

Falco Builders Letter



General Avia F.22B with 160-hp engine, fixed gear and fixed-pitch propeller.

Son of Marchetti

by Stephan Wilkinson

This article originally appeared in the October 1995 issue of The Aviation Consumer.

Signs of intelligent life in the general aviation universe: for the first time since the introduction of the Aerospaziale Tobago and Trinidad a decade ago, a brand-new, conventional-piston-engine, high-performance, metal lightplane has been placed on the market in these United States. It is an Italian design called the General Avia F22, which comes in two flavors—160-hp fixed-gear/fixed-pitch F.22B and 180-hp retractable/constant speed F.22C—and is being marketed by the irrepressible Roy LoPresti, of Vero Beach, Florida.

I can hear in the background shouts of outrage from marketers who have introduced Polish Kolibers, Canadian Zeniths and Katanas, German Grobs and American Pipers, Commanders and VLA homebuilts. But what sets the Italian F22s apart is that they are not rehashes of an earlier design; that they are fully certificated to conventional lightplane standards; and that they have familiar, full-size, no-substitute-for-cubic-inches aircraft engines—a

Lycoming O-320-D2A for the fixed-gear version and a Lycoming O-360-A1A for the retract.

So for one of the few times since the glory days of general aviation, pilots who don't want to fly 15- to 35-year-old designs, who don't believe in two-stroke engines, who think 100 hp is fine for a motorcycle but not enough for an airplane, and who consider "a flight" to be half a thousand miles in three hours have a brand-new option.

The F22s were designed by a slight, shy, dour Italian named Stelio Frati. His fame is great in Europe, though he is not nearly as well-known in the U.S. His best-known

In This Issue:

- 6 Stelio Frati Replies
- 7 Construction Notes
- 8 Flight of the Falco
- 10 Goings On at Sequoia
- 12 Susan's Corner
- 12 Calendar of Events
- 13 Sawdust
- 14 Mailbox

design is the SIAI-Marchetti SF.260—the tip-tanked, bubble-canopied, aerobatic speedster used almost universally by the air-combat maneuvering schools that let both pilots and nonpilots play at being Tom Cruise for \$500 or \$600 a day. (Indeed, even Tom Cruise plays at being Tom Cruise: having become fascinated by flying during the making of *Top Gun*, the toothy star got his ticket and has since bought himself an SF.260.)

Frati also designed the wooden-airframe Falco, which was certificated and built by several small Italian factories during the late 1950s and '60s. The F.8L Falco (Frati's eighth design; the LoPresti airplanes are thus his 22nd) went out of production but rose from obscurity during the 1980s to become one of this country's most admired and lusted-after homebuilt designs—a kit-plane so straightforward in its construction that even a Tim Allen fan could build one. Trust me on this: I did.

In fact, my ownership of a Falco creates an obvious bias that needs to be admitted at the outset. Yet it is a bias that is, in a sense, self-canceling: I am a Frati-airplane enthusiast on the one hand, yet on the other the production-oriented F22s cannot be expected to measure up in every respect to a light, limber, handcrafted matchstick of a homebuilt.

If there is an American equivalent to Stelio Frati—a master of small, light, elegant, God-is-in-the-details conventional-aircraft design—it is Roy LoPresti. Both Frati and LoPresti have spent their entire lives working as engineers in the aerospace industry. Both have found speed in light aircraft where nobody else bothered to look. And both have been frustrated by the fact that they have never truly been involved with airplanes that they in any sense built, controlled and marketed.

Frati has in the past been solely a builder of prototypes. His Milan company, General Avia, until recently has done nothing but create a design, build the prototype, fly and certificate it and then sell production rights to someone else. He has done this with everything from the little Falco to a Winnebago-like commuterliner called



the Canguro, and a stubby jet trainer, the Squalus. Until the advent of the F22 series, General Avia has never manufactured series-built aircraft.

LoPresti has until recently always worked for other companies—Grumman American, Mooney, Beech and Piper among them—and though his intensive tweaks of existing designs have resulted in such widely admired airplanes as the Grumman American Tiger and the Mooney 201, Roy LoPresti has never had “an airplane of his own.”

Years ago, LoPresti designed and home-built an amphibian, the Spectra, that introduced the concept of mounting a



powerplant atop an airplane’s vertical fin. He patented the idea, though Britten-Norman went ahead and utilized it in the Trislander three-engine utility plane. LoPresti considered legal action but decided an international court battle with a British company wouldn’t be worth the candle. Nor does he have any interest in challenging any of the homebuilt designers who have borrowed the concept. “Oh, if somebody like Boeing or Douglas tried it, I’d come knocking on their door,” he admits, “but it’s hard enough to encourage innovation in general aviation without resorting to suing a homebuilder.”

LoPresti’s next flirtation with control of his own destiny was considerably more recent—the Piper SwiftFury, a highly modified, re-engined, remarkably fast Globe/Temco Swift that was to be newly certificated and produced for sale as a Piper model by LoPresti Piper, a company jointly owned by LoPresti and his employer. However, Piper’s Stuart Millar pulled the plug on LoPresti after Roy and his sons Curt and Jim had built, flown and marketed a prototype SwiftFury. Though they tried for nearly five years to find backing, the LoPrestis were never able to put together the financing to certify the SwiftFury, which today sits forlornly in a small hangar next to the LoPresti shop on the Vero Beach Airport, its fluorescent yellow-green paint glowing through the half-open door like a firefly in a bottle.

So Frati’s F22s have become a substitute for

LoPresti’s SwiftFury: airplanes he hopes to someday soon not only be marketing but manufacturing. Initially, the deal is that LoPresti owns the U.S., Canadian and Mexican marketing rights to the two F22 versions. The airplanes will be built, registered, first-flighted and certified in Italy, then disassembled and shipped to Vero Beach, where LoPresti’s crew will bolt them back together and re-register them with U.S. N-numbers. (Frati’s company, General Avia, has been acquired by a group of Italian and German investors and is, for the first time, in the manufacturing business.)

Stage two will, LoPresti hopes, see his own company putting together F22s in Vero Beach from unflown subassemblies shipped from Italy. And stage three, ideally, will have LoPresti producing entire

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aircraft in Florida. “We need to march toward manufacturing an aircraft ourselves if we are to have control of it,” Roy avers. “The SwiftFury was our first attempt to do that, and I’m getting old enough that I don’t want to get cut off again.”

One important component of LoPresti’s plans for the F.22s is also a drag-reduction program—his specialty. “Whenever I’d go to work as a chief engineer for a new company,” LoPresti laughs, “the first thing I’d do is stand up in front of management and say, ‘Gentlemen, we’re gonna embark on a serious course of drag review.’ Whether it was Grumman American, Mooney, Beech or Piper, they’d invariably say, ‘Aw, jeez, Roy, we’ve got a roomful of data on that,’ or, ‘Been there, done that, we got another two knots out of the airplane.’”

LoPresti, however, would find an additional 10, 15 or 20 knots (or, in the case of the Globe Swift, 40 knots through aerodynamic improvements alone, plus another eight from upping the power). Gap seals, fairings, detailed attention to cooling drag, induction-system improvements... LoPresti sees the opportunity to up the speed of the F.22C retractable by perhaps 15 knots, which would go a long way toward positioning the airplane more competitively in terms of its dollars-per-knot quotient. He is obviously looking at the rather blunt, bulged and airscoped firewall-forward aspect of the F.22s.

“I don’t want to offend Frati,” LoPresti admits, “but his company is now owned by other people, whose main thrust is selling aircraft. And if making the airplanes go faster will help do that, they’ll support it.”

Stateside manufacture could also lower the cost of the airplanes, further advancing them along the value curve. The retractable F.22C is currently priced at \$169,900 without paint or avionics and would be considerably more competitive at a price of \$150,000, which might be achieved through lean manufacture and re-sourcing of some components. (The F.22B is being offered for \$129,000 unradiated.)

“The Italians’ prices are crazy,” son Curt LoPresti laughs. “For example, they wanted \$700 for a towbar. We weld up our own for \$20 a piece and give ’em away with the airplane.”

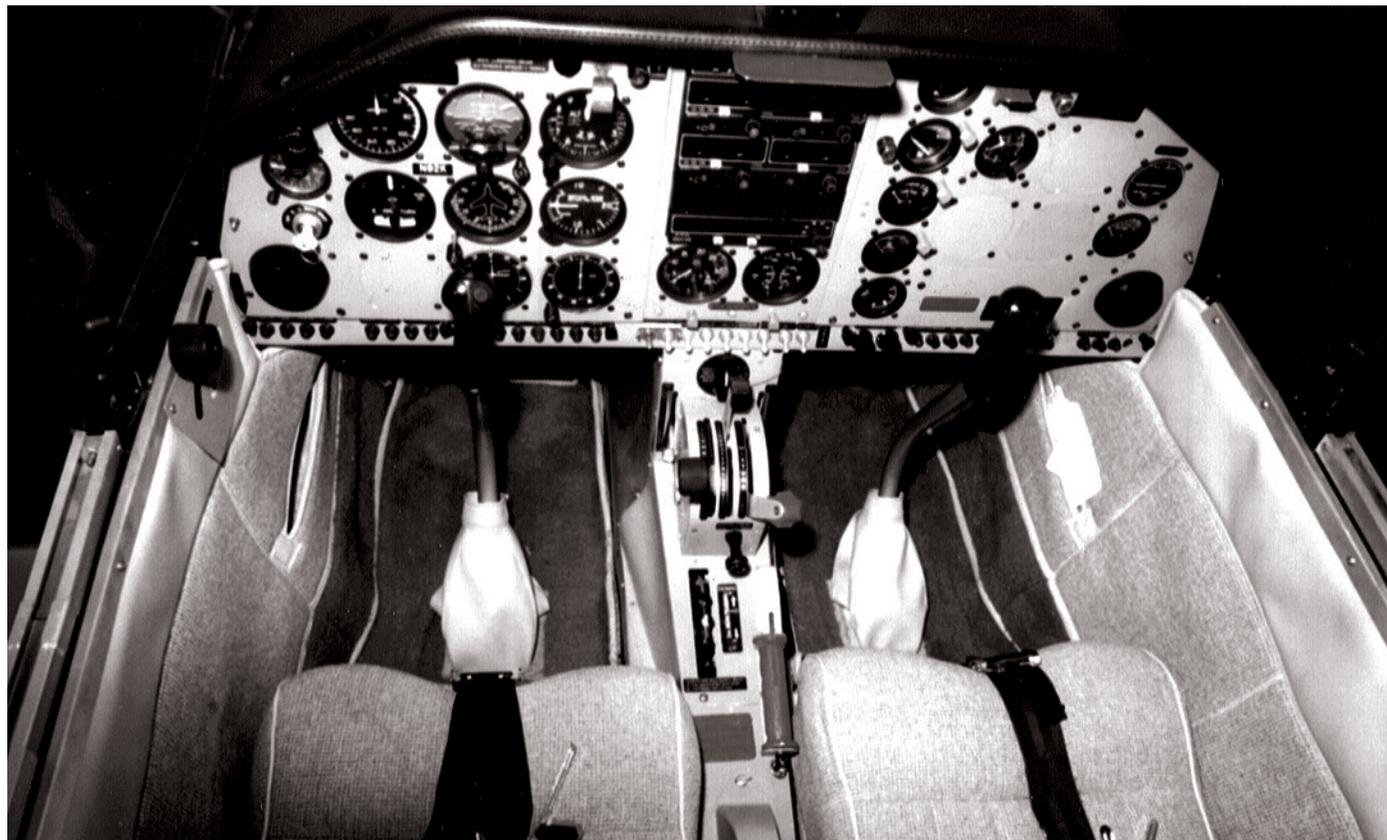
LoPresti introduced the F.22B and C at Oshkosh this summer, and reaction ran 20-to-one in favor of the sleeker retractable F.22C. Performance is obviously the biggest difference (a claimed 158 knots retractable cruise versus about 125 for the fixed gear), but not only does the F.22C’s gear fold under full inboard, outboard and nosewheel doors, the wing-root fillet is compound-curved fiberglass as opposed to the fixed-gear F.22B’s flat-fold aluminum, and the C’s dorsal fin is faired into the vertical fin with a curved glass fillet. And it is immediately—and surprisingly, to Frati enthusiasts—apparent that

the F.22B’s wing and fuselage are speckled with round-head rivets while the C is largely flush-riveted.

The cockpits of both models are virtually identical, save for the absence of a gear handle, prop control or manifold-pressure gauge in the B. The panel is deep and a bit archaic—a confusing scatter of small, odd, mix-and-match engine instruments including an unpleasantly small MP gauge in the F.22C, and 1960s-style industrial-strength toggle switches and dimmable-iris indicator lights the size of Lincoln pennies. This is doubtless a function not of poor design but of the fact that a small Italian aircraft manufacturer has little access to the bounty of choices and supplies that even an ordinary U.S. homebuilder is able to find in *Trade-a-Plane*.

Interior detailing and quality is excellent, but the seating position is surprisingly upright—enough that anybody six feet or more tall is going to be bumping the canopy. (Tall Falco pilots can always be spotted by the “Frati Hunch”: they walk around with their heads tilted to the right, and so it will be with the F.22s.) I suspect that Frati laid out the original design before realizing that Part 23 Amendment 46 standards would require crashworthy seats, which had to be raised a bit to achieve adequate crush space over the main spar.

Three areas in which both F.22s suffer



by comparison with domestic designs all reflect a European lack of understanding of how American pilots use airplanes. One is a paucity of baggage space, the other is the fact that directly behind the seats is a fuel tank, and the third is that the tank holds only 35 or 42 gallons in the F.22B and C respectively. There is no fuel in the wings, and the design of the aircraft means that what you see is what you get: an airplane that has a total endurance of just under four hours at 75-percent cruise—meaning VFR legs of 3+15, IFR substantially less if you're filing an alternate.

In Europe, this is fine, where 3+15 is not just cross-country but across entire countries. And where pilots don't particularly carry baggage anyway but simply go up for an afternoon of sport. Nor are Americans—in the land of airbags, OSHA and the cult of total safety—as willing to accept the prospect of sharing living space with 42 gallons of gasoline directly aft of their shoulderblades.

The fixed-gear F.22B is not a particularly gifted takeoff performer (though admittedly it was 95 degrees on the ground at Vero Beach when Curt Lopresti and I flew). Unfortunately, the fixed-gear model has no nosewheel steering—a baffling omission of a very simple cable mechanism—and the very slight caster angle of the nosegear leg does not make the airplane enjoyably responsive to differential braking. It could be argued that the challenge makes it a more demanding trainer, but owners who buy it as a basic sportplane will also be buying lots of brake pucks.

The 180-hp retractable gets off the ground with noticeably more alacrity. Indeed, maintaining the 75 knots stipulated for gear retraction (stipulated not by the manual but by the airplane's new owner, who is leasing it back to LoPresti for demo use) requires a fairly extreme climbout. Once the gear was up, the F.22C settled upon 800-850 fpm on this hot-and-heavy day, with full fuel and a 253-pound passenger, which paid off to 600 fpm at 5,000 feet. The F.22B seemed to like a consistent 600 fpm up at lower altitudes, 500 fpm at 5,000 to 6,500 feet. I frankly find the claimed sea-level climb rates (1,500 and 1,000 fpm respectively) hard to believe even for a standard day, unless they are achieved at a mid-cruise weight.

Checking cruise speeds at 7,500 feet, the F.22B notched a TAS of 127 knots (Piper

Right: Curt LoPresti, Roy LoPresti, Stelio Frati, Carla Bielli and Alfred Scott at Oshkosh '95.





Warrior performance) at a 2,575 rpm best-power setting, the F.22C 148 knots at 22"/2,400 rpm (roughly equivalent to a Cardinal RG). Density altitude in both cases, however, was just over 10,000 feet, and we were substantially above mid-cruise weights. General Avia claims a max-cruise of 158 knots for the F.22C.

Frati designs have always been noted for their light, well-harmonized controls, in his singles invariably imparted through a stick, and so it is with the F.22s. Falco pilots will find them heavy, but then Falco pilots find a wristwatch to be heavy. Everybody else will be delighted by the smooth and responsive ailerons and elevator, though the rudder is noticeably less effective than a Falco's, perhaps because it is somewhat swept. The controls in fact have a combination of force, feedback and responsiveness that is satisfyingly "military," as opposed to the toylike lightness of the Falco.

And it is the mock-military market that will be attracted to the F.22C particularly. "When we first sat down and tried to figure out what the market for the SwiftFury would be," LoPresti explains, "we figured it would be the typical fortysomething yuppie couple with a Porsche in the garage. We were absolutely wrong. They turned out to be 50-plus empty-nesters, the kids long gone, and the biggest single group was close-to-retirement airline pilots and the next biggest ex-military. And it'll be exactly the same for the F.22."

Will they be wild aerobats, wrenching the +6/-3G F.22s through Aresti-coded sequences? No, and nor did we, having neither parachutes nor a load that met the aerobatic-category limitations. "The older you get, the less you like aerobatics," LoPresti admits. "But the fact that I know the aircraft can do them is of great interest. It means the airplane is a lot stronger, and that you can recover from a fully developed spin quicker. Every normal-category airplane has to be able to recover from a one-turn spin, but let a spin develop for three turns or so and you just may have difficulty pulling it out."

"It's the same thing as people who say to a Ferrari owner, 'Where are you ever going to be able to use all that speed?'" adds Curt LoPresti, whose father was until recently a Ferrari driver. "Well, maybe you won't, but it's nice to know it's there."

Both airplanes have redundant lefthand throttles for proper ace-of-the-base manipulation, and both are cleared for pretty much everything including tailslides. If

the extra loads on tail surfaces during the latter maneuver concern you, note that the control cables are roughly double-size, since Frati abhors the elasticity that can be a problem with conventional cables. Inverted spins and flight are the only prohibitions, since neither airplane will generate upside-down oil pressure.

Yet despite the fact that the F.22s are sport-tuned, stalls are gentle, well announced and absolutely straight-ahead—far more benign than those of my Falco or of a typical SF.260. Slow flight at 60 knots with flaps 30 (out of a total of 40 degrees) is a nonevent, and both airplanes exhibit typical Frati stability and damping. Get the airplane trimmed, and you can maneuver extensively solely with the rudder with no tendency to develop a spiral. Pull the airplane well off trim speed with the elevator, release the controls, and it'll find its original pace after a single down-up-down phugoid. Cross-control hard, let go of everything and the long tail arm will whack it back to straight-and-level in a single movement with nary a wallow.

And finally, there's the quality that has sold more than a few Frati airplanes: the landing comfort and controllability afforded by his traditional trailing-link main gear—a design virtually interchangeable between the Falco, the SF.260, the Squalus jet trainer and now the F.22s. Unfortunately, the rest of Frati's usual screwjack-operated electric gear system is not quite so foolproof. LoPresti has already had the nosewheel of the F.22C collapse once, and rigging the system and its touchy micro-switches to operate consistently regardless of air loads—and, during maneuvering, G loads—has proven a problem. Hence the F.22C owner's leaseback stipulation that the gear be operated only at consistent airspeeds: 75 knots on retraction, 80 knots on extension.

Is the F.22 the new Falco, or a half-price alternative to the SIAI-Marchetti SF.260, as LoPresti claims? In the words of the Hertz ad, "not exactly." But the options for those who are 60-year-old empty-nesters and can finally afford the time and money to do some fun-flying are not necessarily attractive: buy an equivalently equipped new Marchetti for well over a third of a million dollars, or spend a substantial slice of their retirement years building a Lancair, Glasair or Falco. LoPresti's motto is, "Life is short. Fly fast." Though the F.22B is frankly attractive only as a dedicated trainer, the F.22C will allow you to do exactly that without ever having to mess with a bandsaw or a bucket of epoxy.

Stelio Frati Replies

An essentially identical article by Steve Wilkinson appeared in the November issue of Pilot magazine in England, and this caught the watchful eye of Stelio Frati, who sent Steve the following letter.

In a way, Mr. Frati has become a victim of his own success. His airplanes have been so stylish and fast, that when he intentionally designs a trainer, everyone starts comparing it with the SF.260 and Falco. If Ferrari were to design a farm tractor, I'm sure everyone would compare its speed and cornering ability to the Testarosas and Berlinettas, and not at how well it could pull a plow. I'm often asked if the LoPresti F.22's will compete with the Falco and if that concerns me. Hardly. I introduced Roy LoPresti to Stelio Frati, and I'm in favor of Frati airplanes of every type.—Alfred Scott

I've read with utmost interest the statements made by Mr. Curt LoPresti according to your article published in the November issue of *Pilot* magazine.

First of all, I want to thank Mr. LoPresti for the clever aerodynamic lessons he gives with the purpose of increasing the top speed of the F.22C by 10-15 Kts. I think it could be improved even more, however the question is: Will the result be worth the expense?

It might seem strange that the Falco, which I designed exactly 40 years ago, is 15 Kts faster than the F.22 with the same power installed. The same applies to the Rondone, built in 1950, which for 15 years held the world speed record over 100, 500 and 1000 Km, for airplanes up to 500 Kg AUW.

The reason for all this is very simple: both the Rondone and the Falco are sport airplanes, designed with the primary purpose of flying in races, which were very frequent and popular in those days in Europe and particularly in Italy. On the other hand, the F.22 series airplanes were conceived and developed as elementary/primary trainers. Therefore, the flight characteristics essential to the training mission assumed priority, not the top speed. Most certainly, nobody there, whether engineer or newspaper man, has read and understood the press release about the F.22 design and operation philosophy issued by General Avia (and written, I suppose, in decent English) during the 1993 Paris Air Show. I'm glad to attach a copy for your benefit.

While designing the F.22, the qualities that we considered most important were handling, maneuvering stability, safe stall/spin

behavior and recovery, easy and short take-off and landing, and climb performance. The wing profile is much thicker than the Falco's (15% vs 12%) to reduce structural weight, assure long fatigue life and guarantee better stalls. It is fitted with an enlarged canopy, to allow more room for the high seats, capable of gradually absorbing energy in case of a crash landing.

The F.22 has been certified in the Acrobatic category according to the recent FAR 23-41 amendments, regarding the crash-worthiness. Seat proof tests to impacts up to 21 and 26 g's were demonstrated—the first time in the world for a light airplane.

The F.22 has a 6g operational limit. It cannot be compared with Cherokee-class airplanes. The large engine cowling allows for easy maintenance, maybe giving up a little internal aerodynamics.

As for the flaps and aileron's slots, on the first prototype, they had better gap seals. However, in order to cut costs, the manufacturing was simplified on the standard production models, without jeopardizing either the stall or the spin, or the roll rate, which were judged to be very good by many expert test pilots, and not comparable with the Warrior's one.

The "Italian costs" are judged high by Mr. Curt LoPresti. As a matter of fact, the very few modern *aerobatic* airplanes of the F.22's class, cost more than ones, e.g. the Grob 115 T (260hp, 205 Kts Vne, 159 Kts at 75% power—more or less like the F.22C) is priced around \$300,000.

Coming to the internal finishing, it is stated that "homebuilders" catalogues offer better and more modern instruments. I want to offer the following: on airplanes certified in accordance with FAR 23, all instruments must be TSO and have a Certificate of Conformity; all instruments and accessories installed on the F.22 are new and made in the U.S. by the best manufacturers; all the instrument panel lights are made by Grimes, possibly the best in the field; and all the switches are of the thermo-automatic type, made by Klikson according to MS-24509 and MS-3320.

Finally, nobody noted that the "archaic" (?) instrument panel is laterally cut at 30° to facilitate the student in a standard, 30° bank turn.

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Construction Notes

Stanley Harper is completing his Falco and wants to install a fixed pitch propeller. He asked for the specifications of the prop used on the production Falcos.

As I recall from some long-ago document from Hoffman, the German propeller manufacturer, there were two fixed-pitch propellers specified for the Falco. One was a 'climb' prop and one was a 'cruise' prop. I remember noting some years ago that the propeller on my Falco was the 'climb' prop. After years of flying behind it, I would describe it as a 'cruise' prop to anyone. I can't imagine flying behind a prop with more pitch than mine.

The flight manual for the Aeromere Series III Falco calls for a Hoffman propeller with a pitch of 70.86" (180 cm) and a diameter of 68.89" (175 cm). This is the only fixed pitch propeller mentioned in the flight manual. I believe this is the 'cruise' prop mentioned in the Hoffman document.

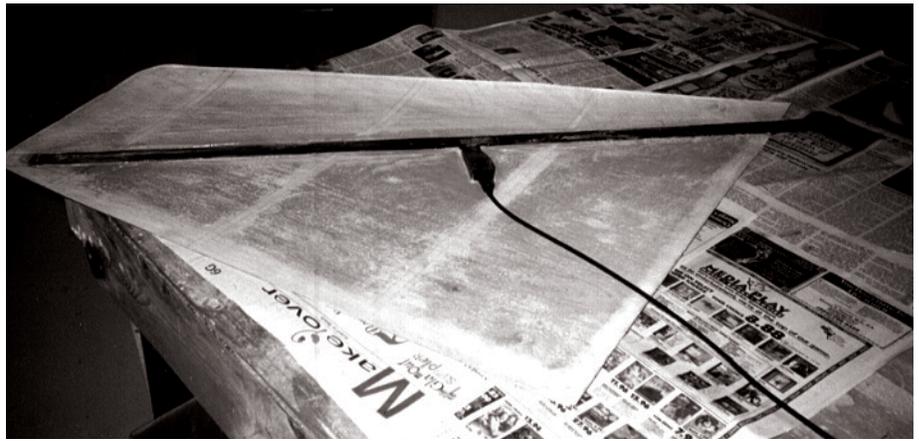
However, the actual propeller installed on my Falco is a Hoffman HO23 HM - 175 170. From this part number, I believe we are looking at a propeller with a diameter of 175 cm (68.89") and a pitch of 170 cm (66.96").

With this propeller, my Falco gets off the ground slowly, but it will get off my 2500' grass strip when the ground is dry. When the grass is long, when the ground is a little soft, or when the Falco is filled with fuel and two pilots, it is very marginal. On takeoff roll, the engine turns about 2200 to 2300 rpm, so you can see that it is not developing full power.

It tends to cruise at about 2700 rpm at 5,000 feet, and perhaps at 2500 rpm at 8-10,000 feet. With the carbureted engine, I always find the engine runs smoother with the throttle wide open, so I always cruise with a fully open throttle, and only retard the throttle for descent or low altitude flying. So unless you have a very long strip, I'd suggest sticking with the 'climb' prop I've got on the Corporate Disgrace if you must use a fixed pitch propeller.

Neil Kowald reports, "I am now using a resorcinol called Resobond, however as with any resorcinol, it has no gap-filling ability, requires humidity in the 35-60% range and temperatures above 20°C (and preferably 30°C). It also *must* have clamping pressure. When these criteria are met (which is not difficult given our climate here in South Australia), the joints are superb.

"You may be interested to note that I read that you must not permit the mixed resorcinol to come into contact with copper! You



might like to put a note in the newsletter to advise other builders, as I don't think this is commonly known.

"I have done a lot of research into adhesives due to my original supplier quitting their CAA-approved resorcinol product (as you know Aerolite is banned in Australia), and it seems that many builders and LAME's regard Ciba Geigy K134 epoxy as giving excellent results. K134 is also a CAA-approved glue here in Australia. In cases where it is difficult to attain the required pressures (for example, the trailing edges of the flaps and ailerons), I will be using K134 adhesive. This advice came from Wayne Milburn who assisted Guido Zuccoli."

Steve Wilkinson recently changed the O-rings on his main gear shock absorbers, and reports, "When disassembled, the oleo had a very small quantity of bushing bronze at the bottom of the strut fluid reservoir—probably enough to cover the head of an old-fashioned thumbtack. The main internal bushing showed the expected polishing of the strut having smoothed it in obedience to its track of movement.

"One thing that particularly interested me: a variety of people have predicted dire things because I use ordinary shop air and a strut pump to pump up my shocks, rather than nitrogen. 'You'll get all sorts of rust,' they've said, parroting the conventional aviation wisdom about why one should pay \$50 a shot for nitrogen rather than using air. Well, there's not a spot of rust anywhere inside the shocks. The pieces are either aluminum, or where steel, so constantly saturated in hydraulic fluid that it doesn't matter what you pump in there. Anybody who is inflating their Falco struts with nitrogen because they think they have to is wasting their money."

Bill Roerig asks, "I recall having read in an earlier builders letter that the wheel well doors were not stiff enough. What seems to be the best remedy short of going with high-dollar graphite?"

I'm not sure there is an answer to this. In all cases that I know of, the wheel well doors appear to pull open in flight by about 1/2" to 3/4" at the outboard trailing edge. Originally, I thought this was a problem of stiffness with the doors themselves. Pawel Kwiecinski made his doors of Kevlar, and they still pull open. I have made a mold with very high reinforcing ribs, and we've installed a few of these on Falcos.

These doors are so stiff it's difficult to imagine that they could flex at all, yet I've flown behind a Falco with these doors (Steve Wilkinson has them on his Falco), and they pull open just like all of the others. The bottom line is that I really don't know if the problem is a matter of flexing in the door, the actuating linkage or both.

Jim Kennedy sent us some information on a high gain VHF antenna. This antenna is an alternative design to the type of antenna we supply in our kits, and I couldn't begin to comment on the merits of the two designs.

The antenna is the Model VHF-5T antenna, available for \$149.00 from Advanced Aircraft Electronics, Inc., Box 4111, Florissant, MO 63032. Telephone: (800) 758-8632. This antenna is specifically designed to be installed inside the airframe and does not depend on a ground plane. They claim that the antenna is superior to all other designs on the market, and Jim Kennedy (who is an electrical engineer with a lifetime experience in telecommunications) says that this antenna will provide a noticeable improvement in the performance of the comm antenna. Jim says they will also work for nav as well, but on reception it's not as critical and that our present foil antennas are good.

Jim says the only problem he's experienced with the antennas is that they will break easily if bent too far. He found this out the hard way when he installed one between two ribs in the wing. Other than that, Jim Kennedy has nothing but high praise for these antennas.—*Alfred Scott*

Flight of the Falco

by Dave Barth

This article first appeared in the February 1996 issue of the EAA Rocky Mountain Region Chapter 301 newsletter. Dave Barth has a PhD in management information systems, is a CFII with about 2700 hours and has flown numerous first flights in experimental aircraft.

It was a clear, calm, sunny day in September. One of those days you ache to be aloft. Or at least be at the airport, vicariously enjoying the freedom of flight by watching other pilots take off. It was September 10, 1995, a red-letter day for me. Richard Clements had recently completed his beautiful, yellow Falco. The tired cliché that it looked like it was in motion even when it was sitting still held truth for me as I gazed upon it for the first time.

When Richard first invited me to Jeffco to view the plane, I didn't know what to expect. On my first look at it, I decided that a whale of a lot of effort had been expended to build this ship. It was so smooth. As smooth as a baby's... well, you get the idea. As I drew closer, being very careful not to touch this work of art, I unconsciously scanned the airframe for flaws. Even for those little, forgivable flaws. I saw none. The plane looked like it had been formed out of a single piece of material. When Richard explained that he had spent eleven years hand-crafting the Falco, I had no problem believing it or appreciating the untold hours of detail work that he had put into it.

Lying on my back to see up into the wheel wells, I was struck by the attention to detail in this area that one wouldn't expect to be pretty. The glue lines were ruler-straight and even. After seeing the wells, I believe if you cut off the tail cone or a wing tip, you would find it perfectly smooth and finished inside.

Richard is a former Air Force F4 Phantom instructor-pilot with many hours of high-intensity, get-your-attention, pump-your-adrenaline flight. Why had he selected me, a mere spam-can instructor, to make the first flight? Well, he and his lovely, vivacious wife, Catherine, had agreed that since Richard had spent so much time building during the past eleven years, and hadn't had much time to hone his flying skills, it might be good to have someone else make the first flight.

Generally speaking, from my experience rubbing shoulders with builders, they tend to become emotionally involved with their airplane, their 'baby.' When making a first



Richard Clement's Falco is painted in Ferrari 'Fly Yellow', the color used for Ferraris in the 80's. What's wrong with 'High Yellow', Richard? After all, in Denver you're at 7,000 feet all the time!

flight, there is something to be said for the pilot who has a detached feeling regarding the ship. Perhaps it is better to have the attitude that if something goes wrong, "Hell, I'm going to plant this box-of-bolts into that thicket, rip the wings and the gear off, and maybe walk away." A builder might have a more difficult time coming to that kind of a decision. I don't know. That's just a theory, and builders make first flights every day with no problem.

Anyway, I felt very honored to be chosen to make the first flight. I knew there were a lot of extremely qualified pilots out there, including the renown builder/engineer/mechanic/pilot Ted Lemen. But Ted was up to his elbows in his Mustang, so that was a break for me.

Of course, the first flight is always approached with trepidation by the pilot who will make it. Questions pondered are: Will this thing really fly? Are there any hidden surprises that will make themselves evident at the worst possible moment? What am I getting myself into? If I bash this machine, will I be sued for a million bucks? Does the builder worry that I or my next-of-kin will sue him for a million bucks? Is the builder having second thoughts about having me fly his beautiful baby? Has the builder found a pilot he would rather have make the first flight? Another thought I had was that Catherine must be one great wife to be able to put up with eleven years of such an intense building effort!

On the day of the maiden voyage, the ac-



This neon Falco sign was fabricated by Richard's son, Rich, and adorns his hangar.

tivities of getting ready changed the focus. Ted Lemen took time out from his busy schedule to provide some helpful ideas. And Dean Cochran [who used to build exhaust systems for the Falco] volunteered to fly chase with his very nice Thorp T-18.

There is a story about Dean that I can't resist telling. Years ago, Richard went to Oshkosh to look at examples of planes he was considering for a building project. When he returned to Denver, in front of a group of EAA members, he gave a talk about his observations. One item was that he had decided against building a Thorp T-18 because it was so ugly. Three Thorp proponents promptly got up and walked out of the meeting. Dean was one of those. Richard realized, too late, that such a comment is a bit like telling a proud papa his child is ugly. Since then Dean and Richard have become close friends.

Anyway, Richard, Ted, Dean and I huddled for some time working out the plan for the first flight. I wasn't about to 'kick tire, light fire' for the first one. Using the current winds and runway in use, we discussed the general plan and the associated 'what-ifs.' Then we hammered out a more detailed plan which included orbiting the airport for a certain number of circuits so if something happened, I would have the benefit of a manned tower and emergency equipment strategically positioned on the field.

After we were confident we had covered the critical aspects, Richard turned to finishing up some details while Ted, Dean and I went to the tower to discuss our plan with them and get their approval and assistance in coordinating the first flight. I was surprised at how willing the tower personnel were in accommodating us. Then I realized Ted and Dean are well-known and respected members of the flying community by the controllers at Jeffco Tower

because of their skilled, professional approach to flying. One tower manager who had never met Dean recognized his voice, and said, "Hey, you're N-number is such-and-such," and Dean nodded affirmative.

So, it was time to go. Although Richard had done extensive taxi tests, I taxied around for a little, weaving down the taxiway, testing brakes and steering, while Dean followed. Although Dean knew what I was doing, those casual observers who weren't aware this was the first flight might have wondered if I was three sheets to the wind, plowed, snookered, etc.

The plan was that my first trip down the runway would be a high-speed taxi. Although Richard had already made these tests, I needed to get the feel of how the plane reacted on the ground. (It is so embarrassing to have a perfect flight marred by a runway excursion on roll-out due to pilot error.) With that accomplished, I was feeling more confident with the ground-handling characteristics. However, flight is a whole different hand of cards.

Back at the run-up area, by prior agreement, Dean joined up with me to fly chase as a flight-of-two. This wouldn't be a true formation flight because Dean was staying well clear, but he would be closer than anyone else to act as an observer to report discrepancies or take a look in case I felt something on the exterior needed to be checked. He could alert me if the plane began to exude liquids, solids, or (forbid) smoke. I felt very comfortable with Dean keeping a close eye on the plane, ready to alert me of any potential problems.

As we rolled down the runway for the first takeoff, I was reaching the pinnacle of pucker. To me, the most critical phase is that altitude between one and 50 feet. If a plane suddenly gets twitchy or the engine quits, I'd like to be either an inch off the runway or at a thousand feet. If it suddenly rolls over at twenty feet, there isn't much room for doing anything. And if the engine quits at fifty feet, and you're beyond the point of being able to put it back down on the runway, not good, especially for runways 29R/11L at Jeffco. The departure areas for those runways are a mess in the event you have engine failure.

So, with Dean safely behind me, I lifted off. The Falco literature indicated the plane had docile slow-flight characteristics, but I always take such verbiage with a grain of salt. I was ready for any sort of odd design or builder defects that might cause problems. But no problem. Once I was at the

pre-planned attitude of 7,000 MSL, I began orbiting above the traffic pattern with Dean quietly flying behind. This was one instance where no news from Dean was good news. The Falco flew like a jewel.

When we had completed the requisite number of orbits, I requested a departure of the pattern to the north. This might seem foolhardy for the first flight, and that argument is valid because upon landing, something about to become a problem might be discovered. But, the plane was performing flawlessly, and I had included it in the plan, in the event everything was okay at this point, because I wanted to do some turns in the opposite direction and some altitude changes to expand the test envelope.

For a few minutes we flew out over the fields just north of Class D airspace, then returned for the first landing. Now, some pilots might say that the first landing is the most critical event during the first flight. My thought is that the plane has already proven that it can operate on a hard surface, and the final phase, if executed properly, will be a little faster than normal with the speed bleeding off at a height of inches. Assuming the plane isn't shedding parts on the approach, even with an engine failure, a successful landing is very possible. The worst that could happen would be a gear collapse on landing. (That happened to me once in my Quickie, but that's another story.) A belly landing is usually no big deal (to the pilot—not to the builder), but you want to make a timely exit in case flames begin to lick the machine.

Having examined Richard's landing gear, and since the plan was to leave the gear down for the entire flight, I was very confident that the gear would hold up. However, the worst part for me was the worry that I'd bounce the plane since there were a considerable number of observers, some of whom had video cameras following me every inch of the way. A bounce wouldn't necessarily be bad, but it would be embarrassing, and captured on tape for eternity.

But the Falco gear is designed to soak up bounces and bumps. The landing wasn't perfect (I could have lowered the nose a bit more slowly) but it was smooth and I was satisfied. In conclusion, Richard's Falco had performed flawlessly on its maiden flight. I couldn't believe that I had no squawks to report. A wave of relief washed over me as I slid the canopy back to taxi back to the hangar where Richard waited like an expectant father. As I taxied up, the first thing I said to his query was, "Magnificent!"

Goings On at Sequoia Aircraft

Things are still very busy around here. Our sales were up 70% for the year, and we're still cooking along at a good pace. We've just received the wood for the next batch of 20 wing spars, and we're beginning work on those now. We make the spars five at a time, and we've already sold the first six.

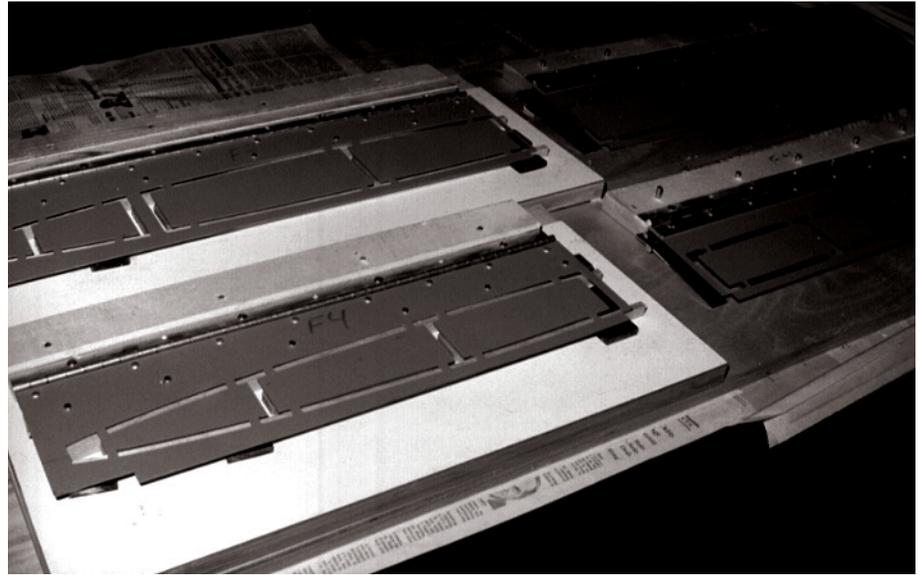
We're also now in the process of making a large batch of tail group ribs. The first time we made those, we used a jiggling method that relied on toggle clamps. It was a real learning curve for us, and we've now abandoned that method in favor of assembling the ribs with staples providing the clamping pressure for the glue. This is a much more sensible approach, and we've now learned to use a small regulator at the staple gun to fine-tune the pressure. Without that, you tend to bury the staples into the plywood.

I've been interested to read the responses to the discussions about modifications and our policy regarding them. There are a few additional observations I would like to make.

There's no aircraft on the market that couldn't be improved by making a design change. When you're a homebuilder, working on your own design, you have complete freedom to do anything you feel like. However, if you sell plans or kits on a design, you are subject to potential lawsuits over the design in the case of an accident or fatality.

That means that you must be capable of defending each and every design change in court. These things have to stand up under close engineering scrutiny. That's always a good idea anyway, but the threat of litigation makes you extremely careful. With any aircraft, there will always be accidents and fatalities, and eventually there will be a lawsuit. If you have failed to perform an adequate engineering review of the changes, then your company is doomed to fail in time.

We've changed the design of the engine mount of the Falco, from the original design for the conical engine mount to the dynafocal type I and II mounts. This is a critical component of the aircraft. The design work was done by Dave Thurston, an aeronautical engineer with about 50 years of experience in the field, and Dave is also an FAA DER (designated engineering representative). Then we built a prototype engine mount and tested it



Tail rib jigs use laser-cut metal stapling templates so you hit the underlying spruce.

to ultimate loads. This test was done by another FAA DER, and it is completely documented. All of this is exactly what any production company would do, and if we ever get dragged into court on this, we have all of the paperwork done to substantiate the design.

Whenever we go through some design change, or when I hear one proposed, I always go through a nightmare scenario in my mind. I ask myself what would happen if someone, at some point in the future, dies in an accident as a result of this design change. I see myself sitting in a witness stand being questioned by an attorney.

"Tell me about your engineering training?"

"I am a speech and drama major from the University of Virginia. I never took a single engineering course."

"All right, then please tell the court what engineering went into the design change that eventually resulted in the death of this pilot."

"Gee, it looked like a good idea at the time, and a bunch of my buddies out at the airport all thought it was a good idea, too."

I needn't explain how that would go over in court. The bottom line is that you'd better be prepared to defend your changes in court with documentation, or you shouldn't be doing it at all.

I recommend that all of you read the report in the February 1996 *Sport Aviation* on the findings on the accident that claimed the lives of Steve Wittman and his wife, Paula. Steve Wittman was an air racing legend who had been building fabric-covered

airplanes since the 1930s. He had about 60 years of experience working with fabric covering, and yet a seemingly small change in the application of the fabric is being blamed as the cause of the accident.

We have had three fatal accidents in the Falco, claiming six lives. I cannot describe to you how horrible it is to have this happen, particularly when you know the people who died. You wonder if anything that you did contributed to the accident, and after the accident you end up dealing with a whole new set of people you've often never heard of before—accident investigators, insurance companies, and friends and family of the deceased who are usually convinced that their dear departed could *never* have made a mistake like the accident investigators conclude.

Today, a typical commercial dispute can easily cost you \$25,000 in legal bills just getting through the business of arguing and appealing. In the case of a fatal accident, a lawsuit can easily cost \$300,000 to defend, no matter how frivolous or fanciful the claims might be.

I've talked at length about all this with Frank Christensen, whose Christen Eagle kits set a standard of engineering excellence and attention to detail that few others have achieved. The aircraft was designed in accordance with the certification standards current at that time and, with a few minor exceptions, could easily have been certificated.

In the last five years that Christen Industries owned the Pitts factory in Afton, Wyoming, they spent at times \$20,000 to \$40,000 a month on legal expenses. They never had a single case go to trial,

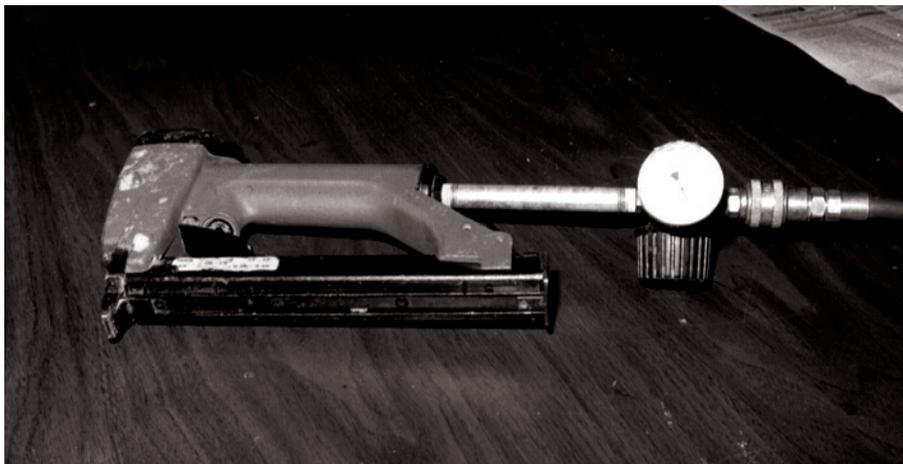
yet the expenses of defending against mostly frivolous suits rolled along as a normal part of the business. Christensen says, "Sometimes it seems that people in our society have abandoned all commitment to personal responsibility and have adopted the notion that they are entitled to a risk-free existence."

For example, the last major suit against Christen Industries was a case involving the death of an Eagle builder who Frank remembers fondly. The man built an Eagle, wrote glowing articles about it, and then gave it to his wife who was also a pilot and built a second one for himself. One blustery day, while on final approach, he veered off course and crashed into the tops of tall trees left of the runway. The aircraft fell out of the trees, the engine mount was driven back into the fuel tank. The aircraft caught fire and the pilot died from the flames.

In a competition-class aerobatic airplane, it's essential to locate the fuel tank at the center of the rotational axes of the airplane so that the polar moment of inertia is minimized and roll and yaw changes meet little resistance. It's also important to make the fuel tank and associated parts as light as possible to minimize weight and maximize performance.

In a court of law, it's very easy to criticize such a system and conjure up images of negligence in the eyes of a jury or a grief-stricken widow about the inherent dangers of such a design. In the case of this suit, the case primarily rested on the claim that the passenger compartment should have been isolated from the fuel tanks by structure and a secondary firewall to completely eliminate the risk of fire in a crash. That's a worthy objective, to be sure, but as a practical matter, it's not possible in a competition-class aerobatic machine, or perhaps any aircraft.

The pressure regulator at the staple gun allows you to fine-tune the pressure.



The suit dragged on for about three years. There was an attempt to 'pierce the corporate veil,' so the suit named Frank Christensen personally as well. About the only time that sort of thing is successful is in the case of fraud, but it took about a year to get Frank's name off the suit.

Mounting a defense in a case like this is an expensive affair. In this case, it involved lawyers in two states, lining up expert witnesses, pretrial depositions, etc. In addition to the expense, it takes an enormous amount of time away from running the business.

It was apparent that Christen Industries was prepared to mount a strong defense. One week before the trial, the plaintiff's attorneys called and said that "we really ought to settle". Christensen remembers that in the course of a single conversation, their settlement offer went from \$1,000,000 to \$15,000, which was, in fact, the total of the plaintiff's legal expenses.

In all, Christen spent about \$500,000 preparing the case. And at the end of the day, neither party was better off. Society and aviation safety have gained nothing, and there is literally nothing Christen could do to prevent a similar accident or lawsuit in the future.

Even so, Christensen still thinks he's gotten off lightly in this litigious world. At any one time, Lycoming has 175 suits running, and they cost an average of \$300,000 to defend—win, lose or draw. One of those involves the death of my old friend Homer Woodard, who used to talk to me about how terrible this litigation thing was, and how it was destroying aviation. Yet after he died in an accident following an engine failure, there have been a whole series of lawsuits, against Woodard's estate by the passenger's family, and Woodard's estate against Lycoming, Fox 51 and SIAI-Mar-



Spruce for 20 wing spars—2000 lbs.

chetti. One result that's come out of this is that SIAI-Marchetti no longer sells SF.260 aircraft in the U.S.

In this world of singing commercials for personal-injury attorneys, you can imagine how this concentrates your attention, not only on doing things well, but also on the enormous risks involved when people start messing with the design. This isn't software, folks, where if you make a mistake the machine crashes and you reboot. There isn't a kitplane company today that can survive a single \$300,000 legal expense and survive. Not only will it destroy your company, it will also ruin your life. And that is why anyone who is in my position must be exceptionally careful. If it seems to be unreasonable, then please look at the world we live in.

I've been going to the Oshkosh air show for the last twenty years or so, and I'm pretty well burned out on it. The Oshkosh show is the best possible place to introduce a new product, but over time people have come to know the Falco, what we do, how well we do it, what we're like, etc. For us, Oshkosh is a time to meet friends and take in the show. It's fantastic when you have a large crowd of Falco builders, like last year.

I'm sure I'll change my mind from time to time, but my general plan is to have a big get-together of Falco builders every five years, coinciding with the 45th and 50th birthdays of the Falco. For those of you who plan to go to Oshkosh and would like to have a Falco builder dinner, we need someone to take charge of things and do all of the arranging. It's not terribly difficult to do, so if you're interested in doing this, please let us know.—Alfred Scott

Susan's Corner

I was sure that when it was time to write my spring column for the builder letter that it would be just that—spring... but not yet, it still feels somewhat like winter. We have had more snow and cold weather this winter than I can ever remember. I moved to Virginia from Maine some 20 years ago to escape the horrendous, long winters, and now they seem to be catching up with me. Actually, it's been okay for a change, but enough is enough. I'm ready for tulips.

We've had a rather busy winter here at Sequoia. Not only have we continued our work in the warehouse, but we've given the whole office a nice face-lift. Alfred went on vacation in February, and the week he was gone Bill and I painted and wallpapered the entire office. (We didn't, however, do Alfred's office as he threatened me to within an inch of my life if I touched it.) In any case, it does look nice around here.

We also had a surprise birthday party for Alfred at the end of December, and I think it really was a surprise. It was big fun—but then good friends and good food always make for a party.

All of our kits are in great shape—I only have a half dozen or so things to order, so now when we ship a kit there's almost no backordered items.

Full sets of fuselage frames are ready to go, and we have the lumber in house for the next 20 main spars. As most of you probably know, we make them in batches of five, and the first six have already been spoken for, so I can only assume that there's some great progress being made on a bunch of Falcos out there.

We've started making more fin and stabilizer ribs again—we've gotten low on those, but that's a fairly quick process, so our stock of those will be built back up again fairly soon.

Oshkosh '96. Thursday, August 1 through Wednesday, August 7. I don't think we'll be going this year. I guess that's always subject to change (personally, I'd love to go again), but if any of you want rooms, just let me know, and I'll make the arrangements with the Paper Valley Hotel. I'm not sure if there will be a Falco builder dinner. That takes a fair amount of organization and planning, so if any of you are willing to take charge of a dinner, please get in touch with me.

That's all for this time. Until the June issue, keep up the good work, and for those of you that are going to Sun 'n Fun, have a great time.—Susan Stinnett

Calendar of Events

15th International Fly-In of Vintage and Stelio Frati Aircraft at Schaffen-Diest, Belgium. August 15 to 18. Contact Guy Valvekens, Hasselsestraat 50, B-3290 Diest, Belgium. Telephone 32-13-335405, 32-13-311496, fax: 32-13-315060.

West Coast Falco Fly-In, September 12-15 in scenic Mendocino, California. Contact: Susann Flowers or Pierre Wildman, 1489 Woodland Avenue, Menlo Park, CA 94025. Tel: (415) 694-4131 or sflowers@getready.com



Top: Lance Zellers, Walter Marsh and Alfred Scott at the warehouse birthday party. Center and above: Mario Domingues and friends in Portugal.

Sawdust

• Don't you just hate it when the wings come off? Lately there have been a spate of serious structural failures. As reported in *Sport Aviation*, the wing of an RV-3 came off while 'maneuvering' with an RV-6, however we understand the pilots were, in fact, dog-fighting at the time. In November, an Illinois pilot, who now goes by the nickname "Lucky", lost the right upper wing of his Seahawk amphibian and landed the plane safely. And recently, a Sukhoi 31 crashed in Florida following the structural failure of the wing. This, the latest design of the Russian acrobatic superplane, has a carbon fiber wing designed for 23 g's, however the wing folded in an aerobatic practice flight with only 12 hours on the airframe.

• **Bosnian Air Lift.** President Clinton recently announced U.S. plans to deploy over 75,000 vowels to the war-torn region of Bosnia. The emergency deployment, the largest of its kind in American history will provide the region with the critically needed letters A, E, I, O and U, and is hoped to render countless Bosnian names more pronounceable. "For six years, we have stood by while names like Ygrjvslhv, Tzlynhr and Glrm have been horribly butchered by millions around the world," Clinton said. "Today, the United States must finally stand up and say 'Enough.' It is time the people of Bosnia finally had some vowels in the incomprehensible words. The U.S. is proud to lead the crusade in this noble endeavour."

The deployment, dubbed Operation Vowel Movement by the State Department, is set for early next week, with the Adriatic port cities of Sjlbdnzv and Grzny slated to be the first recipients. Two C-130 transport planes, each carrying over 500 24-count boxes of E's, will fly from Andrews Air Force Base across the Atlantic and airdrop the letters over the cities. Citizens of Grzny and Sjlbdnzv eagerly await the arrival of the vowels. "My God, I do not think we can last another day," Trszg Grzdnjkl, 44, said. "I have six children and none of them has a name that is understandable to me or to anyone else. Mr. Clinton, please send my poor wretched family just one E please." Said Sjlbdnzv resident, Grg Hmphrs, 67: "With just a few key letters, I could be George Humphries. This is my dream."

The airdrop represents the largest deployment of any letter to a foreign country since 1984. During the summer of that year, the U.S. shipped 92,000 consonants to Ethiopia, providing cities like Ouaouo-



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Top: Butch Harbold's Sequoia is nearly ready to fly. Due to a number of construction mistakes by a weak-brained helper (.25" steel plate in the tail where .063" was called for, gussets added where none were needed, etc.), the airplane proved to be so tail-heavy a six-inch extension of the engine mount was required. Above: This is carrying modifications a bit too far, but if you are going to build a plastic Falco, then at least this one's cheap.

...a, Eaouuae and Aao with vital, life-giving supplies of L's, S's and T's.

• **Media Watch.** In addition to the countless articles on the LoPresti F.22s, look for Steve Wilkinson's article in the June *Air & Space* on the Falco birthday party at Oshkosh. Steve has another article on the Falco in an upcoming issue of the *Forbes FYI* business magazine. And watch the June issue of *Sport Aviation* for a report by the CAFE Foundation on Larry Black's Falco covering performance, handling, etc. We're going to find out *exactly* how fast Larry's plane is.

• There's always a problem when you use jargon or colloquialisms in a technical manual. We've had Falco builders panic over terms like 'dry flox' or 'oleo'. The English Europa company advises builders of their fiberglass machine to have a "cuppa" (a cup of tea or coffee) before starting a long fiberglass layup. A fax from a confused German builder informed Europa that he had searched every technical dictionary available but was not able to find what a "cuppa" was, and he was further confused because the plans did not tell him what to do with this "cuppa", assuming that he knew what it was in the first place.

Mailbox

Thanks for the latest newsletter, it was great as usual. I thought your article reiterating your company's modification policy was excellent, and I share your thoughts about unproven design modifications to be right on the money. I'm in the medical device industry, and it always seems that any little design change, no matter how minor, almost always has an outcome not anticipated.

Dan Carsten
Mequon
Wisconsin

I have all the wing and tail ribs finished along with the tail component spars. I am about to start on the wing spars. William, my son, is working on the fuselage frames and hardware. The portable school house I purchased last summer should be ready for use this coming summer. We dismantled it and rebuilt it here on my property. It will be a nice comfortable place for the assembly. Keep up the good work and your enthusiasm as it is catchy.

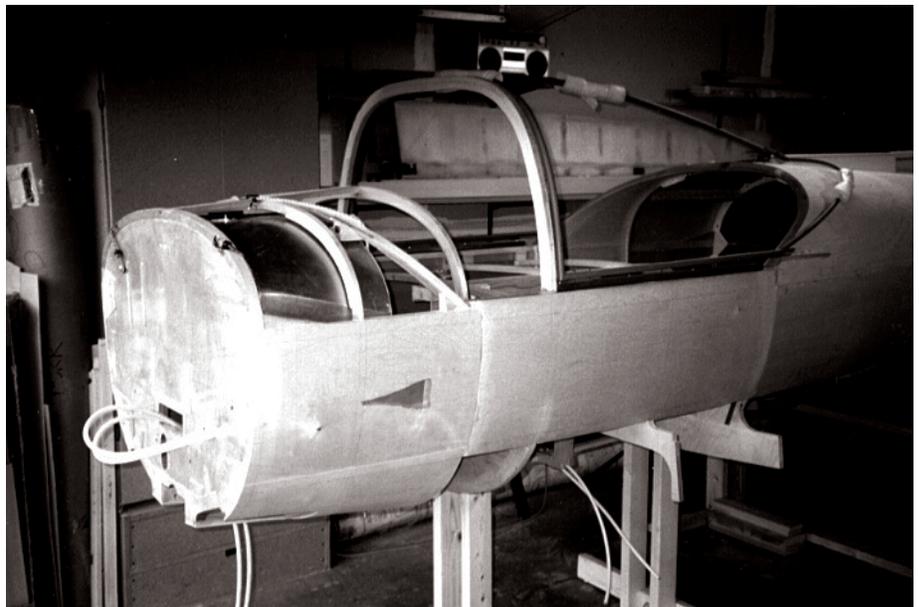
Charles Nutt
Montgomery
Minnesota

Many thanks for sending all the frames in one go. I can't believe how quick time flies when you're having fun. The timber work in the Falco is a completely new learning curve for me as it becomes more and more obvious that timber and metal aircraft are poles apart. Timber is more forgiving in some ways, though.

Drew Done
Merimbula, NSW
Australia

With reference to fin and rudder station 1, shown on drawing D12 and D13, I have noticed a couple of possible measurement problems. The percentage figures of the chord length do not tie up with the measurements shown. On the rudder station rib, the figure given for a 10% measurement of the chord is shown as 128mm, but on the fin station rib the figures given for a 10% measurement step of the chord vary between 119.5 and 124.9. Are the percentage figures only a rough guide, the measurements being correct, or vice-versa?

To bring you up to date on the project so far, to make best use of the cold weather I have been concentrating on producing jigs for the wing and tail sections, and so far all the tail section and half of the wing rib jigs are completed. I hope to complete all the rib jigs and be well under way with the fuselage ring jigs by the time that the am-



Top and above: Dan Dorr's Falco takes shape in Sunnyvale, California.

bient temperature is high enough to start assembly of the ribs themselves. My aim is to have as many components available for assembly of the aircraft mid next year.

Kevin Henville
Dorchester
Dorset
England

My goodness. It's been a long time since someone questioned the tail group dimensions! The drawings are correct however the chord stations (10%, 20%, etc.) for fin rib No. 1 are really names and not actual percentages of chord. This is because the geometry of the tail group is really laid out from the top rib and station 2. Everything else is a projection of those lines, and since fin rib No. 1 is installed at an angle, the 'percents of chord' no longer make any sense and are just projections of those chord stations on other ribs.—Scoti

In Australia, it is a difficult matter to make any modification as they must be properly researched, stress analysis done and all this submitted to CAA for approval along with plenty of dollars. The benefit of this is that it makes contemplation of modifications very easy... you just forget about it and stick to the plans. Although "all progress comes through change", I can appreciate the position of Sequoia in terms of providing assistance to builders, if everyone has the same setup it's much easier to support your builders.

In the computer industry, I see this time and time again, where what starts out to be just a simple change winds up having a chain reaction and opens the door for problems that don't frequently come to light for some time down the track. I have a theory that the word *computer* and



Top: Jim Kennedy's shop. Center: Stephen Friend's Falco.
Above: Guy Valvekens F.15B Nibbio.

the word *just* cannot appear in the same sentence, and there is no such thing as a "simple change". Invariably the whole sequence of analysis, testing, trials and rollout starts over no matter how small

the change may initially appear. That's if you need to guarantee results, and this is what makes the difference between a professional and a hacker, and also why things cost what they do for modifications. Even

with all the best intentions and testing, things still fail, sometimes years after the event. I suspect that changes to something as complex as the Falco falls into exactly the same scenario of problems.

I have completed virtually all of the parts for the empennage, only the forward fin spar to finish, and I am yet to make the main elevator spar. I have completed about 50% of the main wing ribs, and it's really nice to have a growing collection of bits to show others. My progress is very slow compared to many other builders, however I'm enjoying the work and the challenge, and have learned so many things along the way.

Neil Kowald
Linden Park
Australia

My work on the Falco began April last year with the purchase of spruce and plywood from Syd Jensen, in Taupo, New Zealand, which has enabled me to get well into the Falco without having to purchase any kits from you as yet. [*Gee, Brad, that's great!—Scott!*] I have completed most of the fuselage frames, and have started on the tail section. I have found the plans incredible. The detail is amazing and great to follow.

I have used West System epoxy for all my fuselage frames, and I found it great to work with, but I think I will use resorcinol for the wing spars, etc. I really enjoy receiving the Falco Builders Letter. It's a great help with my project.

Last year while over in Australia, I was fortunate enough to be taken for a fly by Guido Zuccoli in his Falco. It was this beautiful aircraft that inspired me to get started on my own dream.

Brad Raven,
New Plymouth
New Zealand

Last week, I popped over to the land of kangaroos and Fosters beer (Australia, that is) where I had the pleasure of meeting a very friendly Stephen Friend. Stephen was kind enough to let me look over his beautifully built Falco, on which I used quite a bit of film, and took me for a fly over his property.

On looking at Stephen's Falco, I would be very happy if mine came out half as good. He certainly has achieved a very high standard of finish. It goes without saying that flying the Falco was a real blast. After all that has been said about the flying qualities of the Falco, I doubt I could improve on it in my short encounter, but if I ever had

any doubts about building a Falco, they are gone now.

People like Stephen make great ambassadors for both the Falco and Sequoia and make the whole thing a pleasurable experience.

*George Richards
Auckland
New Zealand*

You will find here included information about my Procaer F15B Ficchio which I would like to sell. You may remember me as the owner of the Falco OO-MEN, serial number 114. A picture of my aircraft with military colours was printed by you in one of your first information leaflets from the year 1981 or 1982. You told me then in one of your letters that it was a big mistake to sell the Falco, and you were right!

I now have the possibility of buying a dismantled Falco in German, so the Picchio must be sold. If you know somebody who is interested in my Picchio, feel free to give him my address and phone number.

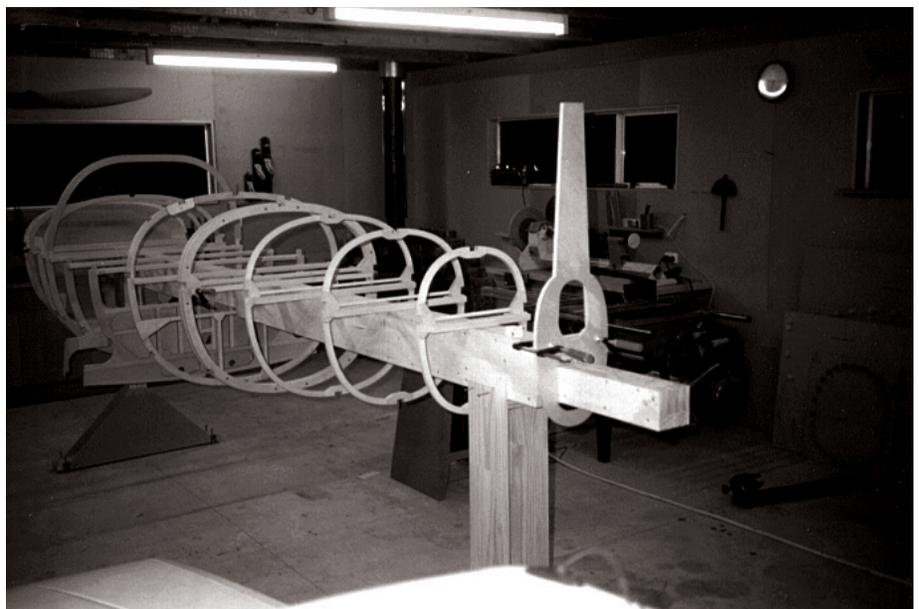
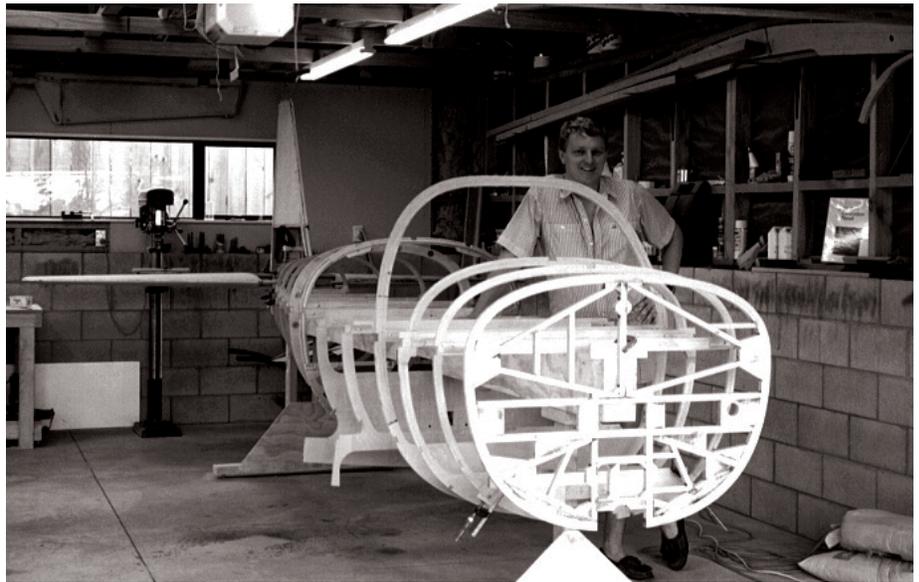
*Guy Valvekens
Hasseltsestraat 50
B-3290 Diest
Belgium
Tel: 32-13-335405*

Last weekend I couldn't find any excuses anymore to postpone the terrifying task waiting for me. I did cut the fuselage in halves. Before gluing the wing spar to the already finished fuselage, I wanted to know if my wing spar was also square on the centerline of the airframe in the 2mm shorter fuselage version, that is, with the two frame No. 8 bolted together without spacer rings. To my luck, the measurement of the distance from wing spar tips left and right to the center of the tail showed only 2mm difference. Good enough for me to glue the spar on the airframe and start construction the support for further wing construction.

*Marcel Morriën
Wijk bij Duurstede
The Netherlands*

I've been a bit quiet lately, but not doing nothing! Progress is excellent, still exciting, and still providing great pleasure. I have completed most of the tail, and currently have it assembled to admire every now and again... 350 hours, and 15 months, into the project I'm pretty comfortable with the processes to date, and satisfying my inspector (so far).

*Angus Buchanan
Glasgow
Scotland*



Two Kiwi Falco projects. Top: George Richards of Auckland, New Zealand. Hmmmm. Doesn't this guy look suspiciously like Bill Clinton? Above: Brad Raven's project in New Plymouth.

Concerning the Ferrari 'Fly Yellow' of my Falco: Several days ago upon returning to Jefferson County Airport, the tower requested I overfly the airport from north to south, and turn on downwind for 29L. Whenever it is necessary to overfly the patch, I jack the pattern altitude up 500 feet until turning on downwind. Just as I was beginning the turn to downwind, tower informed me that I was number four for landing. I searched the pattern and saw nothing. Just about then, a flight of three Mooneys passed no more than 300 feet below me. All this in a Class D airspace!

Well, I landed, put the bird away in my hangar and was puttering about when a friend drove up and told me he was in one of the Mooneys. His comment was, "I'll tell you one thing about your airplane. You

can see that frappin yellow for miles." And that was the intent!

I would like to make a suggestion even though my suggestions are usually taken by Sequoia as coming from an idiot. I thought it would be neat if the aircraft completion number was painted on the nose gear door. For example, mine would be 50. I think it would give each builder a sense of distinction; particularly the early ones.

*Richard Clements
Lakewood, Colorado*

We have enough difficulty getting people to follow the plans, so how are we to talk people into painting them alike! We pass along this worthy suggestion for everyone's consideration. Some builders have painted their plans serial number on the nose gear.—Alfred Scott