SOUTH AFRICAN CIVIL AVIATION AUTHORITY

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

LIMITED ACCIDENT INVESTIGATION REPORT

Reference Number	CA18/2/3/10166				
Classification	Accident	**Date**	28 May 2022	**Time**	0800Z
Type of Operation	Private (Part 91)				
Location					
Place of Departure	Lynedoch Private Airfield, Eastern Cape Province	Place of Intended Landing	Cape Town International Aerodrome (FACT), Western Cape province		
Place of Occurrence	50m left of Runway 07 at Lynedoch Private Farm, Eastern Cape Province				
GPS Co-ordinates	Latitude	32˚30'40.16" S	Longitude	26˚00'06.92" E	Elevation	2 647 feet
Aircraft Information					
Registration	ZS-PTE				
Model/Make	Beechcraft King Air 200 (Serial Number: BB-1184)				
Damage to Aircraft	Substantial	Total Aircraft Hours	8 108.9		
Pilot-in-command					
Licence Type	Commercial Pilot Licence (CPL)	Gender	Male	Age	30
Licence Valid	Yes				
Total Hours on Type	136.1	Total Flying Hours	2 506.1		
People On-board	2+2	Injuries	1	Fatalities	0	Other (on ground)	0

What Happened

On Saturday morning, 28 May 2022, two crew members comprising a pilot-in-command and a co-pilot, accompanied by two passengers on-board a Beechcraft King Air 200 with registration ZS-PTE took off from Lynedoch Private Airfield near Baviaans River in the Eastern Cape province, with the intention to land at Cape Town International Aerodrome (FACT). The co-pilot was also type-rated for the aircraft. The flight was conducted under instrument flight rules (IFR) by day, and the flight plan was filed with FACT. Clear weather conditions prevailed at the time of the flight. The flight was conducted under the provisions of Part 91 of the Civil Aviation Regulations (CAR) 2011 as amended.

The pilot stated that on Wednesday, 25 May 2022, the crew took off from FACT to Lynedoch Private Airfield with two passengers on-board and landed safely at the airfield. The two passengers disembarked the aircraft. A while later, the same crew took off again on a flight to Port Elizabeth

International Aerodrome (FAPE) to refuel the aircraft. They then stayed overnight in Port Elizabeth. This flight was also uneventful. On Saturday morning, 28 May 2022, the pilots took off from FAPE to Lynedoch Private Airfield for the return leg to FACT. They landed at Lynedoch Private Airfield to pick-up the same two passengers. After loading the baggage, pre-flight checks followed by the pre-take-off checks were conducted.

The pilot-in-command stated that during the take-off run, the power was set for take-off at 1800 feet/pounds (lbs) of torque (TG) whilst the aircraft was still stationary with the brakes on. The flaps were configured for take-off/approach. Thereafter, the pilot-in-command released the brakes and proceeded with the take-off roll on Runway 07. The aircraft continued with the take-off roll and the co-pilot made a 60 knots (kt) call. During this time, the aircraft rolled onto an uneven surface, which caused the aircraft to bounce and, as a quick resolve to prevent the nose wheel from slamming down hard on the ground, the pilot applied a slight back pressure on the control column. Following the bounce, the aircraft landed on its main wheels. Shortly thereafter, the aircraft experienced another unexpected bounce and was airborne in a high-nose attitude, and soon after, descended back onto the runway and veered off to the left-side. The pilot-in-command had the back pressure still applied, and he did not push the control column forward to make the wheels stick on the ground. This resulted in a premature take-off. To prevent the aircraft from veering off, the pilot applied the right rudder to bring the aircraft back on the runway, but the aircraft kept yawing to the left with a slight left roll. He further stated that he did not attempt to abort take-off as the aircraft was no longer above the runway.

The pilot-in-command reported that a decision to continue with the flight was taken, but due to the aircraft's speed that was below the required rotational (Vr) speed, a stall warning light illuminated, followed by an aural warning. A full right rudder was applied but the aircraft continued to yaw to the left. The aircraft stalled and later collided with the tree before it impacted the ground. It then skidded for approximately 350m before it hit a duiker/buck, which was fatally wounded. The pilot-in-command shut down the engines and switched the electrical gang bar off and ordered the occupants to evacuate. According to the pilot, there were no defects reported prior to the accident flight. Post-accident, there was no evidence of a pre- or post-impact fire. The aircraft was substantially damaged during the accident sequence; however, the passengers were not injured, whilst the pilot sustained minor injuries to his head.

Figure 1: Aerial view of the runway. (Source: Google Earth)

Figure 2: Final resting position of the aircraft.

What was found:

- The pilot was properly licensed for the flight, and had a Commercial Pilot Licence (CPL) that was issued on 19 July 2021 with an expiry date of 31 July 2022. The pilot was issued a Class 1 medical certificate on 14 July 2021 with an expiry date of 31 July 2022 with no medical waiver.

- The last phase inspection (phase 3 and 4) was conducted on 9 December 2021 at 8075.1 airframe hours. The Certificate Relating to Maintenance (CRMA) was issued on 9 December 2021.
- The Certificate of Registration was issued to the present owner on 1 December 2017.
- Following the accident, the investigator visited the site to inspect the wreckage and the runway surface, and the following was noted:
    - The gravel runway's length is 900 metres (m) and the width is 20m.
    - The runway has an uphill slope when viewed from the hangar side, and a downward slope midway.
    - The surface appeared smooth as the runway was graded recently.
    - The first tree that the aircraft impacted was 450m away from the take-off point and was situated 10m from the left of the runway edge.
    - Ground marks indicated that the left-wing tip came into contact with the ground first, followed by the undercarriage, left- and right-side propeller blades and the right-side wing.
    - The nose gear broke off and separated from the aircraft. It was found 30m from the main wreckage.
    - The left-side propeller blades were severed and had separated from the hub, whilst the right-side propeller blades were still attached but had curled backwards around the engine cowling.
    - The left-wing leading edge was damaged, causing fuel pipes to rupture. The damage was consistent with impact with a tree.
    - The right-side wing sustained buckling damage on the centre and the outboard wing tip was ripped off due to impact with the ground. The flight controls surface was still attached, and the flaps were observed to have been set for take-off.
    - The right-side aileron was bent.
    - The empennage had compression loads on the skin surface on the right-side. The nose section exhibited compression load on the upper surface, and buckling on the lower side.
    - The right-side undercarriage had collapsed, and the tyre came off from the wheel hub. There were streaks of fuel as well as a strong smell of fuel (JetA1) underneath and on the right-side of the aircraft.

Figures 3 and 4: Left- and right-side propeller damages.

Figure 5: Flap position (take-off/approach position) viewed from the rear. The inset picture indicates flap lever position and the master switch in the 'off' position.

Figure 6: Flap position (take-off/approach position) comparison on a serviceable aircraft. The inset picture shows flap position and the master switch in the 'on' position.

- According to the Pilot's Operating Handbook (POH), the V1 speed (decision speed in which take-off could no longer be aborted) is 74 knots while rotation speed (Vr) is 94 knots. The pilot reported that during the bounce, the aircraft's speed was at 60 knots which was 34 knots less than the rotation speed.
- The weight and balance were within the maximum permissible take-off mass of 5 670 kilograms (kg).

Probable cause

Loss of control during take-off as a result of an early rotation, causing a couple of bounces followed by a stall before the aircraft veered off to the left-side of the runway and, subsequently, crashed.

Contributory factors

None.

Safety Action/s

None.

Safety Message

Pilots are reminded to adhere to the manufacturers' limitations, especially during critical phases of flight, such as landing and take-off.

Purpose of the Investigation
In terms of Regulation 12.03.1 of the Civil Aviation Regulations (CAR) 2011, 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****.*
About this Report
Decisions regarding whether to investigate, 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, no 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 brief report. The report has been compiled using information supplied in the initial notification, as well as follow-up information 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 accident. *This report provides an opportunity to share safety message/s in the absence of an investigation.* *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.*
Disclaimer
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This report is issued by:

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