AVIATION OCCURRENCE REPORT

STALL - SPIN

DOUGLAS DE NIEN SPARROW HAWK CF-ASQ
GRAND VALLEY (PRIVATE AERODROME), ONTARIO
23 JUNE 1997

REPORT NUMBER A97Ø0103

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Summary

The pilot flew his amateur-built aircraft from his home base at Nobelton, Ontario, to a friend's private aerodrome near Grand Valley to pick up a part for another vintage aircraft that he owned and flew. After getting the part and having a brief conversation with his friend, he took off towards the north-west. He climbed to about 500 feet above ground level (agl), reversed course to the left, and flew a low pass at 75 to 100 feet agl over the departure runway towards the south-east, a manoeuver he had carried out on previous take-offs. About half way along the 1,800 foot runway, the aircraft climbed to 300 to 350 feet agl then pitched nose down and rolled to the right. It descended in a steep, nose-down, right-banked attitude and struck the ground near the south-east end of the runway after rotating through 270 degrees. There was no engine sound as the aircraft descended. The aircraft came to rest on the nose and right wing where it struck the ground. The aircraft struck the ground with little or no forward speed, and there was no wreckage trail. The pilot was fatally injured.

Ce rapport est également disponible en français.

Other Factual Information

The weather at the time of the accident was as follows: high scattered cloud, visibility 25 miles, light winds from the west, temperature 27°C, and dew point 15°C.

Records indicate that the aircraft was equipped and maintained in accordance with existing regulations for amateur-built aircraft. Construction of the single seat biplane aircraft was completed by the pilot in 1970. It was powered by a 100-horsepower Continental O-200-A aircraft engine and had a maximum authorized gross weight of 1,050 pounds. Total airframe time was 1,177 hours.

The pilot was certified and qualified in accordance with existing regulations. He had flown a total of 1,248 hours and had flown nearly all of the 1,177 hours accumulated on the Sparrow hawk aircraft. There was no evidence that incapacitation or physiological factors affected the pilot's performance.

There was no evidence of pre-impact failure of the aircraft airframe or flight controls that would contribute to the accident, nor was there evidence of internal failure of the aircraft engine or any of its components. The engine rotated freely, and there was adequate lubrication. The emergency locator transmitter (ELT) was found with the function switch secured in the OFF position with a piece of styrofoam.

The aircraft fuel tank was destroyed on impact. There was no evidence of fuel at the accident site and examination of the fuel lines and carburettor did not reveal any trapped fuel. There were no fuel records found for the aircraft. The pilot purchased fuel in two five-gallon (23 litre) fuel containers at the aerodrome where he based the aircraft and fuelled the aircraft himself. He last purchased 46 litres of fuel 11 May 1997. There was one fuel container full of fuel and one container empty at the hanger where he stored the aircraft. Records show the aircraft flew 2.0 hours on 11 May 1997 and another total of 1.5 hours on three short flights, plus the time it flew on the day of the accident. The aircraft fuel tank capacity was 18 Imperial gallons (82 litres).

Analysis

The wreckage distribution, impact angle, and lack of forward speed indicate that the aircraft was in a stalled condition when it struck the ground. Because of the pilot's familiarity with the aircraft, it would seem unlikely that he would stall the aircraft on climb out, unless something unexpected occurred.

Based on there being no evidence of fuel found at the accident site or during the detailed examination of the engine, and the lack of engine noise as the aircraft descended, it is concluded that the engine stopped because of fuel exhaustion during the climb. The nose-high attitude of the aircraft, along with the characteristic high aerodynamic drag of the biplane would have resulted in a rapid loss of airspeed when engine power was lost. The pilot may have banked the aircraft aggressively to manouevre for a landing on the aerodrome, and the wing stalled. The aircraft was at too low an altitude for the pilot to affect recovery from the stall before the aircraft struck the ground.

Findings

1. The aircraft was equipped and maintained in accordance with existing regulations and approved procedures.

2. The pilot was certified and qualified to conduct the flight.

3. There was no evidence of fuel found at the accident site or during the examination of the aircraft engine.

4. It was concluded that the aircraft engine stopped because of fuel starvation during the climb at low altitude.

5. The aircraft stalled at too low an altitude for the pilot to effect recovery.

Causes and Contributing Factors

Following an engine stoppage caused by fuel exhaustion, the aircraft stalled at too low an altitude for the pilot to recover.

This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board, consisting of Chairperson Benoît Bouchard, and members Maurice Harquail, Charles Simpson and W.A. Tadros, authorized the release of this report on 06 March 1998.