



# The Seawind Flyer

Summer 2007

Seawind LLC

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*"The evolution of an intelligent design."*

## FLIGHT TESTING

We have good news and bad news and more good news.

First, we would like to give you some good news, which has come out of our flight test program.

As you have read before, our only remaining concern after the stability and control testing was the idle power spin test. Cruise or full power stalls and spins have not been a concern since you would have to enter an excessively high nose-up attitude with a great deal of buffeting in order to stall the Seawind. Once stalled, the nose instantly drops because of the high thrust line forcing it down. The speed picks up so rapidly that a deep stall/spin cannot develop.

So our concern has been primarily for idle power throttle settings. We had hoped for these tests to happen last December. Finally, the week before Sun n Fun, the first sequence of idle power spins was tested. The Seawind was loaded heavy with forward CG and put into a deep stall at which point the test pilot executed a spin entry maneuver. After numerous attempts, he reported that the Seawind for that configuration is spin proof. We have since conducted five more series of spin tests with a variety of loading and flap settings and have not been able to get the Seawind to make a one turn spin.

**THAT IS VERY GOOD NEWS AND BEYOND OUR EXPECTATIONS!**

Combine this characteristic with the numerous landing options, the rugged hull, proper training and piloting skills, and you will have a very safe aircraft.

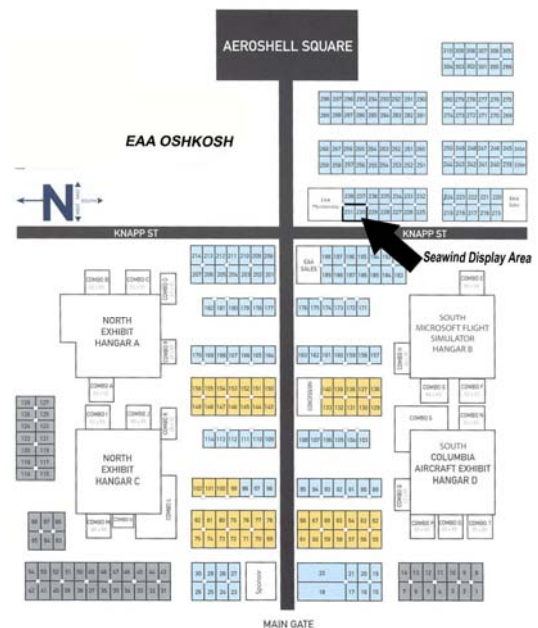
I was hoping that we would be able to give you final results, but we interrupted flight testing to attend Sun n Fun and then headed north to the factory for the 100 hour inspection and service. When we were ready to resume the test flights, we lost almost three weeks due to rain and other adverse conditions. However, the test pilot said he is confident that during the remaining tests, even if he can make the Seawind enter a spin, it will have more than enough control authority to easily recover in less than a turn. He described how the Seawind would start to roll and then the nose would go down as it entered a normal spiral maneuver (nose down descending turn). As the speed increases, it is a normal maneuver to roll out.

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## OSHKOSH

We hope to see you at the world's greatest aviation celebration, EAA AirVenture Oshkosh 2007. This year's AirVenture will be held July 23 – July 29 at Whittman Regional Airport in Oshkosh, Wisconsin. This event will host over 800 exhibitors and will attract over 750,000 aviation enthusiasts. It is an annual pilgrimage of aviators whose interests are in the latest and greatest aviation innovations. Learn about aviation history and everything from aircraft construction and restoration to maintenance and piloting techniques. There will be a daily air show at 3:30 featuring aerobatic performers, war birds, parachute teams, specialty military aircraft and others. For more information, go to [www.eaa.org](http://www.eaa.org).

The Seawind team will be at Oshkosh for the entire week. We will be located in the main aircraft display area along Knapp Street in exhibit spaces 230 and 231. Plan on visiting us at our display, newly expanded for the 2007 air show season.



The Seawind team will be your hosts for a casual reception on Friday evening, July 27 at our exhibit area. Please plan to join us for refreshments. We look forward to seeing you there.

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A total of about 60 different combinations will be tested.



The next good news is the results of the 100 hour inspection. After leaving Sun n Fun, the Seawind was flown back to the factory for its 100 hour (equivalent to an annual inspection). The entire aircraft was thoroughly inspected for any wear or snags; nothing was found. The cowling cooling air outlets were completed. The engine cooling has been very effective. The acid test will be extended step taxiing on water using high power at slow speed. It has never been a problem with the proof-of-concept Seawind. The main landing gear brakes had a tendency to fade, and it was found the stator plates required more clearance when hot. The modified plates were installed. See *Matco Wheels and Brakes*, which follows.

Now the bad news.

We lost the month of April because of Sun n Fun and the 100 hour inspection. During that period, almost every day was flyable. As soon as the Seawind was ready for flight testing, the rains started. For almost two weeks we sat on the ground. Following that, the flight analyst entered the hospital for a week. Since then we have only been able to get two to four flights per week. This has been a very discouraging two months.

Our latest projection is that the flight testing should be complete in September and the documentation is supposed to take an additional two months. All these delays have taken a heavy toll on our program and have slowed production.

So what's the other good news?

Now that we have removed the uncertainty of spin recovery, we can say confidently that certification is assured. The majority of the remaining flight tests involve systems and routine data collection. The plan has been that, when all the risk was gone, we would invite investors to participate in the final production phase. Our present order backlog is two and a half years, which is much too long. We want to reduce the waiting time to less than a year. We also know there will be a big surge of orders when we receive the Type Certificate (T.C.) and again upon the first customer delivery.

If we obtain additional funding, we can accelerate production while building the first five customer aircraft granted by Transport Canada's manufacturing office. We can obtain permission to manufacture many more customer aircraft while awaiting the T.C. We have all the molds required to ultimately manufacture up to one Seawind a day. Accelerating production involves mainly training more manpower and duplicating some assembly fixtures.

### Matco Wheels and Brakes

Wheels and brakes for amphibious aircraft have always been a maintenance problem, especially if they are used in salt water.

In the past, flying boat manufacturers instructed their customers to fill the entire wheel rim with grease to protect the wheel bearings after being immersed in water while taxiing up a ramp or beach. The rims hold a good four to six pounds of grease in each wheel.

The problem is that, during a take-off roll, the centrifugal force flings the grease away from the center bearing and out to the rim. The concept Seawind's first set of wheel bearings lasted only 40 hours.

Matco worked with us to develop a specially designed sleeve to encapsulate the bearings. The second set of wheel bearings lasted 780 hours and the third set almost 1,000 hours.

The Seawind requires less than one tube of grease for all three wheels instead of 12 pounds.

The Seawind wheel rims are anodized aluminum, all the hardware is stainless steel, and the stator plates are chrome steel. A special compact axle was designed to tuck the trailing link and tire up tighter in the wing to reduce drag. The Matco wheels and brakes are being tested for certification on the Seawind. The axles, bearings, and rims have been drop tested to meet Part 23 rules. The wheels were tested for 1,000 miles at 3,400 pounds, which represents full gross load.

We had performed 53 maximum effort brake tests when one of the plates cracked. We are modifying the plate thickness and will start the tests over at the end of the month. This time we are confident that we will pass.

These Matco brakes will be certified for the Seawind only.



*We will be repeating the maximum effort brake tests.*

### Delays, Delays, Delays

Nobody is more concerned about delays than we are. As I have written before, many are self inflicted, and we try to learn from our mistakes.

Many delays are totally beyond our control, i.e., the weather. All we can do is pray and hope our prayers will be answered. Other delays are at the hands of independent people who are supposed to professionally support us but who don't.

Still more delays are at the hands of bureaucrats who take an unreasonable position when the answer is obvious, and then we have to take the time to prove what should be obvious. For example, we have to prove our tractor power plant with the propeller forward of the engine does not have to be tested as if it were a pusher with the propeller behind the engine.

Recently, Eclipse sent a letter to all their order holders citing numerous problems such as supplier problems, insufficient manpower, and regulatory problems. We are working through the same difficulties, albeit at a much smaller scale and with a much smaller budget. In December, we ordered delivery of the FADEC engine for January 2007. The certified system was finally issued its FAA certificate at the end of March 07. As a result of one snafu after another, we finally received delivery the last week of June. Our second flight test aircraft requires the FADEC engine.

Garmin, the leader of the industry, promised delivery of the G600 in the fall of 2006, then 2007, and now it appears it will not be before 2008.

Even something as simple as modifying a red or green navigation light from a DC incandescent bulb to a cluster of red or green LED lights has taken the manufacturers over six months longer than expected.

As I said, many of the delays are our own fault, and we offer no excuses. We are on the final stretch and will continue until successful.

Dick Silva

### OSHKOSH *continued from page 83*

Also planned for the reception will be a drawing for our first 25 delivery position holders for the chance to win a Garmin IFR radio package. The package will consist of a GMA 340 Audio Panel, GMX 200 Moving Map, GNS 430 GPS/COMM, SL 30 Nav/Comm with glide slope, and a GTX 327 Mode C Transponder or the equivalent at the time of production for the winner's Seawind 300C. Good luck to our first 25 delivery position holders, and thanks to everyone for your continued support.



### SUN N FUN

The Seawind team had a wonderful week at Sun n Fun in Lakeland, Florida. The crowds were big and the weather was great. Everyone was thrilled to see the first production "test article" Seawind 300C. Although it looks like a flight test airplane, with



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all the test equipment, large pitot tube, and spin chute, the significant improvements from the kit plane could be observed.

Our Friday night reception was a tremendous success. We had a good gathering of Seawind customers and future customers. Thank you to everyone who took time to visit with us at Sun n Fun.



*A good time was had by all.*



## SEAWIND TRAINING PROGRAM

Transitional training is included with each new Seawind 300C delivery. The training is provided to the owner or pilot of his choice. Due to the Seawind's unique capabilities, transitional training will be required on both land and water.

A total of eight hours of ground, land, and water training is provided. This training program is only for licensed pilots with a seaplane rating. It is not intended for additional ratings, bian-

nual flight review or a seaplane rating. It is recommended that the training be separated into two phases. The first phase is the land training. It is designed to introduce the pilot to the Seawind 300C and its systems and flight characteristics. When this phase is completed, we recommend that you fly your Seawind as a land plane for about 50 hours or until you have reached a high level of proficiency. This is intended for you to be familiar and comfortable with your airplane and avionics before introducing the water training.

In the second phase, water training, the pilot can concentrate strictly on the water handling characteristics. The amphibious Seawind's ability to operate on and off of water is the main difference between this aircraft and the other single engine composite airplanes on the market. Additional training time may be purchased for additional pilots or to increase proficiency. For the more experienced seaplane pilots, the land and water training can be accomplished in the same training session.

For those of you who have not acquired a seaplane rating, it is a relatively inexpensive rating that can be done in a couple of days. Getting your seaplane rating will also cover your biannual flight training requirement.

A preliminary outline of our transitional training program is available on our web site for you to review. We invite your comments. In the next few months, we will be expanding this program.

With water flying, there is always something more to learn and new skills to perfect and always more to enjoy.



*This is the perfect angle for landing on water. The step should touch at the same time as the stern.*

## SALES

Certification is getting close, and that means time is running out to take advantage of our "no risk" deposit program. A \$9,000 deposit will reserve you a delivery position number, and it entitles you to a demonstration flight in a certified production Seawind 300C. If for any reason the demo flight does not meet or exceed your expectations, your deposit will be



*Level out about five feet above the water.*

*Start to raise the nose and bleed off the speed.*

*Touch down on the water.*

refunded with interest. The number of customer deposits is approaching 100, giving us over a two-year backlog in deliveries. Reserve your delivery position number now so that delivery of your new Seawind 300C will arrive sooner. The \$9,000 is deposited in an escrow account in your name and is earning about 4.5 percent interest. Keep in mind that when certification is completed, we will no longer be offering the \$9,000 “no risk” deposit program. For more information or to reserve your delivery position number, contact Dave Arnold at 610-384-7000 or [darnold@seawind.net](mailto:darnold@seawind.net).

Dave Arnold

## FOR YOUR INFORMATION

This segment is to share with you the answers to questions that we have been asked.

**Question:** What about a voice gear warning system?

**Answer:** First, a little background. Amphibians are not required to have a gear warning system. A few experimental Seawinds were landed gear-up on a runway. The center keel is sacrificial and was worn down with no damage to the hull structure. At least one Seawind was landed with the gear down on the water. Unfortunately, the owner did not share the experience, but we do know there were no injuries and no major damage.

We do not recommend that you try any of the above. We do recommend that you memorize the checklist and say it out loud for takeoff as well as landing.

Now, to answer the question, the certified Seawind has a gear decision warning. The system is triggered by an airspeed sensor. When the Seawind slows below 90 knots, a warning horn is sounded to remind you to make a decision. You must select land or water. When you make a selection, a blue light goes on for water or a green light for land. If the landing gear is up for water or down for land, the horn will be silenced. If the landing gear is in the wrong position, the horn will con-

tinue until the position is changed. The position indicator light should be four blue for water or four green for land. It is recommended as well that you visually check the landing gear prior to landing. The main landing gear is visible. A mirror on the left main landing gear leg provides a visual of the nose gear.

The most important tip is do not be distracted by passengers during landing, and say your checklist out loud. Then repeat landing gear position again, and check the lights one more time.

## GEAR UP LANDING

While we are on the subject of landing gear position warning, we want to share some additional information.

We have repeatedly published that all of our emergency landing procedures are landing gear up. The only time to lower the landing gear is on a paved or turf runway or highway. There have been incidents of kit Seawinds landing gear up on a runway and wearing down the sacrificial “V” keel on the bottom of the hull. In one case, about 12 burly guys lifted the airplane and the gear was lowered. An inspection showed no structural damage and in 20 minutes the airplane was again able to take off.

We are adding a ply of Kevlar to the “V” keel to absorb even more of the wear. (See the Seawind Flyer Winter 2006 issue for more information on gear-up landings.)

**Question:** There is a lot of discussion about fiberglass strength reduction when hot. What about cold?

**Answer:** Have no fear; we have tested fiberglass coupons as part of certifying our process. At -65°F (-54°C), our tests showed a 10% increase in tension strength and a 25% increase in compressive strength. I don’t think you will ever start an aircraft engine at -65°F.

**NOTE:** If you have any questions, please do not hesitate to call or write. We are always glad to speak with you. We will continue to share answers to frequently asked questions with all our readers.

These nice pictures are available as 20-inch x 30-inch photographic prints for \$30 plus S&H. Visit our web site or call for ordering information.



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