

LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL

Reference Number	CA18/2/3/10382						
Classification	Accident	Date	27 October 2023	Time	1030Z		
Type of Operation	Private (Part 94)						
Location							
Place of Departure	Oudtshoorn Airport (FAOH), Western Cape Province		Place of Intended Landing	Oudtshoorn Airport (FAOH), Western Cape Province			
Place of Occurrence	Runway 22 at Oudtshoorn Airport (FAOH), Western Cape Province						
GPS Co-ordinates	Latitude	33° 36'2.55" S	Longitude	022° 11'20.95" E	Elevation	1073 ft	
Aircraft Information							
Registration	ZU-TFA						
Make; Model; S/N	Blackshape/Rossouw JJ V.B-560 (Serial Number: BPU011-13)						
Damage to Aircraft	Substantial			Total Aircraft Hours	295.6		
Pilot-in-command							
Licence Type	Commercial Pilot Licence (CPL)		Gender	Male		Age	57
Licence Valid	Yes	Total Hours	6125.0		Total Hours on Type	102.7	
Total Hours 30 Days	17.3		Total Flying on Type Past 90 Days	4.1			
People On-board	2 + 0	Injuries	0	Fatalities	0	Other (on ground)	0
What Happened							
<p>On 27 October 2023, an instructor and a pilot on-board a Blackshape aircraft with registration ZU-TFA took off on a conversion flight from Oudtshoorn Airport (FAOH), Western Cape province, to the local general flying area (GFA) with the intention to return to FAOH. The flight was conducted under visual flight rules (VFR) by day and under the provisions of Part 94 of the Civil Aviation Regulations (CAR) 2011 as amended.</p> <p>The pilot flying stated that the flight to the GFA was uneventful. They conducted three circuits before making a full stop landing. Upon their return from the GFA whilst backtracking on Runway 22, the instructor (who was seated at the rear seat) wanted to show that the flap indication is not the same between the front and rear cockpit control panel. As the instructor turned the key to activate the rear cockpit control panel, the landing gears retracted which caused the propeller blades to strike the ground, and one of the propeller blades separated from the propeller hub. The aircraft skidded on its nose for approximately 5 metres (m) before it stopped in the middle of the runway. Thereafter, the pilot switched off the master switch, and both occupants disembarked from the aircraft. The aircraft was substantially damaged; none of the occupants was injured.</p>							

Post-accident, the pilot stated that the aircraft did not have squat switches (an electrical switch mounted on one of the landing gear struts) that detect if the aircraft is on the ground. When the rear cockpit control panel is activated, the system overrides the front cockpit gear selection (which was in the DOWN position). The instructor was not aware that the gear selection was UP (in the UP position).



Figure 1: The front view of the aircraft after the accident. (Source: Operator)



Figure 2: View of the landing gear after the accident. (Source: Operator)



Figures 3 and 4: Red circles indicate front and rear cockpit control switches. (Source: Operator)

The aircraft did not have a squat switch feature (on the undercarriage); thus, it is possible to retract landing gear whilst the aircraft is on the ground.

The rear cockpit also had a gear lever (see Figure 4). A key has to be turned to activate the rear cockpit control panel. When the rear cockpit control panel is activated, it overrides the front cockpit.

Description of rear cockpit gear selector (Source: Blackshape/Rossouw JJ V.B-560 Maintenance Manual)

In the rear cockpit, a mode selector is located, which can be rotated by using a key. Three different modes can be selected: OFF / PASSENGER / TRAINING. In the OFF position, the flaps and gear controls and indications of the rear cockpit are disabled. In the PASSENGER position, the flaps and gear controls are still disabled, but EFIS12 and indication systems of the rear cockpit are available.

When the mode selector is in TRAINING position, all the rear cockpit indications (EFIS, flaps, gear) and controls (flaps, gear) are available.

Section 9 - Supplement 1 REAR COCKPIT(attached to the Airplane Flight Manual of the Blackshape BS 115) states: *“the MODE selector position must be set on the ground before the engine is started. After the mode has been set, the key must be removed immediately. Changing the mode is not allowed during flight. The mode selector key should be in OFF or PASSENGER mode when carrying persons other than crew members. For training activities, it should be in in TRAINING mode”.*

The mode selector’s key was rotated during the flight, which was not in line with the manufacturer’s procedures.

Findings

1. The instructor was initially issued a Commercial Pilot Licence (CPL) on 3 December 2013. His licence revalidation was issued on 22 July 2023 with an expiry date of 31 July 2024. His Class 1 medical certificate was issued on 26 June 2020 with an expiry date of 31 December 2023 with a restriction to wear corrective.
2. The pilot was initially issued a Commercial Pilot Licence (CPL) on 22 October 2009. His licence was reissued on 24 November 2022 with an expiry date of 30 November 2023. His Class 1 medical certificate was issued on 2 August 2023 with an expiry date of 31 August 2024 with no restrictions.
3. The last mandatory periodic inspection (MPI) on the aircraft was conducted on 18 October 2023 at 290.8 hours. The aircraft was flown a further 4.8 hours after the said inspection.
4. The Authority to Fly (ATF) was initially issued on 6 October 2021. The latest ATF had an expiry date of 31 October 2024.
5. The Certificate of Registration (C of R) was issued to the present owner on 26 March 2014.
6. Fine weather conditions prevailed at the time of the flight. The weather did not have a bearing to this accident.
7. The rear cockpit gear lever was in the UP position, and the front cockpit gear lever was in the DOWN position. When the rear cockpit control panel was activated, it overrode the front cockpit; and with the gear selector in the UP position, this resulted in the landing gears retracting during a demonstration of the flap indication when the aircraft was being backtracked.

8. The mode selector key was rotated during the landing roll, which was not in line with the manufacturer's procedures. The key was not removed as recommended by the manufacturer.
Probable Cause(s)
Inadvertent retraction of the landing gear during a demonstration of the flap indication whilst the aircraft was being backtracked.
Contributing Factor(s)
Disregard of the manufacturer's instruction which required the removal of the rear cockpit key.
Safety Action(s)
None.
Safety Message
To avoid injuries and damage to property, the landing gear micro switch (squat switch) should be installed to this aircraft to avoid inadvertent retraction of landing gear when the aircraft is on the ground.
About this Report
<i>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 desk top 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.</i>
<i>All times given in this report are Co-ordinated Universal Time (UTC) and will be denoted by (Z). South African Standard Time is UTC plus 2 hours.</i>
Purpose
<i>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.</i>
Disclaimer
<i>This report is produced without prejudice to the rights of the AIID, which are reserved.</i>

**This report is issued by:
Accident and Incident Investigations Division
South African Civil Aviation Authority
Republic of South Africa**