SOUTH AFRICAN CIVIL AVIATION AUTHORITY

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

LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL

Reference Number	CA18/2/3/10512						
Classification	Accident	**Date**	10 October 2024		**Time**	0940Z	
Type of Operation	Private (Part 94)						
Location							
Place of Departure	Kimberley Aerodrome (FAKM), Northern Cape Province	Place of Intended Landing	De Aar Aerodrome (FADA) Northern Cape Province				
Place of Occurrence	Near the threshold of Runway 02 at FAKM, Northern Cape Province						
GPS Co-ordinates	Latitude	28°49'10.42"S	Longitude	24°45'48.38"E	Elevation	3 917 ft	
Aircraft Information							
Registration	ZU-CWK						
Make; Model; S/N	Yakovlev Aircraft Factories; Yak 52 (Serial Number: 882807)						
Damage to Aircraft	Substantial	Total Aircraft Hours	926.7				
Pilot-in-command							
Licence Type	Commercial Pilot Licence (CPL) Aeroplane	Gender	Male	Age	58		
Licence Valid	Yes	Total Hours	6224	Total Hours on Type	6.4		
Total Hours 30 Days	10.4	Total Flying on Type Past 90 Days	6.4				
People On-board	1+1	**Injuries**	0	**Fatalities**	0	**Other (on ground)**	0

What Happened

On Thursday, 10 October 2024, a pilot and a passenger on-board a Yak 52 aircraft with registration ZU-CWK took off on a private flight from Kimberley Aerodrome (FAKM) in the Northern Cape province to De Aar Aerodrome (FADA) in the same province. The flight was conducted under visual meteorological conditions (VMC) by day and under the provisions of Part 94 of the Civil Aviation Regulations (CAR) 2011 as amended.

At approximately 0940Z, the pilot requested taxi clearance from the air traffic control (ATC) officer and was instructed to backtrack on Runway (RWY) 02 and to wait for departure clearance. The pilot reported that during taxi at the intersection of RWY 02 and RWY 28, the brakes felt ineffective because of the strong tailwind. The pilot further stated that he kept braking to maintain normal taxi speed. As he was nearing RWY 02 threshold, he noticed that the aircraft's speed was too high and decided to switch off the engine to slow down the aircraft as he intended to complete a 180° left turn along the runway's turning area (which is on the right side) to line up on Runway 02 threshold. The pilot applied the brakes, but they seemed ineffective, and the aircraft could not stop or complete the left turn. He then attempted to steer the aircraft using the rudder pedals, but they were also not effective. As a result, the aircraft exited the turning area, careered westerly and impacted a perimeter fence before it stopped. The pilot reported the occurrence to the ATC tower and requested the assistance of the emergency services. The propeller and the lower part of the vertical stabiliser were damaged. The pilot and the passenger were not injured.

Figure 1: The aircraft came to a stop after impacting the perimeter fence. (Source: Owner)

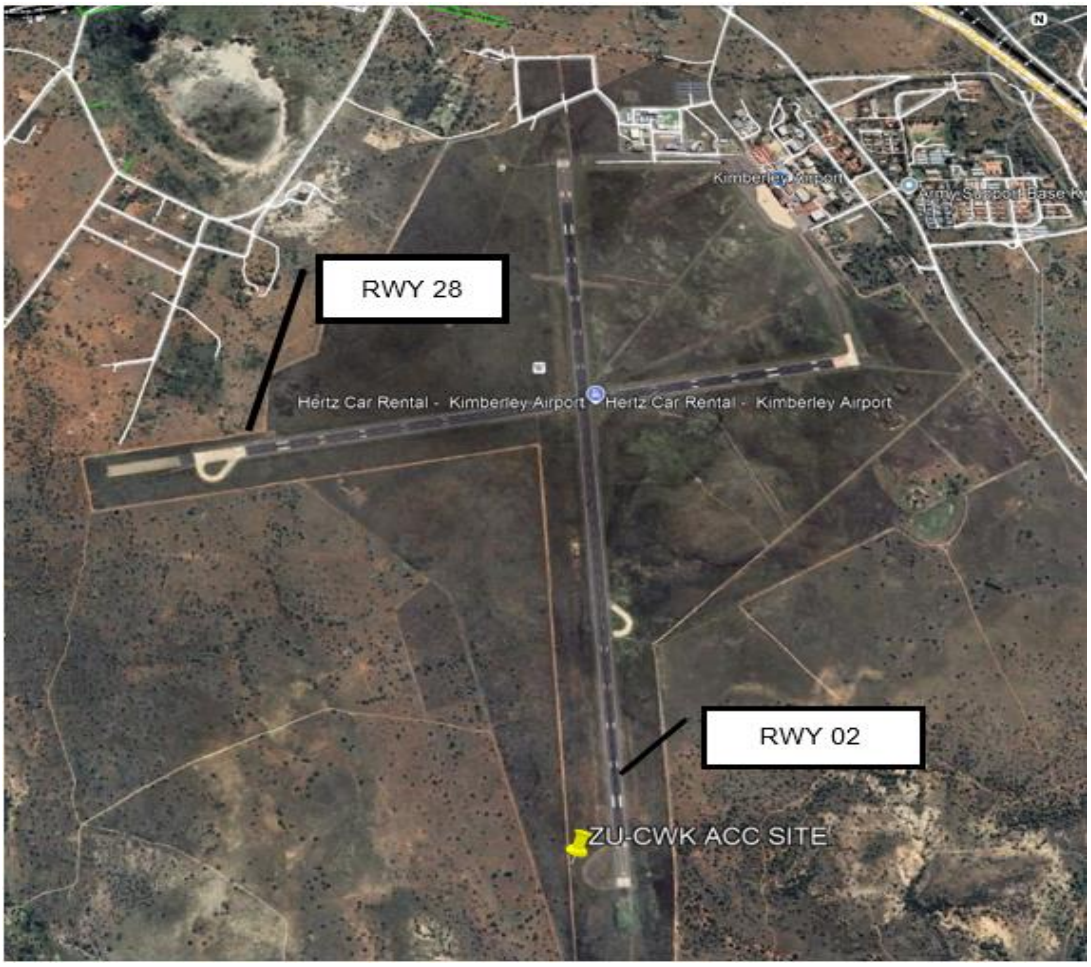

Figure 2: Aerial view of the aerodrome and the accident site.

The weather information below was obtained from the South African Weather Service (SAWS), recorded for FAKM on 10 October 2024 between 0900Z and 1000Z.

FAKM 100900Z 35015KT CAVOK 28/// Q1024=

FAKM 101000Z 34013G26KT CAVOK 32/// Q1023=

Operational Procedure (Source: Yak-52 POH)

- *Request permission for taxiing. Upon receiving, reduce engine speed to a minimum and signal the ground crew to remove landing gear pads. Wait for the ground crew to signal that the pads have been cleared.*
- *Shut the canopy.*
- *At subzero temperatures switch on the circuit breakers for the stall detector heating and pitot heating. Check if the signal lights are on for these components, then begin taxiing.*
- *Circuit breakers must be turned while on the ground no more than 5 minutes before take-off.*
- *Gradually increase the engine speed so that the aircraft begins to move without changing heading. Taxiing speed should not exceed that of a human's pace.*
- *While taxiing, keep the control stick fixed to neutral and use the brakes smoothly, pressing the brake control lever with short impulses when the rudder pedals are neutral. When taxiing, the aircraft has a slight tendency to turn right, which is easily controlled by depressing the left pedal and applying brake pressure. In the case of a strong lateral wind (8-10 m/s), during taxiing, the control stick should be pushed down: this puts a greater load on the front wheel.*

Taxiing (Source: Operator**)**

Note: The nose wheel is free castoring and care must be taken during tight turns to avoid getting into a position where you cannot get the nose wheel straight. In these cases, it may be necessary to shut down and position the aircraft by hand.

- *Brakes -- RELEASE*
- *Throttle -- AS REQUIRED*
- *Brakes -- CHECK during taxi*

To turn, press rudder pedal in desired direction and use short squeezes of brake action.

Caution. During long taxi use brakes sparingly to avoid letting the main air get too low and to avoid overheating the brakes reducing their efficiency.

Findings

1. Personnel Information

1.1 The pilot had a Commercial Pilot Licence (CPL) that was initially issued on 3 December 2013. The licence renewal was issued on 9 October 2024 with an expiry date of 31 July 2025. The pilot had flown a total of 6.4 hours in this aircraft type.

1.2 The pilot was issued a Class 1 aviation medical certificate on 3 July 2024 with an expiry date of 31 July 2025 with medical restrictions.

2. Aircraft Information

2.1 The last annual inspection of the aircraft before the accident flight was certified on 21 February 2024 at 920.1 airframe hours. The accident occurred at 926.6 airframe hours. The aircraft had accumulated a further 6.5 hours since the said inspection. The brakes were checked during the annual inspection and were found in a satisfactory condition.

2.2 The aircraft had a valid Authority-to-Fly (ATF) Certificate that was issued by the Regulator on 25 March 2024 with an expiry date of 31 March 2025. The aircraft was airworthy when it was dispatched for the flight.

2.3 The aircraft's Certificate of Registration (C of R) was issued to the present owner on 9 March 2021.

2.4 The pilot backtracked the aircraft for more than 2 kilometres (km) at a high speed as there was tailwind on RWY 02 which is 3km long. This resulted in loss of brake efficiency due to overheating. When the pilot realised that the aircraft could not stop, he switched off the engine during a left turn and the aircraft veered off the runway and impacted a perimeter fence.

Probable Cause(s)

The tailwind propelled the aircraft to taxi at a high-speed and the brakes overheated and became ineffective. The aircraft veered off the runway during a left turn and impacted a perimeter fence.

Contributing Factor(s)

- Inability to maintain the recommended taxi speed.

Safety Action(s)

None.

Safety Message and/or Safety Recommendation/s

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 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.

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.

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