

Strange Planes Flown in Strange Times by a Strange Pilot
December 2, 2010

INTRODUCTION

Comment about informality and questions that arise.

I have led a charmed life, though I didn't know it at the time. We all have pivotal points and choices that branch out into different streams of life. At the time we don't know it, only in retrospect does it become clear. One benchmark of a successful professional life is to find something you love to do, and then get someone to pay you for it. I have been lucky enough to do that. Even as a young boy I had no desire to become anything other than a pilot. I started flying in 1953. A friend of mine reminded me that that was 50 years after the Wright brothers first flew. That means I've flown over half the recorded history of aviation powered flight. On the other hand, I don't think that's so unusual. Let's have a show of hands here to see how many pilots started before 1953.

My basic training came from an old Air Force training command pilot. Needless to say, his method was rather rigorous. My first airplane was an Aeronca Champ, and my first twin was a T – 50, better known as the Bamboo Bomber. The rest of my ratings were acquired at the Aviation Institute at University of Illinois. As a young and eager pilot just out of college with an aeronautical engineering degree, and about 300 hours in my log, I wanted to be a fighter jock, but since I wore glasses, I was rejected by the Air Force and Navy. The next most macho environment I could enter was flight test. In the 1960s simulators were still relatively primitive, so most initial flight tests really were an adventure. Luckily I had mentors a generation ahead of me who kept me steered down the right path. Duane Cole taught me the finer points of aerobatics. Tony LeVier, Fish Salmon, Bob Hoover, Al White, Don Armstrong, Jim Patton(the Spin Meister), and Clay Lacy all pointed the way.

Note-During my tenure as an FAA test pilot my 'All ratings authorized pilot license' gave me a chance to strut my stuff at FBO's.

When asked about the dangers of a career in flight test, I have always replied that they are greatly exaggerated. However, in looking over my career there are seven pilots that have died in airplanes I tested or was scheduled to test. Should I change my opinion?

SNOW AERONAUTICAL

First job out of college, Olney, Texas-- Leland Snow Company owner, engineer, and pilot. He did all the design work and testing of the original airplane. I was his test pilot and structural engineer. My buddy from University of Illinois was his production engineer. Good training grounds for me - learning how to fly an airplane at a weight that would allow it to just barely fly. Leland could fill the hopper to overflowing and demo the airplane on a 100° day. It took me almost a year to learn to do that. The first time I tried it, on a cooler day, I had to dump the load just before I touched down in an incipient stall. Got a good splash of Texas mud all over the tail of the airplane, which raised a few eyebrows on my return. After two years, I got tired of living in small-town Texas, and I followed my buddy to San Diego and Convair aircraft company.

The company is still in business 50 years later. The present line of aircraft, called Snow Air Tractors, are the largest single engine airplanes, in production at this time in the world. The AT-802 has a PT6-35 engine of 1350 hp, 230 mph top speed, and empty weight of 7000 pounds, and gross of 16,000 pounds, making it the only FAA certified airplane I know of that has a payload more than its empty weight.

CONVAIR

I started out as a flight test engineer in the middle of the Convair 990 program. Since it was an outgrowth of the 880, they decided they could go ahead without building a prototype – big mistake. Many problems ensued, one of which required shock bodies aft on the wing. This also produced a strong longitudinal phugoid. By the time all the problems were worked out, the airplane was only about 8 kn faster than the Boeing 707 or Douglas DC-8. The end result was the company lost hundreds of millions of dollars and went into a steady decline into oblivion. A sad end for a company that had been quite an innovator in aircraft design.

BEDE AIRCRAFT COMPANY

I worked with Jim Bede on the prototype for the XBD-6. [How many people here have heard of Jim Bede?] Jim is an excellent designer, but a less efficient producer of airplanes. Most of his designs have not gone past prototype stage. This aircraft was a radical departure that had a lot of potential. It used a ducted fan in the tail, driven by two engines buried in the fuselage, suction boundary layer control on the wings, and a one-piece fiberglass landing gear. Not too surprisingly, this required a great deal of development testing. Jim's idea basically was that it would work right out of the box. We spent so much time demonstrating the airplane, we did not have much time for the required testing. During the time that he spent on a promotional trip, the engineering group finally got some valid data. We found out that the boundary layer pattern needed refining; we had separation on the shroud surrounding the ducted fan; and there were cooling problems with the engines, which also had a rather long spin up time from idle to full power. When I brought up these issues to Jim, he announced that I really did not have a good positive attitude about this airplane. I replied that my attitude is unimportant; the data was not a matter of opinion. When he insinuated that the data would be improved if my attitude improved, I realized that my time with Bede Aircraft company was limited. Somewhere in the depths of the Smithsonian hangars there sits an airplane of which I was the only pilot.

BD-10

Quite a few years later, I again flew another Bede design, probably the most exciting airplane I have flown in my career. Basically, it was a little mini fighter, rather resembling a tiny F-15. At the weights we were flying, the GE J-85 engine gave it a thrust to weight ratio of almost 1:1. Given the right control system, it would have had supersonic capability. A second aircraft was built at the Peregrine Aircraft Company in Minden Nevada. During a flight test at Douglas County Airport, the aircraft and broke up inflight, killing pilot Mike VanWagonen. It was estimated that this aircraft experienced catastrophic vertical stabilizer failure, due to the excess speed during the flight. Once again, a radical design that never quite made it into production. Since then, other companies have tried similar projects and also failed.

AERO SPACELINES—GUPPY SERIES

As far as I know, I am the only person who flew on all three Guppy designs. The Super Guppy was the largest airplane [cubic volume] in the world at its time. In theory, you could hold an Olympic pole vault competition inside its 25ft. diameter fuselage. The original Guppy, and the Super Guppy, had some of the worst flying characteristics of any airplane I know. The fuselage of the airplane was so large compared to the tail, that the airplane exhibited almost no lateral/directional stability. At high angles of attack, the fuselage would act as a lifting body. That meant the airplane would continue to pitch up at the stall. The only way to stop this event was to roll the aircraft off on a wing to make it pitch down. On the other hand, without these airplanes, NASA would never have been able to develop the space program within the time constraints placed on them. When the flight test staff told the Washington DC office of the FAA overseeing the project that the airplane would not meet any certification standards, the reply was, "Tell us what it will do, and we will take care of the approval." These airplanes were approved as public aircraft, meaning that they were used in the public interest, that of NASA, and required no standard certification approval - an unusual but efficient way of doing business.

Jack Conroy was the driving force behind all of the Guppies. He was always on the brink of financial disaster and pushing hard to get any project through. At one point our credit was so bad we had to pay cash for fuel. There have been several articles written about this including one I did for Invention and Technology magazine. During a dive test on the Super Guppy, the entire forward section of the raised fuselage collapsed inward. Luckily, I was not on this flight. I talked to the copilot, and he said there was the sound of an explosion followed by violent buffeting and shaking. He looked over his shoulder and could see blue sky where there was supposed to be structure. At the time, he thought this would be the last thing he would see before he died. Luckily, as the speed decayed, they were able to regain control of the airplane and stagger into Edwards Air Force Base. Needless to say, major modifications were made to the forward structure.

The Mini Guppy was a commercial project, and we had quite a job stuffing it into the required regulations. I was on the first flight and was involved in the majority of the pre TIA testing. It did have better flying characteristics than the first two airplanes. A few years later the company contacted me about participating in the Turbo Mini Guppy. I turned it down because I was at that time fully involved with my job at Western Airlines. A good thing I did, because a few months later, when I opened the first page of the LA Times, the headline, with a graphic photo, was, "Guppy airplane crashes on takeoff; all flight crew die." Apparently, when they were doing V2 engine cuts, the rudder cables became disconnected where they are split when the fuselage is opened.

ECLIPSE 500A

This was the first and most radical of the very light jets, VLJ's. It was the first clean sheet design since the Learjet. The stir friction manufacturing process was entirely new, as was the highly integrated cockpit design. It was exciting to participate in a groundbreaking project such as this. It also appears that the company was trying to accomplish too much in too short a time to be a commercial success. That was true even without needing to switch engines in the middle of the project. *[show pix here]*

Another example was when the anti-ice system overheated the pitot tubes and caused the central air data computer to decide that it should shut down the cockpit displays since their data input was incorrect. So here I was flying this little jet with no instrumentation at all, just three blank screens. Actually, I looked at the other pilot said, "I bet I could put this puppy into the pattern on the ground without any instruments." We both agreed that that probably would not make the company happy. So how do you fix a problem like this? The same way you always do; reboot the computers, and sit there until they spin up again.

I also feel that the company philosophy included a 'conspiracy of enthusiasm'. By that, I mean that the feeling was that if you threw enough talent and money against a problem it would go away. Ultimately, all of these factors, and probably others, meant that the company could not produce enough functional airplanes, at the price point they declared, in the time envelope that was required.

An example of this was the push to achieve FAA certification by the Thursday of the Oshkosh EAA Air Venture. On Wednesday afternoon, another pilot and I were running tests that had to be completed successfully before the airplane could be approved the next day. They received a ceremonial approval for day VFR operation. To be a usable jet airplane there would have to be further approvals for night, IFR, and icing.

B-70 VALKYRIE

Here's an airplane I did not get to fly before it crashed. I was the FAA liaison test pilot and was being trained to become one of the Boeing SST test pilots, another project that shut down before it ever started. It was our first Mach3 airplane and a radical groundbreaking project that was successful in a limited way. It showed the pathway for later high Mach airplanes. One look at it, described as a cobra striking from an orange crate, and you knew that it was flying into unknown realms. Not unexpectedly, almost every flight in the B-70 resulted in some sort of crisis. I was able to fly the SST simulator with Al White, and I was scheduled to fly in the right seat after initial testing was over. At the end of one test flight, the B-70 was scheduled to do a formation flight with other smaller jets for a photo op. Joe Walker, flying an F104 was sitting just off the right wing of the B-70. His airplane rolled left shearing off both vertical tails of the B-70. He was killed instantly, and the B-70, after a few moments of seemingly stable flight, began to enter a flat spin. Al White was able to eject, but Carl Cross, in the right seat, wasn't able to eject, and was lost with the airplane.

If you're interested, here is a website that is a good resource for B-70 information, <http://xb70.interceptor.com/> ALSO http://en.wikipedia.org/wiki/XB-70_Valkyrie_

Not too long after this, I received a telephone call from the head of the FAA supersonic flight test division saying, "Bob, don't count on it. I don't think it's going to happen." Within a few months that became a reality. I realized that my days as a test pilot moving up the ranks were limited. I took the advice of all the older test pilots I talked to and switched over to Western Airlines, where I had a 30 year career. However, during that period and up until now, I received an FAA designation as a DER test pilot consulting with various aerospace companies.

My latest test project is the Sherpa 650T, [show pix] a real bear of an airplane,

designed to haul large loads out of short strips, like 300 feet. At light weights, it has a weight to power ratio of better than 5:1. For comparison, a Cessna 182 is about 10:1.

It provides a nice contrast to the routine of airline flying. I've flown high and fast, and now I'm enjoying flying low and slow, either in the Cessna 182 RG we have for transportation, or the Mysterious Moose float plane we spent four years building.

DEVIOUS UNPUBLISHED NOTES

- 1). Rumor at Edwards AFB; an F-86 broke Mach1 a few days before Yeager in the X-1
- 2). UFO flap at Edwards AFB in 1965
- 3). Hoover versus Yeager on Mach1 flight in the X-1