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Australian Transport Safety Bureau

Aircraft control issue involving a Liberty XL-2, VH-CZS

at Camden Airport, New South Wales, on 29 October 2015

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Addendum

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What happened

On 29 October 2015, a pilot who held a restricted pilot licence, and a flight instructor, prepared for a training flight at Camden Airport, New South Wales. The plan was to conduct circuits at Camden, in a Liberty XL-2 aircraft, registered VH-CZS (CZS). The pilot conducted a pre-flight inspection of the aircraft, with no defects found.

At about 1140 Eastern Daylight-saving Time (EDT), after the pilot had completed the normal pre-flight checks, and received the required air traffic control clearances, the aircraft took off for the first circuit. The pilot completed two normal circuits with touch-and-go landings on runway 06, and climbed out on runway heading for the third circuit.

During the initial climb, the pilot felt backward pressure on the control stick, and selected the electric pitch trim to a slightly nose down position. The aircraft was then in a stable climb, at an airspeed of 75 to 80 kt. As the aircraft passed about 500 ft above mean sea level (AMSL), the pilot retracted the flaps.

Passing about 700 ft, the pilot commenced a climbing turn onto the downwind leg. As the pilot rolled the wings level on downwind, the aircraft was still about 100 ft below the circuit altitude of 1,300 ft AMSL. The pilot therefore continued a shallow climb with the wings level, at an airspeed of about 95 kt. Suddenly, the control stick came back towards the pilot, and the aircraft pitched to a nose-up attitude.

The pilot pushed forward on the stick with both hands, to a full forward position. They also asked the instructor to adjust the pitch trim to a more nose-down position, to try to return the aircraft to a level attitude. The pilot stated there was something wrong and handed control of the aircraft to the instructor, who also assessed that there was a control issue. The aircraft descended rapidly in a nose-up attitude, and the aircraft then pitched nose-down.

The aircraft descended to about 700 ft, and the pilot broadcast a Mayday[1] to the Camden tower controller advising them of a control issue. The controller asked whether they could make it back to land on runway 06, and the pilot replied ‘negative’. The pilot and instructor elected to conduct a precautionary landing in a paddock ahead of the aircraft. The instructor sighted powerlines and overflew them before extending full flap and landing in the paddock.

During the landing roll, the aircraft collided with two fences and came to rest in a stand of trees. The pilot and instructor were uninjured, and the aircraft sustained substantial damage (Figure 1).

Engineering inspection

An engineer conducted a post-accident inspection of the aircraft, and did not find any obvious defect that may have contributed to the control issue.

[1] Mayday is an internationally recognised radio call for urgent assistance.

Figure 1: Accident site

Source: Insurance assessor

Pilot comments

The pilot and instructor provided the following comments:

- Once they had moved the trim to the full nose-down position, the instructor elected to leave it there and not try to move it, in case it made controlling the aircraft more difficult.
- The pilot initially assessed there was a problem with the stabilator, as it felt as if something had jammed in it.
- They assessed that it was preferable to land with a slight tailwind in the paddock, than to attempt to turn the aircraft and land into wind.
- At the commencement of the flight, the aircraft was about 20 kg below the maximum take-off weight and within the normal centre of gravity range.
- The aircraft flight manual included a checklist for partial control failure or malfunction, but they did not have sufficient time to access the manual during the incident. The checklist advised the pilot to check the trim setting and the circuit breakers, to control the aircraft with power and whichever controls were operational, and to land as soon as possible. The instructor also stated that they did not have time to check the circuit breakers, which were on the right side of the instrument panel.
- The instructor reported that as well as the pitch, or elevator, control issue, the aileron, or roll control felt overly sensitive. When the instructor applied light pressure to roll the aircraft to the left, it was overly responsive. This influenced the decision to land in the paddock ahead, rather than attempt to turn the aircraft into wind or to return to land on the runway.

Operator comments

The operator assessed that the way the pilots used the trim may have led to the control difficulties.

Safety message

The pilot and instructor both commented that their communication during the incident was very good, and that played a key role in getting the aircraft safely to the ground. Faced with an abnormal situation, the pilots communicated effectively, and collaborated to share the workload.

General details

Occurrence details

Date and time:	29 October 2015 – 1200 EDT	
Occurrence category:	Accident	
Primary occurrence type:	Aircraft control – Control issues	
Location:	Camden Airport, New South Wales	
	Latitude: 34° 02.42' S	Longitude: 150° 41.23' E

Aircraft details

Manufacturer and model:	Liberty Aerospace Incorporated XL-2
Registration:	VH-CZS
Serial number:	0090
Type of operation:	Flying training – dual

About the ATSB

The Australian Transport Safety Bureau (ATSB) is an independent Commonwealth Government statutory agency. The ATSB is governed by a Commission and is entirely separate from transport regulators, policy makers and service providers. The ATSB's function is to improve safety and public confidence in the aviation, marine and rail modes of transport through excellence in: independent investigation of transport accidents and other safety occurrences; safety data recording, analysis and research; and fostering safety awareness, knowledge and action.

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 operations involving the travelling public.

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.

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

It is not a function of the ATSB to apportion blame or determine liability. At the same time, 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.

About this report

Decisions regarding whether to conduct an investigation, and the scope of an investigation, are based on many factors, including the level of safety benefit likely to be obtained from an investigation. For this occurrence, a limited-scope, fact-gathering investigation was conducted in

order to produce a short summary report, and allow for greater industry awareness of potential safety issues and possible safety actions.