



Air Accident Investigation Unit Ireland

FACTUAL REPORT

ACCIDENT
Cessna 172S, G-THYB
Cork Airport

12 June 2018



**An Roinn Iompair
Turasóireachta agus Spóirt
Department of Transport,
Tourism and Sport**

Foreword

This safety investigation is exclusively of a technical nature and the Final Report reflects the determination of the AAIU regarding the circumstances of this occurrence and its probable causes.

In accordance with the provisions of Annex 13¹ to the Convention on International Civil Aviation, Regulation (EU) No 996/2010² and Statutory Instrument No. 460 of 2009³, safety investigations are in no case concerned with apportioning blame or liability. They are independent of, separate from and without prejudice to any judicial or administrative proceedings to apportion blame or liability. The sole objective of this safety investigation and Final Report is the prevention of accidents and incidents.

Accordingly, it is inappropriate that AAIU Reports should be used to assign fault or blame or determine liability, since neither the safety investigation nor the reporting process has been undertaken for that purpose.

Extracts from this Report may be published providing that the source is acknowledged, the material is accurately reproduced and that it is not used in a derogatory or misleading context.

¹ **Annex 13:** International Civil Aviation Organization (ICAO), Annex 13, Aircraft Accident and Incident Investigation.

² **Regulation (EU) No 996/2010** of the European Parliament and of the Council of 20 October 2010 on the investigation and prevention of accidents and incidents in civil aviation.

³ **Statutory Instrument (SI) No. 460 of 2009:** Air Navigation (Notification and Investigation of Accidents, Serious Incidents and Incidents) Regulations 2009.



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In accordance with Annex 13 to the Convention on International Civil Aviation, Regulation (EU) No 996/2010 and the provisions of SI No. 460 of 2009, the Chief Inspector of Air Accidents on 12 June 2018, appointed Mr Kevin O'Ceallaigh as the Investigator-in-Charge to carry out an Investigation into this Accident and prepare a Report.

Aircraft Type and Registration:	Cessna C172S G-THYB	
No. and Type of Engines:	1 x Lycoming IO-360-L2A	
Aircraft Serial Number:	172S10569	
Year of Manufacture:	2006	
Date and Time (UTC)⁴:	12 June 2018 @ 12.27 hrs	
Location:	Cork Airport (EICK)	
Type of Operation:	General Aviation	
Persons on Board:	Crew - 1	Passengers - Nil
Injuries:	Crew - Nil	Passengers - Nil
Nature of Damage:	Substantial	
Commander's Licence:	Student operating under Instructor's Authorisation	
Commander's Age:	26 years	
Commander's Flying Experience:	25 hours, all of which were on type	
Notification Source:	The Airport Duty Manager at Cork Airport	
Information Source:	The Airport Duty Manager at Cork Airport AAIU Pilot Report Form submitted by the Student Pilot and the Flight Instructor	

⁴ **UTC:** Co-ordinated Universal Time. All timings in this report are quoted in UTC; Local time is UTC + 1 hour.

SYNOPSIS

Having just completed a local flight consisting of circuits at Cork Airport with a Flight Instructor, the Student Pilot was conducting his second solo flight, which also consisted of circuits at the airport. While attempting to land during the second circuit, the aircraft bounced on the runway a number of times and then landed on the runway, nose wheel first. This resulted in the partial collapse of the nose landing gear, with consequent damage to the aircraft engine and propeller. The Student Pilot exited the aircraft uninjured. There was no fire.

NOTIFICATION

The Investigation was first notified of the accident by the Airport Authority Duty Manager at Cork, and then by the Student Pilot's training organisation. Following discussion with the AAIU, it was agreed that the aircraft would be removed from the active runway at Cork. The Airport Authority subsequently advised the Investigation that there had been no delay to traffic at the airport.

1. FACTUAL INFORMATION

1.1 History of the Flight

The aircraft departed EICK for a local circuit detail with an Instructor acting as Pilot in Command (PIC), and a Student Pilot undergoing flight instruction. Following two circuits flown by the Student Pilot under the Instructor's supervision, the Instructor determined that the Student Pilot was of a satisfactory standard to complete his second solo flight. The aircraft taxied to the ramp and the Instructor disembarked. The aircraft departed with the Student Pilot as PIC for a solo flight, which was to consist of two circuits at EICK. The Student Pilot successfully completed the first circuit to runway (RWY) 34. During the landing phase of the second circuit, the aircraft was seen to bounce on the runway during the touchdown and briefly become airborne again. The Student Pilot continued with the landing. However, following a number of bounces the aircraft impacted the runway, nose wheel first. The impact caused a partial collapse of the nose landing gear and the aircraft's propeller blades struck the runway surface. The Student Pilot maintained directional control on the runway and brought the aircraft to a stop. The Student Pilot exited the aircraft uninjured. There was no fire.

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1.2 Pilots' Statement

The Student Pilot and the Instructor submitted an AAIU Report Form, which described the sequence of events leading up to the accident. The Student Pilot stated that he completed two dual circuits and one solo circuit. During the next solo circuit, he positioned the aircraft for a landing on RWY 34 at EICK. He said that the wind was "*down the runway*". He stated that he considered his speed to be a little fast at 72 knots (kts), but decided to continue the approach. He stated that following the first bounce, he tried to control the aircraft but "*the bounces got worse*". The aircraft came to a stop on the runway after the nose landing gear collapsed. On the AAIU Report Form, the Student Pilot assessed the cause of the accident as "*Touchdown too fast then failure to go-around following initial bounce*".



The Instructor stated that he saw the attempted landing. It was his opinion that the aircraft appeared to land slightly fast and that it bounced on landing. He noted that the Student Pilot continued with the landing rather than conducting a go-around. He stated that the aircraft then commenced what he considered to be a series of pilot-induced oscillations (PIOs), which included a number of bounces. The aircraft then impacted the runway in a nose down attitude and the nose wheel struck the runway first. The nose landing gear partially collapsed and the aircraft came to a stop on the runway.

The Registered Training Facility (RTF) informed the Investigation that go-around procedures are an integral part of flight training from an early stage at the RTF, and demonstration of competency in this area is mandatory before a student is authorised for solo flight.

1.3 The Aircraft

The Cessna 172S (Skyhawk) is a four-seat, single-engine, high-wing aircraft manufactured by the Cessna Aircraft Company. It has a fixed, tricycle undercarriage. It is powered by a Lycoming IO-360-L2A piston engine with a McCauley two-bladed, variable pitch, constant speed propeller. The aircraft was manufactured in 2006 and its Airworthiness Review Certificate (ARC) was valid until November 2020. There was no evidence of mechanical failure prior to, or during the accident flight. The Cessna 172S Pilot's Operating Handbook states that the aircraft stall speed with zero flaps is 53 kts and with full flaps is 48 kts.

1.3.1 Injuries

No injuries were reported to the investigation.

1.3.2 Damage to Aircraft

The aircraft nose wheel partially collapsed during the landing (**Photo No. 1**), causing damage to the nose gear strut and mounting points.



Photo No. 1: The aircraft on the runway after the landing.

The propeller struck the runway during the landing, causing the blade tips to separate on impact (**Photo No. 2**). The blade tips were recovered from the runway approximately 30 metres behind the aircraft's final position (**Photo No. 3**). The Instructor informed the Investigation that the engine was shock-loaded during the accident sequence.



Photo No. 2: The propeller with missing blade tips



Photo No. 3: The recovered blade tips

1.4 Meteorological Information

The wind velocity at the time of the accident was 340/10 kts. This corresponds with the Student Pilot's observation that the wind was down the runway. There was broken cloud with a base height of 2,500 ft, and no significant weather that would have affected the flight had been reported in the vicinity of the airport.

1.5 Personnel

The flight was the Student Pilot's second solo flight. The Student Pilot was undergoing training for a Private Pilot Licence (Aeroplane) with an RTF⁵. The Irish Aviation Authority (IAA) informed the AAIU that as such, the Pilot did not require a Pilot Licence, as he would be released to fly under the authorisation of an instructor of the RTF. This is in accordance with EASA⁶ Part FCL.020, which states '*A student pilot shall not fly solo unless authorised to do so and supervised by a flight instructor*'.

The Instructor was in possession of a valid Commercial Pilots Licence (CPL) and Flight Instructor Rating issued by the IAA.

The flying experience of the Student Pilot and Instructor, prior to the accident flight, is set out in **Table No. 1**.

Personal Details:	Student Pilot	Instructor
Licence:	Nil (Instructors licence)	CPL
Total all Types:	25 hours (incl 1 hour solo)	11,400 hours
Total on Type:	25 hours (incl 1 hour solo)	2,500 hours

Table No. 1: Student Pilot / Instructor Flying Experience

⁵ A change from RTF to Designated Training Organisation (DTO) was in process, with interim arrangements in place to allow existing RTFs that had made a DTO declaration by 8 April 2018, to continue operating without interruption until such time as a transfer to DTO had taken place. The RTF had made such a declaration.

⁶ EASA: European Union Aviation Safety Agency.



2. AAIU COMMENT

2.1 General

The Student Pilot was conducting a solo flight as part of a course of instruction. As such, he was operating under the authority of the Instructor's licence when flying solo in the aircraft. He had just completed two dual circuits with the Instructor on board and was due to conduct a number of solo circuits. During the approach to the runway following the second circuit, the Student Pilot estimated his speed to be '*a little fast*' at 72 kts. It is probable that the additional speed contributed to the sequence of events as the aircraft was still at flying speed following the initial bounce on the runway and the beginning of the PIOs described by the Instructor.

The conduct of solo flight in the early stages of attaining a qualification as a pilot is a challenging environment for a student. There can be a considerable level of stress associated with being given the responsibility for safely conducting an entire flight without the presence of an instructor. It is also a time when a student is at a low level of experience, particularly relating to any sort of abnormal situation. Both the Instructor and the Student Pilot noted that, with the benefit of hindsight, it would have been a more prudent decision to execute a go-around and return for a subsequent landing.

- END -

In accordance with Annex 13 to the Convention on International Civil Aviation, Regulation (EU) No. 996/2010, and Statutory Instrument No. 460 of 2009, Air Navigation (Notification and Investigation of Accidents, Serious Incidents and Incidents) Regulation, 2009, the sole purpose of this investigation is to prevent aviation accidents and serious incidents. It is not the purpose of any such investigation and the associated investigation report to apportion blame or liability.

A safety recommendation shall in no case create a presumption of blame or liability for an occurrence.

Produced by the Air Accident Investigation Unit

AAIU Reports are available on the Unit website at www.aaiu.ie



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