

ACCIDENT

Aircraft Type and Registration:	Reims Cessna F172M Skyhawk, G-BAEY	
No & type of Engines:	1 Lycoming O-320-E2D piston engine	
Year of Manufacture:	1972	
Date & Time (UTC):	18 April 2006 at 1053 hrs	
Location:	Conington Airfield, Peterborough	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - None
Injuries:	Crew - None	Passengers - N/A
Nature of Damage:	Damage to propeller tips and nosewheel, buckling of fuselage skin and cockpit floor	
Commander's Licence:	Commercial Pilot's Licence	
Commander's Age:	35 years	
Commander's Flying Experience:	485 hours (of which 90 were on type) Last 90 days - 22 hours Last 28 days - 7 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot and further enquiries by the AAIB	

Synopsis

The pilot reported that shortly before touchdown the aircraft pitched up unexpectedly. He responded by pushing forward on the control yoke. The aircraft landed on its nosewheel, causing the nose landing gear to collapse, bucking of the fuselage skin and cockpit floor, and damage to the propeller. There was no evidence of a pre-existing mechanical defect that would have resulted in the unexpected manoeuvre or of any weather conditions that might have affected the flight adversely.

History of the flight

The pilot intended to conduct a flight for the purpose of aerial photography, for which he would carry a photographer as passenger. Because he had not flown

a single piston-engine aircraft since September 2005, he was required beforehand to carry out three takeoffs and landings in order to meet the requirement to have recent experience before carrying a passenger¹. Accordingly, he planned to fly, on his own, a series of circuits and landings on the tarmac Runway 28 at Conington, where the aircraft was based.

Footnote

¹ A pilot shall not operate an aeroplane or helicopter carrying passengers as pilot-in-command or co-pilot unless that pilot has carried out at least three takeoffs and three landings as sole manipulator of the controls in an aeroplane or helicopter of the same type or class to be used in the preceding 90 days. In order to meet these experience criteria a pilot may fly with a flight instructor, providing that the instructor does not influence the controls at any time.

The flight was observed from the ground by another pilot who flew regularly for the aerial photography organisation, which referred to him as the “Senior Pilot”. He and other witnesses on the ground reported that the first circuit was uneventful until the landing, during which the aircraft bounced several times before going around into another circuit. The aircraft pilot recalled that at the end of this circuit, following a stable final approach, he flared the aircraft for landing. During this manoeuvre the nose pitched up unexpectedly to above the normal landing attitude and in order to prevent the aircraft from stalling he pushed forward on the control yoke to lower the nose. Shortly afterwards the aircraft touched down heavily on its nosewheel, causing the nose landing gear to collapse partially and allowing the tips of the propeller blades to make contact with the runway. Despite this damage the uninjured pilot was able to taxi the aircraft to a parking position at the eastern end of the airfield.

The Senior Pilot reported that, immediately after the accident, the pilot of G-BAEY had expressed concern that there may have been a control restriction which resulted in his being unable to manoeuvre the aircraft satisfactorily. He appeared re-assured, however, when told that the aircraft had flown without incident since its most recent scheduled maintenance. In his statement to the AAIB the pilot commented that a sudden and unexpected change of wind direction and strength may have caused the nose of the aircraft to pitch up suddenly.

Pilot’s recency

The accident pilot had not flown a single-engined piston aircraft within the previous 90 days. His recent flying experience had been accrued in a jet transport aircraft simulator.

Damage to aircraft

The nose landing gear was displaced laterally and vertically in a manner consistent with a high rate of descent on touchdown. Upward displacement of the instrument panel had trapped the shafts of both control yokes, the position of which corresponded to a nose-down elevator input². Ripples in the skin of the fuselage and upward displacement of the cabin floor indicated a very heavy landing.

Aircraft information

The Cessna 172 is a high wing single engine aircraft with a tricycle landing gear. In common with most aeroplanes it is designed to touch down on its main wheels. The nose landing gear provides steering and stability but is not designed to absorb the first impact of landing. The maximum crosswind for takeoff or landing demonstrated by the manufacturer was 15 kt.

The organisation responsible for maintaining G-BAEY had no record of any pre-existing mechanical defects that would have contributed to the accident. Following an annual inspection the aircraft had returned to service on 12 April 2006, six days before the accident, and had flown uneventfully until the accident.

Meteorological information

The surface wind reported by the AFIS at the time of the accident was from 260° at 15 kt with visibility of 10 km or greater and scattered cloud at 4,000 ft. The pilot reported that the actual wind was varying between 260° and 290° at 15 kt. This would have resulted in a maximum crosswind component of approximately 5 kt.

Footnote

² The control yokes are mounted on horizontal shafts which run through the instrument panel ahead of each pilot. The shafts rotate to transmit aileron inputs and move fore and aft to transmit elevator inputs.

The local topography is not noted to produce unusual surface winds or turbulence and no weather conditions were reported which would have adversely affected the safe operation of this type of aircraft. The runway surface was dry.

Previous occurrences

A review of previous AAIB bulletins revealed several similar occurrences, in which approaches became unstable shortly before landing and attempts to lower the nose abruptly resulted in damage to the nose landing gear and propellers. These occurrences were not confined to a particular design of aircraft.

Conclusion

The available evidence indicates that the aircraft was serviceable prior to the accident. It is unlikely that the reported weather conditions affected the flight adversely. The aircraft touched down on its nosewheel, subjecting the nose landing gear to loads in excess of those for which it was designed and causing it to fail. The shafts of both control yokes were trapped when transmission of these loads through the firewall caused deformation of the cockpit floor and instrument panel.

Discussion

Safety Sense Leaflet 1e – *Good Airmanship*, published by the CAA, contains the following advice under the heading *Landing*:

a. A good landing is a result of a good approach. If your approach is bad, make an early decision and go-around. Don't try to scrape in.

b. Plan to touch down at the right speed, close to the runway threshold, unless the field length allows otherwise. Use any approach guidance (PAPI/ VASI) to cross-check your descent.

c. Go-around if not solidly 'on' in the first third of the runway, or the first quarter if the runway is wet grass.

If an approach or landing appears to be unstable, a go-around reduces the immediate danger of flight near to the ground and provides an opportunity to reassess the conditions before making another attempt. A pilot who is experiencing consistently unsatisfactory approaches and landings should seek the assistance of a qualified flying instructor who is familiar with the particular type to be flown.