Aviation Safety Investigation Report 199604065

Airparts (NZ) Ltd FU-24A-950

10 December 1996

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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.

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The Bureau did not conduct an on scene investigation of this occurrence. The information presented below was obtained from information supplied to the Bureau.

Occurrence Number: 199604065 **Occurrence Type:** Accident
Location: 187 km E Wiluna
State: WA **Inv Category:** 4
Date: Tuesday 10 December 1996
Time: 1745 hours **Time Zone** WST
Highest Injury Level: None

Aircraft Manufacturer: Airparts (NZ) Ltd
Aircraft Model: FU-24A-950
Aircraft Registration: VH-EOW **Serial Number:** 164
Type of Operation: Commercial Aerial Mapping/Photo/Survey
Damage to Aircraft: Substantial
Departure Point: Prenti Downs Wa
Departure Time: 1605 WST
Destination: Prenti Downs WA

Crew Details:

Role	Class of Licence	Hours on Type	Hours Total
Pilot-In-Command	ATPL	250.0	2800

Approved for Release: Wednesday, January 22, 1997

The pilot reported that he was returning to his base airstrip at 500 ft above ground level when the engine slowly lost power. Although it continued to run it was not producing sufficient power to maintain level flight. The pilot completed trouble checks but was unable to restore normal engine operation. He had no option than to carry out an emergency landing and turned towards a road he knew was in the vicinity. Realising he had insufficient height to reach the road, after turning into wind, he changed his plan. Instead, he turned downwind to try and land downwind on the road. There was insufficient height available to complete the turn and the aircraft touched down heavily, in scrub alongside the road. This resulted in substantial damage to the aircraft.

The pilot later reported that, during previous flights, the engine had been leaking oil. Some of this oil had found its way onto the foam filter element of the engine air filter. He indicated that a combination of this oil and dust from a wind storm that blew through the base on the day of the accident, had contaminated the filter. He had noted the contamination during his pre-flight inspection and remove as much of it as possible prior to the accident flight. He did not change the filter element although the filter design made this a relatively simple task. The engine air filter was fitted with an alternate air door which opens in the event of a restriction or total blockage of the filter. A pre-departure power check and engine operation until immediately prior to the occurrence were both normal.

Post-accident engine testing indicated the engine should have been capable of normal operation. Inspection disclosed that the internal wall of the air intake duct, located between the filter and the engine, had collapsed restricting airflow to the engine. The restriction in airflow probably led to the reduction in power reported by the pilot. The ducting consisted of an inner and outer cloth-wall sandwich supported by a wire spiral located between the walls. The duct was also bound with string on the outside. The walls were bonded together on either side of the wire. Some of the bonding between the inner and outer walls had delaminated allowing the inner wall to collapse. The ducting did not have the airframe manufacturer?s part number and was a different type to that approved by the aircraft manufacturer.

The ducting fitted was Aeroduct SCEET 16, a duct that is often used in aircraft systems such as air conditioning, but not for negative pressure applications. The manufacturer approved ducting consists of Aeroduct SCAT 16, a heavy-duty ducting suitable for engine intake applications.

The aircraft had been engaged in low level survey work in very hot conditions. It is probable this led to a deterioration in the bond between the duct walls. On the day of the accident the partially clogged air filter probably increased the negative pressure in the intake duct sufficiently to cause the delaminating inner cloth liner to partially detach and block off the intake airflow. The weakened inner duct wall probably detached before the negative duct pressure reached a level sufficient to open the alternate air door. From that point on the emergency landing was inevitable. If the correct SCAT 16 ducting had been fitted it should have prevented the occurrence. The fitment of incorrect ducting was brought to the attention of the maintenance organisation that carried out the work and the regulatory authority.