



**NO. 94-005**

**ZK-EQS**

**FRANZ JOSEF**

**26 JANUARY 1994**

## **ABSTRACT**

This report describes the circumstances of an accident on 26 January 1994, in which ZK-EQS, a PA28 aircraft on a local scenic flight from Franz Josef, suffered a sudden loss of engine power shortly after take-off. The aircraft was substantially damaged in the ensuing forced landing, but none of the four occupants was injured. The cause of the engine failure could not be determined conclusively.

# TRANSPORT ACCIDENT INVESTIGATION COMMISSION

## AIRCRAFT ACCIDENT REPORT NO 94-005

<b>Aircraft Type, Serial Number and Registration:</b>	PA28-161, 28-8016367, ZK-EQS
<b>Number and Type of Engines:</b>	1 Lycoming O-320-D2A
<b>Year of Manufacture:</b>	1980
<b>Date and Time:</b>	26 January 1994, 0825 hours*
<b>Location:</b>	3.5 nm north-west of Franz Josef Latitude: 43° 21' S Longitude: 170° 07' E
<b>Type of Flight:</b>	Air Transport—Scenic
<b>Persons on Board:</b>	Crew: 1 Passengers: 3
<b>Injuries:</b>	Crew: Nil Passengers: Nil
<b>Nature of Damage:</b>	Substantial
<b>Pilot-in-Command's Licence:</b>	Commercial Pilot Licence (Aeroplane)
<b>Pilot-in-Command's Age:</b>	20
<b>Pilot-in-Command's Total Flying Experience:</b>	426 hours 85 on type
<b>Information Sources:</b>	Transport Accident Investigation Commission field investigation
<b>Investigator in Charge:</b>	Mr A J Buckingham

\* All times in this report are in NZDT (UTC + 13 hours)

## 1. NARRATIVE

1.1 ZK-EQS took off from Franz Josef airstrip about 0825 hours on 26 January 1994 on what was to be a 40-minute local scenic flight. On board were the pilot and three tourist passengers. Shortly after take-off, the engine misfired briefly, then stopped. Another company pilot witness at the airstrip reported that he heard "one pop", then the engine stopped abruptly.

1.2 The pilot landed the aeroplane straight ahead in an open field, touching down about 900 m from the point of lift-off. The grass surface of the field was undulating and studded with small boulders which protruded generally about 300 mm above ground level. During the landing roll, the right main and nose undercarriage struck some of these boulders, collapsing the nose undercarriage strut rearward and detaching the right main undercarriage leg entirely.

1.3 The aircraft slid to a halt on its nose and right wing, slewing through 180° as it did so. All occupants vacated the cabin without difficulty, none having suffered any injury.

1.4 Substantial damage was sustained by the nose cowlings, firewall, lower forward fuselage, propeller and right wing, in addition to the undercarriage damage previously mentioned.

1.5 The pilot reported that normal preflight inspection, engine run-up and pre-take-off checks had revealed no abnormalities. The fuel drains had shown no signs of water contamination, and the engine appeared to be developing normal power during the take-off. The pilot had selected the left tank for start, run-up and take-off, as it held the greater quantity of fuel; the quantities noted on

the pre-flight inspection were 50 litres in the left tank and 40 in the right.

1.6 After the accident, it was noted that the left tank contained fuel consistent with the pilot's statement, and that the right tank had lost some of its contents through the drain cock which had been damaged in the accident. Fuel was present at the "gascolator" drain cock (which appeared to be seated properly) and in the carburettor bowl, and no contamination was apparent in either case.

1.7 As the on-site investigation into this accident revealed no obvious reason for the sudden engine stoppage, the aircraft was removed to its owner's maintenance base at Timaru. Comprehensive checks carried out on the fuel system, the ignition system, the carburettor and induction system disclosed no evidence as to the cause.

1.8 Damage to the lower engine mounts, caused by the collapse of the nosewheel strut, precluded an attempt to test run the engine while still mounted in the airframe. The engine was bulk stripped, but showed only normal wear consistent with the 809 hours run since overhaul.

1.9 Although the atmospheric conditions at the time of the flight may have been conducive to carburettor icing, this was considered an unlikely cause because of the suddenness of the engine's loss of power and the fact that the engine was operating at full power immediately prior to the failure. Failure due to carburettor icing is characterised by progressively rougher running and power loss, and is unlikely to occur when the throttle butterfly is wide open on take-off.

## 2. FINDINGS

2.1 The pilot was appropriately licensed and experienced to conduct the flight.

2.2 The aircraft held a valid Certificate of Airworthiness and Maintenance Release.

2.3 The aircraft's engine suffered a sudden power loss shortly after take-off on a local scenic flight.

2.4 The pilot carried out a forced landing, but the aircraft unavoidably suffered substantial damage as a

result of striking some small boulders during the landing roll.

2.5 None of the aircraft's occupants was injured.

2.6 Despite a comprehensive technical investigation, the cause of the engine failure could not be established.

3 May 1994

M F Dunphy  
Chief Commissioner

## GLOSSARY OF ABBREVIATIONS USED IN THIS REPORT

<b>AUW</b>	All up weight
<b>kg</b>	Kilograms
<b>km</b>	Kilometres
<b>m</b>	Metres
<b>NM</b>	Nautical miles
<b>NZDT</b>	New Zealand Daylight Time
<b>POB</b>	Persons on Board
<b>UTC</b>	Coordinated Universal Time