TRANSPORT ACCIDENT INVESTIGATION COMMISSION
TE KOMIHANA TIROTIRO AITUA WAKA

AIRCRAFT ACCIDENT REPORT

No. 89-039

Fletcher FU 24-300

ZK-CTO

Near Moa Creek, Central Otago

6 April 1989

Transport Accident Investigation Commission
Wellington · New Zealand

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Transport Accident Investigation Commission
Wellington

Chief Commissioner
Transport Accident Investigation Commission

The attached report summarises the circumstances surrounding the accident involving Fletcher FU 24-300 aircraft ZK-CTO near Moa Creek, Central Otago on 6 April 1989 and includes suggested findings.

This report is submitted pursuant to Section 8(a) of the Transport Accident Investigation Commission Act 1990 for the Commission to review the facts and endorse or amend the findings as to the contributing factors and causes of the accident.

13 February 1992

R CHIPPINDALE
Acting Chief Executive

APPROVED FOR RELEASE AS A PUBLIC DOCUMENT

12 March 1992

M F DUNPHY
Chief Commissioner

TRANSPORT ACCIDENT INVESTIGATION COMMISSION

AIRCRAFT ACCIDENT REPORT NO. 89-039

Aircraft Type, Serial Number and Registration:	Fletcher FU 24-300; 131; ZK-CTO
Number and Type of Engines:	One Continental IO-520F
Year of Manufacture:	1966
Date and Time:	1554, 6 April 1989
Location:	Raggedy Range, 5km west of Moa Creek, Central Otago Latitude: 45° 12.1'S Longitude: 169° 34.2'E
Type of Flight:	Aerial Work, Agricultural
Persons on Board:	Crew: 1
Nature of Damage:	Destroyed
Injuries:	Crew: 1 Fatal
Pilot in Command's Licence:	Commercial Pilot Licence — Aeroplane
Pilot in Command's Age:	34
Pilot in Command's Total Flying Experience:	2239 hours 62 hours on type
Information Sources:	Office of Air Accidents Investigation field investigation
Investigator in Charge:	Mr J J Goddard

1. NARRATIVE

1.1 The pilot was a student agricultural pilot, operating under the direct supervision of his instructor, the company chief pilot. His training was well advanced, with some 5 hours of dual remaining to complete the Agricultural Rating requirements. He had flown over 30 hours of productive topdressing. The majority of his previous experience was as a flying instructor, or on scenic flying.

1.2 The pilot and his instructor each flew FU 24 aircraft to the property where 120 tonnes of superphosphate was to be sown, arriving at about 1400 hours. The pilot was briefed on the areas to sow and on the best climb-out path. The instructor, in a more powerful FU 24-950 aircraft, was to sow the higher part of the property.

1.3 The weather was suitable for the task, with clear skies and a light westerly wind.

1.4 The airstrip was situated at 1800 feet amsl on a saddle between the Raggedy Range and the Crawford Hills. It sloped down 1.5° to the south-west and was 460m long. The take-off path to the south-west was over a valley, with higher rocky terrain to the north and south. A major power transmission line (Roxburgh-Islington Line A) and its 90 foot high pylons ran parallel to the strip and 150m to the north.

1.5 The departure procedure for ZK-CTO was to turn left about 30° after take-off, then make a right procedure turn between the south side of the valley and the power line while climbing to cross the saddle to reach the sowing area to the east (See Fig.1). The instructor's procedure was to turn right, as the aircraft was climbing to cross the power line.

1.6 After each had sown 3 or 4 loads, the instructor stopped the pilot to rebrief him on his sowing pattern. Some 5 to 6 further loads were sown satisfactorily before they stopped for a break and to refuel both aircraft.

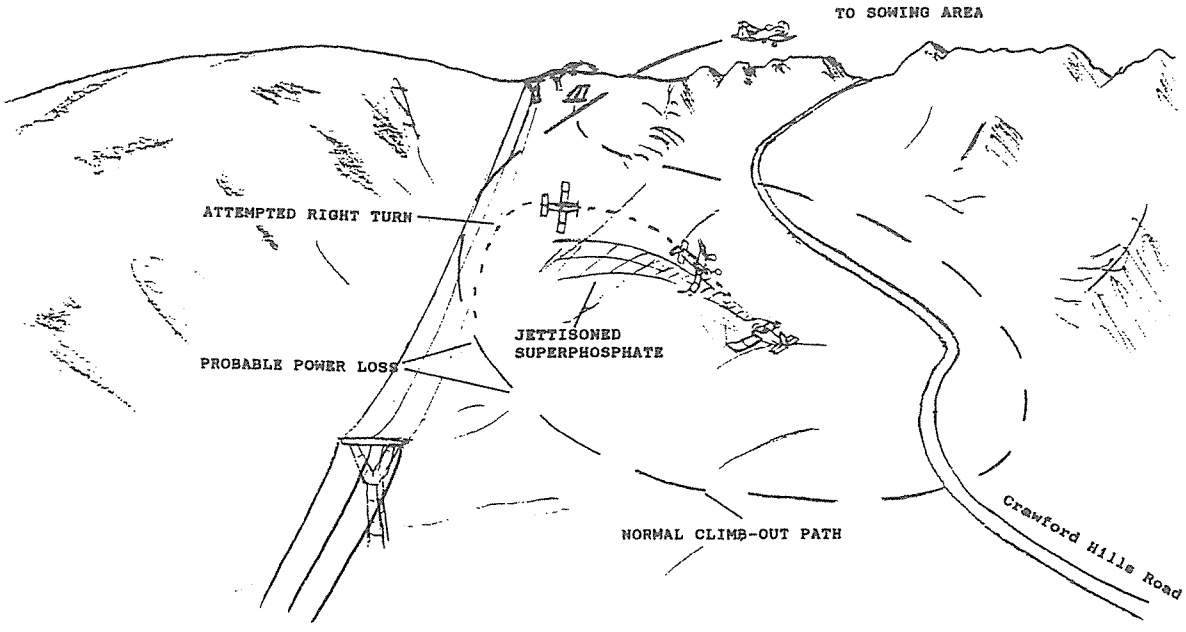

FIGURE 1
Sketch of the probable flight path of ZK-CTO, looking North-East.

1.7 ZK-CTO was refuelled to capacity and subsequent loads reduced nominally from 21cwt (1067kg) to 1 ton (1016kg), as weighed by the loader vehicle. One load was flown as before without incident. On the climb-out with the second load after refuelling, however, witnesses heard the engine of ZK-CTO cut completely for a few seconds then misfire a few times before apparently resuming normal power. The loader driver and the instructor were unable to hear ZK-CTO, but saw it flying towards and across the end of the strip in the normal end-of-procedure-turn position, but much lower than normal and descending towards the southern side of the valley. Superphosphate started to flow from its hopper but apparently at less than full jettison rate. Moments later it collided with the hillside and fire broke out on impact.

1.8 People reached the site within two minutes, but were unable to render assistance to the pilot.

1.9 The right (lower) wing of the aircraft had struck the hillside, causing it to cartwheel to rest upright (See Fig. 1). The wreckage trail converged with the general hillside by about 20°. A curving trail of superphosphate about 200m long led to the wreckage. Some 2/3 of the hopper load remained in the aircraft.

1.10 Examination of the wreckage was not completely conclusive because of fire damage, but no evidence was found of any pre-existing defect or failure of control systems or structure. The hopper lever was in the "jettison" detent. The fuel system integrity or tank selection was not verified. The right wing tank had ruptured during impact, spraying fuel which led to a severe fire. No fuel sample was available.

1.11 The pilot was restrained by a full harness and wore a protective helmet. The severity of the impact, however, made the accident unsurvivable.

1.12 Post-mortem and toxicological investigations showed that pilot incapacitation was not likely.

1.13 The engine was stripped and inspected. No evidence of any pre-impact mechanical failure was found. Magnetos and fuel system components were either tested or inspected. No evidence of abnormal operation was found.

1.14 The bowser on the loader vehicle, used to refuel both aircraft, was inspected. A moderate quantity of water was found in a fuel sample from the main filter drain. Subsequent samples were uncontaminated, as was a sample from the delivery hose. The fuel in the other FU 24 aircraft was uncontaminated. It was not known which aircraft had been refuelled first.

1.15 The superphosphate being sown was reasonably free-running but did contain some lumps. This should not have impeded the aircraft's load jettison, but did cause the amount loaded by the vehicle to vary substantially below the nominal amount because of the grill screen in the vehicle's bucket.

1.16 The loaded mass of the aircraft at take-off could have been up to about 5% above the maximum authorised. It was noted, however, that the take-off was positive and in a normal attitude, before the end of the strip. This indicated that the aircraft performance was not unduly decreased by overloading.

1.17 The critical element in this accident was probably the timing of the power interruption which occurred. Had it been immediately after take-off, a clear path lay ahead down the valley. If it had occurred after the procedure turn was completed, a landing by the airstrip to the north-east should have been possible. It probably occurred, however, when the aircraft was sufficiently far round the right procedure turn for a left turn to the valley to be impracticable because of the position of the power lines and for the airstrip area to be out of reach for a forced landing. The attempted turn right, to the valley, was unlikely to succeed unless the hopper load was jettisoned promptly.

1.18 The failure of the load to jettison in time probably related to a delayed operation of the lever by the pilot, by a few seconds. He was familiar with its operation and had been trained to use it to clear the hopper after each load. No reason for such a delay was evident.

2. FINDINGS

2.1 The student agricultural pilot had received proper training and supervision for the task being undertaken.

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

2.3 The aircraft suffered a temporary loss of engine power at a critical time after take-off.

2.4 The cause of the power loss was not determined, but may have been fuel contamination.

2.5 After the power loss the pilot attempted to turn the aircraft away from hilly terrain at the head of a valley.

2.6 During the turn the aircraft collided with the hillside.

2.7 The hopper load was not jettisoned in time to facilitate the turn.

3. REGULATORY

3.1 Pursuant to Section 14(5) of the Transport Accident Investigation Commission Act 1990 the legal personal representatives of the pilot were invited to avail themselves of the opportunities afforded to them thereunder.

3.2 As a result of representations received the report was amended and amplified to clarify some of the points raised.

3.3 The representations made to the undersigned are not to be taken as an admission of liability on the part of the parties concerned and their statements are without prejudice to their right to act in any way they may consider fit in any proceedings or action which may be based on the events to which this report refers.

12 March 1992

M F DUNPHY
Chief Commissioner