



Are your wing attachment points serviceable?

Stolp Acroduster upper-wing attachment point, eye bolt fatigue cracking resulted in an in-flight break-up.

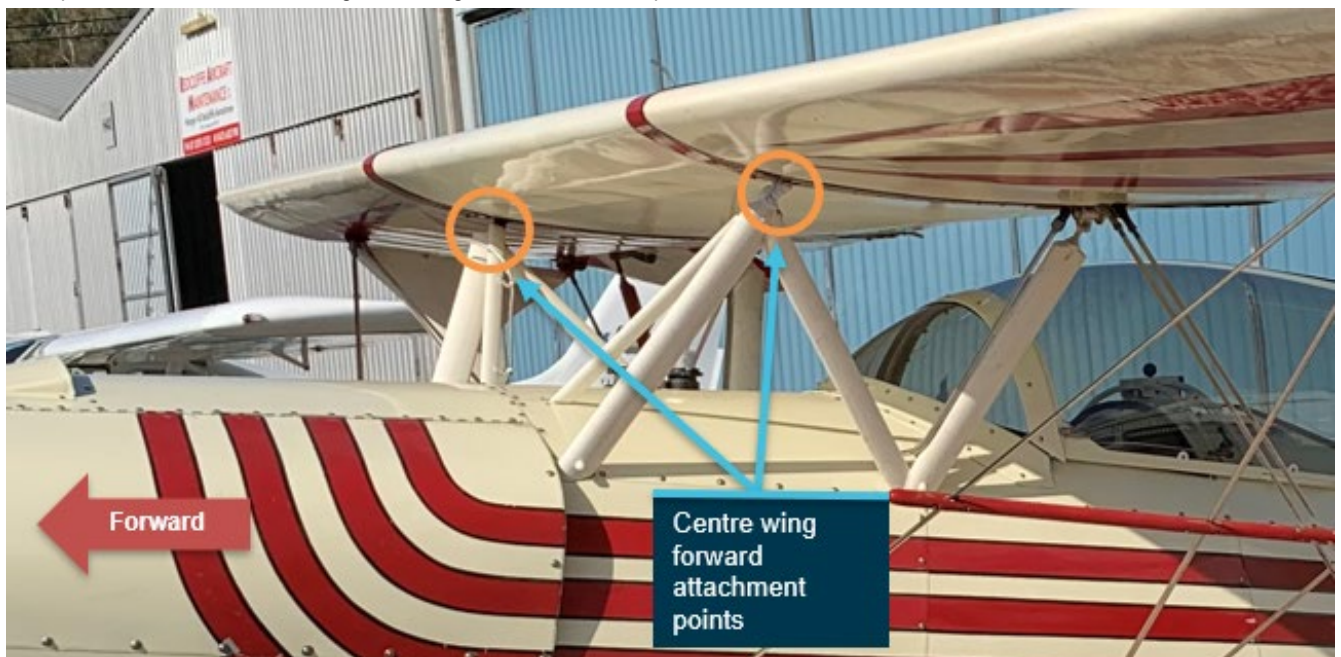
What happened

On 18 August 2021, an amateur-built Stolp Acroduster II SA-750, registered VH-YEL, departed Caboolture Airfield, Queensland, Australia for an aerobatic flight, with the pilot being the sole occupant. A short time later the aircraft sustained an in-flight break-up. The aircraft was destroyed and the pilot was fatally injured.

Why did it happen

The centre section of the upper wing was located away from the main aircraft wreckage. Technical examination of the cabane struts from the centre section confirmed that there was fatigue cracking on the fracture surfaces of the eye bolts that had been fitted in the upper-wing forward position on the left and right cabane struts. The fatigue cracking had initiated in the thread root of each eye bolt at its termination into the cabane strut.

Stolp Acroduster II SA-750 showing centre wing forward attachment points locations



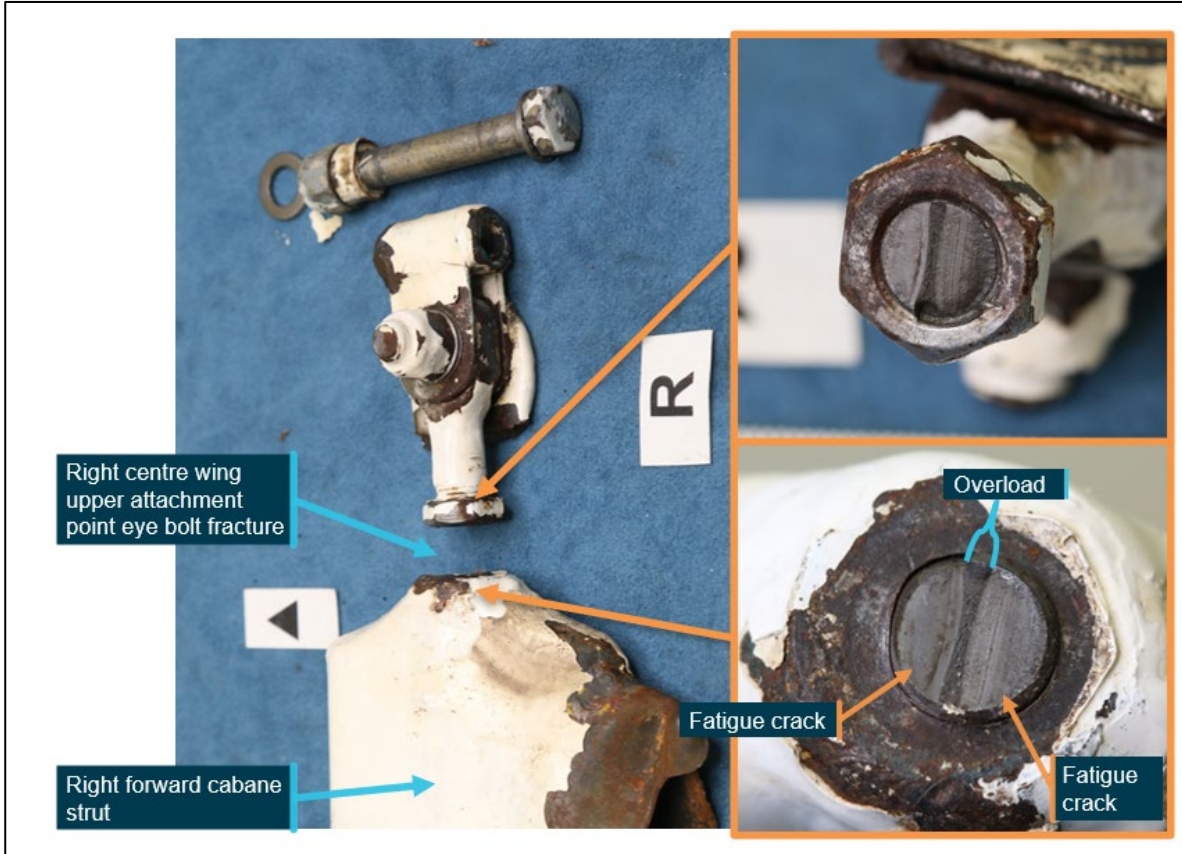
Source: Supplied, annotated by the ATSB

The right eye bolt had sustained fatigue cracking through about 90 per cent of the cross-section, and the left eye bolt had sustained about 40 per cent fatigue cracking through its cross-section. From the preliminary examination findings, it is indicative that fatigue cracking and then fracture of the eye bolts has led to structural instability of the centre-wing section and a consequential in-flight break-up of the upper-wing structure.

There were about 130 Acroduster SA-700/750 aircraft that were completed. The accident aircraft was first flown in the US in 1981, where it was registered N97177. It was exported to Australia in 2007, and registered as VH-YEL. It has accumulated about 717 flight hours at the time of the accident.



Right forward cabane strut showing fractured eye bolt



Source: ATSB

Additional information

This aircraft type has had previous instances of cracking in the same area of the cabane strut upper-wing attachment eye bolts, through the threaded sections. The location of fatigue cracking in the forward upper-wing attachment eye bolts makes identifying fatigue crack during visual inspections difficult and in some cases impossible without removing the eye bolts from the cabane strut. The aircraft type does not have a specific detailed scheduled inspection of the eye bolts to ensure their ongoing airworthiness. It also does not have a time-life replacement of the eye bolts at set periods.

Due to the location of the fatigue cracking through a primary structural support to the upper wing, the ATSB is concerned for the ongoing airworthiness of the Stolp Acroduster aircraft.

Safety advisory notice

AO-2021-032-SAN-01:

The Australian Transport Safety Bureau advises all owners, operators and maintainers of Stolp Acroduster SA-700/750 aircraft to consider the safety implications of the initial findings of this investigation regarding the fatigue cracking on forward cabane strut upper wing attachment eye bolts, and take action where considered appropriate to ensure that their aircraft remain airworthy.

Read more about this ATSB investigation at:

[AO-2021-032 link to preliminary report](#)