

AVIATION OCCURRENCE REPORT

IN-FLIGHT SEPARATION

**AÉROTECH AVIATION
BEAVER RX650 C-IDFL
SAINT-MATHIAS, QUÉBEC
9 MAY 1995**

REPORT NUMBER A95Q0086

The Transportation Safety Board of Canada (TSB) investigated this occurrence for the purpose of advancing transportation safety. It is not the function of the Board to assign fault or determine civil or criminal liability.

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Summary

Shortly after take-off from Richelieu Airport, Quebec, when the ultralight was about 500 feet above ground level (agl) over the Chambly basin, the left wing of the aircraft separated. The ultralight and its two occupants crashed in the Richelieu River. The instructor and student pilot were fatally injured, and the ultralight was substantially damaged.

Ce rapport est également disponible en français.

Other Factual Information

Meteorological conditions were favourable for the flight. The sky was clear and visibility was over 10 miles. Winds were light and from the west.

The instructor and student pilot were qualified under existing regulations. It could not be determined who was flying the aircraft.

The aircraft had been purchased new, unassembled, by Aérotech Aviation in October 1990. It was sold to the builder shortly thereafter. The aircraft was issued a registration certificate in 1991.

The builder had no difficulty assembling the ultralight. During the first flights, the aircraft had a tendency to turn left in flight. To counteract this tendency, the builder modified the attachment of the left wing to the drag bar. He installed brackets that enabled the rear attachment of the wing to be moved one inch. As a result, the wing leading edge was moved forward a considerable distance. The modification was not in accordance with the drawings submitted by the aircraft designer. After subsequent test flights, the builder concluded that this modification did not correct the left drift problem, but he left the modification in place.

The brackets added during the modification were made of stainless steel. The wing was held in place by a 5/32-inch aircraft-quality retaining pin. The pin was secured by a lock ring.

The builder had to transport the aircraft on a trailer every time he went flying, and he had to reinstall the wings, then fold them back again, before loading the aircraft on the trailer. The lock ring and retaining pin therefore had to be installed and removed at each flight. No wear was noticed on any of the pins. The builder logged about 150 flight hours on the aircraft before selling it to Aérotech Aviation in November 1994.

The ultralight had accumulated about 100 flight hours since it was purchased by Aérotech Aviation. The aircraft was used for pilot training. As it was stored in a hangar, there had been no need to assemble and disassemble the wings since the aircraft's purchase. The owner had been informed of the modification to the left wing attachment.

The left wing was not heavily damaged in the accident, and evidence indicated that the wing had not sustained stress at the rear attachment when it separated. Examination of the rear attachment revealed no particular evidence of wear. The retaining pin was not found, and there were no indications that it had failed. Markings on the attachment show that the retaining pin disengaged itself over the course of several flights. The other attachments showed deformation and evidence of failure in overload.

Analysis

The left wing of the aircraft separated in flight. Evidence on the left wing rear attachment indicates that the retaining pin disengaged in flight and that it was not secured by a lock ring. This evidence indicates that the pin could move freely and that it disengaged gradually, probably over the course of several flights. The other wing attachment points showed evidence that they had failed in overload following excessive movement of the wing.

Because the aircraft owner did not have to assemble the wings before each flight as the previous owner had, the condition of the attachments was not checked before each flight. It is clear that a pre-flight inspection of the left wing attachment was not performed.

The modification to this attachment did not conform to the drawings submitted by the designer of the aircraft. Although the modification was not suitable for the wing attachment, it does not seem to have contributed to the wing separation.

Findings

1. The left wing attachment had been modified by the builder and was not in accordance with the design drawings.
2. The retaining pin was not secured by a lock ring.
3. The retaining pin disengaged and allowed the left wing to twist, causing the other wing attachments to fail in overload.
4. The left wing separated in flight.
5. The left wing attachment was not visually inspected prior to the flight.

Causes and Contributing Factors

The retaining pin was not secured by a lock ring and it disengaged in flight. A pre-flight inspection was not performed.