



WATER SPORTS

The name's changed, but the Lake game is the same.

BY MARK M. LACAGNINA

The wind is calm, and the water is as smooth as glass. The dark, crystalline surface mirrors the sky, the sun and the brilliant foliage along the shore.

The insistent hum of the electric fuel pump accompanies your recital: "This is a water landing." The gear and water rudder are up. Flaps are down. The hydraulic pump whines as it restores the pressure bled off by the flaps.

You reach toward the ceiling, pull back the throttle and nudge the propeller and mixture controls forward.

Your senses peak as you descend toward the fathomless, velvet carpet. Your hand darts from the throttle to

the elevator trim control as you establish a steady, slow rate of descent.

A sudden reflection of the underside of the wing catches the corner of your eye as you hear the playful slap of water as it meets the hull right where it should, on the step beneath the rear seats. You add power and streak across the heretofore unbroken surface.

Near the shore, you ease back on the power and lower the gear into the water. The gear legs stir up a froth as you taxi out of the water and onto the beach. The warm sand and the warm sun feel good. The picnic lunch is going to taste even better.

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The Lake 200 EP and EPR amphibians come very close to being the ultimate escape machines. The EPR, which has a reversible propeller, should be certificated by January.



PHOTOGRAPHY BY THE AUTHOR



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Although our vocabularies differ, pilots and sailors are of a kindred spirit. Attracted by the science and beauty of the elements, we share an affinity for motion and the challenges of momentum.

There are machines that fly and machines that float. But there is only one vehicle currently in production that was designed *ab initio* to do both. It is an amphibian that has evolved over the years from the Tadpole, to the Skimmer, to the Seaplane, to the Buccaneer and, now, to the Lake 200 EP and 200 EPR. (Lake officials do not agree on what the new initials stand for. The company's engineering department likes "extended prop/reversible," while the marketing branch prefers "extra performance/reversible." Customers and journalists simply are being told to take their pick.)

The Tadpole was a Grumman project. The little, two-seat amphibian was part of the company's plans for entering the civil aircraft market at the end of World War II. After building a prototype, however, Grumman decided the Tadpole would not stack up well against Republic's popular Seabee.

The prototype was destroyed, but the drawings and rights to the Tadpole were acquired by a Grumman engineer, David Thurston.

Thurston and Herbert Lindblad, a

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Republic engineer and Thurston's former classmate at New York University's Guggenheim School of Aeronautics, spent their off-hours tinkering with the Tadpole design. The result was the 150-hp, three-seat Skimmer, built and flown on Long Island in 1947.

Due to the Korean War, the Skimmer was mothballed until 1955, when Thurston and Lindblad obtained a type certificate for the amphibian and started production under the name of Colonial Aircraft in Sanford, Maine. Three years later, the Skimmer's engine was replaced with a 180-hp Lycoming, and a fourth seat was added.

In 1960, after building 44 Skimmers, Thurston and Lindblad sold the rights to Jack Strayer, a Colonial distributor and a former Grumman test pilot.

Strayer changed the name of the company to Lake Aircraft and the name of the amphibian to the Lake LA-4 Seaplane. He also made some changes to the amphibian. Wingspan was increased four feet, and the fuselage was stretched two feet.

Strayer had a rather startling method of demonstrating the amphibian's rug-

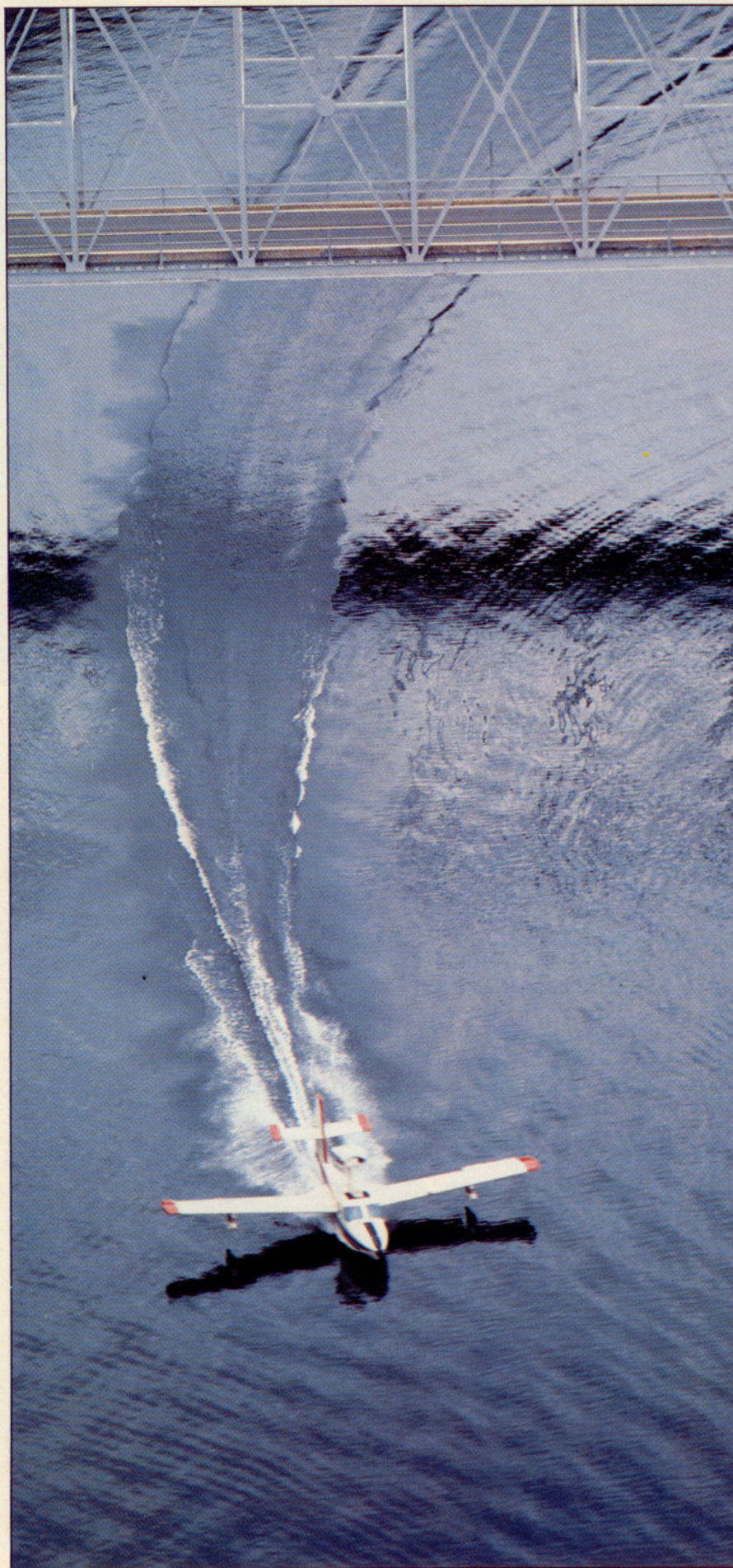
gedness. He toured the country with a Lake that had a strip of Teflon attached to its keel. Nonchalantly, Strayer would make a wheels-up landing on grass, jack the aircraft up onto its landing gear and take off again.

Although it certainly proved a point, this antic apparently did not stimulate sales. In 1962, after building only about 20 Lakes, Strayer sold the rights to John Dalton, president of the newly created Consolidated Aeronautics.

Dalton's effort was short-lived. After trying unsuccessfully to acquire money and production facilities for the Lake, he sold the rights to Merlin (Al) Alson, a former vice president of Brantley Helicopters and owner of a thriving used-aircraft dealership in Indiana.

Alson established the Lake Aircraft Corporation. To improve the amphibian's performance, Alson introduced turbosupercharging as an option and, later, changed the engine to a 200-hp Lycoming and renamed the amphibian the Buccaneer.

Three years ago, Alson sold the assets of Lake Aircraft to Armand Rivard, owner of a Lake dealership in Laconia, New Hampshire. Rivard set up company headquarters at Laconia Municipal Airport, literally a stone's throw from Lake Winnepesaukee, an excellent testing and demonstration area for the



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amphibian. Although he moved the company's second aircraft preparation and delivery center (unofficially called the winter headquarters) from Tomball, Texas, to Kissimmee, Florida, Rivard continues to have the amphibians built under contract by Aerofab. Located about 40 miles from Laconia in Sanford, Maine, Aerofab has been building Lake amphibians since 1964. The president of Aerofab is none other than Herbert Lindblad, who has played a major role in the amphibian's development over the years.

The Lake was designed to withstand the rigors of rough-water operations. As a result, it has nearly twice as many parts as a single-engine airplane, and its skins are about 50-percent thicker. Other than the tops of the nose and cockpit, which are made of flexible fiberglass so that people can stand on them, the Lake is all metal.

Corrosion resistance is an important consideration in the amphibian's construction techniques. Before assembly, each part is etched in an Alodine acid solution and sprayed with zinc chromate. If the customer intends to operate his Lake on salt water, he can opt to have each part misted with LPS-3, a silicone-based corrosion inhibitor.

During assembly, a special plastic compound is applied to the aircraft between the overlaps of wing and fuselage skins to help seal against leaks. The airframe and hull are sprayed with polychromate primer before a polyurethane paint is applied.

The Lake comprises six water-tight compartments. There are two in the nose—one on each side of the nose-gear well. The largest water-tight compartment encloses the sides and bottom of the cockpit and baggage area (which is on the bottom of the aft fuselage, behind the rear seats). Also, there are compartments in the tail and in each of the wing floats. The latter can double as auxiliary fuel tanks, a \$2,560 option.

Each compartment has at least one plug to drain any water that might have seeped in or formed by condensation. Removal of the plugs is a requisite part of preflight preparation.

The main fuselage compartment also can be fitted with a bilge pump, a \$390 option. The pump is especially useful during extended water operation. It has two modes: manual and automatic. In the latter mode, a float switch triggers the pump when water rises to a certain level within the main compartment.

There are no cables or pulleys in the Lake. All flight control surfaces are ac-

tivated by push rods, torque tubes and ball bearings. In true flying boat fashion, a hydraulic system activates the landing gear, wing flaps and elevator trim control surfaces. Optional electric rudder and aileron trim systems can be ordered for \$600 apiece.

The amphibian has undergone continuous refinement since Rivard took over three years ago. First, long, triangular strakes, called Keelson boosters, were added to the sides of the hull both to strengthen the bottom of the amphibian and to improve its maneuvering capabilities on water. The wing floats were strengthened with the addition of an extra rib. Cabin foam treatment and a Q-tip propeller were introduced as options to dampen interior noise. The Buccaneer's glareshield and defrosting and ventilation systems also were improved.

The 1983 Lake models incorporate even more improvements. Rivard believes the total effect of the changes is enough to warrant a name change.

Thus, the Buccaneer is no more.

Welcome the Lake 200 EP and the Lake 200 EPR. A larger, more powerful model called the Renegade also is in the works (see box, below).

The Lake 200 EP has a "new" engine,

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a longer propeller shaft, a modified engine nacelle, wing-root fillets and two more strakes on its hull.

The "new" engine is the Avco Lycoming IO-360-A1B6. Basically, it is the same engine that was used on the Buccaneer—with one important difference: The crankshaft is dynamically balanced. (Recommended time between major overhauls of the 200-hp engine remains at 2,000 hours.)

The balanced crankshaft was required to accommodate a five-inch extension of the propeller shaft on the new Lake. The Buccaneer's nacelle covers only the top, front and sides of its engine. The back of the engine is not covered and disrupts the smooth flow of air around the nacelle.

By moving the propeller aft five inches, Lake engineers gained enough room to install a tapered rear cowl on the EP's engine. In addition, the exhaust stacks, which protrude out the top of the Buccaneer's nacelle, were routed into shrouds in the rear cowl.

Lake Aircraft said the new engine

nacelle improves engine cooling, reduces cooling drag and provides a smooth flow of air onto the propeller. The EP's nacelle also looks good. By contrast, the exposed rear engine of the Buccaneer appears rather indecent.

Although Lake claims the EP is a totally different airplane than the Buccaneer, the differences are difficult to quantify. The name has changed, but the company's performance specifications for the airplane have not. There is one exception: The company has changed the empty weight of the amphibian to 1,660 pounds and its maximum useful load to 1,030 pounds. Due to the modifications, the EP weighs 105 pounds more than the Buccaneer.

I did notice some significant improvements while flying (albeit briefly) both a 1982 Buccaneer and a 1983 Lake 200 EP. The biggest change is in interior noise. The Buccaneer at high power settings is a raucous beast; normal conversation between pilot and passengers is nearly impossible. (In fairness, I should note the Buccaneer was not much noisier than the late-model Piper Archer I flew to Laconia.)

I found the noise level within the EP to be much more agreeable. The improvement obviously is due to the re-

If all goes well, deliveries of the Lake Renegade should begin early in 1983. The Renegade was designed specifically for the rough waters of the Caribbean. The new amphibian is 28.2 feet long, 3.2 feet longer than the Buccaneer/EP, and has five seats. The Renegade's hull and tail also are considerably larger.

The Renegade is powered by a 250-hp Avco Lycoming IO-540 engine and a three-blade Hartzell Q-tip propeller. Unlike its smaller stablemate, which has a 40-gallon fuel tank in the fuselage and an optional 7-gallon auxiliary tank in each wing float, the Renegade will have wet wings as well as a fuselage tank. Standard fuel capacity is 54 gallons; optional is 95 gallons. Maximum useful load is 1,200 pounds.

Lake Aircraft plans to market the Renegade like an executive jet. If a customer wants to purchase one, he can make a deposit on a production slot. Therefore, production of the big amphibian will be dictated by the number of orders received. □



location of the propeller farther from the cockpit and the tapered fuselage.

The nacelle cleanup and wing-root fillets also seem to have improved the Buccaneer's already astonishing takeoff and landing performance. The EP came off the water about five knots slower than did the Buccaneer and climbed more briskly. And on approach, the EP felt solid and responsive at much slower airspeeds.

In addition, there is a yellow arc between 2,000 and 2,350 rpm on the Buccaneer's tachometer. Continuous operation within the yellow arc is prohibited. The EP does not have this limitation, however, thanks to the engine's balanced crankshaft.

When I visited Lake Aircraft in late September, the company was completing type certification of the EPR. (Hence, an "Experimental" placard appears on one of the aircraft photographed for this article.) The EPR will be equipped with a reversible propeller, an option whose price had not been established at press time. Rivard assured me the EPR would be certificated and ready for delivery in January.

Maneuvering toward or away from a dock is a tricky maneuver in any seaplane. Docking a Lake requires extra caution because of its long, low wings. A pilot who misjudges wind or current can end up with some costly repair bills. (For this reason, the Lake often is scooped at by floatplane pilots.)

In the prototype EPR, company pilot Bill Moulton showed me how to use neutral and reverse thrust to slow and stop the aircraft, and to make it travel backward on the water. The reversible prop should be a very popular option.

Both the EP and EPR models can be ordered with an optional (\$10,580) Ray-jay turbosupercharger. The option is especially suitable for operations conducted regularly at high-altitude lakes and airports. One enterprising Lake dealer plans to demonstrate a Turbo 200 EP to the Bolivian government on Lake Titicaca, at an elevation of 12,508 feet above sea level.

The Lake amphibian combines the best of the worlds of flying and boating and could be called the king of the recreational vehicles. But versatility has its price. Base price for the 1983 Lake 200 EP nudges six figures and compares with the costs of an equipped Piper Arrow or Mooney 201.

Extra soundproofing makes the \$850 custom interior an irresistible option. The options list also includes: a Janitrol cabin heater, \$2,500; a cargo door,

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The Lake amphibian is a magic carpet that can transform a weekday work-a-daddy into a weekend pilot/sailor.

\$1,680; and a four-probe exhaust gas temperature (EGT) gauge, \$675. In addition, the Lake can be equipped with a variety of Collins, King and Narco radios, and Brittain autopilots. Figure to pay \$105,000 for a basic fun machine, \$127,000 for a cross-country amphibian or upward of \$160,000 for a well-equipped instrument platform.

The purchase price includes Lake Aircraft's pilot transition course. The course is not an elective; it is mandatory whether the customer is a brand-new private pilot or has thousands of hours in type.

The course, administered both in Laconia and in Kissimmee, includes an average of 10 hours instruction in the classroom, in the air and on the water. That is the average. The company will keep a customer in school until it is sure he is ready to fly his new amphibian home for thousands of hours of safe operation. One customer was unleashed only after 26 hours of instruction (the all-time high, according to Rivard). A seaplane rating is part of the course for those who do not already have it.

Completion of the course qualifies a new Lake owner for a break in what otherwise are incredibly high insurance rates. Insurance companies used to include the Lake amphibian with float-equipped aircraft in a high-risk pool. Premiums ranged from seven to 10 percent of the aircraft's hull value.

Armed with the factory's pilot-training course and with National Transportation Safety Board statistics that show the Lake to have a much better accident record than floatplanes, Armand Rivard was able to convince some underwriters to take the Lake out of the high-risk pool. Customers now can obtain coverage with premiums ranging from three to seven percent of hull value.

The recent improvements incorporated in the Lake 200 EP and EPR should do much to enlarge and please

Lake LA-4-200 EP

Base price \$99,600

AOPA Pilot Operations/Equipment

Categories*:

Sport/Special-purpose \$100,000 to \$110,000

Cross-country \$120,000 to \$130,000

IFR \$140,000 to \$170,000

Specifications

Powerplant	Avco Lycoming IO-360-A1B6
	200 hp @ 2,700 rpm
Recommended TBO	2,000 hr
Propeller	Hartzell 2-blade, constant speed,
	74 in dia
Length	24 ft 11 in
Height	9 ft 4 in
Wingspan	38 ft
Wing area	170 sq ft
Wing loading	15.2 lb/sq ft
Power loading	13 lb/hp
Seats	4
Cabin length	5 ft 7 in
Cabin width	3 ft 5 in
Cabin height, seat to ceiling	3 ft
Empty weight	1,660 lb
Gross weight	2,690 lb
Useful load	1,030 lb
Payload w/full fuel	790 lb
Fuel capacity	240 lb (240 usable)
	40 gal (40 usable)
Fuel capacity (optional)	330 lb (324 usable)
	55 gal (54 usable)
Oil capacity	8 qt
Baggage capacity	200 lb, 19.5 cu ft

Performance

Takeoff distance, ground roll	600 ft, land
	1,100 ft, water
Rate of climb, sea level	1,200 fpm
Max level speed, sea level	130 kt
Cruise speed/Range w/no rsv, std fuel	
(fuel consumption)	
@ 75% power, 8,000 ft	126 kt/560 nm
	(57 pph, 9.5 gph)
Service ceiling	12,500 ft
Landing distance	475 ft, land
	600 ft, water

Limiting and Recommended Airspeeds

Vx (Best angle of climb)	52 KIAS
Vy (Best rate of climb)	56 KIAS
Va (Design maneuvering)	105 KIAS
Vfe (Max flap extended)	109 KIAS
Vle (Max gear extended)	109 KIAS
Vno (Max structural cruising)	106 KIAS
Vne (Never exceed)	134 KIAS
Vsi (Stall clean)	45 KIAS
Vso (Stall in landing configuration)	39 KIAS

All specifications are based on manufacturer's calculations. All performance figures are based on standard day, standard atmosphere, at sea level and gross weight, unless otherwise noted.

*Operations/Equipment Categories are defined in June 1982 Pilot, p. 93.

The prices reflect the costs for equipment required to operate in the listed categories.

the small but faithful band of Lake enthusiasts. But I doubt that the gimmicky new name will catch on. Buccaneer is romantically adventurous. Lake is a sensual metaphor. Unofficially, these names probably will endure.

And while the Big Three keep cranking out the Serious Business Machine in all of its various guises, I'll keep dreaming of a house on the lake and a Lake at the house. □