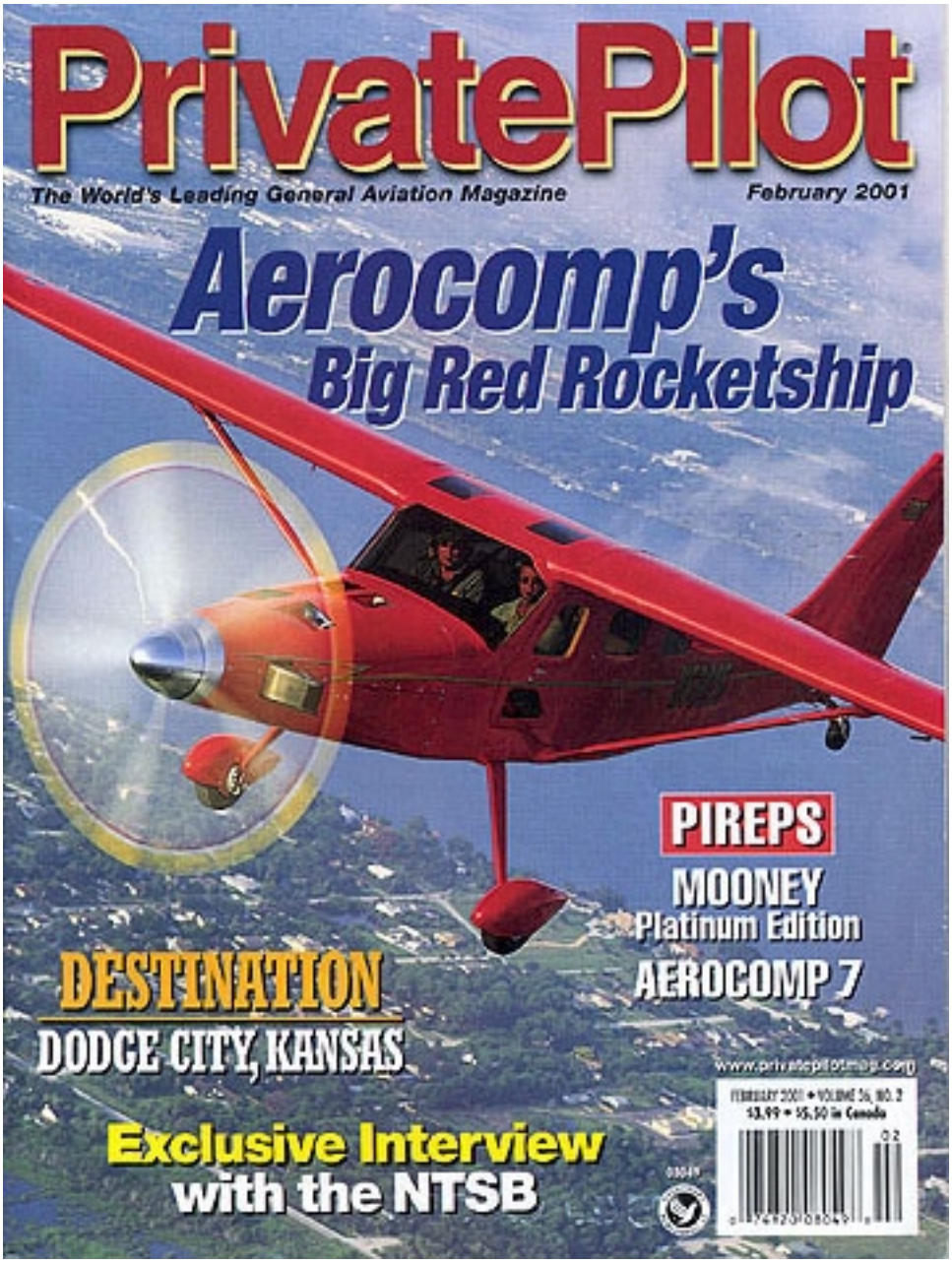
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The World's Leading General Aviation Magazine
February 2001
Aerocomp's
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AEROCOMP'S CLIMB TO THE TOP

"New turbine aircraft, new engines and new directions"

"PIREP NO. 119"

TEXT BY NORM GOYER; PHOTOS BY BILL FEDORKO AND NORM GOYER

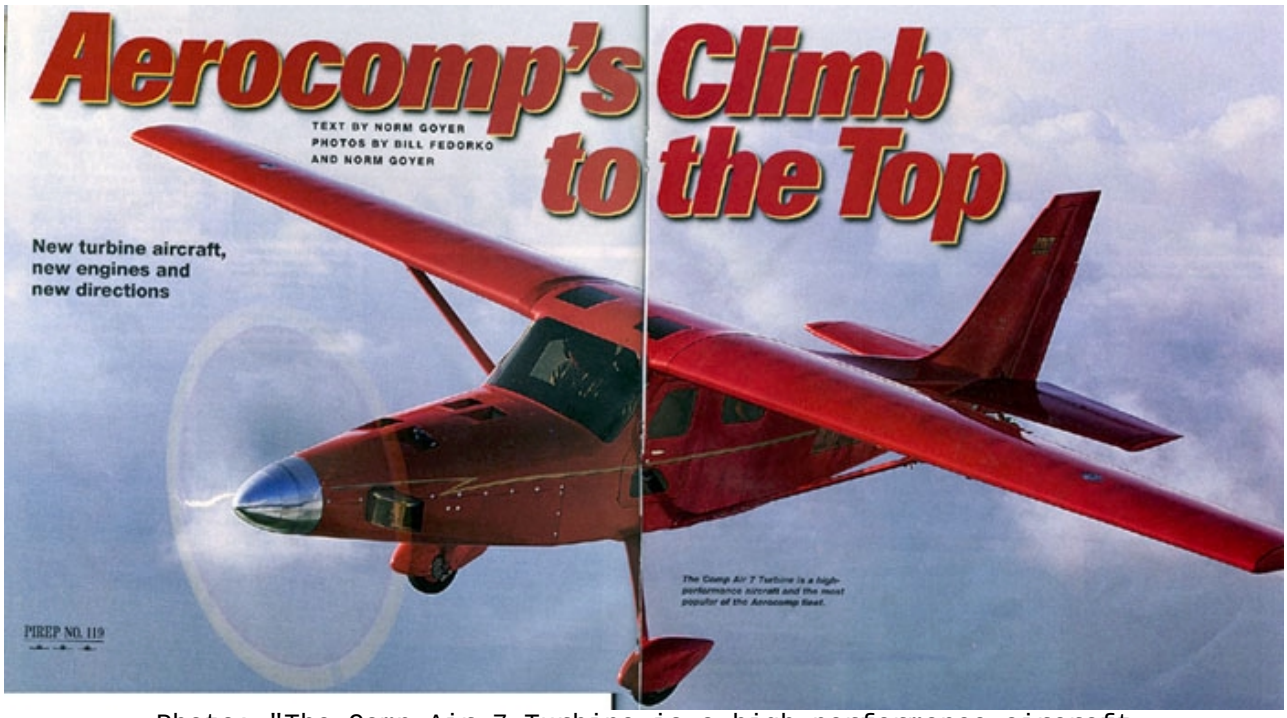

Photo: "The Comp Air 7 Turbine is a high performance aircraft and the most popular of the Aerocomp fleet."

THIS IS THE kind of story I love to write. It's about the tremendous success achieved by Aerocomp, a company in Merritt Island, Florida. It manufactures a wide variety of excellent kits for experimental aircraft. I'm especially pleased to be able to bring this to you, our readers, who, like me, were saddened to hear that, during the past year, quite a number of well-established companies have gone out of business. Their principals are still trying to find a way to recover some of the funds they invested before their companies failed.

Not so with Aerocomp. Sales, which have been booming, show no sign of peaking in the near future. Some of the reasons for the company's success are the foresight and marketing strategy by which its owners have designed and are offering an extensive line of turbine propjet aircraft, one or more of which is sure to suit the needs and tastes of a wide variety of pilots and business people. In other words, company owners did their homework because they came up with and are now offering exactly the kinds of aircraft the customers want to buy, not just the kind the company thought people would want to build. Also, even if it might not necessarily be a major factor, because kit manufacturers can be found at diverse sites, when Aerocomp chose to locate its business in Merritt Island, Florida, it

chose a superb location. The right products, at the right time, at a great location. It sure works for Aerocomp.

I first became acquainted with Aerocomp more than a year ago while covering the project for CUSTOM PLANES, our sister publication. When my article was published, it raised a storm of controversy from those who thought the idea of sticking a 600-hp turbine on the front of a Cessna 206-size aircraft, especially one molded from fiberglass, was a bit shaky, to say the least. And the particular type of engine chosen by Aerocomp was the subject of a miniature range war between factions that has yet to settle down. Some -- but certainly not all -- of them still believe that much of the criticism aimed at the engine might've been justified.

The "sizzle" in the Aerocomp aircraft was their unique engine/prop combination. When those aircraft first appeared several years ago, they used a Walter 601B engine. Aerocomp no longer installs this dash-number engine.). Walter engines have been installed by some Eastern Bloc countries in their Let 410 19-passenger commuter airlines. Then, after they'd run beyond recommended flight time, the engines were either overhauled (if warranted) or discarded. It should be noted that part of the aforementioned controversy came about when some folks discovered that Walter engines have a TBO of only 1500 hours, but that number of hours flown by those European commuters weren't done in the same high-altitude ranges as those of U.S. airlines.

Engine importers were happy to find they were able to obtain quite a number of Walter engines and all their accessories, as well as the props that went with the engines, at attractive prices.

Because of their various origins, the first group of Walter engines sold with early Aerocomp aircraft had little (if any) accompanying paperwork, but before they were ever put into service, they were given a great deal of attention. First, they were removed from their shipping cans, checked carefully and then installed on a test stand, where they were run for a long period of time. If the gauges remained in the correct operating range during the extensive bench test runs, they were installed in aircraft sold to customers.

By their very nature, turbine engines can be run in spite of many internal defects due to age, or any number of factors, without showing any outward signs of internal problems. (But when one or more parts fail under running conditions, they can also blow apart in a spectacular fashion.) In the interest of safety, the engines that were sold were restricted as to power output, and this added to their margin of safety. That was then. Now, in 2001, it's a completely new Aerocomp/Walter association.

As mentioned earlier, Aerocomp is having a most successful sales year. We wondered how that could be, considering the airplanes are so different from many current high-performance aircraft. The plane didn't have the sleek lines of a Lancair or the mystique of the Thunder Mustang, but it was definitely a unique-looking plane. The first time I saw it, I found it impossible to walk by this aircraft and not stop and look, because it was so different from most of the run-of-the-mill experimental aircraft we've been seeing.

I found that this aircraft appeals to pilots looking for an airplane with turbine-powered slam-dunk power that drives you back into the seat when you take off-power with climb attitudes that rival those of an F-16 and that gives you the feeling you've finally joined the jet age. But one with affordable turbine power, and the Comp Air 7 Turbine is certainly that too!

The ultimate test is the reaction of those pilots who've gone on a demonstration flight in Aerocomp's Comp Air 7 Turbine. If they're financially capable of doing so, when they come back from that demo flight, they're ready to buy! If you've ever flown in a Cessna 206 or a Centurion, which are great aircraft, you'll be amazed at the feel and outstanding performance of the Comp Air 7 Turbine.

As soon as you have a demo flight in a Comp Air 7 Turbine, you may be inclined to buy one because of its terrific performance, but as soon as you've become aware of Aerocomp's excellent affiliated building programs, conducted under the auspices of Sky Build, Inc. (Skybuild is an independently owned and operated facility with Steve Darrow as company president), you'll want to close the deal immediately. It's the clincher! Sky Build, Inc. is located at the Merritt Island Airport in a complex of several large industrial buildings. (The corporate offices of Aerocomp are also located in this facility.)

In Skybuild's building program, each owner/builder works with company technicians using company jigs, fixtures and tools. This ensures that every high- performance Aerocomp aircraft is built correctly. As one segment of the aircraft is completed by the owner/builder, it's moved to another room, where the next section is completed. This is not a long-term process, and because in this way, the builder/owner has met the FAA requirement of building 51 percent of the aircraft, allowing him to be listed as the manufacturer and also allowing him to work on the aircraft in the future.

Aerocomp has been in business since 1993, when the company purchased the rights to the Merlin, a two-place, tube-and-fabric aircraft. The Merlin was one of the best-flying light aircraft I've ever flown, and whenever I've covered air-shows, I've often sought it out to use as a camera plane because of its excellent flight characteristics. At that time, Aerocomp consisted of two employees: President Steve Young and Vice President Ron Lueck, an experienced kit builder. (Due to expanded kit sales experienced by Aerocomp, the company now has more than 20 employees.)

Plans were to build three- and four- place aircraft, using the basic Merlin design. Before starting, Young and Lueck wisely conducted an informal survey of potential customers and came away with surprising results: Tube-and-fabric designs were definitely not being considered by customers for multi-passenger aircraft; builders preferred composite construction. So Aerocomp had found its future direction, but there were more surprises to come.

A chance meeting with Doug Karlsen, owner of Turbine Design, Inc., of Deland, Florida, and the owners of Aerocomp family had the missing factor of the equation: turbine power. The right combination of airplane and engine had been found, and once their first turbine-powered aircraft was introduced at Sun 'n Fun in 1999, Aerocomp had nowhere to go but up, up and away!

When you build a super-high-performance aircraft like the Comp Air 7 Turbine, with a propjet in the nose, it's certainly a good idea to train the new owner/pilot in 0 aspects of flying his new aircraft. So Aerocomp organized ground and flight training for new owners of turbine-powered aircraft. Al Pike is in charge of the training program (for pilots without turbine experience), which provides at least seven hours of classroom instruction and a minimum of 11 hours of flight training. To qualify for this training, a pilot must have a current medical, flight review and at least 500 hours of total time, including at least 100 hours in complex, high-performance aircraft. Aerocomp pilots often, but not always, test-fly newly finished Comp Air 7 Turbines for the owners.

This is to be sure that aviation insurance companies will be willing to provide coverage for the owner/operator of this particular type of aircraft without any trouble. Once you've graduated from Aerocomp's flight and ground-school course in turbine operations, this experience will go a long way toward convincing your insurance underwriter that you can comprehend the complexities of a turboprop engine and turbo-powered aircraft, and safely fly it. Without this kind of training, you might be denied insurance coverage, but with it, you'll undoubtedly qualify for it. In fact, your rates might be lower than average.

Once a new owner/builder has finished building his Comp Air 7 Turbine at Skybuild's facility, he may have had all the desired avionics installed by Sebastian Communications. The aircraft has been painted a striking fire-engine red- in stark contrast to the mostly white overall paint scheme composite builders prefer (to prevent ultraviolet damage to the composites). Experts say that the new epoxies are not as prone to sun damage as earlier formulas. The bright red color was different and very appealing.

The entire cabin was done in gray fabric and leather, so well that its interior looked more like that of a luxury car than that of a 'plastic' homebuilt. To gild the lily, a five-blade prop had been installed onto the newly overhauled Millennium Turbine 601 engine. (See the sidebar for more information.) The new owner/pilot is told, "No more procrastinating. It's time to go flying!"

I recently paid a second visit to Aerocomp after being promised a flight in the red Comp Air 7 Turbine with its overhauled, more powerful Walter 601D engine fitted with a five-blade prop -- the one I'd seen at AirVenture. The plane was due back in Florida in the near future for additional radio installations. Finally we received a call that the plane was indeed back at Merritt Island. (The plane is normally based in Modesto, California.)

I always perform a thorough preflight inspection of the aircraft and the cabin. You should be aware though that, when it comes to starting a turbine engine, there are some very different rules to be strictly followed. First, be sure to turn the plane into the wind (if there's any of a significant velocity) to prevent the wind from blowing up the plane's huge exhaust stack. Next, to prevent any possible damage from the prop blast and turbine heat, make a careful visual check to be sure there's no structure or another aircraft behind your plane.

Start by checking the position of the fuel tank valve. Move the indicator to both -or to the correct tank- whichever is indicated for this airplane. Double-check the fuel tanks are full. This is extremely important, because turbine engines use up fuel at a high rate. Before you start the engine, apply the parking brake and stand on the brakes, because when those huge props start rotating, you can really feel the power, and you don't want the plane to roll until you're ready to go. To prevent surges, be sure all power switches and navaids are off and the circuit breakers are in. Check all the controls to be sure they're free and not binding, because this is your last chance to ensure there will be full movement of all the control surfaces.

The following is the procedure taught by Aerocomp to start the Walter turbine: (The engine is available with an auto start if desired, but the engine starts just fine without one.) Check the fuel valve to make sure it's on, that all circuit breakers are in and that the generator is off. Pull the start lever on the power quadrant full aft to "fuel cut off." Next, position the propeller

lever in the full feather position. The power lever, located on the power quadrant, is placed in the idle position. Now you're ready to go.

With one hand on the power lever, use the other hand to turn on the master switch. Check the voltage to make sure there's a reading of at least 24.5 volts. To be absolutely sure, press the two test lights: one marked beta, the other limiter. Check the two igniters, 1 and 2, then shut them off again. Now start the fuel boost pump and check to make sure there's at least 15 pounds per square inch. Look out and check your immediate area to be sure nobody's wandered into the danger area of the five-blade prop, then shout out the standard warning: "Clear prop, or get the mop!"

As you engage the starter switch, monitor the gauge for N1. When it's achieved, move the fuel lever to the start position. Next, turn both igniters on, and ignite the engine on for two seconds, then off for two seconds. You must also monitor the ITT heat gauge to make sure it does not exceed 735 degrees, and keep the starter engaged until the engine reaches an N1 of 45 percent. Also, scan the oil pressure and temperature readings. When you've made sure the engine has reached 45 percent NI, you can release the starter.

The next step is to check and see if the engine accelerates smoothly to 60 percent Ni. Check that you haven't exceeded 735 degrees. If the engine does reach 735, you must pull the start lever to ICO (ignition cut-off) until the ITT drops below 650 degrees. This is the dreaded "hot start" that must be avoided to prevent damage to the engine. If the engine is running smoothly, and all temperatures are in the green, you can switch the generator on, then switch the 12-volt buss on for the avionics. Now is the time to make sure the radios and intercom are working correctly.

Next, check the vacuum pump, strobes, beacons and lights as appropriate. It sounds complex when you see it in print like this, but in actual practice it goes quickly and smoothly. It's much easier to start a turbine than it is to start a fuel-injected reciprocating engine. (You almost need three hands for the latter.)

Release the parking brake, and use the prop beta control as the throttle. Avoid using too much brake or depending on the throttle; you have better and faster control with the prop lever. You're about to go for the wildest ride you've ever had-unless you're in the military and have flown some of the latest fighters. But the Comp Air 7 Turbine will beat them on the takeoff roll. Besides checking the runway for other aircraft taking off, I suggest you also look up and check for crosswind traffic. (You'll see why shortly.)

Takeoff is the same as with any high-performance taildragger, but with just a few more checks to make before you start the takeoff roll. Place the flaps down 10 to 15, recheck the fuel quantity and valve position, and make absolutely sure the fuel boost pump is on. Then, as with any aircraft with a constant-speed prop, cycle the prop once or twice with the power lever in idle position. Check one more time to make sure the power lever is in run position.

Set the power to 30 percent, and slowly move the prop lever to aft position so you can check that the rpm are decreasing gradually. Now move the prop lever to full-forward high-rpm position. We were eager to see how this second-generation Comp Air 7 Turbine aircraft would perform with its newly IRAN'ed (inspect and replace as necessary) Walter 601 D engine and overhauled Avia Hamilton prop.

I wanted to see how this Millennium engine, sporting about 725 horsepower, would compare to the original 600-hp one. When all systems were go, the pilot brought the power up to 30 percent torque and released the brakes. Then, as the plane started to roll, he increased the power lever for smooth and continuous acceleration. When the engine was up to full takeoff power, he checked the engine temperatures and made sure the torque limits weren't exceeded. By the time he'd done that (maybe four seconds), the plane was already off the ground. We used about 100 feet -maybe less- for our takeoff roll.

Maintain best rate of climb (Vy), which was 110 mph with the two people aboard that day. Now came the fun of flying in a superpowered aircraft. Maintaining a 4000-fpm climb, we were already about 1000 feet above pattern altitude-- even before we'd reached the end of the runway! Once the climb rate was established, the pilot reduced the prop lever to anywhere from 1900 to 1950 rpm for cruise climb, then checked the pattern again for traffic. Because the Comp Air 7 Turbine was so powerful, he knew we'd be joining the traffic in a matter of seconds.

As for us, our outstanding climb in the Comp Air 7 Turbine was all for naught, because we had to circle over the Atlantic Ocean for much too long, waiting for the new Cessna 182 camera plane to catch up to us. When the Cessna arrived on station, it soon became obvious that Editorial Director Bill Fedorko was ready: the window of the 182 was up and the long lens of Fedorko's camera was aimed directly at us. Once we'd established contact, we proceeded according to our agreed-upon plan, and the Aerocomp and the camera plane flew around together over Florida's beautiful beaches for about half an hour, while Fedorko photographed the Comp Air 7 Turbine.

Because the Comp Air 7 Turbine was so much more powerful than the 182, pilot John Cook (Cook's Diemech firm had overhauled the engine in this plane) had to throttle way back to stay in formation with it, but because both planes had a wide range of comfortable, tight-formation airspeeds, that wasn't a problem. When Fedorko finished the photo mission, he signaled, then headed "back to the barn". Now it was my turn to fly the Comp Air 7 Turbine and see what this new, improved turbine aircraft could really do.

I'd made a note of the recommended power settings for various cruise conditions so I could see how close the figures in the manual were to reality (which, in homebuilts, sometimes differs significantly). Because our plane had a five-blade prop, I held the rpm between 1700 to 1850. 1 then reduced the torque and checked to make sure the ITT did not exceed 690 degrees. Once I had the right power setup, I could increase the tension on the knobs on the power quadrant to prevent creeping.

Continued on next page…

COMP AIR 7:

PRICE

Airframe kit	$39,995

SPECIFICATIONS

Wingspan	35 ft.
Wing area	178 sq. ft.
Length	29.5 ft.
Height	8 ft.
Seats	7

WEIGHTS AND LOADING

Gross weight	3770 lb.
Empty weight	2100 lb.
Useful load	1670 lb.
Engine	660-shp Walter M601D

PERFORMANCE

Cruise at 21,000 ft	275 mph TAS
Never-exceed speed	258 mph
Stall speed, flaps down	50 mph

In medium cruise, I checked out the controls by doing steep 360-degree turns in one direction, then in the other. These maneuvers are quite a test of the airplane's controls, because you have to use all controls to keep the altitude steady, and the ailerons and rudder to maintain a well-coordinated bank without skidding or slipping. I had to use some rudder, but it wasn't a problem. In spite of the fact that there was such a huge engine in a relatively small plane, the aircraft handled beautifully.

The first thing I noticed, in addition to the increased performance, was the quietness and lack of any perceivable vibration (compared to the Comp Air 7 Turbine I flew last year). The cabin had been completely upholstered, and it had a smooth-running engine and a newly balanced five-blade prop -all of which made the ride enjoyable and quiet. This was an entirely different experience from a reciprocating-engine airplane.

Next, I reduced power and tried my hand at slow-flying the Comp Air 7 Turbine to see how it would stall. We were way up at about 5000 feet, so I knew we had plenty of room. I held back the stick until my arms finally got tired, and I decided the big bird just wasn't going to stall without a lot more work. I noticed we were bouncing along at about 45 mph, and the plane was still flying. I had to use a great deal of rudder to hold the wings level, because the ailerons had given up several miles per hour before.

The Comp Air 7 Turbine finally made a half-baked effort to stall, but as soon as I relaxed the controls, it quickly recovered from the near-stall. This plane's inherent stability is a result of that great wing and excellent airfoil, besides which, the airframe is also very clean. While I'd been slow-cruising along, I'd made some 360-degree turns in a semi-stall condition and still had no problem holding it. (Somebody would have to be a real klutz on the controls to accidentally stall this airplane, but I still can't imagine that he'd be able to do it.)

Now it was time to see how fast the Comp Air 7 Turbine would go. I was able to get it up to a true airspeed about 235 mph at 5500 feet. The manual states it

will easily deliver 275 mph TAS at 2 1,000 feet. The Comp Air 7 will carry loads up to 1670 pounds for a gross weight of 3770 pounds. The plane flew much like a Cessna 206, but without the heavy fore and aft pressures. Of course, these can be trimmed out, but the Comp Air 7 had an entirely different feel to it.

Looking down at the fuel gauges, I saw it was time to head back to the airport. As we entered the pattern, I reduced power and put the prop lever full forward. I then reduced the power lever to achieve the correct rate of descent, but I didn't reduce it below idle stop position. I checked the beta light to make sure it was off. (Funny things happen when the prop starts pushing instead of pulling.)

The manual says the pilot shouldn't let the speed drop below 80 mph indicated during the approach. I pulled about 15 degrees on downwind, then used fun flaps when I turned final. I didn't want to have to change the tires, so I made sure the parking brake was off and my feet were off the brakes. The manual said wheel landings weren't recommended, unless we wanted to redesign the prop tips, so I set the Comp Air 7 Turbine up for a three-pointer (which is the way I've always landed taildraggers anyway).

This plane did have a five-blade prop with a smaller diameter than the three-blade one, but the prop still comes awfully close to the ground. As the plane got closer to the runway, I pulled up the nose just a tad. Then, when we were about 3 feet off, I gradually applied full-aft stick, and the plane squatted and stayed down. I then flipped up the lockout on the beta prop and made the next turnoff.

Flying the Comp Air 7 Turbine was practically a no-brainer. It's just a really easy plane to fly, and you've got to admire its top-notch performance. I was favorably impressed with the Comp Air 7 Turbine demonstrator I flew a year ago, but this new version virtually blew me away! I know why these new Comp Air 7 Turbines are selling like hotcakes. When the pilots I know want to buy an aircraft, they insist on three things: performance, performance, performance! And Aerocomp's Comp Air 7 Turbine delivers!

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"Land and sea mix with power and performance as the Aerocomp Comp 7 flies over Merritt Island, Florida. Photo by Bill Fedorko.

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"The Walter 601 D turboprop engine necessitates a long nose for proper balance."

PAGE 46 PHOTO 2
"The rugged, forgiving landing gear on this Camp Air 7 Turbine was manufactured by Hammerhead Aviation in El Cajon, California."

PAGE 46 PHOTO 3
"Turboprop engine controls are slightly different than those for reciprocating engines, but they're easy to learn. The instrument panel is large, allowing room for a wide range of avionics and instruments. The plane is flown with control sticks rather than control columns."

PAGE 47 PHOTO
"The Comp Air 7 has performance that makes it ideal for a fast passenger or cargo hauler."

PAGE 50 PHOTO
"Double doors make entry and exit easy. Comfortable, adjustable seats make long cross-country trips pleasurable. Seat belts and shoulder harnesses are attached to both the floor and overhead hard points."

PAGE 51 PHOTO
"This Comp Air 7 Turbine has an Avia Hamilton five-blade prop swung by a 725-shp Walter 601 D water-injected engine."