



# The Seawind Flyer

Fall 2009

*"The evolution of an intelligent design."*™

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## WELCOME JEAN-FRANCOIS RICHARD

J-F Richard has joined the project to head up the engineering certification effort. J-F is a senior engineer who is also a Delegated Airworthiness Representative (DAR) with his specialty in electrical and avionics. He has over 20 years of experience in aircraft design including a good deal of experience in system design and troubleshooting. He is a welcome addition to our team.

It has been more difficult than I expected to build the momentum. It took more than two months to get organized and until the end of July to get the right people on board. In addition our project manager had to withdraw due to health reasons in July.

Although we made progress, it was not at the rate expected. We are now making better progress as we look ahead to rolling out the flight test aircraft this fall.

## ON THE SHOP FLOOR

We have fitted the engine mount to the vertical tail and checked and double checked our tooling so that future assembly will go faster. Now that all the interfacing of all the sub assemblies has been completed, including the canopy, we can get on with the remaining work in the fuselage. It was critical that our major fixtures be very accurate for **"conformity."**



That is the most significant term in aircraft production. It means that any part will fit any aircraft.

The systems in the wings of the test aircraft have been completed. All previous findings from the first aircraft have been incorporated, and all the details for future production aircraft have been installed and documented. By taking the extra time, this test aircraft (#002) will be a **"conforming article,"** which in aviation is a significant designation. It will help us in the manufacturing ramp up phase later.

We removed the wings after all the fit-up was complete. Then we closed the wings by bonding the aft top skin. In a few days, we will finish the sponsons (wing tip floats) and the wings will be prep and painted.

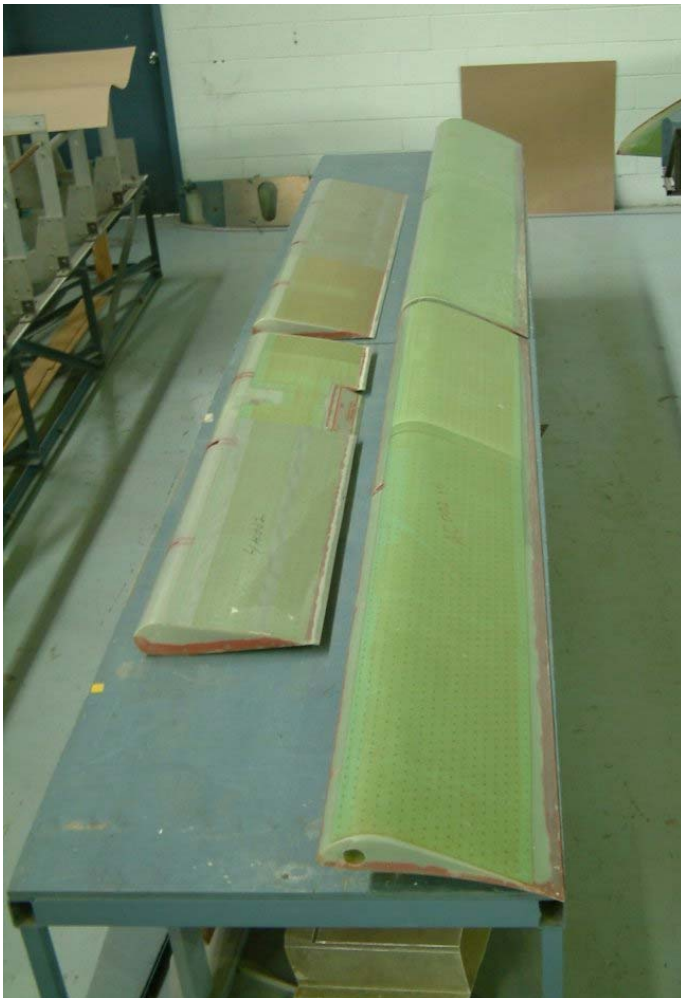


*The wings were put back in the assembly fixture to bond the aft top skin.*

The same applies to the ailerons, flaps, elevator, stabilizer, and rudder. As soon as we install the trim servo motors, we will prep and paint the surfaces and install the balance weights.



*The elevator & stabilizer are ready for painting.  
The rudder has been painted.*



*The aileron and flaps are ready for finishing.*

We still have to fit the canopy latch and the mechanism for the emergency hatch.

The engine and the propeller have arrived. The engine mount frame is bolted to a rotating engine build up stand so that the cooling baffles, exhaust system, cabin heat system and cowling can be fitted to the engine at floor level. During production, the fully outfitted engine will be installed as a unit in the Seawind tail during final assembly.



## FLIGHT TESTING

We had very important meetings in mid-September, and we wanted to report on them in this Seawind Fall Flyer. That is the reason this issue is late this quarter.

John Taylor, our flight analyst DAR, spent a week with us going over the earlier documents and test results. He went over the details of the test aircraft and the configuration of both the first and second aircraft. “**Configuration control**” is one of the most important terms in flight testing.

We spent a good deal of time going through the systems design and operation. The systems testing is an important part of flight testing. The test team has to understand any potential failure modes that could affect the handling of the aircraft.

The aerodynamic testing must be done with the test aircraft in the aerodynamic configuration you intend to produce. Since we removed the flaperons, we cannot use the aerodynamic testing results prior to their removal. For those of you who did not see the “flow energizers” that were installed on the wings, they look like warts on a beauty queen. The previous flight test pilot insisted we would not be able to certify without them. Faced with that choice, I reluctantly had to permit it.

John Taylor said the flow energizers would do nothing. He carefully and fully explained three different options we would have available **if needed**, all of which would be acceptable. They would not be a distraction to the beauty of the Seawind.

After discussing the flights in my Seawind with the NRC and subsequent discussion, it was decided to resume the certification flight testing with a clean wing. They didn’t need to convince me.

If, and only if, change is needed, then we will incorporate one of John’s suggested options.

A number of test cards recorded by the test pilot reported that the Seawind would not spin. He told me that when it was pulled into a very deep power-off stall, it would enter a spiral with a normal spiral recovery.

John was very impressed with the Seawind test aircraft, the molds and tools, and even the building facility. Coming from him, those compliments were really meaningful and very special. Out of necessity, we have to devote our attention to what might be wrong. It is so nice when we receive compliments and we suddenly see the things that are right.

The next day, we met with the test pilots and support staff at the NRC to discuss the instrumentation and coordination procedure. The instrumentation requirement is a joint effort of the power plant DAR James Mewett, John Taylor, the test pilots and our electrical and avionics DAR JF Richard. The NRC instrumentation specialist will install and calibrate the flight equipment.

The next day, the chief test pilot Robert Erdos, John Taylor, and I met with the flight test group at Transport Canada to discuss the project.

Having a highly respected flight test team who are DARs for Transport Canada will be a major boost for our flight test program and the prospects for success.

This time the aircraft will be based in Ottawa for the convenience of the test pilots. It is close enough to Saint-Jean for us to support the program. The down side is that winter is coming.

It was a very good week.

## THE TEST AIRCRAFT

This next test aircraft 002 is configured much like the first with:

- The Continental IO-550-N 310 hp standard fuel-injected engine
- The McCauley 3-blade constant speed propeller
- VFR avionics
- Standard aircraft structure with all the standard equipment and systems.

## WHAT’S NEXT

Our total focus is on the certification of this aircraft. However, I must start thinking of what is next for 003.

The next flight test aircraft will be built to test IFR and autopilot. We are also considering the FADEC controls on the standard IO-550 engine. The question is whether to certify a turbo-charged FADEC instead of the standard fuel-injected engine. If we decide on the turbo-charged FADEC, it will not be on aircraft 003 because of the work and cost involved. It would have to be some months later.

## WHAT’S NEW

In the spring 2009 Seawind Flyer, we discussed the thinking behind selecting a glass cockpit using the Garmin 600. The trouble is that it is easy to get engrossed with the full-color screen and with flashing numbers on engine monitors. It is very distracting. We should be looking out the window instead.

The Garmin 600 combines two screens, each of which is slightly larger than the MX 200 moving map turned vertical. One provides the primary instrument function (PFD), i.e., altitude, air speed, rate of climb, gyro horizon and directional gyro.

The second screen provides a display of multiple functions (MFD), i.e., the moving map, terrain clearance, roads, bodies of water, airways, etc. With the additional options, the screen will display weather, lightning, traffic, approach plates, airport data, and ground information. The equipment cost is about \$30,000.

Garmin has now come out with the G500, which is the same as the G600 without the terrain feature. The cost of the equipment is about \$20,000. Garmin was not interested in providing the 1000 for the Seawind or the autopilot. The cost of the equipment is about \$60,000. If you would like more information about the G500 or G600, click this link: [http://seawind.net/G600\\_500%20Brochure.pdf](http://seawind.net/G600_500%20Brochure.pdf).

If you are an order holder or a potential order holder, please let us know your preferences by completing the short survey below. You can then either return your survey by mail to Seawind LLC, P. O. Box 1041, Kimberton, PA 19442, or scan and e-mail to [seawind@seawind.net](mailto:seawind@seawind.net). We appreciate your taking the time to help us learn your preferences.

Richard Silva



G600. G500.

All answers are optional. All prices are order-of-magnitude estimates and are for survey purposes only.

Your Name:

<b>AVIONICS</b>	<b>Yes</b>	<b>No</b>
1 Are you currently an order holder?	<input type="checkbox"/>	<input type="checkbox"/>
2 Do you intend to order a Seawind?	<input type="checkbox"/>	<input type="checkbox"/>
3 If so, in the next two years?	<input type="checkbox"/>	<input type="checkbox"/>
4 Please give us your preference in glass cockpits:		
a. Do you prefer the G500 for approximately \$20,000?	<input type="checkbox"/>	<input type="checkbox"/>
b. Do you prefer the G600 for approximately \$30,000?	<input type="checkbox"/>	<input type="checkbox"/>
c. Do you prefer the Garmin 1000 for approximately \$60,000?	<input type="checkbox"/>	<input type="checkbox"/>
If you have checked more than one box, please give us an order of preference using the letters a, b, and c: _____		
<b>ENGINE</b>	<b>Yes</b>	<b>No</b>
5 Please give us your engine preference:		
a. Are you interested only in the standard 310 hp fuel-injected engine?	<input type="checkbox"/>	<input type="checkbox"/>
b. Do you want FADEC if it costs \$20,000 more than the standard fuel-injected engine?	<input type="checkbox"/>	<input type="checkbox"/>
c. Do you want a turbo-charged engine if it is \$35,000 more than the standard engine?	<input type="checkbox"/>	<input type="checkbox"/>
d. Do you want a turbo-charged FADEC if it is \$45,000 more than the standard engine?	<input type="checkbox"/>	<input type="checkbox"/>
e. Do you want a turbo diesel if it is \$60,000 more than the standard engine?	<input type="checkbox"/>	<input type="checkbox"/>
If you have checked more than one engine option, please give us your order of preference using the letters a, b, c, d, and e: _____		