SOUTH AFRICAN CIVIL AVIATION AUTHORITY

*Section/division* **Accident and Incident Investigations Division** Form Number: CA 12-57

# LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL

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| **Reference Number** | CA18/2/3/10553 | | | | | | | | | | |
| **Classification** | Accident | | | **Date** | 25 February 2025 | | | **Time** | 0935Z | | |
| **Type of Operation** | Training (Part 141) | | | | | | | | | | |
| **Location** | | | | | | | | | | | |
| Place of Departure | Lanseria International Airport (FALA), Gauteng Province | | | Place of Intended Landing | | | | Lanseria International Airport (FALA), Gauteng Province | | | |
| Place of Occurrence | On Runway 07 at Lanseria International Airport, Gauteng Province | | | | | | | | | | |
| GPS Co-ordinates | Latitude | 25° 56'22.89" S | | Longitude | 027° 55'32.07" E | | | Elevation | 4521ft | | |
| **Aircraft Information** | | | | | | | | | | | |
| Registration | ZS-TDI | | | | | | | | | | |
| Make; Model; S/N | Diamond, DA-42 (Serial Number: 42-200) | | | | | | | | | | |
| Damage to Aircraft | Substantial | | | Total Aircraft Hours | 2632.5 | | | | | | |
| **Pilot-in-command** | | | | | | | | | | | |
| Licence Type | Commercial Pilot Licence | | | Gender | Male | | | Age | 34 | | |
| Licence Valid | Yes | Total Hours | | 1130 | Total Hours on Type | | | 35.2 | | | |
| Total Hours 30 Days | 2.8 | | | Total Flying on Type Past 90 Days | 18.1 | | | | | | |
| **Pilot in Training** | | | | | | | | | | | |
| Licence Type | Commercial Pilot Licence | | | Gender | Male | | | Age | 23 | | |
| Licence valid | Yes | Total Hours | | 1646.8 | Total Hours on Type | | | 0.7 | | | |
| Total Hours 30 days | 80.2 | | | Total Flying on Type Past 90 days | 0.7 | | | | | | |
| **People On-board** | 2+0 | **Injuries** | 0 | **Fatalities** | 0 | **Other (on ground)** | 0 | | | | |

**What Happened**

On Tuesday morning, 25 February 2025, a flight instructor (FI) and a pilot on-board a Diamond DA42 Twin Star aircraft with registration ZS-TDI took off on a type conversion training flight from Lanseria International Airport (FALA) in Gauteng province with the intention to return to the same airport. The type conversion training flight comprised a series of touch-and-go landings (circuits). The flight was conducted under visual meteorological conditions (VMC) by day and under the provisions of Part 141 of the Civil Aviation Regulations (CAR) 2011 as amended.

The first circuit was completed uneventfully. During the second circuit whilst on downwind leg approximately 2 nautical miles (nm) and parallel to Runway 07 threshold, the air traffic control (ATC) officer instructed the crew to shorten their approach due to an inbound scheduled commercial aircraft which was on final approach for Runway 07.

The FI, who had already heard the broadcast from the air traffic control tower on frequency 124.00 Megahertz (MHz), acknowledged the instruction and initiated a short approach for Runway 07. He instructed the pilot flying to configure the aircraft for landing and advised him to reduce power to increase the rate of descent and to plan for a flapless landing.

During this phase, the engine power setting was reduced, triggering the low-power audible warning horn. According to the pilot, the engine power was reduced to idle setting. As they anticipated this warning, the crew disregarded the horn and continued with the approach without lowering the landing gear. The FI reported that they relied on each other to identify any omissions during the landing checklist review.

Whilst the aircraft was in the flare with the low-power warning horn still audible, the crew realised that the landing gear had not been lowered. The FI called for gear extension, but it was too late. The aircraft landed on the runway with the landing gear retracted; as a result, both propellers struck the ground. The aircraft slid on the runway for approximately 800 metres (m) before it stopped on the left side of the runway's centreline. The aircraft sustained damage to both propellers, engine cowlings and the underside of the fuselage. The crew disembarked from the aircraft unassisted and without injury.


**Figure 1:** The aircraft after it had come to a stop. (Source: Pilot)

Low Engine Power Warning – Audible Sound (Source: DA42 Flight Manual)

*"Should one engine lever be placed in a position below approximately 20% while the landing gear is retracted, a warning horn sounds to alert the pilot that the landing gear is retracted. If installed a CHECK GEAR caution is*

*indicated on the PFD additionally. The same warning appears if the flaps move into position LDG (fully extended) while the gear is retracted."*

According to the crew, the aircraft engine power was retarded to idle power setting during approach for landing.

Aircraft Performance

Pre-landing Checklist (Source: Pilot's Operating Handbook (POH)

*Downwind, latest base leg checks:*

- *Flaps: Applicable position*
- *Gear: Confirm 3 green lights for down and locked.*
- *Landing gear light: ON*

*On final, when landing is assured:*

*FINAL CHECKS:*

- *Flaps: LDG*
- *Gear: Confirm 3 green lights for down and locked.*
- *Landing gear light: ON*

The FI only noticed that the landing gear was not deployed during the landing flare whilst close to the ground (runway).

Crew Resource Management

The FI stated that they depended on each other during their checklist review and actioning. This lack of defined roles and mutual verification led to a breakdown in standard operating procedures by the Approved Training Organisation as per their training procedures manual.

**Findings**

1. Man

1.1. The FI had a Commercial Pilot Licence (CPL) (Aeroplane) that was initially issued by the Regulator (SACAA) on 12 December 2020. The licence renewal was conducted on 12 December 2024 with an expiry date of 31 January 2026.

1.2. The FI's Class 1 aviation medical certificate was issued on 26 November 2024 with an expiry date of 30 November 2025. The medical certificate was endorsed with the following restrictions: TML (limited period of validity of the medical certificate – 12 months), VDL (valid only with correction for defective distance vision), SSL (special restrictions as specified), corrective lenses to be worn during flight and hypertension protocol.

1.3. The FI had a total of 1130 flying hours of which 18.1 hours were accumulated on the aircraft type. His licence was endorsed as a Grade 2 flight instructor, and the aircraft type was endorsed on his licence.

1.4. The pilot (on training) had a Commercial Pilot Licence (CPL) (Aeroplane) that was initially issued by the Regulator on 2 May 2021. The licence renewal was conducted on 5 April 2025 with an expiry date of 30 March 2026.

1.5 The pilot's Class 1 aviation medical certificate was issued on 18 March 2025 with an expiry date of 31 March 2026. The medical certification was endorsed with the following restrictions: VDL (valid only with correction for defective distance vision).

1.6 The pilot had a total of 1646.8 flying hours of which 0.7 hours were accumulated on the aircraft type. His licence was endorsed as a Grade 2 instructor.

2. Machine

2.1. The aircraft had a valid Certificate of Airworthiness (C of A) that was issued by the Regulator on 18 February 2015 with an expiry date of 28 February 2026. The C of R was issued to the present owner on 1 March 2007.

2.2. The latest mandatory periodic inspection (MPI) of the aircraft was conducted and certified on 4 February 2025 after which a Certificate of Release to Service (CRS) was issued on 14 February 2025 at 2620.6 airframe hours with an expiry date of 13 February 2026 or at 2720.6 airframe hours, whichever occurs first. The aircraft had a total of 2632.5 hours at the time of the accident. It had accumulated 88.1 airframe hours since the last MPI.

3. Environment

3.1. Good weather conditions prevailed at the time of the flight.

4. Mission

4.1 The flight crew disregarded the low-power audible warning during approach for landing and omitted to extend the landing gear. The low-power warning horn was functioning properly as specified in the POH and it transmitted an early warning to alert the crew about the retracted landing gear.

The crew were both experienced instructors; they relied on each other during the final approach checklist review and actioning of duties without a clear task division or verbal confirmation. As a result, the landing gear was not confirmed down and locked, and the landing checklist was not completed.

**Probable Cause(s)**

The pilots omitted to extend the landing gear during the landing phase.

**Contributing Factor(s)**

- High workload and time pressure due to the ATC's request to fly a shorten approach for landing.
- The crew disregarded the warning horn in the aircraft.
- Inadequate Crew Resource Management (CRM): lack of defined roles and mutual verification of checklist action items led to a breakdown in standard operating procedures.

| **Safety Action(s)** |
| --- |
| None. |
| **Safety Message** |
| None. |
| **About this Report** |
| *The decision to conduct a limited investigation is based on factors including whether the cause is known and the evidence supporting the cause is clear, the level of safety benefit likely to be obtained from an investigation and that will determine the scope of an investigation. For this occurrence, a limited investigation has been conducted, and the Accident and Incident Investigations Division (AIID) has relied on the information submitted by the affected person/s and organisation/s to compile this limited report. The report has been compiled using information supplied in the initial notification, as well as from follow-up desktop enquiries to bring awareness of potential safety issues to the industry in respect of this occurrence, as well as possible safety action/s that the industry might want to consider in preventing a recurrence of a similar occurrence.*<br><br>*All times given in this report are Coordinated Universal Time (UTC) and will be denoted by (Z). South African Standard Time is UTC plus 2 hours.* |
| ***Purpose*** |
| *In terms of Regulation 12.03.1 of the Civil Aviation Regulations (CAR) 2011 and ICAO Annex 13, this report was compiled in the interest of the promotion of aviation safety and the reduction of the risk of aviation accidents or incidents, and not to apportion blame or liability.* |
| **Disclaimer** |
| *This report is produced without prejudice to the rights of the AIID, which are reserved.* |

**This report is issued by:**

**Accident and Incident Investigations Division**
**South African Civil Aviation Authority**
**Republic of South Africa**