skill levels, including low speed control. Poor pilot skills just compound the danger following a mechanical failure.

The airplanes we fly are not stall-proof. We cannot dismiss the need to learn better stall recognition, avoidance, and recovery. For accident statistics to change, BEHAVIOR MUST CHANGE. Flawed behavior in terms of aircraft accidents is not usually an intentional thing. When flight conditions go awry, time constraints are usually such that the pilot responds (behaves) in a subconscious or conditioned manner. Right or wrong. The behavior we need to consider is that of pre-conditioning. Training, planning, and practicing. The "I'll deal with that when the time comes" approach simply doesn't work. Accident statistics offer stark proof of the fallacy of this attitude. Analyze almost any accident and you will find that better decision making and reaction by the pilot could have avoided or minimized damage, injury, or loss of life. Why do some pilots perform better in emergency circumstances than others? Why was the "Miracle on the Hudson" not a "Disaster on the Hudson?" Training, planning, and practicing!

Enough for now. Hopefully this will prompt you to think more about flying safety. We intend to follow on with articles offering details of means of identifying weaknesses and means for improving flying skills. We hope that with a continuing dialog we can entice qualified members of the RV community to share their knowledge and experience for the benefit of all.



FAA INCLUDES RV-12 KIT ON E-AB LIST

KEN SCOTT



builders that, even though the RV-12 may be eligible for E-AB, ***we strongly recommend building the airplane exactly to the plans, with the parts supplied in the kit, just as if it were being licensed E-LSA.***

From its inception, the RV-12 was intended to be an Experimental-Light Sport Aircraft. To qualify for E-LSA, the airplane had to be completely defined and produced in a manner that assured that all examples built from the kit met E-LSA standards. Because of its E-LSA roots, the RV-12 is harder to “improve” than any previous RV. It is an extremely comprehensive and integrated kit. “Integrated” is the key word! Making changes can have an extensive ripple effect, resulting in unforeseen and

APPROVED!

Not long ago, an FAA team visited Van's and had a good look at the RV-12 kit we'd arranged for their inspection. Subsequently we received notice that the kit had met their checklist criteria and qualified for inclusion on the FAA list of “approved” kits, eligible for licensing in the Experimental Amateur-Built category.

While several RV-12s had already been licensed E-AB, it had been up to the individual builders to demonstrate to their inspectors' satisfaction that their airplanes, in fact, met the E-AB requirement that the majority be built by amateurs. Now, an E-AB builder can simply refer his inspector to the list.

One of the benefits of the FAA's decision, from our point of view, is that it helps us sell in foreign markets, like Canada, where authorities insist that kits must be “on the list” before they can be imported.

There are several pros and cons to both the E-LSA and E-AB categories that might enter into an RV-12 builder's decision as to which path to follow. We anticipate (read: dread) that one of the ‘cons’ is the ability to make changes to the airplane during construction that may adversely affect safety. We continue to caution



complicated difficulties that Van's may not be able to help solve.

Such changes can also remove the “umbrella of confidence” that comes from knowing that the E-LSA conforming airplane has met the extensive standards required by the category. Obviously, if Van's RV-12 Special Light-Sport (S-LSA) aircraft has been extensively tested and proven to meet the standards, an identical E-LSA airplane should as well. But if the airplane was altered during construction, those assurances may no longer apply.

It's up to you, the builder, to decide which path suits you best.

SEVEN THOUSAND CONFIRMED!



*The Hobbs Meter on our website has been steadily marching higher until finally, in mid-October, another milestone number rolled up: 7000 completed RVs! Appropriately enough, the builder of the Big Number was a repeat offender; **Ron Jagels** of California. We asked him to write a few words about his new RV-12:*

After medical reasons prompted the sale of my RV-8A, I thought long and hard about my next step. I like flying and I also like the building process. There is a tremendous personal satisfaction and sense of accomplishment when the airplane is finished and you can fly the results of your efforts.

Clearly, the Light Sport option would allow me to continue flying. Van's was well along on the RV-12 development effort and I decided the RV-12 was the solution. Even though there were no RV-12 kits completed, I knew from my RV-8A experience that the kit would be of high quality and there was already very favorable feedback on the detailed build instructions provided with the RV-10 and planned for the RV-12.

Fast forward to May of 2009 when I placed an order for the RV-12. Completing the RV-8A spanned 3 ½

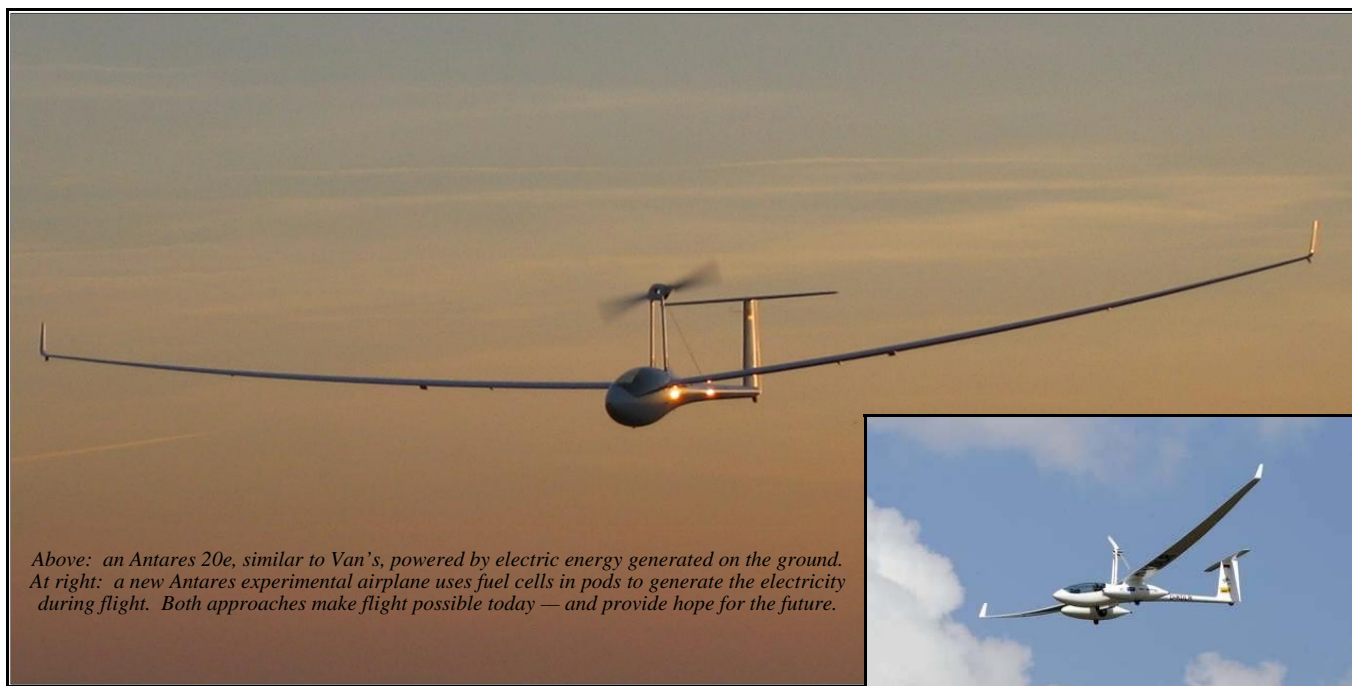
years and some 2700 hrs of time, but I built the RV-12 in less than 18 months and in less than 900 hrs of time. As with the RV-8A, the build process was very rewarding – but in this case, it went so rapidly you could routinely see significant progress on the build. The detailed instructions and well-planned assembly sequence eliminated the “oops factor” you have when just working from drawings and summary instructions. When building the RV-12 there was more than one occasion when I thought I would have like to have been a fly on the wall to see how Van's figured *this* out! Several options were made available during the last year and I incorporated the wheel pants, interior upholstery and dual display into my project.

Projects come to an end and once again there was the sense of accomplishment and satisfaction when RV-12 serial number 120230 received her airworthiness certificate on October 5, 2010. The first flight for N647RM took place on October 12, 2010. You read about “uneventful” first flights but I don't think this is really true. Nothing can replace the adrenaline rush of taking flight in your project. As I experienced with the RV-8A, the airplane performed exactly as it was supposed to. The RV-12 is nimble and really fun to fly. It likes to fly so much; it has to be coaxed back to earth.

So If there are any builders are out there, sitting on the fence, wondering whether to proceed with an RV-12, take it from a repeat offender: you will not go wrong with this airplane.

Big numbers come, and then they go quickly. Twenty two minutes after we received notice of Ron's airplane, 7001 rolled in over the email. By Halloween, we were up to 7025 and well established on the path to 8000.

Keep 'em coming.



Above: an Antares 20e, similar to Van's, powered by electric energy generated on the ground.
At right: a new Antares experimental airplane uses fuel cells in pods to generate the electricity during flight. Both approaches make flight possible today — and provide hope for the future.

ELECTRIC AIRPLANES (CONT.)

VAN

In the last *RVator*, I explained some details about operating the electric motor system on my Antares 20e sailplane. Particularly, I mentioned something to the effect that the battery power level rebounded after I “rested” them every so often. I knew that was not a good technical explanation, and that those of you with electrical savvy would no doubt roll your eyes in disgust. But it was my best “take” on what I had experienced. I got an E-mail back from Dave Nadler, the US representative for Antares. (You may have seen his personal Antares on display at AirVenture the past two years.) Dave said:

“To clarify, the batteries don’t gain anything by “resting.” Rather, the algorithm used to compute remaining power shows less than actually available when you’re under power. When you’re under power the cell voltage drops and the simplistic gas algorithm thinks there’s less available. When you stop drawing power the voltage drifts up. A better “gas gauge” would compensate for the effect of voltage-drop under load. It’s annoying.”

Sounds good to me. I just fly them----I don’t necessarily understand them.

I had previously mentioned that, according to its manual, the Antares should have a power climb capability of over 9000 ft. However I doubted that it could be done in one motor run without “resting” the batteries. Based on Dave’s explanation and his suggestion of gradually reducing power throughout the climb, I went out and tried an extended climb. Normally, I climb at 120 amps which is about 75% max. power. This yields about 500 fpm climb. (my Antares weighs 1050 lbs. empty, about the same as a 2-seat RV. Seventy-five

percent power is about 42 HP., so 500’/min. isn’t bad). On this climb flight, I began further reducing amperage (power) at 2000’. That seemed to prevent the indicated “percentage remaining” power from dropping as rapidly as usual. I reached 7000’ in 18.5 minutes, at which time I had powered back to about 80 amps. Climb rate at that power (about 50%) was just over 300 fpm. (remember, density altitude does not affect power output or an electric motor) Indicated power remaining was 15%. Based on the trend, it appeared that 9000’ ft. was attainable so I terminated the climb and retracted the motor. After a few minutes, the power remaining indicator rebounded to 27%. With more in reserve than initially indicated, it was even more certain that the 9000’+ book value was attainable. (In still air, the Antares will glide more than 90 miles from that altitude.)

This experience basically confirms that the “loiter-cruise” mode of operation for the Yuneec and other such under-development sportplanes will be the best mode of operation. At least with this level of battery technology, a slower power draw seems preferable.

It has been interesting learning to operate an electric power system. I hope that this is of passing interest to you, as there will probably be an electric airplane in the future for many of you. “When” in the future is the question. I have heard that they may soon be able to get 10-15% more performance from the Antares power system, which shows that at least incremental progress is being made. Unfortunately, prospects for a 2-fold (or more) improvement in battery performance — needed for a practical electric sportplane — still seem distant.

WELL, IT LOOKS LIKE AN AIRPLANE

KEN SCOTT

I finally reached the point where I just couldn't fit two airplanes in my hangar any more. I had to move the RV-6 out onto the ramp and park it out in the weather. Boy, it didn't like that – it just sat out there, looking through the hangar door like an ignored puppy while I tried to move the RV-12 closer to flying. You could almost hear the whimpering.

But I had to do it. The RV-12 was essentially together – on the gear, wings on, engine installed, canopy on, controls hooked up, etc. Standing back and admiring it one evening, it suddenly occurred to me that I better get my paperwork in order.

In the Documentation package that included the Production Acceptance Procedures (PAP) I also found the forms I needed to register the airplane with the FAA. I re-read Mel Asberry's article about registering an E-LSA (2nd issue 2010) and separated out the forms I needed to send to Oklahoma. I painstakingly filled them out, and wrote the five-dollar check. I'd already reserved an N-number (just call me N68CK), so I included a copy of that letter too. With the initial paperwork out of the way, I could concentrate on the airplane.

I began working my way through the PAP, which is essentially a very complete, very specific checklist. I was able to get through several pages before I hit my first snag. The electric fuel pump didn't pump. It ran, electrically speaking, making the usual chatter in the baggage compartment, but only the faintest dribble came through the hose mounted on the outlet of the gascolator. I knew the lines were open, and gravity still worked, because when I pushed the quick-drain, fuel gushed out. At first I feared I'd have to disconnect the flaperon pushrods to get to the pump, but in the end I was able to replace it without undoing the control system. I re-installed the fuel lines and wiring and flicked the master switch (in the RV-12 the electric fuel pump runs whenever the

master is on) and confidently awaited a steady flow of fuel from the gascolator.

Nothing.

Well...shoot. The chances of two fuel pumps being bad out of the box is very small, so – obviously enough – the problem must be somewhere else. This time, instead of just stabbing the quick drain and checking for the presence of fuel I actually pulled it out of the gascolator. The initial gush of fuel quickly dried to a drip. That's a clue, Sherlock. Given enough time, the slow dribble that was making its way through the system would fill the bowl, but fuel could not flow nearly fast enough to feed a running engine. There's had to be a partial blockage somewhere in the fuel system.

Scott Risan stopped by the next evening, and together, we started checking the fuel system from one end to the other. We put a gallon or so in the tank, ran the pump (still almost nothing at the gascolator) then pulled the full line of the outlet side of the pump, stuffed a rag into the tunnel and blipped the master. Whoa! *Plenty* of fuel flow there. We moved on to the fuel valve that lives beneath the forward floor. Lots of fuel on the outlet side, and the valve stopped the flow just like it was supposed to. Up to the forward tunnel, where the fuel flow transducer lives. *Plenty* of fuel going in....almost nothing coming out. Well, there you go.

Out came the fuel flow transducer and sure enough, the inlet side of the orifice was blocked. Scott got the first look and said it looked like a flat disc pressed into



The RV-6 had to sit out in the rain when the KK-1 wing was under construction, too, but at least it got to stick its nose in the hangar and see what was going on.

the tube. By the time I saw it, he was already cleaning it out. Poking around over a clean sheet of paper produced a small sprinkling of something gritty and crumbly. We still don't know exactly what it was. It didn't look like construction debris and it certainly wasn't tank sealant or aluminum chips. Right now the prime suspect is some sort of insect. It probably got into the transducer during the several weeks it sat open before the fuel lines were installed. Next time I'll be sure to plug or tape ALL the possible inlets to the fuel system.



With the obstruction removed, full fuel flow was established. I flushed several gallons through the system and double-checked the gascolator screens. Nothing. I called the problem solved.

I knew there must be other small glitches lurking, so I asked Ed Chesney from our prototype shop to come by after work and inspect the airplane. Ed has worked on RV-12s since day one, but he'd never seen mine — which made him the perfect guy to inspect it. I tossed balls to the dog while Ed poked and prodded his way around the airplane, flashlight and notepad in hand. I learned a long time ago to leave an inspecting inspector alone — if you follow them around and discuss every discrepancy, you get a conversation, not an inspection.

When Ed finished, I had a list of about six or seven items that needed fixing. I'd routed a plastic brake line too close to a control cable, the oil drain hadn't been safety-wired, and one of the U-1203C landing gear doubler plates was installed upside down. There were almost a dozen un-filled rivet holes — who knows why? It took a Saturday afternoon to punch all the items off Ed's list. When FoPaw and I went down the runway to the mailbox at the end of the day, the FAA registration was there. Guess I better order some N numbers...

A couple of weeks later: N-numbers installed on the vertical stab, temporary cushions in place, lower cowl installed, battery ground connected, wheels chocked and Ed standing by with my tiny fire extinguisher -- it's time to see if this thing will run. I opened the choke, flipped the master and turned the key. The little Rotax started instantly. I never saw the second blade of the prop pass the windshield. Oil pressure was right there, CHT and EGT were climbing into the green, and everything sounded good. I sat there and grinned at the

Even when it's finished, an airplane stripped down for inspection always looks a bit forlorn. N68CK regards the outside world with trepidation...it looks wet, cold and nasty out there.

world for a couple of minutes before I noticed that the oil temperature was stubbornly stuck on 1 degree. Also, the Dynon was showing the "OAT/Magnetometer not found" message.

I dug into the wiring and found — well, ok...Ed found -- that 1) I'd cut the wrong orange and white wire when I was shortening up the download plug wires, and 2) there was no continuity between the connector on the oil pressure wire and the pin on the plug going into the panel circuit board. Correcting the wiring at the plug and replacing the connector on the wire to the oil pressure sender solved both problems.

I've never enjoyed figuring out computer problems, so I approached loading Dynon's new 5.4 software into my airplane with anxiety. My hand-cranked laptop runs Windows XP, version unknown. But it downloaded and unzipped the locked files from Van's website and retrieved the new software from Dynon without a problem. When I plugged it into the "download plug" built into the airplane, it flawlessly combined the two and after a few minutes, the "download successful" message appeared. After that, I followed the directions in the Dynon installation manual to program the trim indicator and fuel level indicator. Neither was difficult — although the fuel can get messy if you're not careful.

Now, we've got the carbs balanced, static and pitot systems airtight, and the Dynon reading correctly. All the switches make the correct things happen on the far corners of the airplane. Maybe tomorrow — if it's not raining too hard — I'll taxi it up and down the airpark and check the brakes/steering.

Things is gett'n exciting.

FLIGHT OF THREE

A GROUP OF FRIENDS FLY RVs FROM OSHKOSH TO ARGENTINA

EDUARDO HEIGLESIAS



Lined up at Oshkosh, three RVs prepare to depart for Argentina.

Although I live in Texas, over the years I have been talking RVs with my Argentine friends. For my brother-in-law's cousin, Diego Ariztegui, I completed RV-7 N76XE started by Alan Woodall. After listening to Diego rave about RVs, Alfredo Negri, from Buenos Aires, acquired N417CC, a beautiful RV-7 built by Charles Hooper in Arkansas. Alfredo and I flew it to Waller TX, where it joined my RV-6. Word travels fast and my friend Juany Segura, from central Argentina, called me to ask me if we could find a RV-6 for him as well. We found N181R in Oregon, so by the end of the year the fleet had grown to four aircraft – three of which needed to go to Argentina.

So we concocted a plan to fly from Houston to Oshkosh for AirVenture 2010 and from there to Argentina via Houston. Diego and Alfredo would fly their own airplanes and I would fly Juany's. The flight to AirVenture would be the shakedown to detect potential problems and correct them before the actual trip.

One of the things we needed was extra fuel. This we did in different ways. XE had 42 gallons in the main tanks, extended range tanks held 9 gallons, and a Turtle Pack from Australia which held up to 37 gallons although we only planned to use 20 gallons in it for this trip. I had 14 useable gallons in wing tip tanks besides the 38 in the mains so I added a 15 gallon plastic barrel in the right seat. CC was flying both with Alfredo and Jose Luis "Cucu" Celada as pilots, so their only option was a 20 gallon turtle pack which gave them a slighter shorter range than ours, but adequate for the trip.

Everybody worked as a team. Alfredo, Jose Luis (extremely good in mechanical matters), "Freddie" Jobke, an aeronautical engineer with years of constructing airplanes in Argentina, and I did most of the technical preparation. Diego assisted by keeping the beer flowing!

7/30/10 Oshkosh – Waller, TX. 12.5 Hrs/1856NM

A trip of this nature deserves to originate in Oshkosh, so we did. We worked our way back to Texas with a stop at the TruTrak facility in Springdale, AR. After wonderful assistance from Zach and the rest of the guys there, our autopilots were tuned up and we headed for Houston, arriving Friday afternoon. That gave us all Saturday to do the last minute preparations before departing for South America.

In the meantime our friend Martin Rappallini and his nephew Tinti had flown his Argentine-based Aerostar LV-MEG down to Ft. Pierce from Kalamazoo. He would wait for the RV fleet there and fly most of the trip with us. (Six weeks earlier, Martin had flown his Aerostar from Argentina to Houston and then to Aleutians, Nome and finally from Point Barrow, all the way to the North Pole and back. When I asked him what drove him to do this, in his analytical way he responded "because I felt like it.")

8/1/10 Waller – Ft. Pierce., 5.8 hours 883NM

We left about 8 AM and took the inland route in order to avoid the Pensacola NAS, then cut across the Gulf of Mexico. We arrived at Ft. Pierce to find our friends with MEG waiting for us. When we did our fuel consumption calculations, XE, with the most powerful fuel injected engine, had the lowest consumption while I, with a carbureted 160 HP, had the highest at about 8.5 GPH.

The plan for the next few days was to have MEG take off after the RV fleet and land ahead of us in the final destination for that day.

8/2/10 Ft. Pierce-PROVO- St. Croix. 7.7 hrs/1065NM

We took off from Ft. Pierce as early as possible so we could reach St. Croix that same day. The weather looked good after we passed some CB activity off the Florida coast. We cruised at 7500' and averaged about 140 kts. After arriving at Providenciales we cleared customs, refueled, and filed the International flight plan for TISX without even getting a bite to eat - we had to press on. A weather window in the Caribbean must not be ignored.

On the way to TISX we contacted San Juan Control and they cleared our fleet over the island and direct to St. Croix. We reported crossing the shoreline and landed in a 1-2-3 sequence direct to US Customs apron. We tied down at Bohlke International, a first-class FBO with a deserved reputation for being one of the best in the Caribbean. This had been a long day, covering over 1000 NM in good weather. Ahead of us we knew that the weather would go downhill. We had a good dinner in Christiansted and went to bed early.



In Grenada, Alfredo was so tired he took a nap. Diego, Tinti and Martin pay their respects just in case he did not make it back to the living.

8/3/10 St. Croix-Grenada. 3.2 hrs/405NM

Dawn was beautifully clear but once we looked at the weather picture we realized that the tropical depression that had gone through the eastern lower Caribbean was still a factor. We planned to fly east of the islands all the way to Grenada. Once we had worked our way south it turned out this was not a good decision. Contrary to logic the western side of the route looked much better. This was confirmed by MEG who was at FL110 and ahead of us. This valuable information allowed us to fly this leg with an almost direct route to Grenada, all over open water. This time upon arriving to Bishop International we were early enough to get refueled and all the paperwork. We arrived at our hotel on the beach early enough to enjoy the Caribbean waters, having left the RVs ready for a very early departure next day.

8/4/10 Grenada-Cayenne 5.5 hrs/764NM

We woke up before dawn in order to depart as soon as there was enough daylight. This leg is right in the ITCZ (Inter Tropical Convergence Zone) and it is



Eduardo in N181R between Grenada and French Guyana, making his way between big CBs

known for heavy CB developments especially after noon. After the island of Tobago the convective activity got to a level that we could not sustain a higher flight level than 5500'. As we progressed it looked like the worst cells were out at sea so we diverted many times to circumvent them. These cells are big but are randomly spaced, so it is possible to be patient and navigate around them. Going through rain and low visibility areas is a fair price to pay to avoid convective cells. We ended up making landfall at the Surinam - French Guyana border. As we approached Rochambeau airport in Cayenne, MEG, who was ahead of the RVs, advised us that the European Agency's missile launch site was active. Luckily our westerly deviation put us to the west of the prohibited area. Upon contacting approach we decided to use a couple mile spacing and use the 08 runway instrument approach foreseeing the shower activity in the area. This is a 12 NM final that clears the small hill on the west side of the runway. Once on the ground all crews were glad to have this leg behind.

When we got to the hotel we found out that the Arienne missile launch was scheduled for 5:30PM. Neither of us had ever seen a live launch so we went over to a strategic point in the city and had a wonderful view of



Wonder what the VSI would look like....? An Ariane heads for space, launched from French Guyana.

the rocket putting two communication satellites into orbit. Cayenne is a province of France and has been preserved as colonial times. It is a blend of 3 centuries ago and modern times with a European touch.

8/5/10 Cayenne-Macapa-Araguaina 5.7 hrs/781NM

The plan was to fly early and be on the ground by mid-day. Once we departed Cayenne the atmosphere was unusually stable and the further south we went the cleaner it got. The distance to Macapa is less than two hours. This was our entry point to Brazil but we decided that if we cleared the Brazilian entry fast enough we would push on. This was reinforced by reports by MEG (who was doing Cayenne - Brasilia direct) that the weather looked good to the south.

By 1:30PM we had done all the paperwork and had our Brazilian overflight permits as well as flight plan and refueling so we decided to proceed to Araguaina in the

state of Tocantins which is about half way to Brasilia. We crossed the Amazon rainforest under CAVU conditions. We all agreed that we should write this in our log-books because it was unlikely that we would see it again in our lifetime. We arrived in Araguaina around 5:30PM to be greeted by a friendly bunch who put the RVs in a hangar overnight.

8/6/10 Araguaina-Brasilia 3.5 hrs/525NM

From here on I knew that we would have clear skies typical of the dry Brazilian winter. On the high plains it does not rain from April through September. The flight to Brasilia was uneventful except for the rough air created by the thermals that reached 10000'. Our destination was APUB, right in the heart of Brasilia, where I



The RVs rest in the shade at Brasilia.

had based my RV-6 for a year back in 2006. This is an LSA type airfield with 1900' of runway at an altitude of 3700'. You fly less than two miles from the presidential palace -- totally unthinkable in the US. Arriving in Brasilia that way is an unforgettable sight. Some of our friends gave us a warm welcome. After lunch we went on a tour of the capital city which is now 50 years old and has a population of about 3 million.

8/7/10 Brasilia- Foz do Iguacu 4.8 hrs/721NM

Next morning we left Brasilia without adding fuel. I was worried about 181R with its 160 HP and the density altitude. Luziania, about 30 NM south, has a long runway and avgas, so we stopped there to top up and continue to Foz de Iguacu. I knew that our friends at Aeroclube Foz de Iguacu were planning a BBQ for our arrival. The club is about 15 NM NW of the Foz international airport and very close to the shores of the Itaipu lake. Itaipu, with its 14,000MW generating capacity, is probably the largest hydro power plant in the world. The lake is about 30 miles long. Sure enough, when we landed our good friends at the aeroclube were ready for a royal treatment. By this time we started to realize that life was really good. Time and time again we realized what a tight and wonderful community aviators are. It does not matter the country or race or language, it's all the same core values.

8/8/10 Foz-Cataratas- Buenos Aires 4.8 hrs/627NM

Next morning we departed the aeroclube for the short hop to SBF1, Foz international where we had to comply with all the paperwork to exit Brazil. After about 3 hours we hopped over to the Argentine side, where we did all the paperwork to enter Argentina and load fuel which is considerably cheaper than in Brazil.

The headwinds were between 30 and 35 kts and after sending scouts to test other levels we decided to stay at 7500'. Further on a cloud cover with freezing characteristics made us go to 9500' and the temperature was 2 deg C. Diego tested briefly into the top of a cloud and reported immediate freezing. Not good for a



Overflying the Iguacu Falls when crossing from Brazil; to Argentina. One of the wonders of the world.

RV. Later on, the cloud cover got thinner and finally became broken so the final 150 miles were flown at 4500'.

There was a big crowd waiting in San Fernando (SADF), our final destination. We'd flown 7627 miles in 53.5 hours.

We are still riding on the adrenaline generated by this wonderful trip. It would be difficult to imagine a better aircraft than a RV to accomplish a voyage of this nature.



Finally arrival at Buenos Aires!! Alfredo and Jose.

CAVEAT EMPTOR

KEN SCOTT

Those of us on the Tech Help desk find ourselves spending more and more time with prospective kit buyers – unfortunately for us, they are buying kits we sold to somebody else, often many years ago. (Gus, who keeps a running record of his received calls, recently showed me a spreadsheet page documenting a day where TWO THIRDS of the people he spoke to fell into this category.)



Above: Sometimes you see things that just make your eyes roll. Somebody ground a full 1/8" off a main spar to make it fit in a mis-built fuselage. Unfortunately, the people who created this un-repairable mess left it for somebody else to solve.

Right: Why you don't want to chrome plate steel RV parts, no matter how pretty it makes them.

We help as much as we can, but often that's not much. We really have no idea what's happened to that kit since the truck carrying it went hull-down on our horizon. Any amount of work, of any quality, could have taken place. Hardware may or may not be there. The chain of ownership may not be recorded. We don't know if the engine that Uncle Bob (now deceased) bought for the airplane, salvaged from an Argentine Aero Boero, will work (I'm not making this up...). In the used kit world, it's very much caveat emptor.

One particularly sad case came to light recently. A builder was working on an RV-9A kit that had been through several owners – possibly as many as four.

He recognized that this might raise some problems, but he had gotten such a good price on it, he couldn't pass it up. He should have.

While attempting to mount the wings to his fuselage, he found the space between the fuselage bulkheads was a full 1/8" too wide on one side, and almost that narrow on the other. It's hard to imagine just how one of the previous owners had accomplished this, given a pre-punched kit, but there it was. That might have been corrected – but the real shock came when he inspected the wing (which had already been largely assembled). Somebody had obviously tried to fit the wings before, and when the spar wouldn't fit between the mis-aligned fuselage bulkheads, they grabbed a belt sander and sanded away 1/8" of the main spar bars! No, really.

When we got the photos, we had to break the bad news. The spar was ruined, and given the mind-set of someone who would grind away a major structural part of an airplane, the rest of the wing should be very carefully inspected before any parts were salvaged from it. We'll spare you the details of that inspection. Well, here's just one: the tank had evidently leaked (bad), so it had been sloshed (worse), more than once (worse yet), and (really bad) sloshed **after** the fuel sender had been installed -- so now the float was firmly bonded to the bottom skin of the tank.

And here's another gotcha: a used RV-4 with a broken flap handle. The steel flap weldment was chrome plated, somewhere in the past. This was a much discussed idea in RV circles about 18 years ago, but when it became apparent that chrome plating caused a phenomena called "hydrogen embrittlement" and significantly weakened plated steel parts. Someone who had spent four or five years building an RV-4 would have had a much greater chance of absorbing that bit of community wisdom.

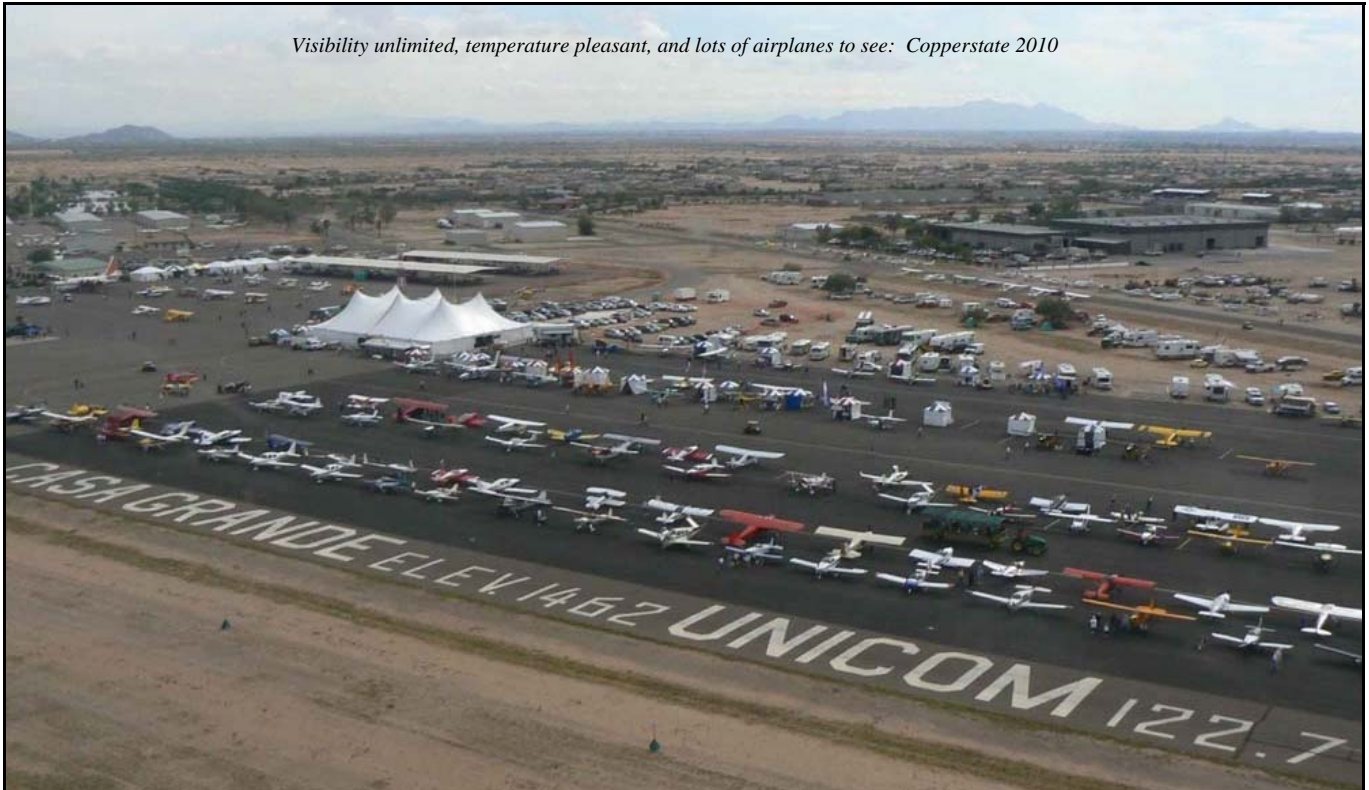
The result: what seemed like a great deal was actually a financial and emotional wolf trap.



COPPERSTATE

KEN SCOTT

Visibility unlimited, temperature pleasant, and lots of airplanes to see: Copperstate 2010



Prototype shop supervisor Scott McDaniels lived in Arizona before he came to work for us, and still has many friends there, so for the last several years he has been Van's Man on the Ground at the Copperstate Fly-in. This year, he was committed to the TeenFlight program and couldn't go, so I volunteered – and I volunteered The Violinist, too. A trip to Arizona in the fall sounded just fine to both of us, especially since we could do it comfortably and quickly in the RV-10. Then she got a gig that was too good to pass up. Van's fancy airplane and I were jilted so she could play an opera by a guy – I swear – named Englebert Humperdink. Sterling Langrell, one of Van's welders and a relatively new pilot, jumped at the chance to fill the seat. He's not nearly as good looking, but he's still at the point where a long trip is an adventure, not a chore, so I was glad to have him.

Copperstate is held at the Casa Grande airport, about thirty miles south of Phoenix. Getting there from Aurora involves several hours of flying over some of the least populated country in the Lower 48, staying out of restricted areas (*serious* restricted areas -- like Groom Lake) and a surprising amount of high terrain. Weathermeister.com informed me that it was clear sailing until almost Las Vegas, where we could encounter some fairly strong cells with heavy rain. Well, nothing to do but go and see, so we launched at about 8 a.m. into a crystalline sky and pointed the nose toward a ho-

rizon full of snow capped mountains. Mt. Jefferson and the Three Sisters slid under the wing and the brown high desert of eastern Oregon began to appear. We transited the northeast corner of California on our way east of Reno and into our planned fuel stop in Yerington, NV.

I'd pulled the Garmin 496 out of my RV-12 for this trip, as nothing installed in our RV-10 shows Nexrad or metars. I was most surprised to see a red ring around Reno – I didn't see anything about a TFR in Reno when we left, although a Presidential visit was scheduled for Portland later in the day. I guess the political campaign trail was working its way north. Just about that time, we lost all GPS information on both GPS units. Great – in our RV-10 GPS is our only nav source. Reno's ATIS was giving the TFR information as a radial and distance from a VOR, but we didn't have a VOR receiver and it's been so long since I've used one that, even if we did, we'd be long gone by the time I remembered how it worked. After a brief search, a whiskey compass was located on the instrument panel. A few gentle turns reminded me which way to go. We stayed high enough to avoid the TFR, went quite a way east of Reno, and found Yerington about where we figured it would be – just as the GPS signal returned.

I almost never get flight following on x/c flights, because I've never learned who to get it from. Rob Hick-

man of Advanced Flight Systems briefed me on this before we left, so I gave it a try when we took off. Portland Approach came right back and after a brief explanation (no, not Harrington, not Barrington...Yerington, with a Yankee) got us dialed in with a squawk. Portland passed us on to Seattle Center over the mountains – and after our initial contact we never heard from them again. We never were passed to Oakland or Reno Approach – I guess they figured we could take care of ourselves. Oh, well, Yerington's right there. Switch frequencies, land and enjoy cheap fuel.

As we flew south from Yerington, the 496 began showing cells to the west of Vegas. Cool! I'd never flown with in-flight weather depiction before (well, I'd taken the 496 to Oshkosh too, but we didn't *have* any weather on that trip, so I'd never seen dark green on the screen before.) This could be useful. Sure enough, we ran into a wall of rain and low ceilings just west of Jean. Pinned between the Sierras to the west, bad airspace juju to the east and weather to the south, we turned north and landed in Pahrump, NV. I might have heard of Pahrump before, but maybe it was just somebody sneezing. Like most small airports, there was somebody to help. A gentleman in a nearby hangar looked up from loading magazines for his AR-15 and welcomed us to charge our phones and wait out the weather. He'd have given us a ride to town if we needed it. We didn't – the weather moved out and we had a clear run to Phoenix.

Just west of Phoenix there was a special airspace I'd never encountered before – a Special Air Traffic Rule area. It requires VFR pilots to contact Luke Air Force Base before entering, even though it's outside the Class B. There's a lot of fighter training at Luke and I guess it's useful to know where the VFR civilian



Denny Myrick brought one of the two RV-12s that attended.

traffic is before you launch in your F-22. We stayed outside the airspace, but something big and gray caught my eye, low and left. It passed under our nose and climbed slowly away to the west trailing a ½ mile of heat waves – an F-16 headed out to play. I could clearly see the pilot's helmet through the canopy.

With an hour's fuel left, Casa Grande showed up and we landed in the late afternoon Arizona warmth. Copperstate is a very well run fly-in. There's a heck of lot of volunteer work that goes in to an event like this, and these folks had it figured out. Absolutely everything that was supposed to be ready for us was. Booth, table, chairs, tiedowns, registration papers and reservations – all in order. The next morning Sterling and I showed up early, dressed in our spiffy company uniforms, and set up shop, awaiting our first potential customer. We were still waiting three hours later. The weather was great, the organization first class – where were the people?

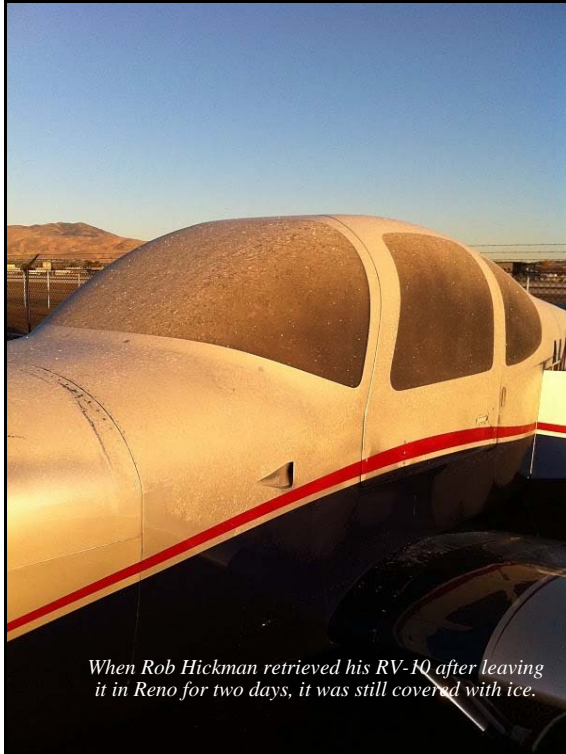
Okay, we knew Thursday would be quiet. Friday picked up slightly, and Saturday saw a morning influx of some lovely and unusual airplanes. Sterling shocked me when I pointed to big, blunt airplane with a huge tail and four immense radial engines.

"PB4Y-2," he said instantly. Damn...the kid's good.

We had a couple of builder-built RV-12s, and one of the nicest RV-3s I've seen in a long time, built in New Mexico by John Nystrom. There was the usual array of beautiful RV two-seaters and a couple of lovely RV-10s. One "other" airplane caught my eye – a beautifully constructed MiniCab. It's an attractive French design, built from wood and fabric. I'd never seen one in the States before. I never met the builder, but



We're open for business....where is everybody?



When Rob Hickman retrieved his RV-10 after leaving it in Reno for two days, it was still covered with ice.

he did a very nice job. Lunch was the high point of my day...RV-10 Myron Nelson hosted his "RV-10 Nest" at his camper. It was within sight and slightly upwind of our booth, so I could smell the carne asada cooking and Myron knows how to cook it. Best meal I've had in some time, and much appreciated.

By mid-morning the ramp was full. From the fly-in point of view, Copperstate was a great success. From the trade-show vantage point, it was still pretty quiet. I gabbed for a few minutes with Rob Hickman of Advanced Flight Systems, who had flown down in his showcase RV-10, equipped with all his company goodies in the panel. He'd come IFR at 17,000' and picked up a skim of ice over Las Vegas, plowing through the same system we'd sat out in Pahump. I'm not sure who had the more relaxing trip.

Rob was checking weather for the trip home. A major weather system was moving into the Pacific Northwest, and looked like it would easily spill over into Nevada and maybe all the way to Colorado. "Do your laundry," he teased me. "You'll probably spend a few days getting home VFR." He filed IFR and left Saturday afternoon.

I thought about it, but we were committed to Copperstate until closing time Saturday, and even if we left right after we folded the tent, we couldn't get much past Las Vegas before dark. I don't fly Nevada in a VFR airplane

at night with approaching weather, so we stayed in Casa Grande and launched for home Sunday morning. I told Sterling I could promise him Vegas and hope for Reno, but the weather in Portland was forecast awful and we'd probably be a day or two enroute, just as Rob had predicted. Sterling's been to Alaska in a Maule and flown with some serious down-in-the-foggy-trees bush pilots, so he doesn't rattle easily. Sure enough, the clouds started to gather south of Reno. We could have easily topped them, but the 496 showed Reno overcast, with increasing winds. We changed course for Tonapah, off to the northeast, refueled there and headed for Winnemucca, even farther northeast. By the time we got there, clouds were down to the tops of the mountain ranges and we were showing 200 knots + groundspeed on 18" of manifold pressure. The 496 was optimistic about circumnavigating the leading edge of the storm and getting to somewhere in Eastern Oregon, but that didn't agree with what I saw when I looked out the window. We landed at Winnemucca in 20 knot winds and when we made the decision to stay overnight, about an hour later, winds were gusting 46. On the trip to town, I began thinking again about putting some of that cool Advanced stuff in the panel of my airplane, and scraping the rust off my instrument rating. Heck, Rob probably got home last night and was having a nice dinner with his wife -- he, she and his RV-10 warm and dry while the rain pelted down outside.

We didn't have to go to Aurora for pelting rain. By the time I ventured out of the hotel for bite, water was running ankle deep down the streets of Winnemucca and big twisting ribbons of rain were slicing across the night sky, in and out of the street lights. I bought a cheap novel and settled in for the night. Sterling spent (lost) five bucks in the casino before he smartened up.

The next morning a full moon was out in a clear sky. We launched at daybreak, with the morning sun reflecting brilliant red and orange off the desert formations below. Outside air temperature at altitude: 14 F. The weather system had torn up streets and trees in Reno and dropped record rain in Portland. It had been a good day to quit early.

The rest of the trip was relatively easy -- head winds held us below 150 knots most of the way, and there was the usual clag in the Columbia Gorge. I throttled back -- 70 knots groundspeed! -- as we chugged along in the venturi winds and bumps of the Gorge, then we were through and in a few minutes we touched down in Aurora.

That evening I noticed Rob's RV-10 wasn't parked at his house at our home airpark. Later, I found that he'd encountered heavy weather, parked the airplane in Reno and flown home on an airliner that encountered 100 knot headwinds. Then it was another airliner back to Reno to pick up his frost-covered airplane and fly it home -- two days later.

We'd actually beaten him home....and I had plenty of clean laundry left over.