

**Aviation Safety Investigation Report
198702428**

Cessna 180G

3 October 1987

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NOTE: All air safety occurrences reported to the ATSB are categorised and recorded. For a detailed explanation on Category definitions please refer to the ATSB website at www.atsb.gov.au.

Occurrence Number: 198702428
Location: Berrigan NSW
Date: 3 October 1987
Highest Injury Level: Nil
Injuries:

Occurrence Type: Accident

Time: 1715

	Fatal	Serious	Minor	None
Crew	0	0	1	1
Ground	0	0	0	-
Passenger	0	0	0	4
Total	0	0	0	5

Aircraft Details: Cessna 180G
Registration: VH-DFO
Serial Number: 18051427
Operation Type: Private (Parachute Jump)
Damage Level: Substantial
Departure Point: Berrigan NSW
Departure Time: 1705
Destination: Berrigan NSW

Approved for Release: March 9th 1989

Circumstances:

While conducting parachute dropping runs from 5000 feet the pilot heard a loud bang from the engine and saw an object ejected through the top engine cowling. The windscreen was immediately covered with engine oil and the engine lost power. The parachutists abandoned the aircraft, and the pilot made a forced landing in a field of young wheat. The field sloped downwards in the direction of the landing roll, and the aircraft nosed-over when the mainwheels intersected a shallow ditch while wheel brakes were being applied. Investigation revealed that the number 4 connecting rod had failed in fatigue across a big end arm. The fatigue had multiple origins on both the outside and inside of the arm, and propagated through approximately 95% of the cross-sectional area. The fatigue initiated from the inside of the big end bore revealed characteristics indicative of high cycle low stress fatigue, while the fatigue commencing from the outside of the arm propagated through high stress low cycle fatigue. The join between the two lines of propagation ran parallel with the bore. The other big end arm had 4 distinct fatigue initiations, one con-rod bolt had failed in overload with distinct signs of necking, while the other bolt remained attached to the cap and remaining part of the big end arm. The No.4 slipper bearing was reduced to a large quantity of severely deformed cold-worked fragments. Detailed metallurgical examination of the failed bearing did not disclose the cause of the failure. The oil filter was clogged with deposits and oil sludge. The bypass and pressure relief valve cavities contained similar deposits. The engine oil had the appearance of dirty used oil. However, laboratory analysis suggested that the oil had changed very little when compared with unused oil. The spark plugs were found to be oily, fouled and heavily deposited by carbon and lead. The aircraft had only flown 6 hours since the previous 100 hour inspection. This inspection should include the inspection of the oil filter, changing of the engine oil and servicing of spark plugs. The condition of the spark plugs was inconsistent with 6 hours of flight time. Approximations of the length of time for which the oil and plugs had been in use was not determined. Examination of the stripped engine disclosed that the oil passages were free, and no components showed signs of oil

starvation. The cause of the bearing failure was not established. The aircraft had flown approximately 16 hours between a periodic inspection on 24.6.85 and the next periodic inspection on 1.10.87, and approximately 6 hours between the latter inspection and the accident on 3.10.87.

Significant Factors:

It was considered that the following factors were relevant to the development of the accident

1. The number 4 big end bearing failed, leading to extensive internal engine damage and loss of power. The cause of the bearing failure was not determined.
2. Engine oil covered the windscreen, making preparation for and execution of a forced landing difficult.
3. During the forced landing roll on a down hill slope through young wheat, the aircraft mainwheels intersected a shallow ditch while the brakes were being applied and the aircraft overturned. FM -