

# Falco Builders Letter



Charlie and Bill Nutt's Falco, the 88th Sequoia Falco.

## First Flight of N767CN

by Bill Nutt

On Sunday, June 10, 2007, one week before father's day, Falco N767CN took to the air for the first time—the culmination of a 13+ year project with my Dad that I'll cherish forever. I was at the controls that day, with Charlie watching anxiously, acutely aware of the fact that I was renegeing on a promise I had made to my wife years earlier—that I would hire someone else to make the first test flight. I'm not sure what she was so nervous about—after all, Charlie is a retired A&P mechanic, and I fly airplanes for a living, so it seemed like a good combination! As near as I can tell, I guess either: a) she still loves me, b) she doesn't trust our building skills, c) she doesn't trust my flying skills, or d) maybe I don't have enough life insurance. All kidding aside, Charlie and I have been fortunate to have had very supportive wives over the years—a key ingredient when you take on a project like the Falco—thanks Rita and Mom (Inez)!

I guess you could say the genesis for the Falco started many years ago. Charlie grew up during the golden age of aviation. As a kid, he built and flew models. Later on, he learned to fly, got his pilots license, and

enrolled at Parks College to get his A&P license. Afterwards, he landed a job with Pan Am as a professional flight engineer flying DC-7s out of New York. He bought his first new car—a sporty brand new 1958 Mercedes convertible, and an airplane—a Luscombe. Then he got married, had six kids and guess what? The airplane went away, and the sports car almost went away, and well, you know how the rest of that story goes... Charlie went on to survive the ups and downs of the airline industry while they raised us—sacrificing a lot to get six kids through college, all of us with advanced degrees.

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### In This Issue:

- 5 Coast to Coast Australia
- 12 Flight of 'The Lizard'
- 14 Falcos Downunder 2008
- 16 Construction Notes
- 18 Goings On at Sequoia Aircraft
- 19 Susan's Corner
- 19 Calendar of Events
- 20 Mailbox

I first remember seeing the Falco when I came home from college one year. Charlie had seen it and ordered the info packet. We talked about it briefly, but at that point it was simply a dream.

As for me, I've been interested in aviation for as long as I can remember. Dad used to take me to the airport as a kid to watch the airplanes take off and land. When I was 14, I had my first flying lesson, and I was hooked. It's funny, but I soloed and got my drivers license when I was 16 and Mom never told me to be careful *flying*, but always told me to be careful *driving* to the airport. I earned my private license at 17 and knew if I could get paid for doing this, I'd be a happy man.

Of course, with airline deregulation underway when I graduated from high school in 1979, I decided to go the military route. I was fortunate to get a four-year Air Force ROTC scholarship with a pilot slot to Embry-Riddle in Daytona Beach and graduated with an aeronautical engineering degree in 1983. (Coincidentally, I would meet Rita at a beach party on spring break, and we've been together ever since). I spent the next 14 years on active duty flying a variety of aircraft, but decided to get out in 1997 when the airlines were hiring, and I have been with United airlines ever since.

Around 1993, the dream of building a Falco rekindled. Charlie reordered another info packet and we discussed turning the dream into reality. We decided to take Mom and Rita out to a nice restaurant to "discuss" our plans—it's a good thing that I had two couches at home since we almost needed them. It wasn't a total surprise, of course, but when the wives get the calculator going on that price list Sequoia includes, it can take a little convincing...

We started by ordering the plans—serial number 1232—and Sequoia gave us a list of builders in the area. As it turned out, Bud and Peg Baker lived only 20 minutes away from where I lived in Dover, DE at the time. Bud and his son Tim had built a Falco (N4TB), but tragically Tim had died recently in another plane crash. Bud



**Charlie and Bill won the Reserve Grand Champion Plans-Built at Oshkosh 2007.**

was getting ready to sell the Falco—along with parts they had to build *another* airplane. We purchased most of the wood to build our airplane along with an unfinished hardware kit (see, this isn't going to be so expensive after all!), and kindled a fond relationship with the Bakers at the same time.

We set about building the small parts—Charlie worked on wing ribs in Minnesota, and I worked on the fuselage frames in Delaware and later Illinois. We spent time setting up our respective shops and got to the point where we needed a hangar. Charlie found a portable school building (24 by 30 feet) that the local school district was selling for 500 bucks and jumped on that. Since they live on 72 acres in Minnesota, space wasn't an issue, so up went a foundation. The only tricky part was getting it moved—we decided to take it apart and reassemble it on-site.

Everything went pretty well until we tried to get the last 30-foot wall down. Dad and I were on both ends, with my brother in the middle, rocking that wall back and forth. It got away from us—I jumped off my end, my brother jumped through a window opening and the wall came crashing down on Charlie. Fortunately he knocked out a stud which helped a little and my brother said “we just killed Dad”. We picked the wall up and sent Dad home bloodied from the nails that gouged his back, with a swollen ankle, and in shock by the time he got home. Needless to say, Mom wasn't too happy with us that day. All turned out well, and we were soon in business with a

heated and air-conditioned “hangar” that the Falco would slowly take shape in over the years.

During the construction, we didn't set any specific timetables other than to make steady progress. We decided to enjoy the building process along with our time spent together. We followed the plans as closely as possible, and built all of the wood parts, including the spars. We also copied many of the great ideas we saw at Oshkosh, the fly-ins, and on the website; and even added a few original ideas of our own.

By the spring of last year, Falco N767CN was in primer and looked “almost ready” to fly. Glyn Russell had told us once that the last two percent seems to take forever, and he wasn't kidding. We debated painting it ourselves, but Rita and Inez convinced us to have it painted professionally. Similar to Dan Dorr's story, it would be at the paint shop for over five months, but we were extremely pleased with the final result—WipAire had done a beautiful job.

As it turns out, the delay gave us a chance to close up the gap between the spinner and the cowling, close up the cooling inlets slightly, and most importantly move the NACA inlet forward (Dave Nason kept telling us to do that, and we decided we couldn't face him if we didn't do it!). We did a little research on NACA inlets and found the Falco inlet as designed was very close to optimum—we lengthened it slightly and added a small airfoil at the inlet lip which is supposed to be very important. It's too early to tell, but Dave says moving

the inlet forward gives him an extra inch of manifold pressure, so I think it's a worthwhile (and relatively easy) modification.

Our Falco weighed in at 1349 pounds with an empty CG of 64.4". It was a little heavier than we had hoped for, but we installed a lot of equipment to include the “high Nustrini” canopy, inverted fuel and oil systems and full gear doors. I'm sure the paint job and interior (leather) added a fair amount of weight, although we didn't weigh it before it was painted. We installed an Eagle Engines XTREEM 360 (Superior IO-360-B1E2) with LASAR electronic ignition system, lightweight starter and two alternators. We installed an Aerocomposites ACI-2250 constant speed propeller which required some design work to get the hub length and spinner design set up for the

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Falco, and we are very pleased with the final result.

We decided to get rid of the vacuum system and went all electric with triple redundancy to an essential bus powering dual Blue Mountain EFIS Lite G-3's, GTX-327 transponder, SL-30 NAV/COMM, VM1000C color engine monitor, floodlights, gear indicator lights, and turn coordinator. The rest of the panel is stock Falco and we rounded out the radio stack with a Garmin audio panel and GNC 300XL GPS/COMM.

About two years ago, as we discussed the stall characteristics of the Falco, we decided to install an AOA professional angle of attack system—a worthwhile addition we'd highly recommend. Once calibrated, it provides aural (through the headsets) stall warning in both the clean and landing configuration, an additional landing gear aural warning and provides L/D max and optimum AOA information during maneuvers and approaches.

By April, we were ready to go. We contacted the local designated airworthiness representative (DAR) recommended by our EAA technical counselor. With the paperwork set, we figured it would be a quick and easy sign-off for N767CN. I had reserved the N number the previous year—the CN part was easy for me—my Dad's initials, but searching the FAA database for some meaningful numbers was more difficult. In the end, I settled for the airplane I currently fly for United. We had our aircraft registration from the FAA.

As it turned out, this was unacceptable to the local MIDO inspector—his interpretation was that only one name can be listed as the manufacturer. The FAA in Oklahoma City insisted what they had done was correct. In the end, our local guy wouldn't budge and release our paperwork to the DAR until we re-registered our Falco. How a local MIDO inspector can override the FAA was beyond us, and in the end that fiasco set us back several weeks. The good news was that our final inspection and sign-off went off without a hitch.

In early June, we were finally ready to fly. I spent three days in Minnesota but the winds wouldn't cooperate (strong, gusty cross-winds), so we decided not to chance it. I felt ready to go—Larry Black, Dave McMurray and Dave Nason had given me some stick time a couple years ago at the West Coast fly-in in Redding, CA. In May, I had a layover in Seattle, and Dave Nason took me up again for a bunch of landings



### *Taxiing out and in the air on the first flight.*

and stalls which was invaluable—thanks again Dave and Tamera!

On June 10, 2007, I was back in Minnesota for another attempt—the winds had subsided somewhat—still a quartering cross-wind, but acceptable. I was ready to go—nomex flight suit and gloves, my Air Force helmet, parachute (my birthday present), and Al Aitken's flight test cards. I studied and followed the advice in the Falco Flight Test Guide, and as advertised the flight was almost a non-event.

The takeoff was quick—with over 195 horsepower (according to Eagle engines) and that prop, I was off the ground before I knew it. It needed a good stomp of right rudder, and I realized that I've gotten lazy feet flying jets. Charlie was surprised at how high I was by midfield, and the pictures reflected that. I stayed over the field,

flew the flight test as planned and landed after about an hour. It wasn't until after our Falco was safely tucked back into the hangar that the emotion of that first test flight and what we had been through hit me. I didn't show it much, nor did Charlie, but I'm sure we both felt the same way.

To date, we have about 15 hours flown off in the FAA-mandated 40-hour flight test program (non-certificated engine/prop combination). The engine and propeller are running strong and smooth. The VM1000C engine monitor does a nice job of tracking engine performance. CHT's climb into the low end of the yellow arc during slow, extended climbs on hot days, but remain around 380 degrees most of the time. Oil pressure is steady around 72 psi and the oil temps are consistent at 185 degrees. The left wing was a bit heavy—we re-rigged the ailerons slightly and added a

small three-inch long wedge to the right aileron to balance things out. It also takes right rudder to keep the ball centered at cruise power settings, so we'll add a trim tab to the rudder next. We didn't install stall strips on the wing, but I get slight, but noticeable feedback in the stick 3-5 knots before the stall.

I haven't taken it much past approaches to stalls, but I see 66 KIAS clean and dirty (flaps 20 degrees) with slight wing drops in both directions. Now that the AOA system is calibrated and once we get the rudder trimmed a little better, I'll explore the stall envelope more fully. I retracted the landing gear on the third flight test, and it really is like taking the brakes off. In level flight at 5,500 MSL on a hot day at 24.7" MAP and 2500 RPM, the Falco accelerated quickly to 178 KTAS on the EFIS's (or 205 MPH if my calculations are correct). Not sure if that's particularly fast or not, but we're hoping for more once we get the gear doors installed and reduce some of the trim drag. So far N767CN is flying like the other Falcos that I've flown—a joy to fly with the utmost of ease. It definitely takes a light touch, gets very dirty with the gear and flaps down, and builds speed quickly in a dive.

Charlie and I are hoping to get it to Oshkosh later this month, so I'll be flying it on most of my days off. Al Aitken has graciously offered his services to help us and will be flying it when I can't. Wish us luck and hope to see you at Oshkosh *with our airplane* this year.

As I stated earlier, Charlie and I owe thanks to many people in making our dream come true. First and foremost to Inez and Rita—without your support and encouragement it never would have happened. We know it wasn't always easy, but you never wavered in your support. To my three daughters—Vanessa, Caity, and Jackie—who gave up time with *their* Dad almost every month so I could travel to Minnesota to spend time with *my* Dad and work on the airplane. I hope we can create memories of our own in the future flying our Falco.

To Alfred, Susan and Sequoia Aircraft for the help and support over the years in providing the best homebuilt aircraft in the business.

Finally, to all we've met over the years that have provided friendship, help, encouragement, and ideas. Charlie and I tend to be quiet by nature, but consider ourselves fortunate to be part of the Falco family.



## Coast to Coast Australia in Four Falcos and a Lancair

by Juliet Ferguson

Australian Falco Builders and Flyers have a biennial meeting and in 2006 we decided on Perth in Western Australia so that we could inspect Rob Phyllis' nestling Falco and attend the Red Bull Air Race.

The crew was composed of Drew and Judy—DJJ, Stephen and Annie—SBD, Neil and Gwyn—NVA, Ian and Juliet—YBN in our Falcos and friends Tony and Jo in their Lancair—TMR.

NVA and DJJ hail from the east coast and YBN had been there in the preceding few days though is based in northern Victoria. DJJ is from Goulburn SE of Sydney and TMR from near the coast in western Victoria. So most of us started from the coast on the east side of the country, and we all made it to the west coast.

We left from home on Tues Nov 14 on a hot, dry, dusty day for the short step to our first destination Mungo Lake. On departure from our narrow strip with a permanent crosswind we strayed a fraction and had a brief encounter with our stubby, drought-stricken crop of wheat. We flew over dry irrigation country, dry creeks with billabongs, flat, desolate orange/grey plains then red sandy country with clay pans to Mungo which is NE of Mildura and north of the dwindling Murray River. On arrival we discovered we had no brakes—courtesy of the stubby, drought-stricken wheat crop.

DJJ and SBD were already there tied down behind the cabins and shortly after, amid cheers, Neil and Gwyn arrived in their fledgling Falco NVA. Tony and Jo were to meet us at Streaky Bay tomorrow.

Mungo Lake is a dry, flat lake bed covered with salt bush. It was once a huge freshwater lake providing a rich environment for aborigines but dried up about 25,000 years ago. The relentless westerly wind has blown sand across the lake creating a huge lunette of dunes which are constantly changing, exposing soft multicoloured sand stone buttresses and aboriginal skeletons and artifacts dating back 40,000 years.

*Top: Mungo Lake.  
Center: Neil and Gwyn arrive Mungo.  
Bottom: Four Falcos at Mungo Lake.*





We did a bit of a tour with an aborigine who played the didgeroo, drove across the lake accompanied by kangaroo and emu and wandered around the dramatic lunette at sunset accompanied by feral goats.

Then drinks back at the Lodge and bed. Very windy during the night.

The weather has gone mad in this country. It was cold and windy in the morning and snowing in some parts of Australia where there were to be bush fires a few days later. Attempts to fix our brakes were unsuccessful, and we decided to fly to Mildura where there was more chance of finding a LAME (licensed aircraft maintenance engineer, equivalent to your A&P) than Whyalla where the others had planned to refuel. It was freezing, and we sat in the A/C trying to keep warm and waiting for a gap in the squalls that were passing through. Difficult to feel optimistic under these conditions!

At last, after some considerable difficulty starting the A/C we were off just before 11am. Very rough flying under low cloud over flat sand and timber. Then a brief period of peace as we flew across big yellow paddocks interspersed with olive scrub on red sand like an aboriginal dot painting. The short lived peace was followed by violent turbulence. Little blue wing please stay on.

**Top Left: Repairs at Mildura.**  
**Top Right: Dunes and sandstone formation at Mungo.**  
**Center: Drew, Ian, Judy, Stephen, Annie, Neil and Gwyn at Mungo.**  
**Bottom: Murray River SW of Mildura.**





In the circuit at Mildura we were heading for runway 18 when a RPT ahead said he was landing on 24 so we followed him but changed our mind again when he informed us, after landing, that the crosswind component on 24 was 30 knots!

Mildura, normally quite active, appeared deserted. After some time we found the hangar door of QantasLink, a regional airline, ajar and were so lucky! We found two LAMEs who fixed the brakes while we sat inside warm, drinking tea and reading lewd LAME magazines. It took them some time, and they did not charge us for the work.

Off again at about 4pm initially following the Murray in dust storms and wild turbulence. Low cloud, rain and a strong head wind. Lunch was an apple which Ian dropped, loosening his harness for a retrieve just as we were nearly thrown through the canopy.

Over flat scrub on red sand, then the southern end of the Flinders ranges followed by yellow cropping country with small salt lakes bumping all the way until we reached Spencer Gulf which we crossed still at 2,500 with no life jackets. Turquoise water with lots of white caps but at least the air was a little calmer.

Rough riding again. Now over vast yellow paddocks of the Eyre Peninsula. To our surprise and pleasure we heard Tony in the Lancair requesting a SAR (search and rescue watch) for crossing the gulf. We had assumed the weather would stop his departure today.

At last Streaky Bay which is on the eastern side of the Great Australian Bight. Tony and Jo arrived at the same time (how fast does a Lancair go!!) No sign of the other Falcos but Drew had called enquiring about holes in the cloud.

Courtesy bus to a nice hotel by the sea. The town is tiny with a long wooden jetty, people fishing and pelicans.

The others arrived only about 1/2 hour later. They had sat out the storms at Mungo until 1pm and then flew sedately over cloud, refuelling at Whyalla on the gulf then flying over cloud again fortunately finding a hole just before Streaky Bay.



*Top: Streaky Bay.  
Center: Nullabor plains and cliffs.  
Bottom: Neil and Guyn in NVA.*

Some walking, some drinking and a very convivial dinner.

Woke to a sunny, cool morning with a light breeze. Breakfast then a quick visit to the town's main tourist attraction—a fibreglass model of a huge, sinister shark at the Shell Roadhouse. A grim reminder of the hazards of the ocean.

Refuelled and departed late morning flying along the coast over scrubby plains and long surf beaches. Many A/C on the chatter frequency 123.45 all following the coast on the way to the Red Bull. Some very excited youthful pilots.

Miles and miles of surf and sand. Then the Nullabor (“no trees”) Plains ending abruptly in sheer cliffs dropping to the sea. Dramatic flying abeam the cliffs at 500 feet above the wild ocean. Sinister sharks below.

East of Eucla we turned inland over the Nullabor to Forrest. Now hot and hazy. Forrest is in the middle of the Nullabor on the Trans Australian Railway. Only a solitary couple live there managing the aerodrome and providing fuel. The runway is long and sealed, a leftover from the days when RPTs had to refuel to cross Australia. The influx of A/C on the way to Perth caused great excitement especially the line up of four Falcons and a Lancair!

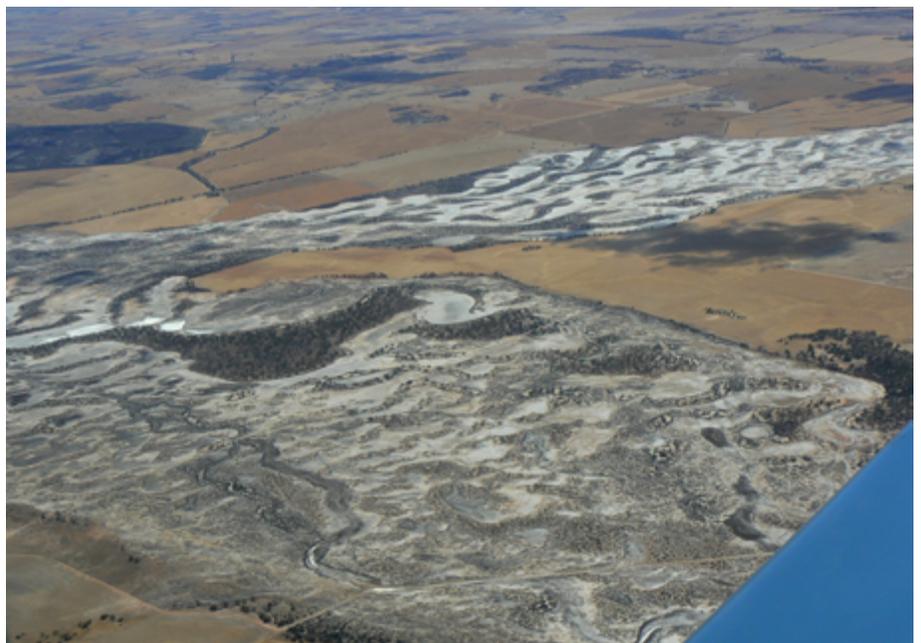
[RPT = regular public transport. Aerodromes served by RPT are treated somewhat differently from others.]

Judy had previously arranged lunch, and we were provided with sandwiches and cake though because of the time change it was still closer to breakfast time. Departed over the wide orange plain following the road and railway trying to catch Neil to take photos of NVA. After the plains scrub, salt lakes, storms and increasing turbulence as we approached Kalgoorlie.

Kalgoorlie is a gold town with huge open cut mines, impressive old buildings, masses of pubs and Hay Street—a strip of galvanised iron brothels. We had planned to visit the giant Super Pit, but it was closed because of the storms!

The following day, after studying the Perth VTC we departed for Jandakot Perth's secondary, but controlled, airport. Over scrub

**Top: Open cut mine Kalgoorlie.  
Center: Salt River east of Perth.  
Bottom: Rob's Falco.**





and low hills with an occasional road and red track. Salt lakes. Calm and warm with an inversion. Later yellow country with yellow roads then farming country with big brown and yellow paddocks. In and out of Cu's.

Along Salt River an amazing river of braided salt and salt pans. Descended into turbulence trying to understand the ATIS which was fast and garbled. Low across hills covered with dense timber. Dozens of A/C approaching Jandakot. Had to report at two points three miles apart so by the time we had reported at the first we were beyond the second—a lake difficult to recognise as it had no water!

Lots of airspace infringements and, because of the traffic, Stephen had to orbit on final! Jandakot is 1697.7nm on a great circle from Merimbula. Our trip was a little less direct!

Rob had arranged some quality parking and was there to meet us. He lent us a car, and we hired another. Our hotel in Perth was excellent with views over the Swan River and the pylons for the air race—some practice in progress as we arrived. Not so excellent for Gwyn and Neil though as in spite of confirming their booking a room was not available.

The next two days were devoted to inspecting Rob's A/C, lunches, dinners and the air race. The air race aeroplanes were based at Langley Park an airstrip in the middle of the city and adjacent to the Swan River. In addition to the spectacular air race there were F18's, Harvards, an aerobatic pilot from Shepparton (close to home) and others performing. Hundreds of boats were moored on the river to watch the race.

On Mon Nov 20, three of the Falcos started for home by a rather indirect route. Annie had to get home quickly so took a commercial flight. Jo and I had relatives to visit in Perth so we left the following day for Leeuwin Estate, a well-known vineyard about 120nm south of Perth. Prior to departure, while taxiing, our nosewheel dropped into a soft sandy hole with the propeller almost hitting the ground. We stopped the engine and, with assistance, hauled it out.

**Top: Red Bull.**  
**Center: Four Falcos and Lancair at Leeuwin Estate.**  
**Bottom: Ian and Neil.**

We flew south at 2,500 along the coast. Surf, inlets, estuaries, lakes, dunes and the empty Indian Ocean. Then inland for a few miles over green paddocks and vineyards. Tied down next to the other Falcos in grass with dandelions as Tony and Jo arrived.

Jo had arranged lunch on the verandah with some other pilots. We had oysters, marron—a delicious freshwater crayfish—cheese and excellent wine with a band of kookaburras pinching food from our plates. The building is surrounded by a lush flowering garden, and there is a wonderful gallery of Australian paintings in the basement. Prints of these paintings are used as wine bottle labels.

A taxi to take us a few miles north to Margaret River, famous for its wine, where we met the others who had spent the day exploring on bicycles. After a walk we all met again for *more* drinks then yet another large meal.

The next day was another short trip 60nm SE to Manjimup. Neil arranged a limo(!) to take us back to Leeuwin Estate. Jo and Tony left us and departed for Esperance. We flew over vineyards, blue lakes and then dense forest. This is an area of giant trees. Morning tea at the Manjimup Flying Club then a bus, arranged by Neil, to take us on a tour of the giant trees—Karri, Marri and Jarrah, all eucalypts—and on to the Karri Valley Resort where we had cabins overhanging a lake surrounded by forest. Masses of birds including marauding Purple Bonneted Parakeets with very sharp claws. Emu and kangaroo.

Here we walked, had more drinks, more food and the next day did a boat trip down the Donnelly River to the ocean. Then back to Manjimup to depart in the afternoon. Ian and I left the group here to have a beach holiday in Denmark while the others headed home via Esperance.

We departed at 3pm heading west initially to fly over Cape Leeuwin, the most south-westerly point in Australia—rugged coastline and a lighthouse. Then followed the coast SE flying over the mouth of the Donnelly River, blocked by a sand bar, where we had been in the morning. More rivers, white sand and surf to Denmark which is on a big inlet 30nm west of Albany. Kangaroos on the airstrip.

**Top: Drew, Judy and feathered friends, Karri Valley Resort.**  
**Center: Cape Leeuwin.**  
**Bottom: Donnelly River.**





We stayed for a few days in a spacious cabin in the camping ground on the edge of the inlet and spent the days walking on the beaches—deep blue bays, granite boulders, wild surf—and fishing. Birds everywhere—pelican, ibis, gulls, terns, cormorants, ducks, parrots and many others. Also, in our hired car, visited another forest of giant trees. Tingle trees with wide hollow bases, where there is an impressive canopy walk suspended across a valley.

We left on Mon Nov 27. A quick flight to Albany where we refuelled and met a man who has built 22 RVs. Coastal abeam rugged mountain ranges and over islands, endless deserted surf beaches, rounded granite headlands. Sitting at 7,500 on autopilot. Refuelled at Esperance which was very hot then flew low over the islands of the Archipelago de Recherche—hundreds of small, low, barren granite islands and a coastline of turquoise bays and granite headlands.

Then climbed to 9,500 and resumed track to Caiguna and on to Ceduna along the Great Australian Bight. Surf, sand, cliffs and the Nullabor. Warm and hazy. A GS of 197 knots.

Landed at Ceduna and parked by a Jabiru, the only other A/C here but high security getting out and back in to the airport. Our government's answer to terrorism!

Stayed in an old, recently renovated hotel on the foreshore lined with Norfolk Pines opposite and old jetty. Sad aborigines in groups by the shore. Oysters and squid in the restaurant with a red sun sinking behind the sea.

The next day, a bit sleepy from the loss of 2.5 hours, we departed for home. After eight attempts we started the engine which had shown considerable reluctance for the entire trip. This was to be the last start with this particular starter motor! Over Spencer Gulf again—we got a SAR this time—and across huge paddocks, salt lakes, timber, the long parallel red sand ridges of Sunset Country, flying abeam then over the Murray which has become a curious opaque green in the drought and so to home in increasing smoke haze from devastating bushfires to the east.

Landed on our dry paddock airstrip with the drought-stricken crop. Home sweet home.

*Top: Archipelago de Recherche Center: Granite and turquoise about 35 nm east of Esperance.*

*Bottom: Ferguson airport.*

## Flight of "The Lizard"

by Graeme Lean

'Caloundra traffic, Falco Lima Zulu Delta, lining up runway 12, Caloundra.'

*What the heck am I doing here? I'm lined up on the active runway at the attractive coastal city of Caloundra's airport in an airplane that I have constructed myself. This is to be its first flight, and I am at the controls. What do I think I'm doing?*



I was born during the post-war period and raised on stories of intrepid fighter pilots. I grew up harboring a desire to be one of these dashing souls who could swoop and roll through the skies. I read numerous books on aviation, joined the air cadets and, on graduation from high school, I was offered a place in the RAAF (Royal Australian Air Force) pilot training program. At this time it was pointed out to me that my height precluded a career as a fighter pilot, and the thought of being a transport pilot did not have the same appeal.

A quick re-evaluation of my options led me to consider a career involving biology which had intrigued me in high school. So I accepted a scholarship to study veterinary science, which led into a career that has served me very well, allowing me to be involved in food production, herd improvement, public health, teaching and general animal health as well as giving me the chance to travel to exciting places and meet some very interesting people.

But the addiction of aviation, as we all know is too strong to ignore, and while working in Canada during the 1970s, I



learned to fly. At about this time I read my first homebuilt aircraft magazine and have been hooked ever since.

My first homebuilding project was a Zenith CH200, but before I completed it I felt the urge to return to live in Australia. So with my new Canadian bride, and various aircraft components, I returned to Australia intending to complete the project here.

Well, as things often do, the project was put on the backburner while I got engrossed with establishing my practice, buying real estate and raising four children. When it was time to return to aircraft building I found that my harmless pastime of looking at other aircraft had become a hopeless obsession with a sleek Italian model. I had fallen in love with another aircraft—the Falco.

In 1991 I contracted a severe case of psittacosis (parrot fever) from some birds I had been treating and was off work for some time. My wife, Marilyn, decided I needed something to focus on, so she encouraged me to order the plans from Sequoia Aircraft.

Thus started a project which filled the next 17 years of spare time between working, community involvement, driving children to school, sport, dance, the beach, then encouraging and supporting them through college—somehow infecting two of them with the aviation bug, with one becoming a Blackhawk pilot with the Australian army and another an aero-mechanical engineer with the Canadian forces. The other two are more like their mother—enjoy going for a fly—but not obsessed.

The building process managed to fit in between many other activities and episodes

of my life, including time spent abroad and periods in hospital after I was demolished by a cranky brahman cow and a bout of bowel cancer. It was always a focus of time 'for myself'. During the process I developed some skills in woodworking, glueing, metalwork and fiberglass construction as well as developing more patience than I thought I could muster. It has been a great experience and has taught me very much the meaning of enjoying the journey as much as the destination. The building process, for me, was very rewarding and actually having a flyable aircraft, for me at times seemed irrelevant.

However the time came when I realized that I was running out of excuses for procrastination and the only thing left to do was to fly this love child of mine. At about this time I enlisted the help of Tony Chamberlain, who worked on Lynette Zuccoli's Falco, and who now works on the Caloundra airfield, to check it over. It was comforting to have an experienced eye run over it even if some of my building errors were brought to the light. So after the necessary paper warfare and inspections and a few humbling revelations about my construction inadequacies (fortunately minor, and not of a serious nature), I was issued with a Certificate of Airworthiness—Experimental category for Falco VH-LZD aka "The Flying Lizard."





**Top: Graeme and Marilyn. Above: Graeme and Tony Chamberlain**

The lizard reference has nothing to do with a former neighbour and client who achieved a degree of fame by stirring crocodiles and other wild animals until he met an unfortunate end at the tail of a stingray. It was indeed named after the quiet water dragons that live in close proximity to our house and happened to be visiting while I was poring over the list of available registration marks on the CASA website.

So here I was at 0730 am on a beautiful Sunday morning with about 4/8 cloud over the airport, with Tony Chamberlain in a borrowed Cherokee Arrow with my wife, and number one supporter, Marilyn riding

as passenger, sitting off to my right waiting to line up after me. My pre-arranged test pilot was working for the airlines in China when the time came to fly, and under the regulations only pilots nominated on the certificate of airworthiness can fly the aircraft for the first 25 hours. Tony, who was also on my pilots list declined (cautiously) to fly it so it was now up to me. I had prepared for the flight by practicing my arranged first flight routine many times over in the Arrow until I thought I could do it in my sleep.

I take a quick look over my shoulder— Tony and Marilyn give me encouraging

smiles and a ‘break a leg.’

‘Caloundra traffic, Lima Zulu Delta rolling 12, Caloundra.’

I open the throttle, the plane’s engine roars encouragingly, and I’m off down the runway, 60 knots comes more quickly than I expect. I ease back on the stick, by 65 knots we’re airborne. I’ve decided to leave the gear extended for the first flight to reduce my workload. The nose pulls off to the left, and I have to give it an extra bit of right boot to straighten it. The nose begins to oscillate a bit, I decide I’m being too assertive with the controls and relax on the stick. The lizard settles down to climb out at 85 knots.

“Gees that thing is slippery, can you slow it down a bit?”

It’s Tony on the radio. We’re passing through 2000 ft, and he is steadily falling behind in the climb. I throttle back to 24/24, and he is able to keep up behind in climb but it is not until we reach the top of climb and I try slow flight that he can catch up.

The Falco flies very sedately in slow routine with nothing to stir my nerves, let’s see how she stalls.

Power off, hold the nose up, slight buffet and the nose comes down abruptly, left wing dropping to a steep angle.

Comment from Tony, “That looks like fun!”

Okay let’s do it with power on, this time the wing doesn’t drop so sharply. Maybe I’m a bit on top of this thing now. Next stall not so bad.

Well, that was my planned show routine, so back home to Caloundra in a slow descent, this time the Arrow had no trouble flying with me. The circuit is a breeze, the Lizard flies like it is on rails and the landing straight forward.

This plane makes me look like I can fly. I like it!



## Falcos Downunder 2008

by Neil & Gwyn Aitkenhead

Every eighteen months to two years we, the Falco owners and builders of Australia and New Zealand, have a fly-in get-together. In recent years we have had two at the Zucoli Warbird and Falco collection in Toowoomba, Queensland, one in Ardmore, New Zealand, hosted by George Richards and Giovanni Nustrini. Then Merimbula, on the south coast of New South Wales hosted by Drew and Judy Done. The most recent to the Red Bull Races in Perth, Western Australia in November 2006 hosted by Rob Phillis.

This year, on the 7<sup>th</sup> to 9<sup>th</sup> March, it was our turn to host the event on The Gold Coast in Queensland, Australia. The focal point of the weekend was the Southport Flying Club, ([www.southportflyingclub.com.au](http://www.southportflyingclub.com.au)). I have been a member of this private aircraft owners club since 1989 and built my Falco from start to finish in my hanger at the field. The club is an almost unique facility (air park) for Australia, an all-weather licensed airfield with approximately ninety aircraft hangered, ranging from your standard Cessna, Piper, Beechcraft and Cirrus through to Yaks, Nanchangs, Stearman, RVs, plus helicopters from R44s to corporate-sized Eurocopters, and of course one Falco, VH-NVA.

We had a total of five Falcos plus invited friends, Tony Tabart and Jo Pocklington in a Lancair 360, plus builders and interested people from all over Australia for the weekend. The first Falco to arrive was Ian and Juliet Ferguson in VH-YBN, from Dookie in Victoria, on the Thursday followed on Friday by Drew and Judy Done in VH-DJD and Ian Newman and Rex Koerbin in VH-SWF (the ex-Wilkinson Falco recently purchased from Robert Hendry) both from Merimbula in New South Wales and Stephen and Annie Friend in VH-SBD from Goulburn in New South Wales. Wayne Milburn intended to attend with the Zucoli Falco VH-LZF on the Sunday morning but at that time we had a very strong easterly over the ranges between our airfield on the coast and Toowoomba which can produce severe turbulence, so Wayne decided to withdraw.

Graeme Lean had only just got his Falco airborne a week or two before the fly-in so unfortunately it was still too early for him to attend. Graeme and Marilyn drove the two and a half hour road trip from the Sun Shine Coast, North of Brisbane.



We had Rob Phillis and Lesley Boyle, builder, from Perth in Western Australia and Garry O'Leary, builder, from Horsham in Victoria plus Brad a prospective builder

from Sydney, New South Wales. Unfortunately, due to other commitments, we had no representation from New Zealand on this occasion.



The program for the weekend commenced with a gathering at the club bar on Friday afternoon with fresh prawns and drinks, followed by dinner at the Seaworld

Resort Hotel, where most of the party had accommodation.

For Saturday I planned a scenic flying ex-

ursion of about thirty minutes firstly past the Gold Coast coastal high-rise apartments (condos!), including the 80-level, 1000ft high, Q1 residential tower then on up the ocean coastline to a grass airstrip at a place called Dunwich on North Stadbroke Island.

For the additional seats needed for those that came to the fly-in by road, two of our club members Roger Gardner and John Atkinson kindly provided their R44s. Judy, Lesley and Gwyn all jumped at the opportunity to go by chopper to allow the builders to go by Falco. From the airfield by two mini-buses across the island to a popular resort hotel for lunch at Point Lookout which as the name implies is situated on a headland with an unrestricted view over the Pacific Ocean to the north and east.

The weather was 'OK' but not up to the Gold Coast standard I had hoped for. We had predominately fairly brisk south easterlies that bring passing showers in off the sea, however, nothing to hold up the events of the weekend.

After a leisurely lunch it was a flight back to the club airfield via the sheltered inland waterways, known as the Broadwater, then all the Falcos put safely away in borrowed hangers.

Saturday evening was firstly a cocktail hour on the 21<sup>st</sup> floor of my host's apartment in Main Beach, again overlooking the Pacific Ocean, followed by a five-minute walk to the Southport Yacht Club for dinner on the deck overlooking the yacht marina.

Sunday morning's agenda was breakfast at the Flying Club which I arranged to be part of the usual bi-monthly event. We also invited guests from the local chapters of the SAAA (Sport Aircraft Association of Australia). A total of sixty for a fully cooked breakfast.

This was also the ideal opportunity for the obligatory Falco lineup and Falco people photo shoot.

After the usual and continuing Falco talk and inspections the flying visitors departed on their three- to four-hour trip back home South, tracking inland of the Great Dividing Range. The initial 20 minutes or so flying over the ranges would have been turbulent with the persistent easterly wind but all reported a fair run home with tail winds.

All in all a successful and enjoyable weekend and gathering of five Falcos plus a Lancair and eighteen participants.

## Construction Notes

In their article on the first flight of their Falco, Bill Nutt said “It’s too bad that one of the aileron push-pull tubes doesn’t have an adjustable end—Charlie and I think you could dial in the aileron that way and eliminate the need for a trim tab altogether.”

It never ceases to amaze me how many highly intelligent and aeronautically trained engineers and mechanics fall under this illusion.

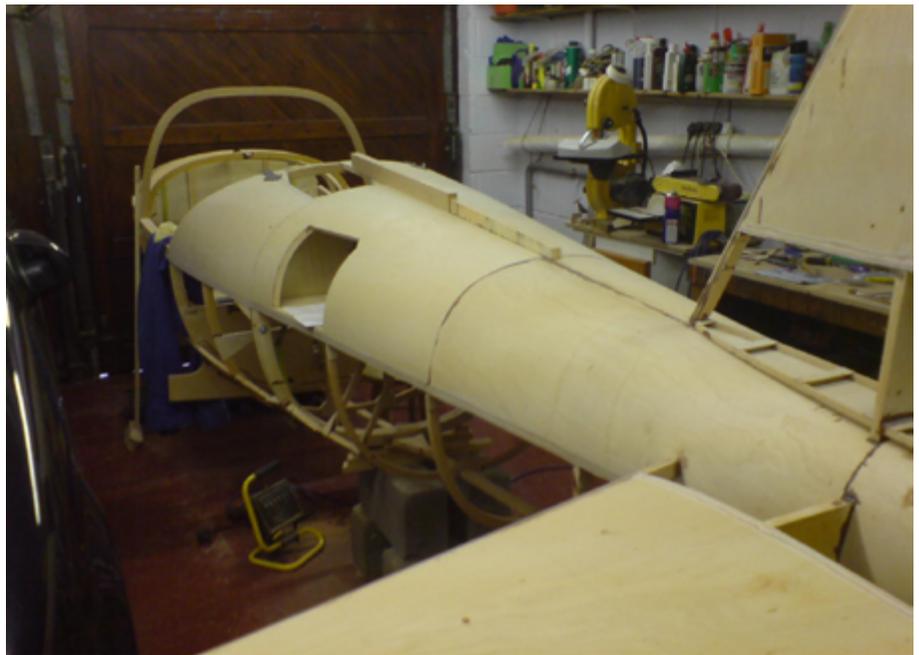
In point of fact, it would not make any difference at all. The ailerons end up in a natural balance and if you twiddle with the control cables or push rods, then all you have done is move the stick. The only adjustment you can do is to effectively cause both to be higher or lower, like lowering the flaps, but the left-vs-right balance is a completely separate matter. And here I am, a speech-and-drama major explaining this to an aeronautical engineer! Think about it for a while, and you’ll see that this is true.

Bill Nutt says “I wrote the first flight report during the initial flight testing while we were dialing in the aileron and rudder trim. It appeared to me at the time that the ailerons were not completely faired on both sides and that an adjustment one way or the other might make a difference.

“It also occurred to me that removing the floorboard and adjusting the cables and then re-tensioning them was a pain—that from a rigging standpoint, it would be much easier if one of the ailerons had an adjustable end.

“In the end, as you’ve pointed out, it made no difference at all—the ailerons seek their own balance point in flight. We ended up putting a very small wedge on the bottom of the right aileron and a wedge on the rudder to trim things out—barely notice-

**Pete Porebski’s ‘quick-build’ kit—a partially finished project he was able to pick up on eBay for a project sold from the estate of a builder.**



**This is Neville Langrick’s second Falco, which he is building with Alastair Newall. In this case, they are building the wing separately from the fuselage, typically done when you have less working space.**

able, but it takes some trial and error to size them properly.”

Bjørn Brekke asks “I am starting to close frame #1, and I am thinking of filling all of the hollow spaces in the frame using Unifrax (same as FiberFrax) ceramic fiber insulation. My concern is there’s a possibility for moisture to get trapped inside the frame. Is this something to be concerned about? I think this will prevent noise from the engine.”

I don’t see how filling an empty space with an inert material like this would be any dif-

ferent from having just air. The key is to seal the frame up so moisture does not get in at all.

Angus Buchanan reports, “My canopy and windshield are at last becoming close companions. I stared at them in their box for a month or so before feeling brave enough to become more closely acquainted. It frightened me to even remove them, with fear of a scratch (or worse).

“However, they have both now been subjected to the drill, grinding wheel and even belt sander! On the back of this,



Top: Guglielmo Leggeri's Falco won the "Trofeo Gigi Meazza" during the annual meeting of the C.A.P. Toscana. Above: Mike Schuler and Bob Trumbley's Falco is taking shape.

we seemed to have formed a relationship, hopefully of some mutual respect, and I can now sit 'inside'.

"You advise drilling 3/16" holes to allow for expansion/contraction. With large No. 8 screws in the windshield and smaller No. 4 screws in the canopy, there is obviously a differing allowance for movement around the respective screws! What size clearance should I create for each?"

I don't think there is any precise right answer, but I would use 3/16" for all of them. The windshield is smaller and there will be

less overall movement. Think in terms of a percentage length change, and I think you will get the idea here.

Also from Angus "I'm about to skin the fuselage top between frames 10 and 12. I understand the hints about the fin leading edge and the elevator trim tube, but what about the stabilizer leading edge?"

"Do I just cut them back, lay the skin underneath and then insert a block from leading edge to the skin? That solution does not seem to have any strength in bonding the stabilizer to the fuselage."

You cut the stabilizer leading edge strip back to the fuselage skin will just slip underneath, then you glue in a wedge of wood to get some contact between the two. Also remember, there is a 'root' rib that is glued in there and which does all of the real work in keeping the stabilizer shape.

And then when the stabilizer skin actually hits the fuselage skin, you'll fit these together and glue them, and then later put a small fillet of epoxy and a filler material, such as flocked cotton, to give it some strength.

From Ian Vickers: "On fuselage frame #1. I am a little unsure of the correct sequence for the ply and doublers. Is it 1.2mm all over, front and back, then the four roughly quadrilateral 2mm doublers front and back where the diagonal braces meet the laminations, with a further 2mm doubler around the perimeter of the front face only, covering the laminations and butt-jointed to the quadrilateral doublers?"

That's right. First, 1.2mm plywood is not available, so you will use 1.5mm instead.

The doublers under the engine mount mounting points are structural. The rest are simply to give the cowling mounting strips a smooth (or flat) surface to mount to. So you only need these under the cowling mounting. Also, the firewall is metal, and you want a flat surface there.

**A Tail of Two Cities. In England: Alastair Newall and Neville Langrick's tail is to be fabric covered. In Norway: Bjørn Brekke's children and his all-plywood tail.**



## Goings On at Sequoia Aircraft

The only thing permanent in this world is change. Some people fear change, but I don't. It just makes things more interesting and insures that there's something different in every day.

The first change to report is that Susan Fleming has decided the time has come to retire. I'd like to introduce all of you to Susan Arruda, who will be taking her place here at Sequoia.

I've always had a philosophy that whenever someone leaves me, it's an opportunity to get someone better. Many of you felt like your world was coming to an end when Brenda Avery retired on me, but then along came Susan Fleming, who has been great. Susan has really made a difference here. She's got the warehouse in tip-top shape, doesn't hesitate to yell at me when needed, pushed me into the Internet, insisted that we get better Falco garments, and many, many other things. And I know all of you have come to understand that when you really want to get something done around here, talk to Susan and not me!

So if you're going into a 'what are we going to do without Susan' panic, don't worry. I've known Susan Arruda for 25 years or so, from when she worked for me as a manager of an apartment building I owned with a manic-depressive friend. She was easily the best manager we ever had, and we have kept in touch with each other over the years.

Susan Arruda is one of the most exceptional people I've ever worked with. She is extremely organized and highly productive, but the funny thing is that you can never catch her working. She just quietly gets things done.

My manic-depressive partner drove her to distraction, and when she left, I suggested to Susan that she talk to Joe Stettinius, a realtor friend and associate. She went to work at Joe's company, ended up staying for 15 years and was easily the most valuable employee they ever had outside of commission sales people. After ten years or so of working in the office handling property management, bookkeeping and eventually becoming comptroller of the company, she grew tired of it, left on good terms, and went off to do something completely different. After some time, Joe called Susan and asked her to come into his office. He had hired five people to replace her, and they



*Susan Arruda and Susan Fleming.*

weren't getting the job done. "Susan, name your price!" he said. She did and came back to work for another five years or so.

What's also great is that Susan Fleming and Susan Arruda lived one house apart for many years and their children went to the same schools together. So they've known each other for years, and Susan Fleming is thrilled to see Susan Arruda coming on board.

It's going to take some time for Susan to get fully up to speed, and in the meantime she has Susan Fleming to get her going and who will be on call when she needs help. And we'll be happy to pass along any well-wishes you may have for Susan Fleming.

We're also going to try something new and will have video-conferencing available at [falcosupport@mac.com](mailto:falcosupport@mac.com) for Mac iChat users, or SequoiaAircraft at Skype. One of the great things about working here is getting to know all of the people building and flying the Falco. It's always easier working with someone when you've spent some time talking to them face to face. Susan would enjoy meeting you, but please don't over-use these methods of communications. It would probably be best to set things up by email ahead of time.

Another thing that is going to change is that we are going to get back to having a quarterly Falco Builder Letter, and as you can see from this one, there's at least one big difference.

I wear a number of hats around here, and for the past few years I was heavily involved in a real estate transaction that ended up in court with a frivolous lawsuit. That has all worked out fine, especially the lawsuit, where we sought to have the law firm sanctioned for abuse of process. When it became a matter that involved the whole law firm, it was settled quickly, and with an unusual twist in that the firm fired the attorney who was leading the attack. And he was a partner in the firm. That's not something that happens every day. But this is all over now, and I'm going to have more time to work on the Falco.

I don't have all of the details worked out yet, but I am going to change the way we post photos on our website. I have been suffering death by email and often drown in digital photographs and it becomes a real problem to get these on the website. So I am going to change to using photo galleries and in many cases provide the ability for you to add photographs to these yourself.—*Alfred Scott*

## Susan's Corner

I hope everyone out there in Falco-land is well. If you're building I hope it's going smoothly and if you're flying I hope you're safe. I'm pretty sure that most of you have heard, either from reading our website or from the grapevine, that the time has come for me to pass the torch to the next person in line. That new person is Susan Arruda, and I think you'll find her very easy to work with.

Susan and I have known each other for many years so I think having known her so long, the transition will be very smooth.

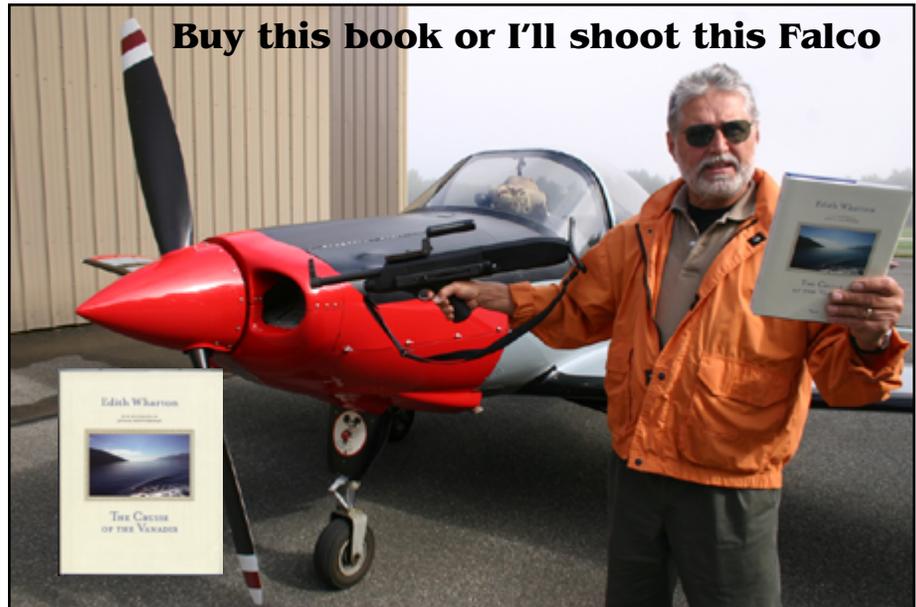
This change is creating some very mixed feelings for me. On one hand, there are a lot of things that I want to do, that I will now have the time to do, but on the other hand, after being here as long as I have been, and having learned the job like the back of my hand, I feel like I'm leaving an old friend behind. No two days here have ever been the same and that's what's kept the job so interesting. For sure, boredom has never been an issue for me.

I don't know if it's the 'Falco family' feeling or just that you Falco builders seem to be a cut above the rest, but you are by far the nicest group of people I have ever had the privilege of working with, and I will miss you. I've developed some very good friendships over the years, so if you would like to stay in touch with me you can through my personal email, susan21047@yahoo.com. There are some of you that I really don't want to lose touch with.

This has been a very challenging job, and even now, at the very end, I'm still learning something new every day. I know it will take the new Susan quite a while to learn everything she needs to know, but I will be available whenever she runs into a snag and needs some help. It's quite different and much easier when you have someone coming in to replace you that you already know. It's like passing a job off to a friend, and it's very comfortable.

Now, you will have to help her out along the way. Just don't inundate her with emails for long lists of parts and prices and stuff like that because I know it's going to take her a few days to get into her own groove and learn which things have a higher priority than others.

I'll still be here for a while, off and on. So please be kind to her (at least for a while) or she'll "tell on you" and then you'll have to deal with me, and we all know that wouldn't be pretty.



### Buy this book or I'll shoot this Falco

Five years ago I co-authored a book (*The Cruise of the Vanadis*) with Edith Wharton (the sharper ones will remember from their high school English classes that Edith Wharton died in 1937). It was a lovely book, and it did well when it came out. It is now ranked on Amazon as the 2,440,150th best seller. That was yesterday. Today, I notice, it is in 2,440,786th place. These plunging sales bother me. I have decided it is time to do something about it before nobody knows my name. I have designed a promotion campaign that will appeal to Falco builders, and where better to run it than in the Falco newsletter? My inspiration comes from a cover of *The National Lampoon*, now long gone. It was a photo of a hand, a gun and a dog. The words were: Buy this magazine or we will shoot this dog. As you can see I'm going to do something even more heartwrenching. What Falco builder wants to be responsible for a dead Falco? I'll be watching those numbers, so hey, Falco pilots, let's get those sales numbers up, OK?—Jonas Dovydenas



**If you've ever wondered what the Falco would be like if it was 'modernized' and built with carbon fiber, now you can have the answer. Giovanni Nustrini, his brother Lapo and Lapo Ancillotti have designed the Falcomposite LN 27 FURIO. It has the same 180 hp engine Giovanni has in his Falco, and he reports that the Furio is faster and has a great rate of roll. Best wishes to the Furio team with the design.**

So, while I may be saying goodbye, I'll still be around from time to time so I'm sending big hugs to all you fabulous builders out there who have been so nice to me and were so helpful when I was a newbie.

Please do stay in touch and know how sincere I am when I say how special you've been. So build carefully, fly safely and know that I really do love you all (along

with the terrific spouses of yours that I've been privileged to know). For now, I'm over and out.—Susan Fleming

### Calendar of Events

West Coast Falco Fly-In. Sept. 18-20, 2008 at Gillespie County Airport, Fredericksburg, TX. Contact: Jim Quinn: FalcoFlyIn2008@gmail.com

## Mailbox

As a glider pilot and after purchasing your information kit back in the early 80s after flying in Ian Ferguson's SF-260 Marchetti, I had the dream! Unfortunately due to a medical condition (an epileptic seizure) the neurologist said that I would never fly again. I was so depressed for around 15 years where I did little flying.

There has now been a rethink with the Civil Aviation Authority over here that with five years seizure-free and free of medication I could get an aviation medical. The same weekend I found this out I had a flight with Drew Done in his Falco in my home town down here on the south coast of New South Wales in Australia, and I was hooked. I started looking for any aircraft to fly after this and after many types which my brother warned me off because of the accident record (he was a CFI at the local flying school) including Lancairs. When I mentioned the Falco and as he has also flown in the Marchetti and Drew's Falco, he was happy with this idea.

I spoke to Ian Ferguson, and he told me it should be no problem with my gliding experience, and then he told me about Bob Hendry's Falco that was for sale in Melbourne. I contacted Bob and found out it was still available, so after many months of waiting for weather to clear for him to fly it up here for my local LAME Rex Koerbin to check it out, I am the new owner of Steve Wilkinson's infamous Falco.

Bob just couldn't justify two aircraft as he didn't use it enough. My brother had let his instructors rating lapse but after his flight in it yesterday with Drew he is madly trying to get it back so he can teach me in it. It's funny as he was so blasé about it until it arrived here, and now he can't stop talking about what he wants to do with it.

*Ian Newman  
Merimbula, NSW  
Australia*

Charlie and I did not fly the Falco much this winter due mainly to the weather, but took advantage of the time to finish up most of the items on our "punch list". Mostly minor/detail items that we didn't have time to finish before Oshkosh last year. We did manage to get all the gear doors installed last month, and I took it up a couple of weeks ago to check everything out and update my landing currency. I'm happy to report that the main gear doors fully close with the gear up or down, and we spent a lot of time trying to make that happen.



**Top: Ian Newman. Above: Mouse invasion of Swing-Wing Falco.**

Charlie and I plan to be at Oshkosh again this year, hope to see you there!

*Bill Nutt  
Magnolia  
Delaware*

I'm getting a great deal of pleasure out of the Falco project. The spruce is good to work with and the more I pore over the drawings the more I come to understand the subtleties and appreciate the immense amount of effort that's gone into the design and the drawings.

*Ian Vickers  
Harrison, ACT  
Australia*

Talk about the homemaking instinct! I pulled these wiping rags and shredded paper towels out of my wing, just inboard of the far end of the right flap actuator tube.

How did the mouse drag the rags into that space? And the paper towels had to have been brought in entire because they were neatly shredded into long strips.

I don't know when I last looked at the torque tube with a light and a mirror, but without the mirror the rags were just enough inside the wing to be out of sight.

The mouse nest had not been occupied—there were just a few turds there and no odor nor urine stains. The rags were not the kind I ever used. Neither were the paper towels the kind that are used in my hangar. No sign of chewing, as far as I could see but I'm going to look for a used proctoscope on e-bay to look into this.

*Jonas Dovydenas  
Lenox  
Massachusetts*