



The Seawind Flyer

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“The evolution of an intelligent design.”

THE EVOLUTION OF AN INTELLIGENT DESIGN

ANYTHING WORTHWHILE DOESN'T COME EASY

If you read the winter 2005 Seawind Flyer, you have some understanding of the saga of Seawind. Just when we thought there were no more potholes, we hit two more.

POTHOLE #1

When my prototype 300HP Seawind kit plane was flown, the test pilot found the stall characteristic to be nominal, which in pilot speak, means acceptable, i.e., straight ahead and controllable.

About seven years ago I landed on Lake Powell, which is at 4,600 feet above sea level. I had quite a bit of extra gear stored in the nose compartment and a forward right seat passenger. Lake Powell is a 180 mile long man-made lake formed by damming the Colorado River and flooding a magnificent canyon.



We made a number of water landings

After enjoying the spectacular scenery, we decided to take off. When a seaplane starts its water take-off run, it builds up a wave in front of the hull. As the craft comes up on top of the wave, it moves aft under the hull until it is at the center of balance or c.g. At that point you apply up elevator, or the nose will go back down the wave, and the seaplane starts to porpoise. If that happens, simply chop the power and start over.

It happened three times, but on the fourth try I got the Seawind on the step, and the remainder of the take off run was normal. Of course, there is that condition called density altitude, which requires a longer run as the elevation gets higher or the temperature gets hotter.

When I returned to Pennsylvania and sea level, I discussed it

with our aero dynamist, who suggested I increase the elevator up angle from 20 to 30 degrees. It would provide more elevator authority at high altitude.



What a magnificent lake.

In mid-December 2005, the test pilot was doing some familiarization flights. He pulled the elevator right through the stall to the stops, which initiated a very deep stall with considerable wing drop. That was something I had not experienced.

I contacted the designer of the NASA laminar flow airfoil, Mr. Dan Somers. He had designed the airfoil number NLF (1)-0215 (F) for gentle stall characteristics. Our original aero dynamist has health problems, so he recommended Mr. David Bevan, who is now part of the team.

They had us tuft the Seawind, and we installed four video cameras. The tufts were near perfect in cruise, right down to ninety knots. Quite surprisingly, we found considerable disturbance over the ailerons below 70 knots. The stall originated at the root of the wing, and traveled outboard which was good to confirm.

We also observed some vertical tail and rudder disturbance below 70 knots at the three quarter rudder deflection point.

Dan and David gave us a number of experiments to try.

First, we restored the elevator from 30° up back to 20° up and 15° down. That made considerable improvement in identifying the stall and its characteristics.

Then we tested aileron gap seals and were surprised to see that the disturbance was worse. We then, reluctantly, tested vortex generators, which improved the low speed flow, but will cost on the high speed end. The vortex generators did the job. The third test simulated a modified aileron shape. It gave perfect low speed flow, the Seawind could be held in a stalled condition, and

was controllable with maximum wing drop, a mere 4 to 5°. We will be flight testing with the new aileron configuration.

We did a number of tests using the new certified rudder, which has made some improvement in slow-speed effectiveness, and should be more than adequate for crosswind water landings.

The original air rudder was sufficient for a 20 knot crosswind landing while carrying the normal approach power. Certification requires a crosswind component of 20% of stall speed, which is a little less than 11 Knots.

POTHOLE #2

What the government gives, it can also take away.

It is no secret that Canada has a number of programs to encourage business to create jobs. I will spare you all the nerve racking details, and get right to the point. Just as we got back on track from pothole #1, we were notified that the government, in its infinite wisdom, had determined our program was no longer eligible. Talk about a bomb going off. This put a 25% hole in our financial plan and would stop the financing package we secured last year.

We had to immediately throttle back and preserve capital. Meanwhile, the most pressing task switched from certification to convincing government it was wrong. After months of frustration we did the impossible; the government changed its mind. Thankfully, we are getting back on track, except that our schedule has suffered again.

We are now scheduled to start flight testing the end of April. It is very exasperating that we are more than a year behind our original schedule. Even though other well-funded projects are multiple years behind schedule, it is no consolation. We apologize to our order holders, and we appreciate their patience in staying with the Seawind program during exasperating times.

Why am I telling you all of this? It's to give you a better understanding of what is involved in the development of a certified airplane. It's also to let you know we are not sitting around doing nothing. We are late for a reason. It is also to let you know that if we uncover a problem, we will correct it. Our goal is to provide not only the best airplane that we can, but the best seaplane in the world.

The evolution of an intelligent design goes on, and we won't give up.

WHAT'S NEW?

The flight team, Baker Aviation, is on board and we are pleased to have such an experienced and respected team. The initial testing will be performed in Saint Jean to prove the basic envelope. The test aircraft will be flown to the test team's facility, where they will be able to progress faster than if they conducted tests in Saint Jean. We are pleased to have a test pilot who has substantial water testing time. They have certified a number of land and seaplanes STC and new models in Canada.

They are estimating four to five months to complete VFR certification, which includes flutter and spin testing. It comprises about 80% of the total test requirements. We had scheduled three to four months.

During the VFR testing period, the second prototype (flight test article) will be assembled. It will fly with the full deluxe IFR with moving map, S-Tec 55X autopilot and the Continental FADEC engine.

The test team has allowed another month to complete IFR and autopilot certification. There is probably another thirty days to process the paper work, during which, they are scheduled to complete the FADEC certification.

LIGHTNING PROTECTION

We have had a number of questions about the need for it, and the timing of the decision.

We want to make the VFR Seawind as affordable as possible. Lightning protection in a composite airplane is expensive, and if you never plan to fly IFR, you need not spend \$10,000 to have it. This is a decision you must make before the structure is fabricated. It cannot be added later.



With wing upside down a bolt of lightning strikes the aft tip of the sponson

You can, of course, elect to have lightning protection and still be VFR equipped. This gives you the option of upgrading to IFR later.



After passing all the wing load and landing gear tests the wing sustained eight lightning strikes

It's your choice. I know many VFR pilots who fly the Seawind. They are not concerned with resale because they will never sell it. The Seawind will be part of their estate. If you elect the IFR option, then the decision is made; you must have lightning protection.

MANUFACTURING PLAN

As soon as the second prototype is finished, we expect that the testing will be well along through the spin and flutter regime.

At that point we will be confident that no significant changes will be required, and we can safely ramp up production. We have the approval to manufacture seven aircraft, and the next five will be built with an expanding work force during which, we should be receiving our VFR certification and production certificate.

It is our understanding that we can deliver **IFR** equipped aircraft with a VFR certification. However, they cannot be flown

IFR until we have received the IFR certification. If there are no changes resulting from the testing, then the aircraft need not be brought back to the factory.

It should apply to both the basic IFR, and the deluxe IFR with moving map, and the autopilot as well.

The **FADEC** will follow. For our early customers who want the FADEC, we are offering them a FADEC ready engine, which can be converted after FADEC certification has been completed.

We will not charge them any more than the cost of the FADEC option. They will, however, have to return to the factory for a few days, at which time they can see the sites, or get additional training in the company Seawind.

GLASS COCKPIT.

Garmin has told us that they will not be able to provide a glass cockpit G-1000 until 2007 because of software availability, and their policy is not to schedule us until the Seawind receives certification.

This may be a problem for our early customers who want the latest and greatest.

I have been flying instruments with the early version of our deluxe IFR system for many years, and have only used a fraction of its capabilities. The MX20 moving map has wonderful graphics and the cost is much less than the G-1000.

We are keeping our glass cockpit options open, and we will keep you posted on any new developments. We do not believe in taking 'no' for an answer.

MEANWHILE, BACK AT THE FACTORY

ENGINEERING

In spite of the disruption, work has continued albeit slower than we planned. All the static load testing has been successfully completed, including the engine mount.

The fatigue (damage tolerance) tests have started, and will continue for the equivalent of two life times. It is a standard procedure to continue fatigue testing even after the aircraft has started flying.

The canopy with the new escape hatch has been completed with the Plexiglas and overhead air duct.

The engine exhaust system and cooling baffles have been designed, mocked up and released for production.

The new aileron shape has been incorporated in the molds. The new design is in production and will be on the flight test aircraft.

PRODUCTION

The wings, including the landing gear flaps and all the control surfaces, have been finished and are ready for painting.



Some of the control surfaces have been painted.

The systems have been installed, and the power plant is being installed on the fuselage. Preparations are being made for fin-

ishing the control console and cabin and upholstery. See photo on back page.

BUILDING IMPROVEMENTS

The Seawind project will occupy the entire building starting April 1st. We have been gradually improving the facility, into what will be, an efficient aircraft factory. The old rolling steel doors, which leaked cold air like a sieve, have been replaced by 70 foot-wide vertical bi-fold doors. The east side (right side) houses the part manufacturing, sub assembly, and final assembly area.

The west side (left side) houses our 44 foot paint spray booth, and will be the warehouse, and storeroom, and the soon-to-be relocated machine shop. The remainder of the west side will be used for factory services to the Seawind customer aircraft.

With 74,000 sq. ft. and the potential to increase it to 80,000, the facility is large enough to support a production level of one Seawind per day. Space will not be a problem for a long time.

Dick Silva

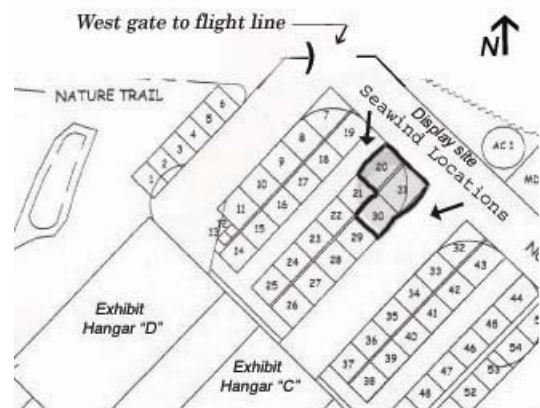
SALES. Sales of the Seawind 300C have continued at a steady pace. At this writing, we have sold 64 airplanes. We are very pleased that despite the schedule delays, only two customers had to cancel their orders, while at the same time, we have added more than forty-five new customers.

We have decided to continue the current \$309,900 pricing and the \$9,000 no-risk deposit program until the end of Sun 'n Fun or until 80 aircraft have been ordered. This number of orders represents a two-year backlog and meets our financial forecast.

We expect that there will be an increase in the price of the airplane, but will not know what that increase may be until just before we receive our certification when we are better able to determine the actual production cost of the airplane. If you want to be a Seawind 300C owner, we recommend you contact our sales office to take advantage of this no-risk offer, and to secure the earliest available delivery date. We will continue to maintain contact with each of our customers to provide them with timely information.

AIRSHOWS. The production 300C First Test Article (FTA) is in final assembly, and will be undergoing certification flight testing in late April and into the summer. Our priority is to complete certification as quickly as possible. We plan to interrupt the flight testing for the week of EAA Oshkosh to display our First Test Seawind 300C. We also plan to attend the following events subject to the progress of flight testing. The proof of concept Seawind will be at the following events until certification is achieved.

Sun 'n Fun. The Seawind team will be attending SnF 2006 and



will be located at the same N20, N30 and N31 display sites as last year. Our full display will feature the 'proof-of-concept' Seawind, N46SW along with the mock-up of the production Seawind 300C. As you all know, Sun 'n Fun is the beginning of the airshow season, and we're all very excited about attending again. We look forward to the opportunity to renew friendships and cultivate new ones. www.sun-n-fun.org

AOPA OPEN HOUSE. Frederick, MD, June 3, 2006. Attendance at this one-day show is around 5000 visitors with 100 Exhibitors. Our proof-of-concept aircraft, N46SW will be on display. www.aopa.org/flyin.

THE CANADIAN AVIATION EXPO. Oshawa, Ontario, Canada, June 23 -25, 2006. This year the Canadian Aircraft Owners and Pilots Association (COPA) and the International Aircraft Owners and Pilots Association (IAOPA) have joined with the Canadian Aviation Expo to present the premier Canadian aviation event. There will be over 200 exhibitors and over 100 air-

craft displays. We will be exhibiting at this show with our proof-of-concept aircraft, N46SW, the Seawind display and production Seawind 300C mock-up. www.canadianaviationexpo.com.

More about upcoming events next quarter.

DELIVERIES. Our customers have been informed of the challenges and delays associated with our certification schedule. We will wait until we have passed the spin and flutter tests in the flight test certification process before we issue the revised early-position delivery dates. Once we have passed these tests, we will reevaluate the delivery schedule and notify the effected customers. We will try to ramp-up production faster to minimize the delays in the deliveries scheduled for 2007.

SEAWIND GIFT ITEMS. Father's Day is not that far away. Check out the Seawind apparel, 20" x 30" photos, and accessories for your favorite pilot. <http://www.seawind.net/gifts.html>.

Bill Poirier



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