

**Aviation Safety Investigation Report
199801979**

**Piper Aircraft Corp
Archer**

18 April 1998

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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: 199801979 **Occurrence Type:** Accident
Location: 2km NW Mittagong, (ALA)
State: NSW **Inv Category:** 4
Date: Saturday 18 April 1998
Time: 1330 hours **Time Zone:** EST
Highest Injury Level: None

Aircraft Manufacturer: Piper Aircraft Corp
Aircraft Model: PA-28-181
Aircraft Registration: VH-NOR **Serial Number:** 28-8090188
Type of Operation: Non-commercial Practice
Damage to Aircraft: Substantial
Departure Point: Bankstown NSW
Departure Time: 1342 EST
Destination: Bankstown NSW

Crew Details:

Role	Class of Licence	Hours on	
		Type	Hours Total
Pilot-In-Command	Private	138.2	153

Approved for Release: Friday, January 22, 1999

The pilot advised Flight Service (FS) that the engine had failed and he was attempting a landing at the Mittagong airstrip. The aircraft subsequently landed approximately 2 km short of the airstrip damaging the left wing tip and landing gear during the rollout. The pilot advised FS of the situation and that there were nil injuries.

The initial maintenance investigation discovered that the crankshaft accessory drive gear positioning dowel had sheared. This in turn had ceased the drive to all the engine accessories and the camshaft, resulting in the engine stopping. The initial reason for the failure of the dowel could not be positively determined.

Subsequent to the initial investigation, a detailed failure analysis of the failed engine components was carried out. This examination revealed that a significant factor in the failure of the crankshaft gear/crankshaft attachment had been a manufacturing irregularity on the bearing surface of the head of the attaching bolt.

The manufacturing irregularity resulted in a reduced clamping force, between the gear and the crankshaft, being established during assembly.

The loss of the clamping force had allowed relative movement between the gear and the crankshaft mounted gear positioning dowel. This eventually led to the fatigue failure of the dowel and the loss of integrity of the accessory gear drive assembly.