Australian Government

Australian Transport Safety Bureau

Loss of control during landing, involving a Diamond DA40, VH-CGT

Bankstown Airport, New South Wales, 16 May 2014

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Published by: Australian Transport Safety Bureau
Postal address: PO Box 967, Civic Square ACT 2608
Office: 62 Northbourne Avenue Canberra, Australian Capital Territory 2601
Telephone: 1800 020 616, from overseas +61 2 6257 4150 (24 hours)
Accident and incident notification: 1800 011 034 (24 hours)
Facsimile: 02 6247 3117, from overseas +61 2 6247 3117
Email: atsbinfo@atsb.gov.au
Internet: www.atsb.gov.au

Addendum

Page	Change	Date

Loss of control during landing, involving a Diamond DA40, VH-CGT

What happened

VH-CGT in paddock

On 16 May 2014, a Diamond Aircraft Industries DA40 aircraft, registered VH-CGT (CGT) departed Bankstown Airport, New South Wales, for the local training area. On board the aircraft were an instructor and student.

The primary focus of the dual exercise was for the student to refine the maintenance of aircraft directional control during stalls and incipient spin recovery, and also to monitor attitude and directional control consistency during landing.

Source: Operator

After the satisfactory completion of the upper air sequences, CGT was returned to the airport, with the student conducting the landing. The instructor reported the landing was satisfactory, but the student was still not flaring[1] the aircraft sufficiently prior to touchdown. To consolidate previous extra dual instruction to address this difficulty, he authorised the student to conduct four practice touch and go solo circuits.

At the time, the weather was CAVOK [2] and the wind variable at about 3 knots. Runway 29[3] was the duty runway, with runway 29 L, a left circuit pattern, as the runway nominated for circuits.

At about 0924 Eastern Standard Time (EST), the student commenced the first solo circuit. The initial, crosswind and downwind legs of the circuit were reported as normal. After the turn onto base, the airspeed was reduced to about 80 knots with take-off flap set[4] and as intended, the turn onto final was between 600-700 ft above ground level (AGL). The plan was to maintain 70 knots on final approach, reduce power if necessary to obtain that airspeed, and select landing flap when required. The student was confident the approach was going well, however also held the mindset, that a go-around would be initiated if at any time it was felt that the acceptable parameters had been exceeded and the approach unstable.

The approach was steeper than usual, and as the student commenced the flare, it became evident that the change of aircraft attitude during this phase had been premature, leaving the aircraft too high above the ground, in a nose high, low airspeed configuration. Recognising that the aircraft was too high, the student initiated a go-around. Full power was applied, and almost immediately the aircraft tail struck the runway. Minimal, if any, adjustment had been made to the aircraft to compensate for the effect of the increase to full power.

Within seconds, the aircraft rolled rapidly to the left and stalled, resulting in the left wingtip striking the ground (Figure 1). The aircraft then turned further left through about 100 degrees, and the wings levelled. It continued in this direction, crossing over taxiway Bravo, then through a wire perimeter fence, coming to rest about 25 m later, in the long grass of an open paddock (Figure 2).

The student, began to shut down the aircraft, and contacted the Chief Flying Instructor (CFI) by mobile phone. He instructed the student to completely shut down, and exit the aircraft. When an

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1 Final nose-up pitch of landing aeroplane to reduce rate of descent to approximately zero at touchdown.

2 Ceiling and visibility OK, meaning that the visibility, cloud and present weather are better than prescribed conditions. For an aerodrome weather report, those conditions are visibility 10 km or more, no significant cloud below 5,000 ft or cumulonimbus cloud and no other significant weather within 9 km of the aerodrome.

3 At Bankstown Airport, runway 29 consists of Runway 29 L (left), 29 C (centre) and 29 R (right).

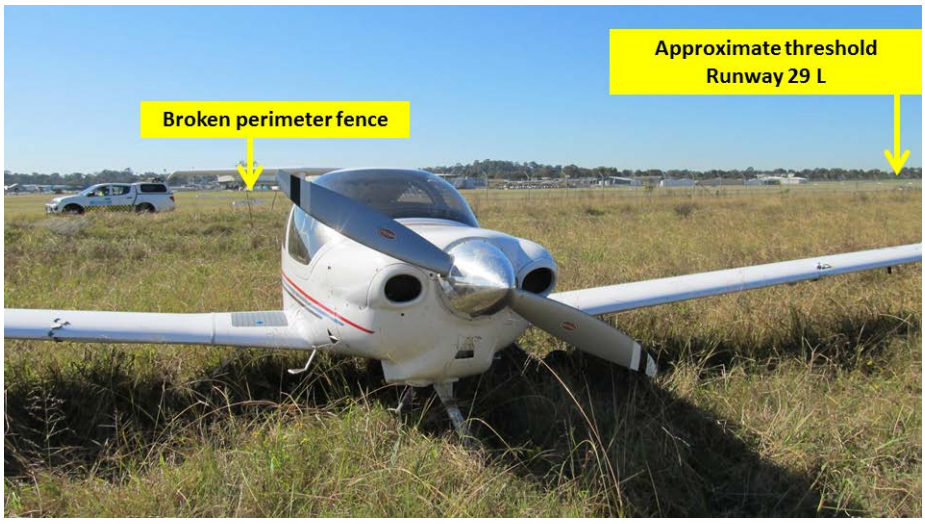
4 This is the first stage of flap for this aircraft, displayed on the flap selector as ‘take-off flap’

airport officer arrived on the scene, the student was still in the aircraft. Emergency services arrived shortly after. The student was not injured; however, the aircraft was substantially damaged.

Figure 1: Left wingtip damage

Source: Operator

Figure 2: VH-CGT approximate path of travel



Source: Operator

Student pilot experience and comments

The student commenced flying training in January 2014, and had accrued about 60 hours of dual and 10 hours of solo flight time. All experience had been gained in DA40 aircraft.

When flying the solo circuit, the student reported being satisfied with the aircraft's profile and configuration, up until commencing the flare. Realising the aircraft was too high, a go-around was initiated. The student recalled applying full power, then diverging slightly to the left of the runway, to allow any following traffic behind CGT to be able to continue with an approach and landing.

However when the tail struck the ground, the student reported feeling totally overwhelmed, and recalls little else except the aircraft coming to a stop in the paddock.

Flying school management comments

The student was in the second year of the Professional Pilot Program. During this year, students commence their flight training in the DA40.

The student had been receiving extra dual tuition to improve competency with the maintenance of directional control of the aircraft during some flight sequences. The following points regarding the accident were also noted:

- During the accident circuit, after turning final the student was high on the approach, and the approach was unstable.
- The student commenced a go-around from a low height, with the aircraft at a high pitch attitude and low airspeed
- The tail strake contacted the runway as the engine power was increased, probably distracting the student

As this was the first serious accident involving the School's DA40 aircraft, the intent is to learn from it, and prevent similar occurrences. The school has reviewed all relevant procedures, and has initiated several measures (further outlined in the Safety Action section) to support this approach.

Garmin G1000 data download

Data from the Garmin G1000 electronic flight instrument system (EFIS) fitted to CGT was provided to the ATSB.

The G1000 provides all primary instrument and engine parameter information, but not information regarding the position of the flight controls.

An overview of the information extracted from the accident approach is as follows:

Table 1: Garmin 1000 data extract

Position	Altitude (ft) Elevation 19 ft	Airspeed (knots)	Pitch attitude (°)	Rate pf descent (fpm)
Turn onto final	700	80	-7	800-900
Final	400	80	-8	1000
	300	70	-8	800-900
	50	70	-4	
	25	45	+8	
Go-around power	22	35	+12	

Safety action

Whether or not the ATSB identifies safety issues in the course of an investigation, relevant organisations may proactively initiate safety action in order to reduce their safety risk. The ATSB has been advised of the following proactive safety action in response to this occurrence.

Flying School management

As a result of this occurrence, the Flying School management has advised the ATSB that they are taking the following safety actions:

Training

- It is recommended that during initial training and consolidation training, the correct sequence of events for go-arounds, from any height or position in the circuit be reinforced, with the

emphasis on the correct values of pitch attitude and airspeed, and the application of engine power

- There will be greater emphasis placed on stabilised approaches
- There will be greater emphasis placed on appropriate control input during go-around
- Greater emphasis to be placed on:
  a. The Human Factors of timely and correct decision making within the theory program
  b. And in the practical flying phase

Operations Manual update

- This emphasis will be reflected in the wording of the mandatory go-around conditions, in Section E of the Operations Manual

Future Assessment, Selection and Monitoring Processes for the Professional Pilot Program

- The school will enhance the assessment process for applicants to the Professional Pilot Program, by implementing 5 hours of flight screening. This phase must be passed before applicants are formally accepted into the program.
- Students in the program, whose progress is unsatisfactory, currently undergo a review process to make a case for continuing within the flying program. The school have now implemented a risk matrix to make this process more objective and transparent.

Safety message

A go-around, the procedure for discontinuing an approach to land, is a standard manoeuvre performed when a pilot is not completely satisfied that the requirements for a safe landing have been met. The need to conduct a go-around may occur at any point in the approach and landing phase, but the most critical go-around is one initiated close to the ground.

This incident highlights the importance of conducting a go-around as soon as landing conditions appear unfavourable.

The following link provides some useful information on go-arounds: *Aviation safety explained – Go-arounds* www.casa.gov.au/scripts/nc.dll?WCMS:STANDARD:1001:pc=PC_91481.

General details

Occurrence details

Date and time:	16 May 2014 – 0924 EST	
Occurrence category:	Accident	
Primary occurrence type:	Loss of control	
Location:	Bankstown Airport	
	Latitude: 33° 55.47' S	Longitude: 150° 59.30' E

Aircraft details

Manufacturer and model:	Diamond Aircraft Industries DA40CS	
Registration:	VH-CGT	
Serial number:	40.1108	
Type of operation:	Flying Training - solo	
Persons on board:	Crew – 1	Passengers – Nil
Injuries:	Crew – Nil	Passengers – Nil
Damage:	Substantial	

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 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.

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.