

**Aviation Safety Investigation Report
199603537**

**Airparts (NZ) Ltd
Fletcher**

30 October 1996

Readers are advised that the Australian Transport Safety Bureau investigates for the sole purpose of enhancing transport safety. Consequently, Bureau reports are confined to matters of safety significance and may be misleading if used for any other purposes.

Investigations commenced on or before 30 June 2003, including the publication of reports as a result of those investigations, are authorised by the Executive Director of the Bureau in accordance with Part 2A of the Air Navigation Act 1920.

Investigations commenced after 1 July 2003, including the publication of reports as a result of those investigations, are authorised by the Executive Director of the Bureau in accordance with the Transport Safety Investigation Act 2003 (TSI Act). Reports released under the TSI Act are not admissible as evidence in any civil or criminal proceedings.

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: 199603537 **Occurrence Type:** Accident
Location: 4km E Dunedoo
State: NSW **Inv Category:** 4
Date: Wednesday 30 October 1996
Time: 1000 hours **Time Zone** ESuT
Highest Injury Level: Fatal
Injuries:

	Fatal	Serious	Minor	None	Total
Crew	1	0	0	0	1
Ground	0	0	0	0	0
Passenger	0	0	0	0	0
Total	1	0	0	0	1

Aircraft Manufacturer: Airparts (NZ) Ltd
Aircraft Model: FU-24/A4
Aircraft Registration: VH-BBG **Serial Number:** 141
Type of Operation: Commercial Aerial Agriculture - Other
Damage to Aircraft: Destroyed
Departure Point: Airstrip, 5 km E Dunedoo, NSW
Departure Time:
Destination: Airstrip, 5 km E Dunedoo, NSW

Crew Details:

		Hours on	
Role	Class of Licence	Type	Hours Total
Pilot-In-Command	Commercial	28.0	7200

Approved for Release: Wednesday, February 19, 1997

FACTUAL INFORMATION

The pilot had arrived at the property to commence spraying operations on the day before the accident, and had been provided with a map of the area by the property owner. In addition, the property owner briefed the pilot on the location of relevant powerlines and other obstructions. However, the pilot did not carry out any spraying on that day, but instead flew the aircraft to Scone, in order to have a minor engine problem rectified. He then flew to Mudgee where the aircraft remained overnight.

The pilot returned to the area the next morning, arriving on site at about 0645 ESuT. After spraying approximately 175 acres on an adjoining farm, he commenced an aerial inspection of the next property to be treated, but declined an offer by the property owner to accompany him in the aircraft so the property boundaries and powerlines could be pointed out. The aircraft was seen to make three passes over the area before it descended in an easterly direction, toward a crop of barley. A gentle rise, which included a dam bank located at the corner of the crop, had to be negotiated in order for the pilot to position the aircraft at the correct operating height for the swath run. A spurline, suspended over the crop and running in a northerly direction, was located a further 40 m beyond the dam. A witness reported that the aircraft had appeared to be maintaining level flight, and had commenced spraying, when it struck the spurline, then impacted heavily with the ground and overturned, fatally injuring the pilot. The weather in the area at the time of the accident was reported as fine, with light winds.

The aircraft struck a three-wire spurline which ran in a northerly direction over the crop, at right angles to its flight path. The line spanned 165 m from the main powerline to the first spurline pole, located about 100 m from a house and to the left of the flight path. A number of large trees nearer to the house provided a backdrop to the spurline pole. A strainer wire stemming from the main powerline was positioned some 92 m further on in the direction of the intended flight path. It was about 10 m in length and ran parallel to the spurline. The strainer wire passed over a road and was attached to a support pole located one metre from the edge of the barley crop. The pilot had commenced the first swathe run by flying in an easterly direction, towards distant rising ground which was cloaked in shadow, whilst the powerline in the foreground was set against this backdrop.

The aircraft was an Airparts New Zealand Fletcher FU-24/A4, fitted with a Lycoming 10-720, 400 hp engine and a three bladed, constant speed Hartzell propeller. Such aircraft are used widely in New Zealand, and to a lesser extent in Australia, principally for agricultural operations. Although they are most often used for the aerial spreading of solids onto crops and pastures, this particular aircraft could be equipped for spreading or spraying. The hopper had just been refilled prior to the pilot's aerial inspection and was believed to contain about 1000 kg of a non-toxic spray medium. The spray equipment fitted to the aircraft consisted of booms with standard spray nozzles, and a wind-driven spray pump. Depending on the conditions, spraying with this equipment generally required the aircraft be flown with the spray nozzles at a maximum height of 6-10 ft above the crop. At the time of the accident the aircraft was being operated at or near its maximum weight. The aircraft was not fitted with wire deflectors or cutters.

An on-site examination of the wreckage revealed that the powerline had removed the cockpit canopy before slicing off a major portion of the vertical fin. The aircraft then continued forward a further 90 m, before it collided with the ground and overturned. The design of the aircraft provided limited rollover protection, with the result that the upper cockpit area was grossly disrupted.

Given the position at which the spurline wires had sliced through the vertical fin, it was calculated that the aircraft was flying some 8-10 ft higher than the normal spraying height. There was no evidence found of any condition which may have affected the normal operation of the aircraft.

The pilot held a valid licence for the operation being undertaken. He had accumulated some 7,200 flying hours, of which 5,500 hours had been flown in helicopters. Of the 1,700 hours of fixed wing flying, some 800 hours was agricultural flying. He had completed a biennial flight review on 2 October 1996 but had not flown any aircraft between 28 April 1991 and 21 August 1996. The pilot had not flown a Fletcher before commencing work for the operator one month prior to the accident flight. He had then flown about 28 hours in the aircraft, with much of that time engaged in the aerial spreading of superphosphate and urea, an operation which is normally carried out at a height of about 200 ft.

Three days before the accident the pilot commenced taking two prescribed medications for diarrhoea and nausea resulting from an intestinal condition. An aviation medical practitioner indicated that the main concern with such a condition is dehydration, possibly exacerbated during the initial days of treatment by the medications. Some of the effects of dehydration are general fatigue, reduced levels of concentration and drowsiness.

ANALYSIS

Aspects of the pilot's experience, his general well being, and the visual cues available to him to locate the position of the spurline, were considered to be significant factors in the development of this accident. Pre-existing aircraft equipment and structural design factors were also considered relevant to the non-survivability of the pilot.

Whilst the pilot had considerable overall flying experience, he had not flown during the previous five years, having only returned to flying about one month prior to the accident. In addition, he had limited experience on the aircraft type, particularly in low-level spraying operations. This would have made it more difficult for the pilot to accurately position the aircraft at its correct operating height for the swathe run, after manoeuvring to negotiate the gentle rise and dam bank.

It is possible that the performance of the pilot may have been somewhat impaired by the effects of his medical condition. This could have included fatigue, reduced levels of concentration and drowsiness, resulting in a momentary lapse in awareness prior to striking the powerline; or he may simply have been unaware of its location.

If the pilot had not located the position of the spurline during his aerial inspection, due to the unobtrusive location of the spurline poles, he may have believed the line was located further along the swathe run due to the more obvious presence of the support pole adjacent to the crop. As a result he could have considered he had more space in which to descend, in order to pass beneath what he thought were the only powerlines passing over the crop. There would have been little opportunity for the pilot to have seen the line during the approach to the crop. The orientation of the spurline in relation to the flightpath, the lack of contrast available to discern the wires from the background, and the difficulty in locating the poles of the spurline, were factors which support this view.

Damage resulting from the wirestrike may have been reduced or eliminated, had the aircraft been fitted with a suitable wire deflector/cutter system. The installation of such equipment was not required for the operation being conducted. The design of the aircraft provided limited structural rollover protection, and in this occurrence, the degree of disruption to the upper cockpit area made the accident non-survivable, even though the pilot was wearing a protective helmet. With the canopy already separated from the fuselage, and with no other form of rollover protection, the pilot was exposed to the brunt of the impact forces as the aircraft overturned.

SIGNIFICANT FACTORS

1. The pilot had limited recent flying experience.
 2. The pilot had limited experience on the aircraft type, particularly with regard to low-level spraying operations, prior to the accident.
-

3. The performance of the pilot may have been impaired by the effects of a medical condition he was suffering from.
 4. The location of the spurline was difficult to see and may have been confused with an apparent powerline, further along the intended flight path.
 5. The aircraft was not fitted with any form of wire deflector or cutter.
 6. The aircraft provided limited structural rollover protection for the pilot during the accident sequence.
-