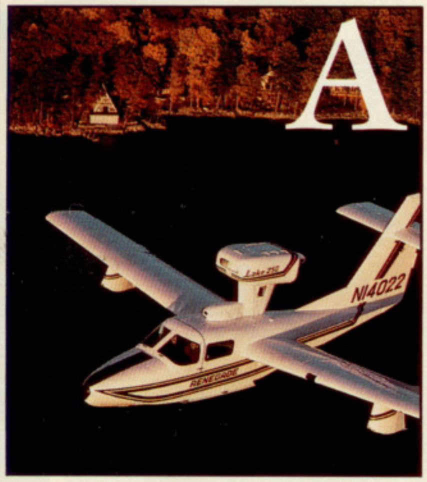
SEA POWER

The Lake LA 250 Renegade gives a new dimension to the concept of light amphibians.

BY EDWARD G. TRIPP



Airplanes that can land on both water and hard surfaces—amphibians—have appealed to pilots and aircraft designers since the early days of flight. Three approaches have been taken: converting landplanes by adding flotation—pontoons or floats—with retractable gear; building airplanes with seaworthy hulls, the true seaplanes; and fitting air cushion devices. Each imposes financial and performance penalties. And, despite countless designs and development programs since the end of World War II, the days of the flying boat and the seaplane seem largely at an end for all but three builders.

Not counting homebuilt designs, only three companies in the world manufacture seaplanes, and only two are commercially available: Canadair of Canada builds the twin-engine CL-215 amphibian water bomber; Shin Meiwa of Japan is building a four-engine turboprop amphibian for the nation's search and rescue force; and Lake Aircraft of the United States builds the latest version of the LA-4, the four-place 200 EP and the LA 250 Renegade. Only the Lake products are suitable for light commercial, utility, business and personal use. (The Beriev Be-12 twin turboprop amphibian was the last to be produced in the Soviet Union.)

While both aero- and hydrodynamics could be considered subsets of fluid dynamics, the requirements of air- and seaworthiness present designers and engineers with significant conflicts in such areas as flight performance—aerodynamic shape and efficiency, and weight—and water performance—hydrodynamic performance and structural strength and weight.

•

The concept of what most of us know as the Lake amphibian was laid down as the Grumman Tadpole 40 years ago. The progenitor of all subsequent Lakes, the Colonial C-1 Skimmer, first flew in May 1948 and was certificated in 1955.

Colonial Aircraft Corporation was sold and became Lake Aircraft in 1959. Lake in turn became part of Consolidated Aeronautics in 1962 and was made the marketing arm of the company. From that time, certification and manufacturing has been performed by another offshoot of Colonial: Aerofab, Incorporated.

With a few interruptions, particularly a complete suspension of operations between 1962 and 1963, and several changes in ownership, the design has endured. The most popular variants are the 180- and 200-horsepower versions of the LA-4, which was announced in 1960. The 200-hp model was introduced in 1970 as the Buccaneer. An improved model, called the 200 EP, was introduced in 1983 and continues in production. Slightly more than 1,000 of the several versions of the LA-4 have been built to date. (For more on the history, the Buccaneer and the 200 EP, see "Lake Buccaneer," August 1980 *Pilot*, p. 68, and "Water Sports," December 1982 *Pilot*, p. 67, respectively.)

Aerofab, Consolidated and Lake are now owned by Armand E. Rivard, a successful contractor and real estate developer who had been a Lake dealer in

New England. It has been said of Rivard that, like Victor Kiam of Remington electric shaver fame, he liked the product so much, he bought the company.

Quite a few hangar tales have developed about the Lake over the years, yet a lot of gee whiz has been written about the airplane. And many people compare it and its performance to landplanes rather than seaplanes. The net effect has been to diminish the utility and merits of the products. There are tales about poor water handling, especially a tendency to porpoise more than other float planes and seaplanes, and a general inability to handle chop; extremely touchy weight and balance considerations; poor payload and overall performance; abysmal handling characteristics on the ground; gross pitch changes with power changes; claims that it is suitable only for operations from well-protected bodies of fresh water; and questions of structural integrity. On the other hand, people claim it can do such things as fly itself from and onto the water, untouched by human hands, and is one of the greatest toys one can own.

The accident record is comparatively good, particularly when the variety of operations to which the airplane is exposed are considered, but insurance is reported to be prohibitively expensive when it can be obtained.

Lake has offered transition training for many years. Under Rivard's leader-

ship, the training program has been directed at dealing with the hangar tales and the operational problems owners and operators have encountered. It has resulted in significant savings in insurance costs for operators who successfully complete it. The program will be covered later in this article.

•

In 1982, the company announced a development program for a new six-place amphibian to be powered by a 250-hp engine. The LA 250 Renegade was certificated in June 1983 to the requirements and standards of Federal Aviation Regulation Part 23, rather than as an amendment to the LA-4's older CAA type certificate. The project took roughly three years to complete. Approval of optional, auxiliary fuel tanks located in the wings was obtained in May 1984, but certification of a reversing propeller option for the 200 EP and 250 is still in the works. At press time, FAA flight test of a turbocharged version of the 250 was just beginning.

The LA 250 Renegade is unquestionably a development of the Skimmer/Lake family, and the seaplane is easiest to describe on the basis of the differences between it and the LA-4/Buccaneer/200 EP.

The LA 250 is three feet, three inches longer. The stretch is almost equally divided between the forward section of the fuselage and aft of the wing trailing edge. The cabin side window is longer; it and the different empennage are the most obvious visual differences.

The vertical stabilizer is higher, has a thicker chord and is more swept. It has a noticeable notch in the trailing edge to accommodate elevator movement, whereas the LA-4 elevators are notched to accommodate rudder deflection.

There is a single elevator trim tab on the port side as opposed to the two trim surfaces outboard of either side of the elevator on the smaller model. The horizontal stabilizer is located higher on the vertical tail, above the center line of the propeller; the LA-4 horizontal surface is below the propeller center line. The rudder is completely below the horizontal tail on the 250; the LA-4 rudder extends from the tail cone to a point above the horizontal stabilizer. The retractable water rudder is located in the tail cone of both models.

Wingspan and area for both models is the same as the original LA-4: 38 feet/170 square feet. The higher power of the 250 results in a power loading of 12.2 pounds per horsepower compared to the 13 of the 200 EP. Both current models share a common wing structure as developed for the Renegade for manufacturing simplicity. The LA 250 gear is beefier to accommodate its higher gross weight (3,050 pounds versus 2,690). The Lake has sported trailing link main gear for years, long before it was "discovered" by other manufacturers. There are both mechanical and hydraulic uplocks. The nosewheel is free-swiveling. Steering at low speed is by differential braking; moderate taxi speeds and use of power provides rudder directional control. Pilots not used to this arrangement are embarrassed by the lurching and annoyed by the sense of not being in control that are the inevitable results. The technique is quickly learned and enables good maneuvering in tight quarters.

The basic empty weight of the 250 is approximately 300 pounds heavier than the 200 EP. The larger engine and propeller, in combination, account for roughly 100 pounds of the difference; additional structure and some equipment (standard on the 250 and optional on the 200 EP) account for the rest.

The fuselage stretch does more than provide space for additional seats or cargo space in the cabin. It results in a deeper, longer hull with a sharper vee and improved water handling characteristics. Recommended wave height operating limit is 18 inches compared to 12 for the 200 EP (this, like the demonstrated crosswind component published for most airplanes, is a recommendation, not a certification/operating limit). The deeper hull also results in a slight increase in cabin headroom.

The longer cabin enables provision for two rows of bucket seats and a bench seat mounted against the aft bulkhead. The rear seats have a maximum load capacity of 200 pounds. There is a baggage bay behind the rear seat that also has a 200-pound load capacity. The cabin provides adequate comfort for four with good baggage space or four average adults and a child or two.

Both sides of the windshield are hinged at the centerpost and are the doors or hatches to the cabin. Behind the starboard hatch is an additional cargo door that gives easier access to the mid and rear seats.

Pilots with experience in amphibians will find the engine control arrangement familiar. Landplane pilots find it a bit strange. The mixture and propeller controls are mounted in the overhead between the two front seats. The throttle is mounted on the windshield center post forward of and slightly lower than the propeller control. Forward on all three is maximum setting, so the motion is consistent with any other airplane. Gear and flap controls are standard and are mounted on a center console below the instrument panel along with their respective position-indicator lights, hydraulic pressure gauge (good practice, which is constantly stressed and tested in training to make it a regular drill, is to check pressure before moving any of the hydraulically actuated controls) and the manual hydraulic pump. The elevator trim lever is between the seats. Just in front of it is the water rudder lever.

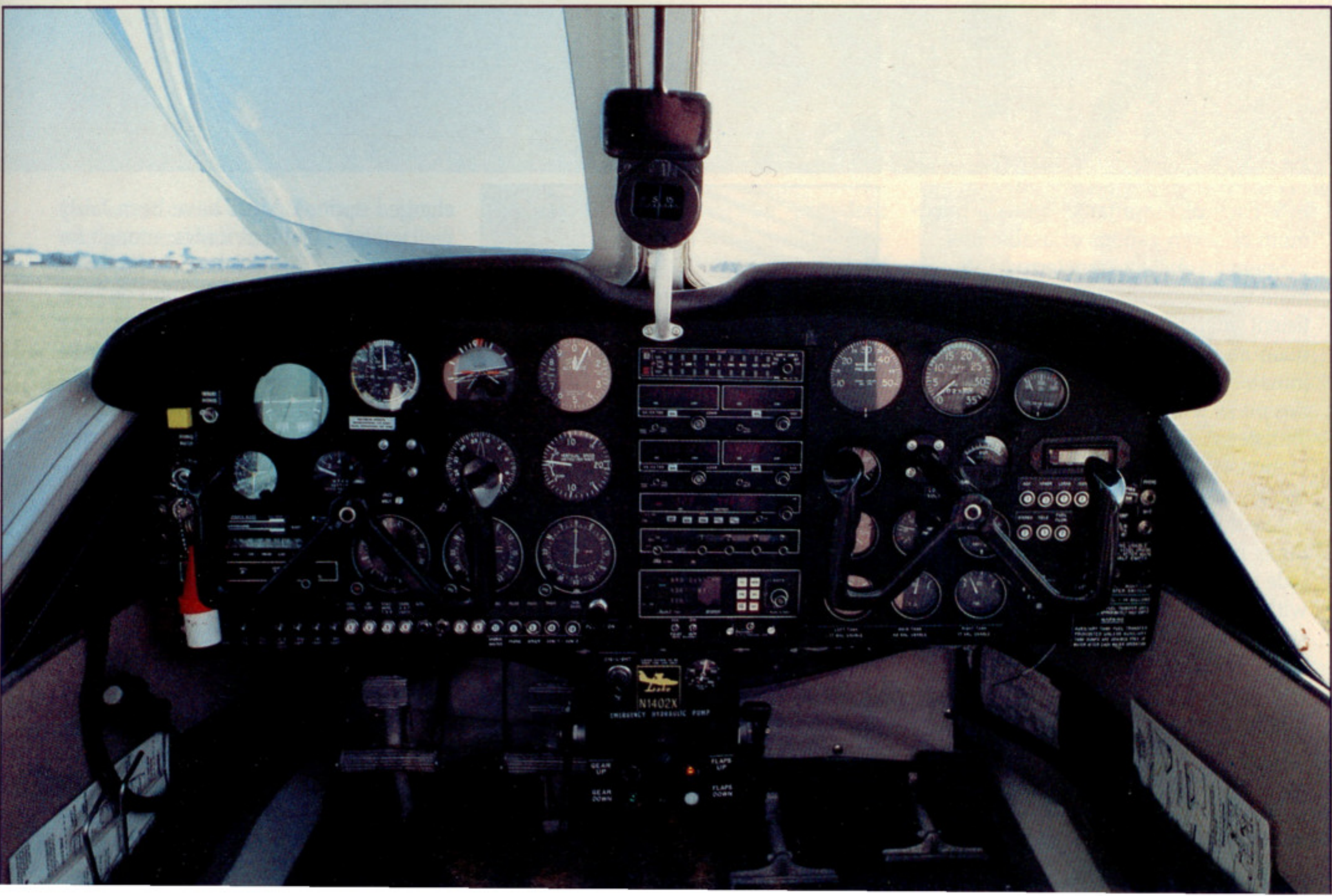
The hull arrangement is the same in layout as the 200 EP and has four watertight compartments, not counting the wing floats or sponsons.

All aluminum parts are alodined and painted with zinc chromate before assembly; sealant is installed at all skin joints and the airframe is painted with a further anti-corrosion primer after assembly. Polyurethane finish coat is standard. An additional internal hull treatment is available for aircraft intended for regular salt water operations.

The engine-pod support struts of the LA-4 have been replaced by stainless steel flying wires on the 250. The side panels of the pylon are part of the supporting structure.

The powerplant is the six-cylinder Lycoming IO-540-C4B5 with a three-blade constant-speed, Q-tip Hartzell propeller.

Control arrangement and the systems are common to both models. Elevator trim, gear and flap actuation are hydraulic. Electric rudder trim is standard on the 250 and an option on the 200 EP;



electric aileron trim is optional for both.

Single-slotted flaps extend approximately 70 percent of the wingspan and have two positions: up and down (20 degrees). They are lift- rather than drag-producing when extended; that position is recommended for takeoff and landing in all conditions except the initial run, before getting on the step, in strong crosswinds on the water.

Flight controls are actuated by torque tubes that are supported and run through ball bearings, except an initial cable run for aileron control between the yoke and the wing/fuselage juncture. Torque tube actuation provides more direct response to pilot input in exchange for higher effort. Rudder control is heaviest, aileron next; elevator effort varies with loading, center of gravity location and, of course, trim position.

The positive pressure fuel system consists of the standard 40-gallon main tank bladder located in the fuselage center section. Optional auxiliary tanks hold 17 gallons in each wing leading edge and gravity feed into the main. Additional, optional tanks can be fitted in the sponsons (these are also available on the 200 EP). Each of these tanks holds a maximum of seven gallons of usable fuel.

SEA POWER

Sponson fuel is transferred into the main tank by an electric fuel pump. Sufficient fuel must be burned from the main and wing tanks before transfer is initiated (Cessna 300- and early 400-series pilots will be familiar with the drill). Transfer of sponson fuel after water operations is prohibited until the sumps are drained.

Maximum usable fuel with the five tanks is 88 gallons, which should provide endurance of more than five hours with reserve at 75 percent power, or a still-air range of approximately 660 nm.

Thirty-one Renegades have been delivered to date; the thirty-eighth airframe is in final assembly in Sanford (two of the airplanes in inventory are awaiting certification of the turbocharged option). Most have been fairly well equipped with avionics, enough for at least basic IFR operations (Loran-C has been a very popular option on both models). Average equipped empty weight is estimated to be 2,045 pounds. Payload with full fuel is 528 pounds. The payload/fuel tradeoff is as good as most piston landplanes, both singles and twins, and better than most landplanes with amphibious floats.

The empty center of gravity is just behind the aft cabin bulkhead. Fuel and baggage move the CG aft; occupants and gear in the cabin move it forward. CG also moves forward as fuel is consumed. To provide the broadest possible load flexibility, racks for ballast are built into the nose tackle bay, which also holds anchor and line for mooring, and into a compartment in the tail cone. The

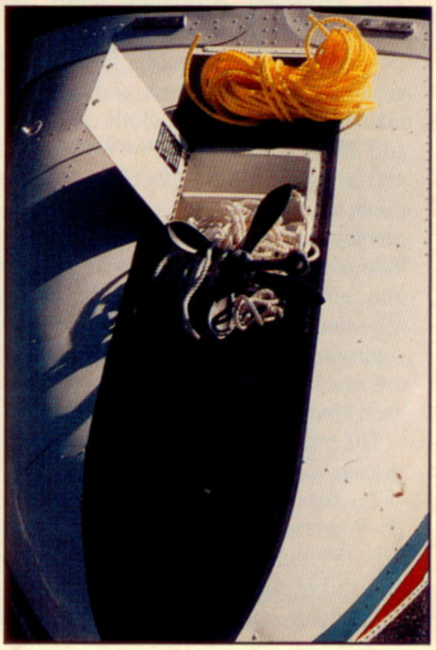
two worst cases of loading are a single occupant and full fuel (nose ballast will be required) and full cabin with partial fuel (aft ballast will probably be required to maintain CG within limits). For most operations between the extremes, ballast is not required.

•

Lake Aircraft Corporation is a general aviation company that appears to be properly sized for its market, and consciously so. That size is small, which gives it a more human proportion in dealing with its customers and prospects than the increasingly impersonal face of many businesses. In both feel and reality it is a family company. Four members of the Rivard family work there, starting with chief executive Armand E. Rivard. Yet the company is functioning in international markets. And, if the efforts of Rivard and executive vice president Gordon S. Collins to sell a military version of the LA 250 called the Seawolf bear fruit, the company will generate an even larger portion of sales overseas.

During several visits, I got the impression that most of the past customers are known to Lake employees. For instance, head of product support Hans Vosteen spends most of his time talking to customers and technicians on the telephone. He sounds as though he is talking to friends, yet he also sounds as though the parts inventory for every Lake resides in his personal memory bank alongside files containing probable solutions to obscure squawks.

The dual company headquarters—Laconia, New Hampshire, and Kissimmee, Florida—combine completion, sales, service and training operations as



well as administration. They also frequently serve as gathering points for customers. Each spring, Lake hosts an open house at Kissimmee.

Both locations offer another dimension in sizing up an aircraft. Pilots in training or back for a refresher can frequently play sidewalk superintendent while a new airplane is having avionics installed or an older one is being serviced, and thus see parts of the airplane and its systems that are usually off-limits elsewhere.

Luke A. Smith is chief pilot for Lake. He does a lot of the demonstration flying, is in charge of the company's transition training and functions as the principal training pilot. Smith has trained more than 150 pilots for water ratings in the past three years. I was surprised to learn that 70 percent of the Lake buyers do not have water ratings.

Training is part of the purchase of a new Lake. In fact, according to Rivard, the company will not deliver an airplane to a customer until he or she has successfully completed the course. The training is also available to purchasers of used Lake amphibians, and the company will consider training non-owners on a space-available basis. Recurrent training is also available. It is one of the best company-run programs I have seen, because its orientation and organization is operational. (Most manufacturer-run training concentrates on systems familiarization, which is good as far as it goes. But most tend to minimize flight training and the operational characteristics of the products.) It also affects insurance rates for customers. And proficient customers affect the manufacturer's insurance cost, too.

Average students require five days of ground and flight school and approximately 25 flying hours. Both classroom and practical training are well organized and encourage a systematic approach by pilots to checking and operating the airplane in its two environments and provide a thorough grounding in systems and emergency procedures. Students are rated on a scale of one to five, five signifying adequate proficiency. There are oral, written and practical tests for each element.

The training manual expresses the approach well:

"...You will find the basic attitude in the flight training program somewhat conservative, stressing awareness and striving to instill reasonable caution.

"Arriving at your water destination, you will find no center stripes, no runway... markings, no sectional or AIM listings or runway lengths. ...Technique and water conditions have much effect on performance. The unavoidable excitement of arriving at a beautiful body of water can... mar judgment.

"To offset the above, the advice given and performance figures given you during training will be in this light. We suggest using the training manual recommendations, especially until your log book is fat with Lake amphibian time and experience."

SEA POWER

For operational information, my opinion is that the training manual is more useful than the aircraft operating manual. Aside from procedures and weight and balance, the latter is lacking, particularly in performance data.

For most pilots, transition to water flying presents several new considerations that the Lake course emphasizes. Learning to size up a landing site in terms of wind, water and weather conditions, obstructions, other traffic (boaters love to chase seaplanes, it seems), length and distance from shore ('never land farther from shore than you care to swim' is a regularly repeated admonition) and determining the type of landing most appropriate for the conditions are just some of the things you must think about. Then there are the seamanship aspects of operating the airplane—the boating, as opposed to flying, operations such as slow taxiing, rules of the nautical road, docking, beaching, mooring and the effects of wind and water at low and high speeds—that must be learned. Noise impact and other effects your operations will have on others in and around the water—including operations in and around wilderness or wildlife protected areas—are integrated into the training. A certain amount of water wisdom and, in general, more thoughtful pilots are products of the course.

The airmanship part of the training not only familiarizes you with the operation and characteristics of the Lake; a lot of emphasis on basics is included: coordination; altitude, attitude and speed control; proper trimming; good procedures (both normal and emergency); looking outside of the airplane instead of fixating within the cockpit; and use of the check list are reinforced constantly. The lessons learned and relearned apply to anything you fly.

Throughout the training, the hangar tales about the Lake are addressed: porpoising, for instance. This is another version of the pilot-induced oscillation (PIO) that can be experienced with many aircraft. But not a few pilots talk about the Lake as an airplane that wants to bury its nose, or submarine, during water landings. It is a definite concern with any float- or seaplane. The shorter-fuselage Skimmers have a greater tendency to porpoise if attitude and airspeed are mismanaged, particularly in choppy water conditions, than the later, longer-hulled LA-4s and the LA 250. Smith claims that a properly trimmed Lake will not porpoise. I found any tendency to do so was easily overcome with slight back pressure, and the exercises reinforced the importance of attitude control.

Most pilots are used to flying what is now the conventional arrangement of tractor propulsion. The Lake is a pusher, with the engine mounted high above the fuselage. Torque and P-effect produce left yawing and right turning tendencies that should be compensated for with left aileron and right rudder during takeoff. The high thrust line induces a slight pitch down with power application and a pitch up with power reduction. Also, in ground effect there is an aerodynamic pitch-down tendency. Then the effect of crosswind on the airframe has to be considered. The large surface of the empennage creates a tendency to weathervane into the wind at rest and at low speed. When making the transition to the step, with a nose-high attitude, the wind creates a downwind-turning tendency. All of these are more noticeable on the water than they are when operating from a hard surface. None are problems once you are aware of them and are trained in proper technique. Poor technique, on the other hand, can lead to trouble in difficult weather conditions, periods of distraction or during emergencies.

For instance, the recommended go-around technique includes a two-step power application to counteract the pitch-down tendency in ground effect and with power application. It minimizes the pitch change and also reminds pilots to recheck for proper pitch attitude and wings level. Sloppy technique in normal operations reduces efficiency, such as prolonging takeoff runs by not achieving the proper attitude or dragging a sponson.

Talking about these characteristics takes more time than learning about them. And doing it is a great deal more fun than talking about it. Learning to do it correctly is highly satisfying. Reverting to the student role was more enjoyable to me, and a far more satisfying way to sample a new airplane, than anything I have done in quite some time.

Trying to decide what part of the flying was the most fun was not easy. Setting up for and successfully performing glassy water landings, in which finding a reference for height at the last minute after establishing power, sink rate and airspeed, then waiting for the sign that the water was coming up to kiss the hull (a slight pitch up) and maintaining the discipline of proper pitch and airspeed (don't rush things on the water, I was constantly reminded); picking a good landing site when the winds and the water conditions were not ideal; simulated engine failures, especially the 180 power-off descent; the gentle rush of water on the aft hull to complete a properly set up and conducted step landing; playing speedboat in step taxiing and turns for simulated confined area landings and takeoffs—all were challenges and all were fun. Stall landings and aborted takeoffs were dramatic. Docking and beaching were good training in thinking and patience.

Operating on the step is a great exercise in pitch, speed and power coordination. It is one attribute of seaplanes that floatplane pilots have difficulty with, especially step turns. You literally fly the airplane on the water. One of the challenges was that we rarely landed in or took off from the same place twice; if we did, the conditions had changed to make it a new experience.

Toward the end of my transition training, I flew with Smith as he demonstrated the full capabilities of the Renegade. Then I had a chance for more of the same with Paul M. Furnèe in another airplane. By this time, I was feeling right at home in the Lake. They both showed me that it could do a lot more than I could, and that the training manual admonitions to stick to the recommended limits, be patient and learn while you build time and experience made more sense than ever. □

WATER RIGHTS

When Lewis W. Lindemer proposed opening a seaplane base on Montana's Seeley Lake two years ago, he might as well have been asking his neighbors to live next door to a toxic waste dump. As almost everyone in the community "knew," seaplanes were inherently unsafe. If allowed onto the lake, the suspect seaplanes would dismember boaters, pollute the water and disturb the peace with a buzz-saw cacophony of high-revving airplane engines.

In an effort to ban seaplanes, Seeley Lake residents appealed to the Montana Fish and Game Commission, the state Aeronautics Division and the courts. Ultimately, the residents of Seeley Lake appealed to the state legislature.

The Montana Fish and Game Commission passed a resolution against seaplane operations on Seeley Lake. But the state commission had no actual authority over seaplane operations.

The Aeronautics Division theoretically *did* have authority over seaplanes, but had never licensed state airports or seaplane landing areas. Seeley Lake homeowners therefore went to court and obtained an order requiring the state of Montana to begin licensing airports and seaplane bases. (The homeowners' objective, of course, was to have the license for

Model Lake LA 250 Renegade
Base price: $194,200
AOPA Pilot
Operations/Equipment Category*:
Cross-country: $202,000
IFR: $232,000

Specifications

Powerplant	Lycoming IO-540-C4B5, 250 hp @ 2,575 rpm/29.3-in mp
Recommended TBO	2,000 hr
Propeller	Hartzell Q-Tip, three-blade, constant speed; 76-in dia.
Length	28 ft 2 in
Height	10 ft
Wingspan	38 ft
Wing area	170 sq ft
Wing loading	17.94 lb/sq ft
Power loading	12.2 lb/hp
Seats	6
Empty weight	1,850 lb
Empty weight, as tested	1,969 lb
Gross weight	3,050 lb
Useful load	1,200 lb
Payload w/full fuel	40 gal/960lb, 88 gal/576 lb
Max landing weight	3,050 lb
Fuel capacity, std	246 lb (240 lb usable) 41.3 gal (40 gal usable)
Fuel capacity, w/opt tanks	549.6 lb (528 lb usable) 91.6 gal (88 gal usable)
Oil capacity, ea engine	12 qt
Baggage capacity	200 lb
Max nose ballast	130 lb
Max tail ballast	50 lb

Performance

Takeoff distance over 50-ft obst	Hard surface: 2,025 ft water: 2,150 ft
Max demonstrated crosswind component	15 kt
Rate of climb, sea level	680 fpm
Max level speed, sea level	132 kt
Cruise speed/Range w/45-min rsv, std fuel (Fuel consumption, ea engine)	
@ 75% power, best economy 8,250 ft	132 kt/320 nm (79.2 pph/13.2 gph)
@ 65% power, best economy 12,500 ft	125 kt/344 nm (69 pph/11.5 gph)
@ 55% power, best economy 9,750 ft	106 kt/335 nm (61.8 pph/10.3 gph)
Service ceiling	12,500 ft
Landing distance over 50-ft obst	Hard surface: 1,410 ft water: 2,225 ft

Limiting and Recommended Airspeeds

Vx (Best angle of climb)	66 KIAS
Vy (Best rate of climb)	76 KIAS
Va (Design maneuvering)	115 KIAS
Vfe (Max flap extended)	107 KIAS
Vle (Max gear extended)	107 KIAS
Vlo (Max gear operating) Extend	107 KIAS
Vno (Max structural cruising)	115 KIAS
Vne (Never exceed)	145 KIAS
Vr (Rotation)	57 KIAS
Vs1 (Stall clean)	55 KIAS
Vso (Stall in landing configuration)	49 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 1985 Pilot, p. 94. The prices reflect the costs for equipment recommended to operate in the listed categories.*

the Seeley Lake seaplane base denied.)

In the end, however, seaplane pilots won the battle of Seeley Lake. Montana legislators, after hearing the seaplane pilots' side of the story and learning that a licensing program could cost the state as much as $60,000 per year, revoked the long-unenforced state licensing laws, clearing the way for unrestricted use of Seeley Lake by seaplanes.

Throughout the legal and political maneuvering, the Seaplane Pilots Association was active in many ways. SPA Executive Director Mary F. Silitch and West Coast Field Directors Richard A. Woodin, David H. Wiley and Walter B. Windus lent their support to Lindemer with calls and letters to various state officials. These included the Seeley Lake Chamber of Commerce, the state aeronautics director, the Fish and Game Commission and Montana legislators. SPA officers also presented their case to the Associated Press and *The Missoulian*, a Missoula, Montana newspaper (both covered the story).

In arguing the case for seaplanes, Seaplane Pilots Association officials offered some compelling safety statistics: From 1976 through 1980, a period in which there were 33,000 boating accidents and 7,700 boating fatalities, there were only eight collisions between boats and seaplanes, most of them determined to be the fault of boaters. Serious injuries (none fatal) occurred in only one of those collisions.

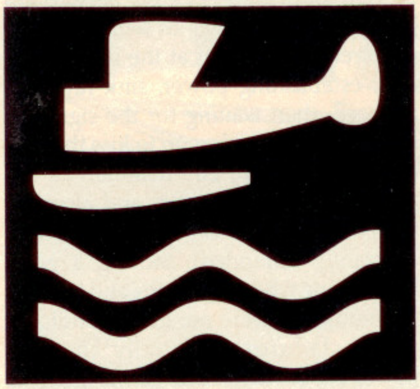
SPA argued that seaplane pilots could operate harmoniously with boaters without causing undue disturbance to lakeside residents. SPA officers cited examples of waterways where both seaplanes and boats operate safely. Seattle's Lake Washington, for example, is home to one of the largest seaplane bases in the continental United States and also to a large commercial fishing fleet. The safety record on Lake Washington has been excellent.

One state legislator, who was lured to a Seaplane Pilots Association fly-in and took her first ride in a seaplane, became an enthusiastic and crucial supporter of the association's position.

During the dispute over the proposed Seeley Lake seaplane base, there was one particularly ugly incident, a reminder (as if one was needed) of just how hostile people can be toward seaplane operators. An SPA member, who was unaware of the controversy taking place in the community, landed his float-equipped Cessna 185 on Seeley Lake. He was met by angry boaters who surrounded the 185, shouted obscenities and tried to swamp the floatplane. Several of those involved were later convicted of reckless boating.

The Seeley Lake affair is an extreme example of the kind of opposition that SPA combats daily. But it illustrates well the animosity with which SPA often must contend.

The association was formed in New Jersey in 1972 by a small band of seaplane pilots who were frustrated by the state's restrictive



seaplane regulations. To this day, seaplane landings are prohibited in the state of New Jersey, except at those few sites that have licensed seaplane bases.

But in many areas of the country, seaplane operators now have access to hundreds of lakes, reservoirs and rivers that were off-limits a dozen years ago. In California, for example, 36 lakes now are open to seaplane pilots. When SPA was founded, only two lakes in the state were open to seaplanes. Several other states have relaxed their restrictions on seaplanes and more are considering doing so, thanks to SPA efforts.

Because the regulations that govern the use of lakes, reservoirs and rivers come from a number of sources, SPA must work on many levels to improve access to waterways. The authorities that control waterways include the U.S. Army Corps of Engineers, the National Park Service, the U.S. Forest Service, the Tennessee Valley Authority, private power companies, and state and municipal regulatory offices.

The association's crowning achievement to date came in 1977, when the Army Corps of Engineers adopted rules for opening Corps-controlled waters to seaplanes. It was the culmination of five years of persistent lobbying by the Seaplane Pilots Association's volunteer officers, particularly by the association's president, David A. Quam.

The Corps controls hundreds of waterways. In 1972, none were open to seaplanes. Today, about half are open, and that percentage increases annually. SPA's strategy has been to persuade the Corps' district engineers to open waterways first on a trial basis and then permanently.

The Corps left the final authority to open waterways to its district engineers. While some of these officers remain staunchly opposed to seaplanes, others who have conducted thorough studies have been quite receptive to the association's interests. No waterway that has been opened on a trial basis has been closed subsequently because of safety problems.

Another major advance for seaplane pilots came recently when a federal court ruled that no power company regulated by the Federal Energy Regulatory Commission (FERC) could ban seaplanes from bodies of water used to generate electricity. This decision is expected to open a great many lakes and reservoirs to seaplanes.

SPA's successes at opening waterways have gone hand in hand with efforts to inform members about available landing areas. Initially, Robert G. Murray and the late Albert G. Lisch, two of SPA's founders and original board members, turned out newsletters and an annual magazine.

But as membership grew (it now stands at just under 4,000), the press of correspondence, lobbying activities and publications management overtaxed the small volunteer force at the helm of SPA. In 1980, at the request of SPA's board of directors, the organization became an independent affiliate of AOPA, which had been continuously involved in representing seaplane pilots. By affiliating with AOPA, the Seaplane Pilots Association obtained a professional staff to manage its affairs.

Executive Director Mary Silitch, a former editor of *AOPA Newsletter* and former associate editor of *AOPA Pilot*, handles all legislative and regulatory affairs for the association. She also edits SPA's quarterly newsletter, *Water Flying*, and the annual publication, *Water Flying Annual*. Silitch keeps in touch with the membership by telephone and letter and by organizing SPA safety seminars and fly-ins, which she attends in her amphibious Cessna 185.

Under her tenure, SPA has published the *SPA Seaplane Landing Directory*, the first comprehensive directory of its kind and a valuable aid for seaplane pilots traveling into unfamiliar territory. The directory lists seaplane regulations and open and closed bodies of water in each state. It also includes detailed information, derived from the Aircraft Owners and Pilots Association's airports and services database, on individual seaplane bases. The directory's "Routes" section shows fuel stops across the country, which should be particularly helpful to pilots of seaplanes on "straight" floats (those without retractable wheels).

Silitch also is working with several insurance companies to develop programs that would lower the cost of insurance coverage for seaplane operators. Both commercial and non-commercial seaplane operators must bear the burden of insurance premiums that are considerably higher than those for landplanes.

According to Silitch, premiums are high not because of a high rate of accidents, but because the risk to insurance companies of financial loss is spread over so few aircraft. Premiums are also high because recovery of the aircraft in even minor accidents is often difficult and expensive. SPA maintains a list of underwriters who will provide insurance for seaplanes.

Membership in the Seaplane Pilots Association costs $28 per year. For more information, contact: SPA, 421 Aviation Way, Frederick, Maryland 21701; telephone: 301/695-2083.

—J. Jefferson Miller