Australian Government
Australian Transport Safety Bureau

ATSB TRANSPORT SAFETY INVESTIGATION REPORT
Aviation Occurrence Investigation – AO-2007-060
Preliminary

Collision with terrain
Uaroo Station, Pilbara, WA
15 November 2007
Cessna Aircraft Company 172M, VH-TCS

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Released in accordance with section 25 of the *Transport Safety Investigation Act 2003*

Published by: Australian Transport Safety Bureau
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ISBN and formal report title: see 'Document retrieval information' on page iii.

DOCUMENT RETRIEVAL INFORMATION

Report No.	Publication date	No. of pages	ISBN
AO-2007-060	16 January 2008	9	978-1-921165-67-2

Publication title

Collision with terrain - Uaroo Station, Pilbara, WA, 15 November 2007, Cessna Aircraft Company 172M, VH-TCS

Prepared by

Australian Transport Safety Bureau
PO Box 967, Civic Square ACT 2608 Australia
www.atsb.gov.au

Reference No.

Jan2008/Infrastructure 50432

Abstract

Late in the afternoon on 15 November 2007, a Cessna Aircraft Company 172M aircraft, registered VH-TCS, took off from Uaroo Station, in the Pilbara region of WA, for a local flight under the visual flight rules. A witness driving in a northerly direction along the North West Coastal Highway reported seeing a column of ‘dark smoke’ in the direction of the property between about 1700 and 1730 Western Daylight-saving Time.

Witnesses discovered the aircraft wreckage on the side of a hill located about 500 m from the property landing strip on the morning of 17 November 2007. The aircraft had been destroyed by impact forces and a post-impact fire. The pilot, who was the sole occupant, was fatally injured.

The investigation is continuing.

THE AUSTRALIAN TRANSPORT SAFETY BUREAU

The Australian Transport Safety Bureau (ATSB) is an operationally independent multi-modal bureau within the Australian Government Department of Infrastructure, Transport, Regional Development and Local Government. ATSB investigations are independent of regulatory, operator or other external bodies.

The ATSB is responsible for investigating accidents and other transport safety matters involving civil aviation, marine and rail operations in Australia that fall within Commonwealth jurisdiction, as well as participating in overseas investigations involving Australian registered aircraft and ships. A primary concern is the safety of commercial transport, with particular regard to fare-paying passenger operations.

The ATSB performs its functions in accordance with the provisions of the *Transport Safety Investigation Act 2003* and Regulations and, where applicable, relevant international agreements.

Purpose of safety investigations

The object of a safety investigation is to enhance safety. To reduce safety-related risk, ATSB investigations determine and communicate the safety factors related to the transport safety matter being investigated.

It is not the object of an investigation to determine blame or liability. However, an investigation report must include factual material of sufficient weight to support the analysis and findings. At all times the ATSB endeavours to balance the use of material that could imply adverse comment with the need to properly explain what happened, and why, in a fair and unbiased manner.

Developing safety action

Central to the ATSB's investigation of transport safety matters is the early identification of safety issues in the transport environment. The ATSB prefers to encourage the relevant organisation(s) to proactively initiate safety action rather than release formal recommendations. However, depending on the level of risk associated with a safety issue and the extent of corrective action undertaken by the relevant organisation, a recommendation may be issued either during or at the end of an investigation.

The ATSB has decided that when safety recommendations are issued, they will focus on clearly describing the safety issue of concern, rather than providing instructions or opinions on the method of corrective action. As with equivalent overseas organisations, the ATSB has no power to implement its recommendations. It is a matter for the body to which an ATSB recommendation is directed (for example the relevant regulator in consultation with industry) to assess the costs and benefits of any particular means of addressing a safety issue.

About ATSB investigation reports: How investigation reports are organised and definitions of terms used in ATSB reports, such as safety factor, contributing safety factor and safety issue, are provided on the ATSB web site www.atsb.gov.au.

FACTUAL INFORMATION

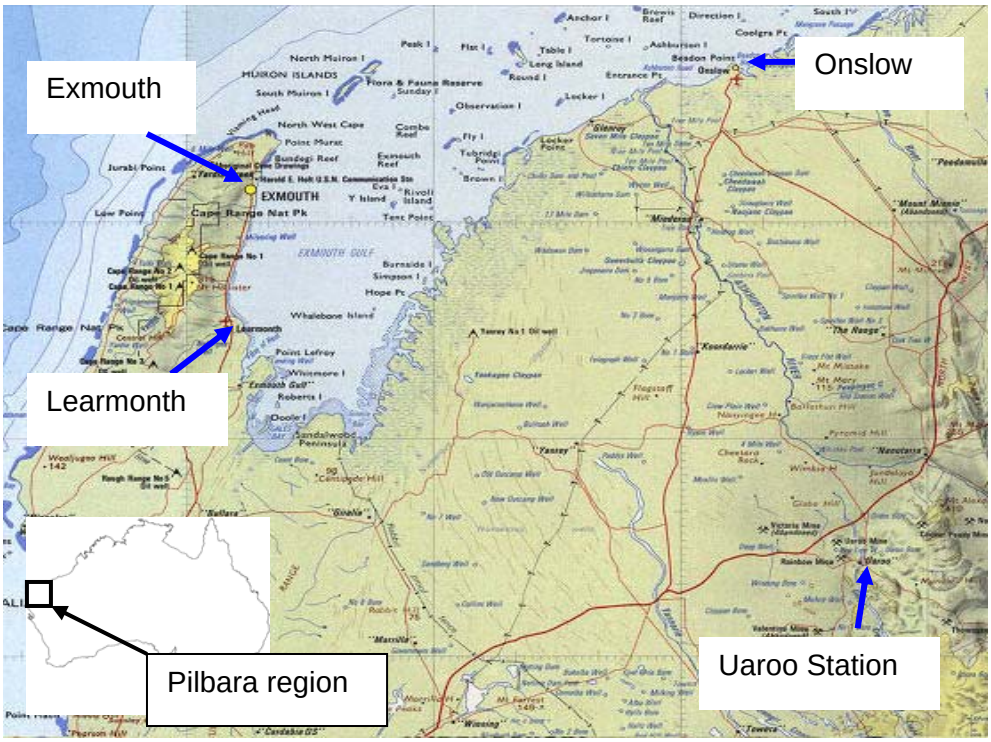
Note: *The information contained in the preliminary report is derived from initial investigation of the occurrence. Readers are cautioned that there is the possibility that new evidence may come to light that alters the circumstances as depicted in this report.*

History of the flight

Late in the afternoon on 15 November 2007, a Cessna Aircraft Company 172M aircraft, registered VH-TCS, took off from Uaroo Station, in the Pilbara region of WA (Figure 1), for a local flight under the visual flight rules. A witness driving in a northerly direction along the North West Coastal Highway subsequently reported seeing a column of 'dark smoke' in the direction of the property between about 1700 and 1730 Western Daylight-saving Time[1].

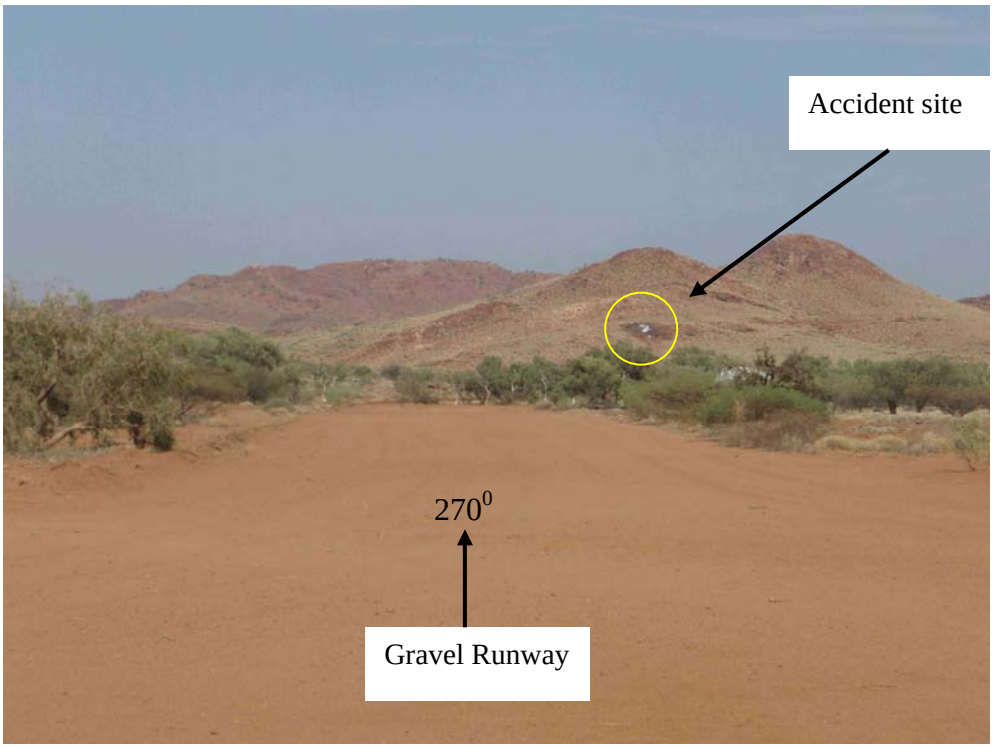
On the morning of 17 November 2007, the aircraft wreckage was discovered on the side of a hill, located about 500 m from the property landing strip (Figure 2). The aircraft had been destroyed by impact forces and a post-impact fire. The pilot, who was the sole occupant, was fatally injured.

Figure 1: Accident location



1 The 24-hour clock is used in this report to describe the local time of day, Western Daylight-saving Time, as particular events occurred. Western Daylight-saving Time is Coordinated Universal Time (UTC) + 9 hours.

Figure 2: Accident location – view to the west



Pilot information

The pilot held an Australian private pilot (aeroplane) licence, issued in 1984 by the Civil Aviation Safety Authority (CASA). He was appropriately endorsed to fly the C172M aircraft type and held a valid CASA Class 2 Aviation Medical Certificate, which included a restriction for the pilot to wear distance vision correction.

Aircraft information

The aircraft was a Cessna Aircraft Company C172M, manufactured in 1974, powered by a Lycoming 150 hp engine and fitted with a fixed-pitch propeller. The pilot had acquired the aircraft in November 2005. The last periodic maintenance inspection had been carried out on 1 September 2006, and the aircraft Maintenance Release was valid to 31 August 2007. The last maintenance to be conducted on the aircraft was on 23 November 2006 and comprised an engine oil and filter change and some minor maintenance.

There was no evidence that the pilot had refuelled the aircraft prior to the accident flight and, because of the level of destruction, the aircraft fuel tank quantity at the time of the accident could not be determined. However, an intense post-impact fire and significant quantities of fuel residue at the accident site indicated that there was sufficient fuel on board the aircraft to ensure continued flight.

Airstrip information

The airstrip at the property included two gravel runways aligned 195/015 degrees and 1,100 m (3,600 ft) long, and 270/090 degrees and 400 m (1,300 ft) long.

Wreckage and impact information

A line of hills, which ran in a north-south direction, was located to the west of the property airstrip (Figure 3). The tops of those hills ranged in height from about 400 to 500 ft (120 to 150 m) above the level of the airstrip. A gap in the line of hills was located about 50 m to the south of the accident site.

Figure 3: Accident location

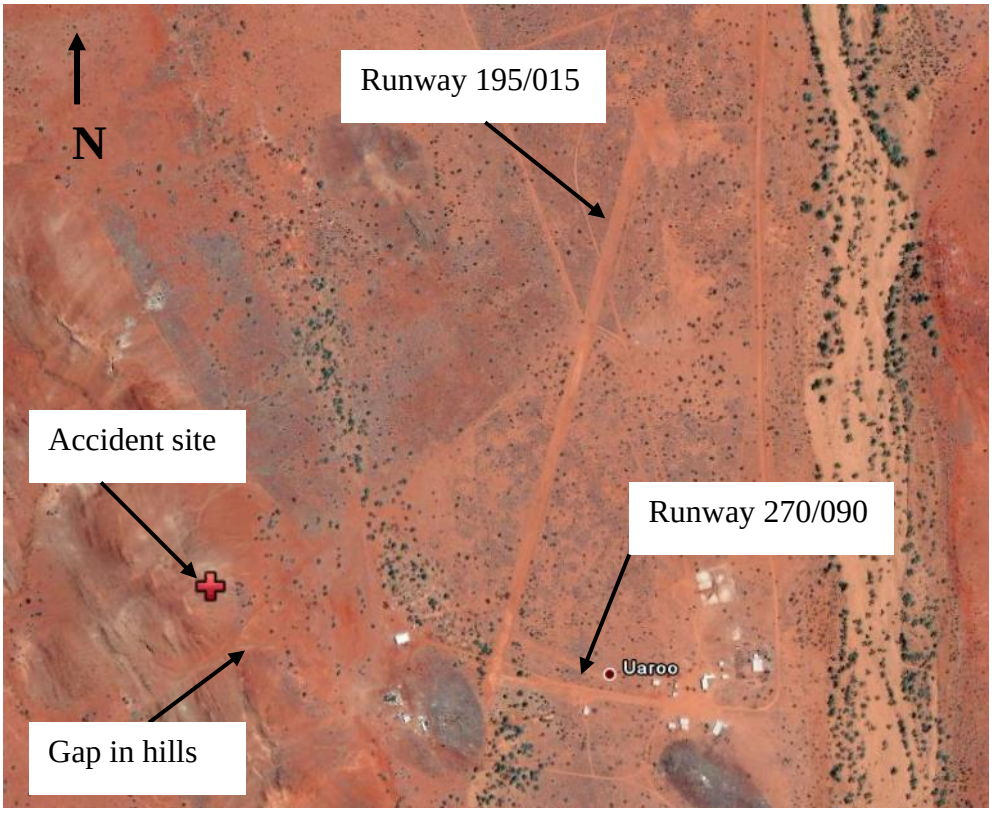


Image courtesy of Google Earth™

The aircraft impacted the hillside, heading in a westerly direction, at an attitude of about 3 degrees nose-down, 10 degrees left wing-low and with a slight left yaw, coming to rest 29 m from the initial point of impact (Figures 4 and 5). The aircraft impacted the hillside at a height of 150 to 200 ft (45 to 60 m) above the level of the airstrip. The hillside slope was at an angle of about 30 degrees.

An examination of the aircraft engine and propeller indicated that the engine was operating at high power at the time of impact.

Impact forces and the subsequent fire resulted in disintegration of the right wing, cabin and cockpit of the aircraft. The left wing, which had come to rest on the right side of the accident site, retained some integrity. The empennage, although damaged by impact forces, was largely unaffected by the post-impact fire. Impact forces had compressed the remains of the rear fuselage and lower forward fin and

tailplane and caused binding and restriction of movement of the rudder and elevator control surfaces.

Flight control cable run continuity to the ailerons, rudder and elevator was established from the forward part of the empennage and the remains of the inboard wing sections.

Figure 4: Accident site – westerly view in direction of impact

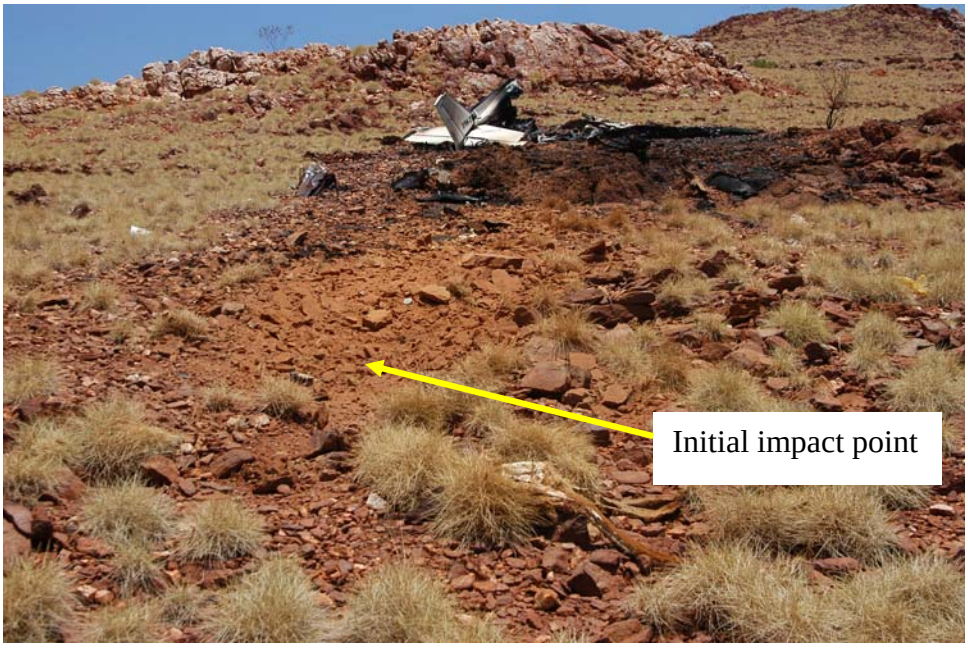


Figure 5: Accident site – easterly view towards property buildings

Meteorological information

The Bureau of Meteorology recorded weather observations for the Pilbara region on 15 November 2007 included fine conditions, 1 to 4 oktas of cloud cover[2], westerly winds ranging from 20 to 25 knots (37 to 46 kph) and temperatures ranging from 23 to 41 degrees Celsius. Meteorological conditions recorded on the adjoining property indicated fine conditions, 5 oktas of cloud cover, moderate west-north-westerly winds and temperatures up to about 42 degrees. Last light was at 1939.

Witnesses reported that local conditions on the day of the accident were fine, very hot with strong south-westerly winds, with large, intense, willy-willies[3] occurring throughout the day. In addition, the investigation team noted a number of very large, intense, willy-willies throughout the days while conducting the on-site investigation.

Further investigation

The investigation is continuing and will include:

- further technical examination of the aircraft engine, propeller and other recovered components
- operational and meteorological issues
- a review of the maintenance conducted on the aircraft.

2 Cloud cover is measured in eights or oktas.

3 Willy-willies (also known as dust devils or dust whirls) may be defined as revolving masses of air resulting from local atmospheric instability, such as that caused by intense heating of the air mass adjacent to the ground by the sun on a hot day.