

Last updated: 28 October 2018
Status: Final
Date: Sunday 5 July 2009
Time: 13:05



Type: [Britten-Norman BN-2A Trislander Mk.III-1](#)
Operator: [Great Barrier Airlines \(New Zealand\)](#)
Registration: ZK-LOU
C/n / msn: 322
First flight: 1972-11-01 (36 years 9 months)
Engines: 3 [Lycoming O-540-E4C5](#)
Crew: Fatalities: 0 / Occupants: 1
Passengers: Fatalities: 0 / Occupants: 10
Total: Fatalities: 0 / Occupants: 11
Aircraft damage: Substantial
Aircraft fate: Written off (damaged beyond repair)
Location: near Great Barrier Island Airport (GBZ) ( [New Zealand](#))
Phase: Initial climb (ICL)
Nature: Domestic Scheduled Passenger
Departure airport: [Great Barrier Island Airport \(GBZ/NZGB\)](#), New Zealand
Destination airport: [Auckland International Airport \(AKL/NZAA\)](#), New Zealand

Narrative:

A Britten-Norman BN-2A Trislander Mk.III-1 passenger plane sustained substantial damage in an accident near Great Barrier Island Airport (GBZ), New Zealand. There were ten passengers and one pilot on board. Three passengers suffered minor injuries.

At about 13:00 the 3-engined Trislander took off from Great Barrier Aerodrome at Claris on Great Barrier Island on a regular service to Auckland International Airport (AKL).

When climbing through about 500 feet the pilot heard an unusual "pattering" sound. He also heard the propellers going out of synchronisation, so he attempted to resynchronise them with the propeller controls. He checked the engine's gauges and noticed that the right engine manifold pressure and engine rotation speed had dropped, so he adjusted the engine and propeller controls to increase engine power. At that time there was a loud bang and he heard a passenger scream. Looking back to his right the pilot saw that the entire propeller assembly for the right engine was missing and that there was a lot of oil spray around the engine cowling.

The pilot turned the aeroplane left and completed the engine failure and shutdown checks. He transmitted a distress call on the local area frequency and asked the other company pilot, who was airborne behind him, to alert the local company office that he was returning to Claris.

Despite the failure, ZK-LOU continued to climb, so the pilot said he levelled at about 800 feet and reduced power on the 2 serviceable engines, completed a left turn and crossed over the aerodrome and positioned right downwind for runway 28. There was quite a strong headwind for the landing, so the pilot elected to do a flapless landing and keep the power and speed up a little because of the possibility of some wind shear.

After landing, the pilot stopped the aeroplane on the runway and checked on the passengers before taxiing to the apron. Three of the passengers received some minor abrasions and scrapes from shattered Perspex and broken interior lining when the propeller struck the side of the fuselage.

Probable Cause:



FINDINGS:

1. The engine propeller assembly separated from the right engine of ZK-LOU in flight and struck the fuselage when the

crankshaft failed at the flange that connected it to the propeller hub.

2. High-cycle fatigue cracking on the flange that had developed during normal operations from undetected corrosion had reached a critical stage and allowed the flange to fail in overload.
3. The crankshaft had inadvertently passed its overhaul service life by around 11% when the failure occurred, but the company had not realised this because of an anomaly in the recorded overseas service hours prior to importation of the engine to New Zealand. Ordinarily, the crankshaft would have been retired before a failure was likely.
4. The crankshaft was an older design that has since been progressively superseded by those with flanges less prone to cracking.
5. There was no requirement for a specific periodic crack check of the older-design crankshaft flanges, but this has been addressed by the CAA issuing a Continuing Airworthiness Notice on the issue.
6. The CAA audit of the company had examined whether its engine overhaul periods were correct, but the audit could not have been expected to discover the anomaly in the overseas-recorded engine hours.
7. This failure highlighted the need by potential purchasers of overseas components to follow the guidelines outlined in CAA Advisory Circular 00-1 to scrutinise overseas component records to ensure that the reported in-service hours are accurate.

Accident investigation:

Investigating agency: TAIC New Zealand 
Status: Investigation completed
Duration: 263 days (9 months)
Accident number: 09-004
Download report:  [Final report](#)

Classification:

[Prop/turbine blade separation](#)
[Forced landing on runway](#)

Follow-up / safety actions

On 15 December 2009 the CAA issued Continuing Airworthiness Notice 85-005 advising operators and maintainers of the potential for cracking of Lycoming engines fitted with crankshaft propeller flanges with lightening holes because of corrosion, and the need to inspect periodically the flanges for corrosion damage.

TAIC issued 1 Safety Recommendation

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Photos

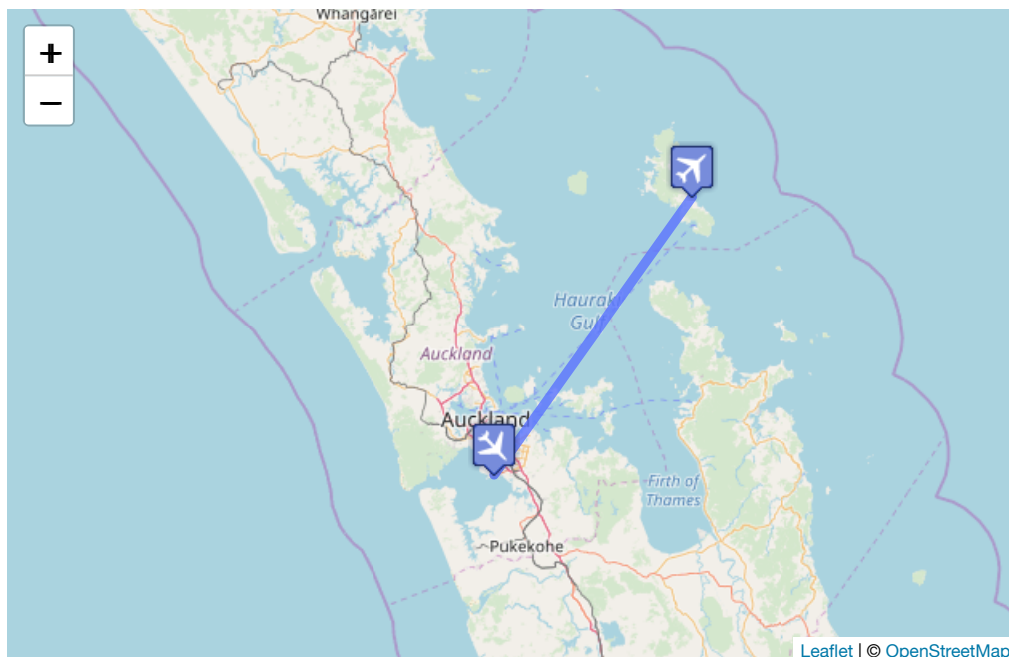




Map

This map shows the airport of departure and the intended destination of the flight. The line between the airports does not display the exact flight path.

Distance from Great Barrier Island Airport to Auckland International Airport as the crow flies is 104 km (65 miles).



This information is not presented as the Flight Safety Foundation or the Aviation Safety Network's opinion as to the cause of the accident. It is preliminary and is based on the facts as they are known at this time.

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