

For many aircraft, the price of admission to the wonderful world of water flying is a set of amphibious floats. The Lake Buccaneer, on the other hand, doesn't need a ticket: it was designed from square one for operations wet and dry.

Today, the Buccaneer is a one and only, and it is a good one. In talking about the Lake amphibian, the bottom line is: It's fun!

According to Armand Rivard, president of Lake Aircraft, our test aircraft was characteristic of the majority of Buccaneers prepared for delivery—it was loaded. The Buccaneer had a full King panel, including distance measuring equipment, a Brittain two-axis autopilot and keelson boosters.

(Keelson boosters, a new option costing \$1,150, are small metal plates on the bottom of the hull that modify

THE LAKE BUCCANEER

As adaptable to time and fortune as it is to land and sea, the Lake is the only single-engine amphibian still in production.

BY MARK M. LACAGNINA



PHOTOGRAPHY BY THE AUTHOR

the flow of water to help the amphibian get onto the step—the optimum planing angle for high-speed taxiing and takeoff—turn tighter and operate in rougher water.)

Preflight duties include using an Allen wrench to check five water drain plugs in the Buccaneer's hull and two more in the sponsons, or wing floats.

The engine is a Lycoming IO-360-A1B, mounted with a constant-speed, pusher propeller on a pylon atop the fuselage. A Rajay turbocharger is available as an option for \$7,790. Front and side cowls can be peeled like a banana to expose the engine fully. During the preflight, Bruce Rivard, Armand's son and vice president of Lake Aircraft, found the beginnings of a bird's nest in the engine. Apparently, the lofty engine in-

stallation provides an attractive homing site.

(The engine pylon also is susceptible to vibration, which has caused a number of problems. A service difficulty report submitted to the Federal Aviation Administration in 1978 said one of the mounting bolts had pulled through the strut, causing the engine to fall over onto the wing as the Buccaneer was taxiing. The FAA issued an airworthiness directive a year later requiring replacement of the aluminum struts with steel units.)

A wooden dipstick is used to check fuel quantity during preflight. A bladder tank aft of the cockpit holds 40 gallons (all usable), and optional sponsons that hold an additional 15 gallons of fuel (14 usable) are available. Fuel flow is controlled by a simple On-Off lever mounted on the aft

cabin firewall. Two fuel drains are located on the left fuselage.

If the Buccaneer is to be operated with only one person aboard, 30 to 40 pounds of ballast must be placed in the small nose baggage compartment to bring the CG (center of gravity) forward.

After a few minutes of operation, I found working with the controls comfortable. The throttle and propeller and mixture controls are located on the forward portion of the cabin ceiling. The controls can be reached easily and are within the pilot's peripheral vision.

The wrap-around windshield and side windows offer excellent visibility, and the low panel means visual reference to the horizon in straight-and-level flight is actually much lower than in most landplanes.



The Buccaneer's cabin is comfortable but Spartan. Soft fabrics and leathers would not be compatible with wet bathing suits and sandy feet. An average-size person will find plenty of legroom in the rear seats.

The interior noise level, however, is high, compounded by a garbage-disposal-like *graunch* from the electric fuel and hydraulic pumps.

The free-castoring nosewheel takes a little time to get used to. On the ground, the Buccaneer can turn on a dime and is easy to overcontrol. However, you quickly learn how to use thrust and differential brake pressure to get the amphibian to go where you want it to go.

Full flaps are used for all takeoffs and landings. I used a little back pressure on the yoke at 48 knots, and the Buccaneer then flew itself off the runway at 52 knots.

With flaps up and the best-rate-of-climb speed of 56 knots, the Bucca-

neer ascended at a solid 1,000 fpm on a muggy day.

In the air, the rudder and ailerons feel very heavy. I found the hydraulic elevator trim control, mounted between the seats, to be very hard to get used to. However, by craning your neck rearward, you visually can check the position of the trim system, which can best be described as a set of flippers positioned on each side of the elevator.

Stability is one of the Buccaneer's fortes. With proper trim, the amphibian will hold almost any attitude you put it in. On one run, a Lake instructor climbed to altitude after takeoff and put the Buccaneer into a series of 45-degree turns using only the rudder and elevator trim.

With the high engine installation and pusher propeller, I expected power changes to be a handful. However, I found that jockeying the throttle during straight-and-level flight pro-

duced only slight attitude changes.

The Buccaneer just does not want to stall. Power on and power off, the aircraft simply would wallow around at an airspeed of 39 knots, losing very little altitude. The airplane was buffeted mildly during a departure stall but continued to gain altitude.

Mounted on the left wall are the takeoff and landing checklists. The landing checklist directs the pilot's attention from the left (fuel boost and hydraulic pump switches On) to the right (wheels up for water, down for land, flaps down and water rudder up) and up (to set throttle, propeller and mixture).

The pilot can get a positive visual check of main gear position by looking out the side windows. A small mirror mounted on the left sponson allows a visual check of the nose gear.

Final approach speed for a water landing is 60 knots. The Buccaneer is flown onto the water in a relatively



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flat attitude. If done properly, the hull will make initial contact with the water just aft of the rear seats.

During my visit to Lake Aircraft, the winds on Lake Winnepesaukee were relatively calm, and I did not have the opportunity to sample the Buccaneer's handling characteristics on rough water. The flight training manual advises that student pilots should seek shelter if the wind is greater than 13 knots or if they see whitecaps or defined wind streaks on the water.

However, Bruce Rivard assured me that the Buccaneer's rough water capabilities are limited only by the experience of the pilot. He noted that there is an Australian firm, Air Whitsunday, that regularly operates a fleet of six Buccaneers to transport divers from the mainland to the barrier reef, where waves greater than two feet are encountered normally.

The Buccaneer is well-mannered on the water. It sits low, with the floats drawing only 14 inches at rest, and is not overly prone to weathercocking. The huge air and water rudders make water maneuvering easy.



It also is easy to get the Buccaneer onto the step, a configuration at which the hull is at the optimum planing angle to the water. In fact, feed it full power and use left aileron to keep the right sponson from plowing and rudder to keep it straight, and the Buccaneer will get itself onto the step.

Once on the step, the Buccaneer can be taxiied for long distances without overheating the engine. During step turns, however, care must be taken to keep the sponsons from plowing into the water. The sponsons are attached to the wing with three bolts designed to break away cleanly if excessive side loads are applied.

Water takeoffs are accomplished by getting onto the step, holding full power and allowing the Buccaneer to fly itself off the water.

To demonstrate the STOL-like characteristics of the Buccaneer, Lake's instructor pilot landed the aircraft on a tree-lined pond that appeared to be scarcely a half-mile long. The Buccaneer splashed to a halt less than 500 feet from where it first had contacted the water. To take off from the pond,

the Buccaneer was circled on the step until flying speed was obtained.

Because the Buccaneer was designed to be operated on water, it has to be tough. And it is. The keel is .052-inch aluminum plate, about half again as thick as the skins on most landplanes.

David Teetor, a Wyble Advertising executive who was assistant to former Lake Aircraft President Jack Strayer (Strayer now pilots the Pepsi Cola bi-plane), can attest to the Buccaneer's strength. "We used to land the amphibian, wheels-up, on grass to show how strong the hull is," he said. "Then, if you were by yourself, you could just put the gear handle down and raise each wing with your back and the nose with your hand to get the landing gear down, and fly it off again."

To inhibit corrosion, the metal used in constructing the Buccaneer is dipped in an acid-etching solution after it is stamped and formed. This process is called alodining. Each part then is sprayed with zinc chromate before assembly, a step initiated in 1970. If the Buccaneer is destined for

operation on salt water, each part is sprayed with a silicone-based corrosion inhibitor called LPS.

The Buccaneer is all-metal, except for fiberglass on the front of the engine cowl and on the tops of the cockpit and nose. Control surfaces are activated by push rods and torque tubes. Landing gear, wing flaps and elevator trim are powered by hydraulic pressure, eliminating the need to route electrical wires through the airframe.

Stewart Warner and Janitrol cabin heaters, mounted in front of the engine pylon, are available as options. However, the heaters have been the subject of several service difficulty reports, and the FAA recently issued an airworthiness directive on the Janitrol unit following a fire caused by deteriorated combustion liners.

Despite tight credit and high interest rates, the market for Lake Buccaneers has remained steady. One reason for this is that nearly half of all Buccaneers built are delivered to foreign buyers. More important, however, is the lack of competition. Amphibians such as the Republic Seabee and Siai Marchetti Riviera have come

and gone. Financial problems have halted production of the Teal, a two-place amphibian closely resembling the Buccaneer, and threatened introduction of the Trident Trigull, a Sea Bee look-alike. Even if production were to begin, the Trigull would cost about \$130,000, compared to \$64,400 for a bare-bones Buccaneer.

Although the Buccaneer enjoys a market all its own, the new owners

Lake LA-4-200 Buccaneer
Basic price \$64,400
Price as tested \$87,051

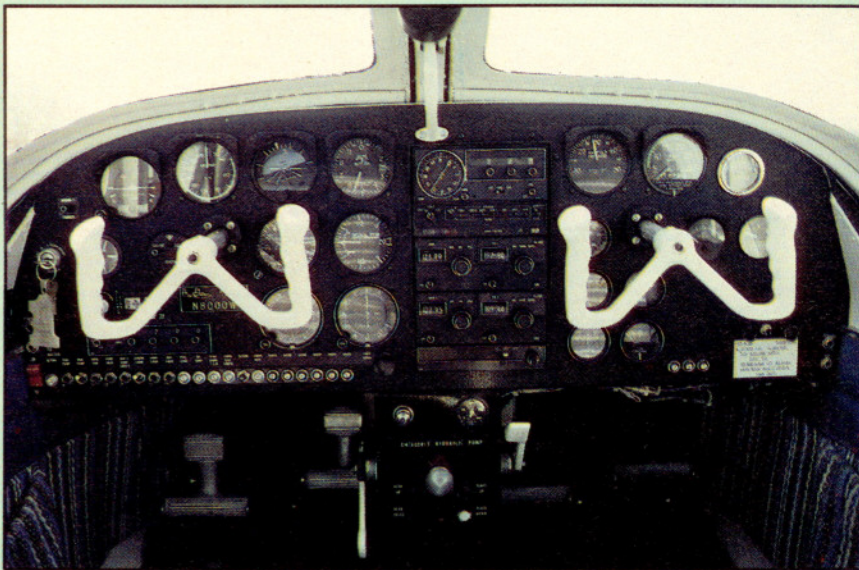
Specifications

Engine	Lycoming IO-360-A1B 200 hp @ 2,700 rpm TBO 2,000 hr
Propeller	Hartzell 2-blade, constant speed, 74 in
Wingspan	38 ft
Length	24 ft 11 in
Height	9 ft 4 in
Wing area	170 sq ft
Wing loading	15.2 lb/sq ft
Power loading	13 lb/hp
Passengers and crew	4
Cabin length	5 ft 7 in
Cabin width	3 ft 5 in
Cabin height (seat to ceiling)	3 ft
Empty weight	1,555 lb
Equipped empty weight (as tested)	1,746 lb
Useful load (basic aircraft)	1,135 lb
Useful load (as tested)	944 lb
Payload with full fuel (basic aircraft)	811 lb
Payload with full fuel (as tested)	620 lb
Gross weight	2,690 lb
Fuel capacity (standard)	40 gal (40 usable)
Fuel capacity (with optional tanks)	55 gal (54 usable)
Oil capacity	8 qt
Baggage capacity	200 lb (19.5 cu ft)

Performance

Takeoff distance (ground roll)	(land) 600 ft (water) 1,100 ft
Rate of climb (gross weight)	1,200 fpm
Maximum level speed (sea level)	130 kt
Cruise speed (75% power, 8,000 ft)	126 kt
Fuel consumption	9.5 gph
Range at 75% cruise (no reserve)	560 nm
Service ceiling	14,000 ft
Landing distance (ground roll)	(land) 475 ft (water) 600 ft
V _{si} (Stall speed with no flaps)	45 kt
V _{so} (Stall speed with full flaps)	39 kt
V _y (Best rate-of-climb speed)	56 kt
V _x (Best angle-of-climb speed)	52 kt
V _{fe} (Maximum flap-extended speed)	109 kt
V _{le} (Maximum landing-gear-extended speed)	109 kt
V _a (Design maneuvering speed)	105 kt

Based on manufacturer's figures



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of Lake Aircraft have launched an enthusiastic effort to improve the airplane. Improvements announced in mid-1980 include soundproofing, glareshields and new defroster and ventilation systems. The bottoms of the sponsons, the small wing floats, also have been strengthened with the addition of an extra rib.

Q-tip propellers are now optional equipment for the Buccaneer.

Armand Rivard has other projects on the back burner, but he is keeping the lid on them for the time being. However, it would be safe to guess that the plans might include a bigger engine and a reversible propeller to improve the aircraft's performance.

Lake also plans to improve the operating handbook for the Buccaneer. At present, the handbook, a cardboard-bound mimeographed affair, serves double-duty as the flight training manual, too, but falls very short of the handbook guidelines developed by the General Aviation Manufacturers Association and adopted by most manufacturers.

For instance, the handbook contains no information on cruise speeds, fuel consumption or range at settings of 55 and 65 percent power. And, on request, Lake Aircraft was unable to provide either that information or data on landing and takeoff distances over a 50-foot obstacle.

With the purchase of a new Buc-

caner, the customer gets a free checkout, comprising about 10 hours of ground instruction and 10 hours in the aircraft. Lake Aircraft also offers recurrent training once a year at no charge.

In addition to teaching the customer how to fly the Buccaneer safely, the factory training program allows owners a break in insurance rates, which otherwise are quite high.

While a 500-hour pilot would pay an average of \$1,700 to insure a 200-hp, retractable-gear landplane with a hull value of \$70,000, the rate for a Buccaneer would be about \$4,500. A \$1 million liability policy with \$100,000 deductible for each passenger would cost about \$280 a year for the landplane and about \$600 for the Buccaneer.

These rates may seem unfair when you consider the Buccaneer's accident record. Statistics supplied by the National Transportation Safety Board for the years 1974 through 1978 show that general aviation had an average accident rate per aircraft of .026 and a fatal accident rate of .004. During the same years, Lake amphibians and the earlier Colonial Skimmers (see box p. 74) were involved in .020 accidents per aircraft and .002 fatal accidents per aircraft.

However, as several brokers were quick to point out, accident statistics do not tell the whole story: a non-

reportable incident can prove quite expensive to the owner and his insurance company.

As one broker put it, "There are a million ways to bang up a Lake. For example, the low wing makes docking a nightmare." Another broker recalled a customer who sank two Lake amphibians in one week.

However, when totaling the costs of owning a Lake Buccaneer, it

should be noted that Lycoming recommends a 2,000-hour time before overhauls because the engine's location allows superior cooling. The TBO for the same engine in landplanes is 1,600 hours.

The Buccaneer is a veritable magic carpet for those who love the sea as much as the air. Although I found, and owners concur, that the Buccaneer falls about five knots short of

its published 130-knot (150-mph) cruise speed, the Buccaneer is an acceptable vehicle for business travel for those not overly concerned with speed.

"For every airport in this country, there are 150 lakes," Armand Rivard said. "The Buccaneer may be slower, but it is the only new airplane in its price class that can make a water landing more than once." □



THE EVOLUTION OF AN AMPHIBIAN

The roots of the Lake Buccaneer can be traced back to Grumman, which at the end of World War II included a two-place amphibian in plans for a line of general aviation aircraft.

The project was placed in the capable hands of David Thurston, who had designed a number of combat airplanes, including the Brewster Buffalo and the Grumman Hellcat.

However, Grumman's lightplanes never came to be. The company decided the aircraft would not be competitive with the likes of the Beech Bonanza and the Republic Seabee.

In his spare time, Thurston picked up where Grumman left off. With the help of Herbert Lindblad, a Republic engineer who had been a classmate at New York University's Guggenheim School of Aeronautics, Thurston built a 150-hp, two-place amphibian in a garage on Long Island. Dubbed the Skimmer, the amphibian first flew in 1947.

The Korean War turned their full-time jobs at Grumman and Republic into overtime jobs, and Thurston and Lindblad did not return to the Skimmer until 1955. They obtained a type certificate and formed Colonial Aircraft

Corporation to begin production.

In 1958, the Skimmer was given 30 additional horsepower and two more seats. Colonial built a total of 44 of the 150-hp C-1 and 180-hp C-2 Skimmers before selling the production rights to one of its distributors, Jack Strayer, a former Grumman test pilot.

Lindblad stayed on with Colonial, which began to do subcontract work for the aerospace industry. Thurston left Colonial to design his own amphibian, the Teal. He later sold the production rights to the Teal to Schweizer which, in turn, sold them to two airline pilots who formed Teal Aircraft in Florida. Thurston now is president of Thurston Aeromarine Corporation, an aircraft-design consulting firm.

Strayer added four feet to the Skimmer's wingspan and two feet to its fuselage and renamed the amphibian the Lake LA-4. Strayer's firm, Lake Aircraft, built about 20 LA-4s before financial problems forced him in 1962 to sell the production rights to Consolidated Aeronautics, a company formed by entrepreneur John Dalton.

However, Dalton was unable to acquire either the financing or the fa-

cilities to produce the Lake. In 1964, he sold his holdings in Consolidated to Merlin (Al) Alson, owner of a used aircraft sales company in Indiana.

At that time, Lindblad left Colonial to form Aerofab. His company has been building Lake amphibians under contract ever since.

Under Alson's guidance, the Lake effort prospered. In 1970, the 180-hp LA-4 was replaced by the 200-hp LA-4-200 Buccaneer.

The most recent chapter in the Lake amphibian's history was written last year when Armand Rivard, owner of Lake New England in Laconia, New Hampshire, acquired the assets of Lake Aircraft from Al Alson.

The Lake amphibian has come a long way since Thurston and Lindblad built the original Skimmer. But when talking with Rivard, one gets the impression that the evolutionary process is just beginning.

"Nothing has been done with this airplane for 20 years," Rivard said. "We are now engaged in a continuing effort to improve it, and we are very excited about doing new things with the Buccaneer." —MML