

LAKE AVIATION BUCCANEER & COHORTS - A BRIEF OVERVIEW

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Among the QAM collection of rarer and interesting aircraft is the Lake Buccaneer VH-EJX. It is one of a family of small amphibious flying boats developed for personal recreation flying. They derive from the Grumman G-65 Tadpole of which only one prototype was built in 1946. However its designer, David Thurston, saw a possible market for it in the recreational flying area and in 1946 formed a company to produce a developed version in small numbers.

It is interesting to look at the family of aircraft that developed over the years from this decision. Table 1 shows the models and numbers of them that had been built up to July 1986. Table 2 shows more detail of the full range to May 2018 in terms of production and general performance. In the process the building company has changed name once (from Colonial to Lake) and passed through several different owners. Only one aircraft was produced in 2007 and none in 2008 but it continued to produce parts for existing aircraft. By 2009 the work force was down to six from a peak in earlier years of 200.

TABLE 1

Model Numbers, Names and Production of the Buccaneer Family to 1986

| Model no | Name | c/ns | Number Built |
|-----------------|-------------|---------------|--------------|
| XC-1 | Prototype | 1 | 1 |
| C-1 | Skimmer | 2-25 | 24 |
| C-2 | Skimmer IV | 126-143 + two | 18 |
| LA-4A & P | Development | 224-225 | 2 |
| LA-4-180 | Amphibian | 246-437 | 192 |
| LA-4-200 | Buccaneer | 438-1 075 | 638 |
| LA-4A-200EP/EPR | Buccaneer | 1 077-1 115 | 39* |
| LA -250/T | Renegade | 1-50 | 50* |

*Still in production July 1986

Total to date 965

. After: Aviation News 10.vii.86 + additions to name column.

TABLE 2

Evolution of Lake Amphibious Aircraft

| Years Produced | Model | Seats | Horse Power | Maximum Cruise | Payload Main Tank Full |
|----------------|----------------|-------|-------------|----------------|------------------------|
| 1948-1959 | C1 and C2 | 2 | 150-180 | 90mph | 340lb |
| 1960-1969 | Lake LA-4 | 4 | 180 | 110mph | 440lb |
| 1970-1982 | Lake LA4-200 | 4 | 200 | 105knots | 500lb |
| 1982-1985 | Lake LA4-200EP | 4 | 200 | 110knots | 550lb |
| 1984-1995 | Lake Model 250 | 6 | 250 | 132knots | 800lb |
| 1987-2005 | Lake 250 Turbo | 6 | 270 | 155knots | 720lb |
| 2006 | Seafury | | 250-270 | | |

After: Anon [https:// wikipedia.org/wiki/Lake-Aircraft](https://wikipedia.org/wiki/Lake-Aircraft)

Not appearing in the above two tables is the **LA-260 Seawolf**.

COLONIAL C-1 & C-2

Colonial Aircraft Corporation was established at Sanford, Maine USA in 1946 by David Thurston and Herbert Lindblad to produce the redesigned Grumman Tadpole. However (Staber-2007) says Thurston alone established CAC at Huntington Station, Long Island NY and it did not move to Sanford until September 1955 to begin production of the C-1. The prototype was named the **XC-1 Skimmer**, a two/three seat all metal amphibian with a hull shaped fuselage, mid-mounted wings with 80% span slotted flaps, a cruciform tail and pylon mounted, pusher engine. The nose wheel of the tricycle landing gear protruded from the nose as a bumper for docking. Registered N6595K it first flew in July 1948 powered by a 115hp (86kW) Lycoming engine. It proved somewhat under powered and the engine was changed after 25hr to a 125hp (93kW) Lycoming. In 1955 there was a further change to a 150hp engine with a Hartzell constant speed phenolic propeller.

Due to problems within the US certification process it was September 1955 before the Type Certificate 1A13 was approved and it went into production, as the **C-1 Skimmer**, with deliveries commencing in 1956. The engine was the 150hp (110kW) Lycoming. It seated two/three people. A total of 24 were produced,

The C-1 was succeeded by the **C-2 Skimmer IV** (in company records Skimmer Tack IV) which had the 180hp (125kW) Lycoming engine. Some sources list it seating four. It was approved by the regulatory authority (FAA), again under TD1A13 in December 1957 but only 18 had been produced before the company got into financial difficulties and was sold. One C-2 came to Australia in 1959 (VH-ARB / VRB) (Anon A A 12:90).

LAKE AIRCRAFT

When Colonial ran into financial difficulties it was purchased in 1959 by M.L. Alson who renamed it Lake Aircraft. It only persisted as a base company for a short time. In 1962 it again ran into financial difficulties and was taken over by Consolidated Aeronautics who retained Lake as a marketing section, as Lake Aircraft Division. The manufacturing portion became Aerofab Inc. with Herb Lindblad, another ex Grumman staffer, in charge. He subsequently purchased Aerofab but by 1970 the Type Certificates for all Lake designs were owned by Armand Rivard. He had also purchased Aerofab from Herb Lindblad. Rivard's headquarters were at Laconia, New Hampshire. However it is interesting to note that aircraft produced between 1960 and 1980 were listed by the Fed Av. Admin. as produced by Consolidated Aeronautics.

Staber(2007) gives more specific details saying Rivard bought Lake from Alson and moved the office to Laconia NH and Kissimmee Florida in 1979 with the Type Certificates owned by REVO. He also states Rivard bought Aerofab from Lindblad in 1985 but Lindblad stayed on as CEO.

Rivard had been a successful Lake dealer and was also closely associated with Mooney Aircraft, (Anon AN 10.iv. 86). In October 2002 Rivard sold Lake to Wadi Rabim but recovered it in 2005 after Rabim defaulted on payments. In January 2009 Rivard indicated he intended to sell Lake and retire. By this stage it was down to six staff and only producing spare parts for existing aircraft. It had only produced one aircraft in 2007 and none in 2008.

The later Lakes, certainly the Buccaneers, were built at Laconia. Initially Aerofab may have remained at Sanford, Maine.

LA-4-180 Lake Amphibian (Skimmer?)

With the name change to Lake the development of the Colonial line continued. The prototype for the first Lake Amphibian was a Colonial C-2 (c/n 121) rebuilt as the LA-4P. It first flew November 1959 and was followed by two LA-4As with strengthened wing spars and modified wing attachment points. They were used to complete the certification process.

By mid 1960 production LA-4s were being delivered as the LA-4 Skimmer or should this be Lake LA-4 Amphibian. Staber (2007) says it should be the latter. These were quite different to the Colonial Skimmers with a 4ft (1.2m) increase in wing span and an increase in length of 17ins (0.432m). The later mainly due to an increase in the length of the nose coupled with a completely retractable nose wheel. There was a completely new hydraulic system but the 180hp (125kW) engine was retained. Hence the designation LA-4-180 used overall for the Amphibian, Overall it took close scrutiny to see the difference from the C-2. Staber(2007) says there were a number of changes to specifications and performance as development to the LA-4-180 proceeded.

An optional extra was the fitting of a Rayjay supercharger to become the LA-4T. A single pure seaplane version, the LA-4S, was built but the reduction in price from leaving out the undercarriage was small, as was the potential market, so it went no further. (AN 10.vii.1986 & Staber 2007).

A total of 192 LA-4-180 Lake Amphibians (Skimmers?) were produced. It would appear that the name was not changed to Buccaneer until the 200hp (149kW) engine was fitted.

Lake LA-4-200 Buccaneer

The Buccaneer was built by Lake Amphibian Inc. of Laconia, New Hampshire. It had resulted from 35 years of development and refinement into the late 1990s with almost 1 000 of all models being built. (Eden & Moeng 2002). Table 2 suggests it manufacture began in 1970. Staber(2007) says the prototype was a converted (1968) -180 Amphibian, (c/n 311). Production began in 1969.

To accommodate the 200hp (149kW) engine a slight modification of the engine nacelle was required. At the same time the small triangular fairings on the wing roots were removed and some improvements to the general standard of the cabin fittings were made. The optional fitting of cabin heating and ventilation, always available on Lake aircraft, remained. This was housed in a large fairing ahead of the engine pylon.

Otherwise the Buccaneer remained essentially the LA-4-180. The change of name with the more powerful engine appears to have been essentially a marketing ploy.

It was sold widely with a number being operated in places as diverse as Canada, Sweden (at least five at one stage), Finland and Nigeria among others. A number came to Australia. Air Whitsunday, for example, started with one but ten years later were operating five on charters to the tidal areas of the Great Barrier Reef. QAM's exhibit was one of these. First registered to Air Whitsunday in December 1974. From October 1978 it passed through a number owners until a second undercarriage collapse in June 1985 ended its flying life.. It is interesting to note that, in a letter quoted in Staber (2007) Kevin Bowe, the principal of Air Whitsunday, says that he had flown at least 20 Buccaneers and that his personal pride and joy was c/n 311, the Buccaneer prototype.

Improvements to the Buccaneer included the **200EP** (extended propeller) and the 200EPR. The EP had a longer propeller shaft which made it possible to streamline the engine pod. The earlier Lakes had a blunt, open rear end to the pod. In the EP this opening was covered by a tapered moulding and a large propeller spinner. The EP also had an extra cargo door. A further option was the **EPR** which was fitted with a reversible, two blade Hartzell propeller. This was useful in slow speed maneuvering on water. At the same time the old wing root fairings were reintroduced. Collectively these changes improved overall performance considerably. Table 2 suggests cruising speed increased by 5 knots (5.8 mph/ 9.3kph) and payload by 50lbs (21,65kg). Table 2 indicates production of all Buccaneers ceased in 1985.

Lake LA-250 Renegade

The next in the line of these small amphibians was the Renegade which began to replaced the Buccaneer on the production line from 1984. The prototype was a converted Buccaneer. It first flew in 1982 with a slightly stretched (38in/97cm longer) fuselage (in the cabin area) to accommodate six seats. The deep section of the hull was significantly longer and this made it easier to handle on the water. It was also fitted with the more powerful (250hp/180kW) Lycoming engine driving a three blade Hartzell metal propeller. Because of this the cowling had been redesigned and some changes made to the tail. However it was covered by the same flight certificate as the Buccaneer.

In 1988 a Turbo Lake Renegade was used to set a new world altitude record of 24 500ft for sustained flight by a single engine seaplane. The Turbo Renegade is shown variously as a LA -250 or 270 and may only have seated four.

Variants of the Renegade included the LA-260 Seawolf and the LA-270 Seafury.

The **LA-260 Seawolf**, is essentially a militarised LA-250 Renegade. Designed for light maritime patrol with six standard NATO hard points under the wings to carry bombs, other armaments or rescue equipment. Fitting radar in the forward end of the engine pod was also possible. It had a higher gross weight and a 290hp? turbo engine.

The **LA-270 Seafury** had upgraded anti-corrosion measures and other features to improve serviceability in maritime and other saline areas. This was achieved by the use of ceramic corrosion proofing. It also had a storage compartment for survival gear. It replaced the Renegade on the production line and could be fitted with either the normal 250 or turbo 270hp engines.

REFERENCES

The following is a list of the authorities sighted during preparation of this paper. It was not always possible to cite each at the appropriate place as often snippets from several were being melded together. Unless otherwise stated the majority of these are from the Wikipedia sources. Unfortunately full details of the magazine clippings were not being recorded over the period involved.

- Anon. (1986) :- The first Lake Skimmer *Aviation News* 10,vii: page number not recorded. Another article recorded as June/July :119 & yet another item as 7:86. These are probably clips from one article.
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- Anon. (2018) :- Lake Aircraft - https://en.wikipedia.org/wiki/Lake_Aircraft
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- Eden & Moeng eds (2009) :- *The Encyclopedia of World Aircraft* : 883
- Staber, John (2007) :- *History of Lake Amphibians* - <http://lakeamphianclub.com/lake-history>

TABLE 3

SPECIFICATIONS & PERFORMANCES

| Model | Colonial C-1 Skimmer | | Lake LA-4-180 Amphibian | |
|--------------|---------------------------|------------|--------------------------------|------------|
| Engine | 1 Lycoming O-320 110kW | 150hp | 1 Lycoming IO-360 A1A 132kW | 180hp |
| Wing Span | 10.36m | 34ft 0ins | 11.58m | 38ft 0ins |
| Length | 7.16m | 23ft 6in | 7.66m | 24ft 11ins |
| Height | 2.69m | 6ft 10in | 2.75m | 9ft 4ins |
| Wing Area | 12.00 sq m | 158.6sq ft | 15.7sq m | 170sq ft |
| Weight Empty | 658kg | 2 150lb | 760 kg | 1 676lb |
| Weight Gross | 975kg | 1450lb | 1 088kg | 2 400lb |
| Max Speed | 201kmh | 125mph | | |
| Cruise Speed | 180kmh | 112mph | 136mph | 219kmph |

| | | | | |
|-----------------|----------|-----------|---------|-----------|
| Rate of Climb | 216m/min | 700ft/min | 243.8m | 800ft/min |
| Service Ceiling | | | 4 248m | 14 000ft |
| Range | 966km | 600mile | 1 009km | 627mile |

| Model | Lake LA-4-200 Buccaneer | | Lake LA-250 Renegade | |
|-----------------|-------------------------------------|-------------|---------------------------------|-----------|
| Engine | 1 Avco Lycoming IO 360 B1A 149kW | 200hp | 1 Lycoming IO 540-C4B5 186kW | 250hp |
| Wing Span | 11.65m | 38ft 0ins | 11.58m | 38ft 0ins |
| Length | 7.59m | 24ft 11ins | 8.64m | 28ft 4ins |
| Height | 2.84m | 9ft 4ins | 3.05m | 19ft 0ins |
| Wing Area | 15,79sq m | 170sq ft | 15.8sq m | 170sq ft |
| Weight Empty | 705kg | 1 555lb | 839kg | 1 859lb |
| Weight Gross | 1 220kg | 2 690lb | 1 383kg | 3 050lb |
| Max Speed | 241kmh | 159mph | 258kmph | 160mph |
| Cruising Speed | 211kmh | 131mph | | |
| Rate of Climb | 365.7m | 1 200ft/min | 280.8m/min | 800ft/min |
| Service Ceiling | 4 480m | 14 700ft | 4 480m | 14 700 ft |
| Range | 1 326km | 825mile | 1 668km | 1 036mile |