Assessing Significance: CAB Wasp Ultralight Aircraft

The item I have chosen for this exercise is an ultralight aircraft built in 1984 and known as a CAB Wasp. This aircraft was one of sixteen built by CAB Engineering in Gunnedah, NSW. It was designed by the owner of CAB Engineering, Mr Neville White, who was a glider pilot and also raced go karts.

Background

Australia was the first country in the world to introduce legislation which allowed the legal operation of minimum or ultralight aircraft. This was promulgated under Air Navigation Order 95.10 (ANO 95.10). With this legislation there was no requirement for aircraft to be registered or for the pilots to be licenced. There were however, some drawbacks. The aircraft could not operate over 300 feet above ground level; they were restricted to one seat with a maximum empty weight of 115 Kilograms and they were prohibited from flying within 300 metres of a public road or within 5 kilometres of an airport. Also, the pilot had to weight 76 Kgs (12 Stone) or less.

By comparison, to-day, ultralight pilots need to undergo at least 20 hours instruction followed by a practical test to obtain a pilot's certificate. They must also be medically fit to the equivalent required for a motor vehicle licence. All aircraft must be registered with Recreational Aviation Australia, the governing and licencing body. Aircraft can fly to 5,000 feet, over roads and towns and may land at uncontrolled airfields. The weight restrictions now apply to the aircraft and not the pilot.

The world's first commercially available powered minimum aircraft, the *Wheeler Scout*, was designed and built by a Sydney hang glider builder, Ron Wheeler, who built around 200 of these aircraft.

A Wheeler Scout
Note the wire bracing above and below the wing and the modified motor mower engine. The chain drive between the motor and propeller is not evident in this photograph.

Neville White bought a *Scout* in 1977. After the rudder broke on the first flight, followed by a broken propeller shaft and then a broken chain which resulted in a broken propeller, Neville decided he would design his own

aircraft to improve reliability and so the CAB Wasp was born. The first CAB Wasp was flown on 10 September 1978.

Provenance

The subject of this exercise has been identified by Mr. White as No. 3 of the sixteen built. It was originally sold to Mr. Clive Godber of Gunnedah, who subsequently sold it on to Mr. Lyndon Hughes also of Gunnedah. The next owner was also a Gunnedah resident, Mr. John Connelly, who subsequently sold it to me (Max Brown) in September, 2006 as one of a group of three ultralights of historical significance, one of the others being a Wheeler Scout. All three aircraft are currently on loan to the Australian Ultralight Aircraft Museum in Holbrook, NSW.

Talk to Donor, Owner and Users.

As the current owner, the aircraft's background, history and technical features are discussed throughout this evaluation. I have had a number of discussions with the designer/builder together with some correspondence. I also spoke to the previous owner, John Connelly, at the time of purchase. He had flown the aircraft but, I think, he shared my interest in preserving these aircraft. Mr White was able to assist with partial restoration of the Wasp, including the provision of replacement transfers for parts of the aircraft, the originals having deteriorated.

Explore the wider context of the item, historical, environmental or other

Following the introduction of ANO 95.10 a number of minimum aircraft were built around the country and in New South Wales the centre of activity was around the Sydney area. However, the Wasp was conceived and built in isolation in the northern part of the state where Neville White had to rely on his experience, knowledge and intuition to develop the aircraft. He did not have the assistance of others but he did have a determination to improve on the *Wheeler Scout*. It is historically significant because it was conceived, designed and built in the very early days of the ultralight movement in Australia and the world. Our American cousins did not have similar legislation for this type of aircraft until 1982, six years after the introduction of ANO 95.10.

The Wasp has a number of features that were technically superior to some of the early ultralights and these will be examined in detail under the heading of "design".

As far as can be ascertained, this aircraft is one of only two known surviving aircraft of this type.

Analyse the fabric, design, manufacture and condition

Like other ultralight aircraft of its time, the CAB Wasp was built from aluminium sections used for marine applications such as yacht masts and spars, the bracing was either stainless steel or galvanised wire and the wings made of sailcloth and usually manufactured by a sail maker. In the case of the

CAB Wasp, the fabric was cut and sewn by Mrs. White using a sail maker's sewing machine especially purchased for that purpose by Mr. White.

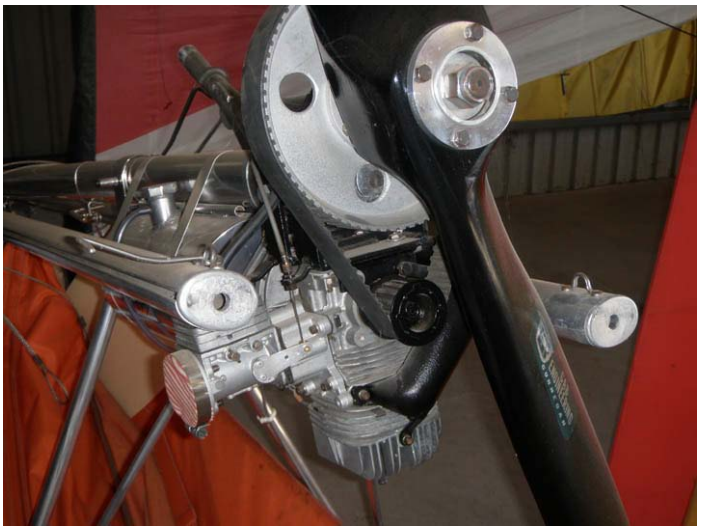
While the Wasp was similar in design to other ultralights in the early days, it did incorporate several improvements that made it significant.

These improvements included:

The wire bracing used in the Scout and other early ultralights was replaced by aluminium struts on the Wasp, a feature seen on most modern high winged light aircraft such as Cessna 172's.

Note aluminium spars (struts) supporting the wings

The propeller was belt driven rather than chain driven. It was a common problem with early chain driven propellers that the chains, similar to bicycle chains, would break and result in a forced landing. Belt driven aircraft were more reliable.

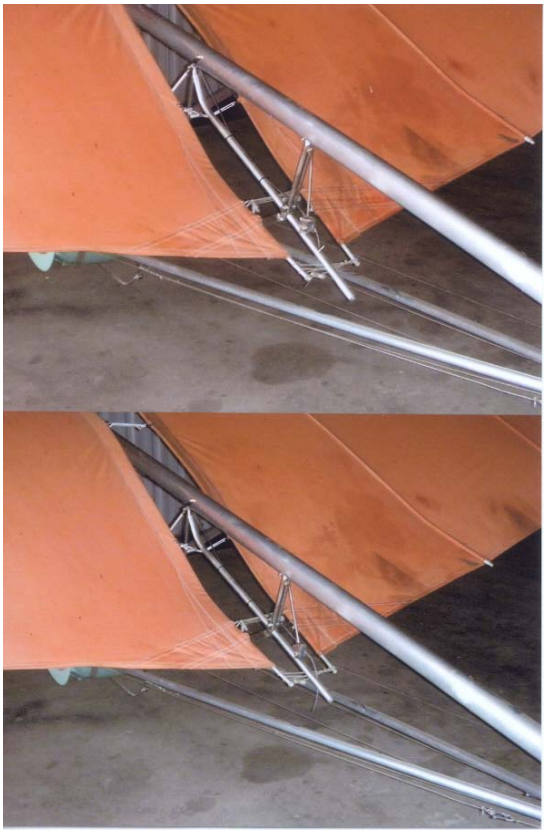


Note belt drive between motor and propeller shaft

Whereas the Wheeler Scout was a two axis aircraft i.e. it could turn with the application of rudder only (but it was a flat, skidding turn) and rise and descend by the application of elevator, the Wasp also has “spoilers” on the wings which allowed the aircraft to bank and so the aircraft could make balanced turns.

Top picture: Spoiler raised, drag increases, wing drops
Bottom picture: Spoiler normal, wing level or rises if other spoiler is raised

The Wasp also had a very basic flap system which allows the aircraft to fly slower with greater lift for taking off and landing.



Top Picture: Trailing edge lowered, Drag and Lift increase, airspeed decreases for landing
Bottom picture: Trailing edge raised, drag decreased, airspeed increases for cruising

Other features included a trim wheel that would allow the pilot to fly “hands off” and a “butterfly” tail that eliminated one of the rear flying surfaces but this was offset by the complicated engineering needed for this configuration.

Top picture: “Normal” Tail
Bottom Picture: Wasp’s “Butterfly” Tail

Comparative Examples

As noted above, this aircraft is only one of two still thought to exist. The aircraft’s development resulted from shortcomings of the *Wheeler Scout* noted by Neville White. As other aircraft were designed and built, they incorporated some of the improvements built into the Wasp. This aircraft is in good condition and the type is not represented in any other Australian aircraft museum (Reference: *Australasian Aviation Museums Guide 2009* included in *Flightpath* magazine, May 2009)

Assess Significance against Criteria

The CAB Wasp is primarily of historic interest. It is both rare and representative of early Australian ultralight aircraft. It incorporates technical improvement not seen on early ultralights and its provenance is well known from the builder through to the current owner. Its significance was acknowledged in 2009 by Recreational Aviation Australian, the governing body for ultralight aircraft in Australia, when Neville White was given “Pioneer” status by that organisation.

Statement of Significance

The CAB Wasp is a fine example of an early Australian designed and built ultralight aircraft. It incorporated technical improvements that were novel for its time. It is one of only two known to exist of the original sixteen built and is in good condition. The provenance is well known.

If it had not been for ultralight aviation pioneers like Ron Wheeler and Neville White and the aircraft they designed, built and flew, the Australian ultralight movement may not have progressed to the point it is at to-day with nearly 10,000 members and 3,000 registered aircraft. The movement has allowed so many more people to experience the joys of flying where they may not have been able to fly under other circumstances e.g. because of medical conditions or cost.

A modern ultralight, the Australian built Jabiru