

No: 1/88

Ref: 1c

Aircraft type and registration: Chipmunk DHC-1 Mk 22 G-BDID

No & Type of engines: 1 Gipsy Major 10 Mk 2 piston engine

Year of Manufacture: 1952

Date and time (UTC): 22 September 1987 at 1800 hrs

Location: Husbands Bosworth, Leicestershire

Type of flight: Private (pleasure)

Persons on board: Crew — 1 Passengers — 1

Injuries: Crew — 1 (fatal) Passengers — 1 (fatal)

Nature of damage: Aircraft destroyed by fire

Commander's Licence: Private Pilot's licence, Silver 'C' Gliding Certificate

Commander's Age: 26 years

Commander's Total Flying Experience: 77 hours aeroplanes (of which 15 were on type) and gliding experience estimated at about 200 hours.

Information Source: AAIB Field Investigation

The Coventry Gliding Club was running its usual Tuesday evening gliding course using a single tug aircraft and pilot when the Assistant Tugmaster arrived on the site. He decided to bring out a second tug aircraft, G-BDID, and arranged to fly in the rear seat with a recently qualified tug pilot. The precise nature of the flying exercises intended could not be determined as the preflight 'logging-out' system used by the club did not include details of the intended flight.

The aircraft took off from Husbands Bosworth airfield about 1740 hrs for some local flying and was seen to return from the north about 20 minutes later. It flew across the airfield and joined a left hand 'tug type' circuit halfway along the downwind leg. The approach to the airfield had been with power but the engine was heard to be throttled back by the start of the base turn which was commenced at an estimated height of 300 feet.

The shortened downwind leg was flown very close to the airfield, at a distance estimated by one eye-witness to be less than 100 yards from the landing strip. The aircraft was seen to carry out an extremely steep, at least 60°, banked turn onto the base leg almost over the south eastern corner of the airfield. The subsequent base leg was very short probably merging with the final turn which witnesses estimated to be at an angle of bank of 45°. During these turns the pitch attitude of the aircraft was observed to be horizontal.

On completion of the 'U' or 'finals' turn onto the westerly landing direction the nose dropped sharply, the aircraft banked rapidly to the right and its heading turned through about 180° before crashing into the ground some 95 metres inside the airfield boundary.

The surface wind was south-westerly about 10 knots at the time of the accident, the weather was fine and the bright sun was low on the western horizon.

The aircraft struck the ground in a steep nose down attitude, at least 55° below the horizontal with the first impacts being taken on the nose and left wing tip. Propeller rotation carried one blade deep into the ground. The nose structure and wing root fuel tanks were ruptured and the aircraft caught fire. Rescuers fought the fire and managed to extricate the rear seat occupant. It proved impossible to control the fire which eventually consumed much of the cockpit and severely damaged the wings.

Post mortem examination did not reveal any abnormalities in either pilot which might have caused or contributed to the accident.

Examination of the aircraft showed that there had been no mechanical failure in the structure or controls prior to the ground impact and fire and nothing was found which might have constituted a control restriction. The flap actuating system was found to be intact. No evidence was found to indicate that the flaps had been down at impact.

An 'upset' which could have led to the accident was reproduced in a series of simulated approaches in a Chipmunk Mk 22 based at the Royal Aircraft Establishment, Farnborough. The essential features were a tight left turn, starting at about 90 kts, and turning through 180° onto a reciprocal heading. While still in a banked left turn right rudder was applied to produce a left sideslip manoeuvre. After each turn and at an IAS of 45 kts the aircraft consistently flicked rolled to the right, almost onto its back, into an extreme nose down attitude. Recovery action stopped the roll after the aircraft heading had altered about 180° and in that time 300 feet had been lost.

It was observed that the type of tug circuit practised at the club involving both tight turns and side-slipping manoeuvres would require a high standard of skill. While it is not inherently dangerous to fly tight low level circuits clearly the margins for error due to lack of experience or adverse weather conditions are greatly reduced.