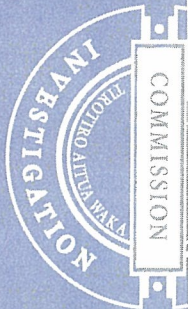


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AIRCRAFT ACCIDENT REPORT

No. 90-003T

CESSNA AGHUSKY T188C ZK-WAS

Near Bunnythorpe

23 October 1990

**Transport Accident Investigation Commission
Wellington - New Zealand**

TRANSPORT ACCIDENT INVESTIGATION COMMISSION

AIRCRAFT ACCIDENT REPORT NO. 90-003T

Aircraft Type, Serial Number and Registration:

Cessna Aghusky T188C,
T18803628T, ZK-WAS

Number and Type of Engines

1 Lycoming IO-720-A1B

Year of Manufacture:

1980

Date and Time:

23 October 1990, 1249 NZST

Location:

2 km east of Bunnythorpe,
Wellington Province

Type of Flight:

Aerial Work, Agricultural

Persons on Board:

Crew: 1

Injuries:

Crew: Serious

Nature of Damage:

Substantial

Pilot in Command's Licence:

Commercial Pilot Licence
(Aeroplane)

Pilot in Command's Age:

41

Pilot in Command's Total Flying Experience:

In excess of 10 000 hours;
6000 on type

Information Sources:

Transport Accident
Investigation Commission
Field Investigation

Transport Accident Investigation Commission
Wellington

Chief Commissioner
Transport Accident Investigation Commission

The attached report summarises the circumstances surrounding the accident involving Cessna Aghusky T188C ZK-WAS near Bunnythorpe, Wellington Province on 23 October 1990 and includes suggested findings.

This report is submitted pursuant to Section 8(2) 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.

9 May 1991
R CHIPPINDALE
Acting Chief Executive

APPROVED FOR RELEASE AS A PUBLIC DOCUMENT

21 May 1991
M F DUNPHY
Chief Commissioner

1. FACTUAL INFORMATION

1.1 The pilot owned and operated his own aerial topdressing and spraying business based at Feilding Aerodrome. On the morning of the accident he had commenced spraying operations at about 0800 hours, and completed a 200 acre spraying contract from an airstrip in the Tuakina Valley before returning to Feilding Aerodrome to spray two loads for a client near Ashurst.

1.2 He reported that his aircraft, ZK-WAS, a developed version of the Cessna Agwagon series, with a 400 HP Lycoming IO 720 engine, performed faultlessly throughout the morning's flying.

1.3 The aircraft was refuelled to full tanks and the pilot commenced a further contract, spraying Hi-Ester 2,4-D herbicide to eradicate thistles from a 400 Ha property about 2km east of Bunnythorpe.

1.4 A number of electrical power transmission lines traversed the area, converging at the nearby substation, and specifically, the 110 000 volt Bunnythorpe - Tuai line crossed one of the large undulating paddocks on the property, in a 372m span, oriented north-east/south-west.

1.5 The pilot, who had sprayed the property on many previous occasions, arranged his runs to pass approximately at right angles beneath the conductors of this span, (i.e. on south-easterly and north-westerly headings) commencing spray coverage from the southern boundary of the property.

1.6 No difficulties were experienced during the first sortie in which the pilot passed beneath the conductors at least six times. The pilot then flew back to Feilding to reload. He subsequently returned to the property with a further load of some 600 litres of herbicide and completed two spray runs, under the conductors, without incident.

1.7 The following run (towards the south-east) involved overflying a solitary poplar, about 45 feet high, and 70 m from the span, growing in a shallow gully which traversed the paddock on the northern side of the span. The pilot recalled that after passing over this tree, he was obliged to lower the aircraft's nose to fly beneath the conductors, prior to pulling up again beyond them, to clear the substantial stand of trees forming the eastern boundary of the paddock.

1.8 He recalled that as the aircraft flew beneath the conductors he felt the tail get "hooked up", and the aircraft was "dragged around". He remembered the aircraft later "hitting a tree" and "going down over a bank" but recalled little else concerning the final stages of the accident sequence.

1.9 Trans Power recorded that at 1249 hours the circuit tripped out on the Bunnythorpe - Tuai line, and then reset. This event correlated with the evident wire strike.

1.10 The transmission lines comprised six individual conductors, three suspended each side of the associated pylons. In the region struck by the aircraft, a few metres north of mid-span, there was approximately 30 feet clearance between the ground and the lowest conductor. The conductors, formed from 19 strands of 2.57 mm diameter copper wire, had an overall diameter of 12.8 mm, and an ultimate tensile strength of 39.5 kn.

1.11 When examined after the accident, the lower span on the western side had a portion of metal skin still wrapped around it which had been torn from the outer leading edge of the right wing of ZK-WAS at impact.

1.12 The middle and lower conductor spans on the eastern side, suspended some 3.5 m apart, also bore evidence of being struck by the aircraft, and "arcing" marks showed that they had been forced into contact with each other.

1.13 Scattered parts from the aircraft lay beneath the span. It was evident that the leading edge of the right wing had struck the western conductor approximately 1250 mm inboard from the tip, which had cut through the wing and aileron, severing the complete outboard section. Part of the right wing root fairing had also been dislodged, indicating that the wing itself had been forced rearwards at this time. The aircraft was fitted with a windscreen wire deflector strip and a deflector cable running from the top of the cockpit to the top of the fin, but this cable had failed 400 mm from its upper attachment, when ZK-WAS collided with the conductors. As a result, (as suspected by the pilot), one of the conductors had severed the upper section of the fin and rudder.

1.14 Following the wire strike, the aircraft had veered to the right and skidded across the brow of the hillside, fracturing the right undercarriage assembly, and the sprayboom installation. After flattening a fence it had loffed through a belt of oak and poplar trees, breaking a 100 mm diameter trunk, while descending to the valley floor and, following a further 60 m ground slide, it had come to rest upright in a line of trees, 370 m south-east of the transmission line. The engine assembly had separated completely from the airframe at the firewall and lay inverted some 4m beyond the aircraft, with the propeller facing towards the wreckage trail.

1.15 The pilot sustained serious back injuries in the accident, and was hospitalised for 16 days.

1.16 Both front legs of the rail-mounted pilot's seat had failed under overload. The pilot was wearing a protective helmet which prevented serious head injury, although the crushable fascia panel bore evidence of a significant impact. The pilot's inertia reel shoulder harness assembly was in the "unlock" mode at the time of the accident, but the pilot recalled that he had earlier tightened his shoulder straps, and considered this action had assisted considerably in reducing the extent of possible injury.

1.17 The pilot considered a factor contributing to the wire-strike may have been wake turbulence remaining in the calm conditions from the spraying run carried out immediately prior to the accident.

21 May 1991

M F DUNPHY
Chief Commissioner

ADDENDUM

AIRCRAFT ACCIDENT REPORT No. 90-003T

Please amend the date and time of the accident to read
24 October 1990 and 1249 NZDT respectively.