



AIRERAFT ACCIDENT REPORT

No. 92-018

**Vickers Armstrong Supermarine Spitfire
Mark XVI**

ZK-XVI

Woodbourne Aerodrome

18 November 1992

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

Price \$10.60 (including G.S.T.)

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TRANSPORT ACCIDENT INVESTIGATION COMMISSION
AIRCRAFT ACCIDENT REPORT No. 92-018

Aircraft Type, Serial Number and Registration: Vickers Armstrong Supermarine Spitfire Mark XVI TB 893 ZK-XVI

Number and Type of Engines: One Packard Merlin 266

Year of Manufacture: 1944

Date and Time: 18 November 1992, 1613 hours NZDT

Location: Woodbourne Aerodrome
Latitude: 41° 31' S
Longitude: 173° 52' E

Type of Flight: Private — Positioning

Persons on Board: Crew: 1

Injuries: Crew: 1 Nil

Nature of Damage: Substantial

Pilot in Command's Licence: Private Pilot Licence (Aeroplane)

Pilot in Command's Age: 54

Pilot in Command's Total Flying Experience: 11211 hours
120 hours on type

Information Sources: Transport Accident Investigation Commission field investigation

Investigator in Charge: Mr D G Graham

1. NARRATIVE

1.1 The historic fighter aircraft was being flown from Wanaka to Auckland where it was to take part in Air Expo 92. A brief landing was planned at Woodbourne aerodrome to refuel.

1.2 Arriving from the west at about 1600 hours, the pilot was cleared to enter the Control Zone direct to Woodbourne and was informed that runway 07 was in use with a surface wind of 090°M, 10 to 15 knots.

1.3 The pilot confirmed with the Tower Controller that the parallel grass runway was serviceable and advised that he would join for a buzz and break to the right. The subsequent landing clearance for "07 grass" included wind information 090°M 12 knots. The wind strength and direction was read by the Controller directly from the indicators in the Tower when he issued the clearance.

1.4 The pilot made a standard approach to grass runway 07, with allowance for the existing light crosswind. He reported that everything appeared normal as the aircraft crossed the threshold but shortly after touchdown an unexpected gust caused a swing to the right which he attempted to correct using rudder and brake. Braking action proved ineffective on the wet grass and the pilot realised he would be unable to regain directional control in time to complete the landing safely.

1.5 He then applied power to commence a go around and straighten the aircraft but was obliged to close the throttle a few seconds later as the aircraft, which had begun to slide on the grass, reached the edge of the asphalt taxiway which crossed grass runway 07 at right angles. The left undercarriage leg collapsed and folded beneath the fuselage and the left wing and propeller struck the sealed surface. The aircraft came to rest on the eastern side of the taxiway, at the edge of runway 07, having swung through 90° to the right.

1.6 An RNZAF rescue/fire crew attended the mishap. Due to the aircraft's proximity to the main runway the aerodrome was closed until 1900 hours while recovery action was completed. The aircraft was lifted onto a cargo loader and transported to the facilities of an aircraft engineering organisation located at the aerodrome.

1.7 Woodbourne Aerodrome has a single paved runway oriented 070°/250°M and two grass runways, oriented 070°/250°M and 100°/280°M respectively. Grass runway 07 has a length of 1425 m and is 60 m wide. Grass runway 10 is 1182 m long and 90 m wide. Both grass runways are crossed about halfway along their length by the sealed taxiway which provides access to the main runway from the Airport Terminal area.

1.8 During the afternoon members of the RNZAF Base Gliding Club were operating on grass runway 10. At the time that ZK-XVI landed on grass runway 07, a Blanik glider and Cessna 172 towplane were positioned on the threshold of runway 10 in readiness for a further flight.

1.9 A gliding instructor seated in the Blanik was watching the windsock at the southern boundary of the aerodrome. He reported that although the wind was favouring runway 10 and was mostly "on the nose" at about 12 to 15 knots, his observation of the movement of the windsock just as ZK-XVI landed suggested a temporary increase in strength to about 15 or 18 knots and a variation in direction to 130°M or 140°M.

1.10 Wheel marks on the grass surface showed that ZK-XVI had touched down, without drift, on the centreline of the grass runway. After a slight bounce and a ground roll of about 100 m the aircraft had followed a curved path to the right in a manner consistent with the pilot's report and witness observations. The aircraft had come to rest on the taxiway approximately 300 m from initial touchdown.

1.11 No continuous recording was available to determine the precise wind speed and direction as ZK-XVI touched down. Some fluctuation in wind strength and direction was to be expected in the prevailing easterly/south-easterly conditions, but at the time of issue of the landing clearance the crosswind on grass 07 was less than 5 knots and was acceptable to the pilot. However a temporary change in direction and strength as reported during the landing could have resulted in a crosswind component from the right of up to 17 knots.

1.12 The Pilot's Notes for the Spitfire Mk II, published by the Air Ministry in 1942, included the following:

"LANDING ACROSS WIND: The aeroplane can be landed across wind but it is undesirable that such landings should be made if the wind exceeds about 20 mph".

1.13 World War II experience proved that the Spitfire, and similar single engined fighter aircraft of the era designed with a narrow track main undercarriage, and castoring tailwheel, were vulnerable to loss of directional control in crosswind conditions. Where possible, operations were arranged to permit take-off and landing into wind.

2. FINDINGS

- 2.1 The pilot was appropriately licensed and had recent experience on type.
- 2.2 The pilot accepted a landing clearance for grass runway 07.
- 2.3 Surface conditions indicated a crosswind from the right on this vector.
- 2.4 At touchdown the aircraft was properly aligned and in the centre of the vector.
- 2.5 During the landing the aircraft developed a swing to the right which the pilot was unable to correct.
- 2.6 The swing resulted from the increased crosswind component caused by an unexpected gust.
- 2.7 Braking action to assist in directional control was ineffective on the wet grass.
- 2.8 Side loads caused the left undercarriage leg to collapse when the aircraft encountered a sealed taxiway which traversed the grass.

11 February 1993

M F DUNPHY
Chief Commissioner

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