SOUTH AFRICAN CIVIL AVIATION AUTHORITY

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

LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL

Reference Number	CA18/2/3/10207						
Classification	Accident	**Date**	10 August 2022		**Time**	1540 Z	
Type of Operation	Private (Part 94)						
Location							
Place of Departure	Wonderboom Aerodrome (FAWB), Gauteng Province	Place of Intended Landing	Klerksdorp Aerodrome (FAKD), North West Province				
Place of Occurrence	Runway 29 (RWY29) at Orient Aerodrome (FAOI), Gauteng Province						
GPS Co-ordinates	Latitude	26° 02' 15.15" S	Longitude	027° 35' 33.94" E	Elevation	5100 ft	
Aircraft Information							
Registration	ZU-FNS						
Make; Model; S/N	Jabiru J430 (Serial Number: 791)						
Damage to Aircraft	Substantial	Total Aircraft Hours	438.0				
Pilot-in-command							
Licence Type	Private Pilot Licence (A)	Gender	Male	Age	64		
Licence Valid	Yes	Total Hours	136.0	Total Hours on Type	2.8		
Total Hours 30 Days	4.5	Total Flying on Type Past 90 Days	4.5				
People On-board	1 + 0	**Injuries**	0	**Fatalities**	0	**Other (on ground)**	0

What Happened

On Thursday afternoon, 11 August 2022 at 1455Z, a pilot on-board a Jabiru 430 aircraft with registration ZU-FNS took off from Wonderboom Aerodrome (FAWB) in Gauteng province to Klerksdorp (FAKD) Aerodrome in the North West province. 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. Clear weather conditions prevailed at the time of the flight.

The pilot reported that he conducted a pre-flight inspection, and all the checks read normal. He stated that the initial part of the flight was uneventful, but later deduced that he would not make it to FAKD in daylight. This led him to look for a nearby aerodrome to divert to, which was Orient Aerodrome (FAOI), about 70 nautical miles (nm) north-east of FAKD. Upon arriving at FAOI, the pilot noticed an aircraft conducting touch-and-go exercises on RWY29 and assumed that it was the runway in use. He followed an unmanned aerodrome joining procedure at 1000 feet (ft) above ground level (AGL).

The pilot then selected full-wing flaps on final approach for landing at approximately 75 knots (kts) airspeed. The aircraft ballooned during the flare, followed by a nose-first hard landing on the runway, which was sloping downhill. In the process, the nose landing gear assembly broke off and the

propeller struck the grass-covered runway surface before it came to a stop in a nose-down attitude. The pilot was not injured during the accident sequence; he disembarked the aircraft unassisted. The nose gear assembly and the propeller were substantially damaged.

Figure 1: The view of the FAOI aerodrome. (Source: Google Earth)

Figure 2: The aircraft at the scene of the accident. (Source: Pilot)

Figure 3: The detached nose gear assembly. (Source: Pilot)

Findings

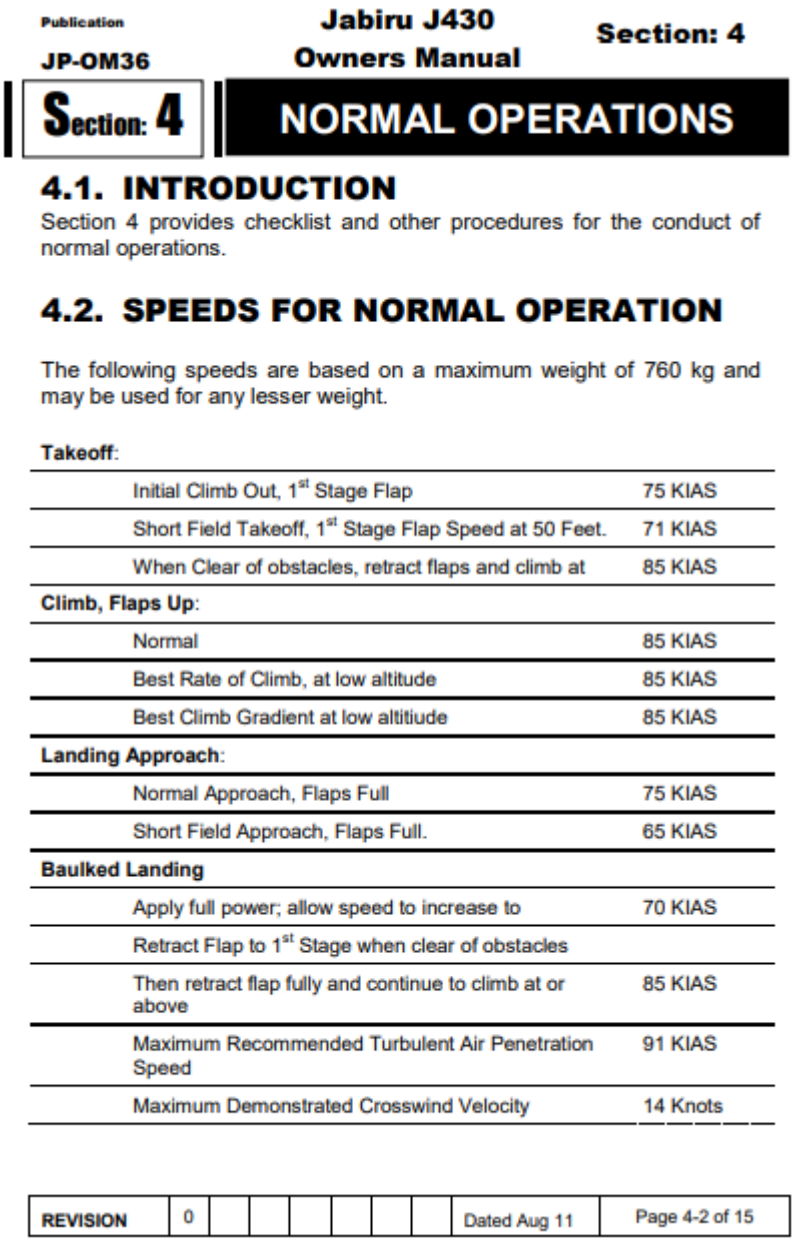
The Pilot

- The pilot underwent a skills test on 10 February 2022 and was issued a Private Pilot Licence (PPL) Aeroplane on 17 March 2022 with an expiry date of 28 February 2023. The Jabiru 430 aircraft type was endorsed on his licence with no night rating.

- The pilot had a Class 2 aviation medical certificate that was issued on 22 July 2022 with an expiry date of 12 August 2023, with a restriction to wear corrective lenses.

- The pilot was not familiar with the runway at FAOI.

- The pilot was of the opinion that the accident was due to the high flare and high airspeed on the down slope runway, according to the pilot questionnaire.



Publication JP-OM36 | Jabiru J430 Owners Manual | Section: 4

Section: 4

NORMAL OPERATIONS

4.1. INTRODUCTION

Section 4 provides checklist and other procedures for the conduct of normal operations.

4.2. SPEEDS FOR NORMAL OPERATION

The following speeds are based on a maximum weight of 760 kg and may be used for any lesser weight.

Takeoff:		
	Initial Climb Out, 1st Stage Flap	75 KIAS
	Short Field Takeoff, 1st Stage Flap Speed at 50 Feet.	71 KIAS
	When Clear of obstacles, retract flaps and climb at	85 KIAS
Climb, Flaps Up:		
	Normal	85 KIAS
	Best Rate of Climb, at low altitude	85 KIAS
	Best Climb Gradient at low altitiude	85 KIAS
Landing Approach:		
	Normal Approach, Flaps Full	75 KIAS
	Short Field Approach, Flaps Full.	65 KIAS
Baulked Landing		
	Apply full power; allow speed to increase to	70 KIAS
	Retract Flap to 1st Stage when clear of obstacles	
	Then retract flap fully and continue to climb at or above	85 KIAS
	Maximum Recommended Turbulent Air Penetration Speed	91 KIAS
	Maximum Demonstrated Crosswind Velocity	14 Knots

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Figure 4: The Jabiru 430 normal approach speed. (Source: Jabiru 430 POH)

Aircraft information

- The aircraft had an Authority to Fly (ATF) permit that was initially issued on 8 June 2021. The ATF was renewed on 20 July 2022 with an expiry date of 30 June 2023. The aircraft's Certificate of Registration (C of R) was issued on 1 February 2021.

- The annual mandatory periodic inspection (MPI) prior to the accident flight was certified on 5 July 2022 at 435.20 airframe hours. The aircraft was flown a further 2.8 hours since the said inspection.

- The aircraft was issued a Certificate of Release to Service (CRS) on 5 July 2022 with an expiry date of 12 July 2023 or at 485.20 hours of flight time, whichever occurs first unless the aircraft is involved in an accident or becomes unserviceable.

Aerodrome information

- The pilot reported that he followed the unmanned joining procedure before landing.
- Round Out/Flare (Source: Airplane Flying Handbook Chapter 8)

  The round out is a slow, smooth transition from a normal approach attitude to a landing attitude, gradually rounding out the flightpath to one that is parallel with, and within a very few inches above, the runway. When the airplane, in a normal descent, approaches within what appears to be 10 to 20 feet above the ground, the round out or flare is started. This is a continuous process until the airplane touches down on the ground.

  As the airplane reaches a height above the ground where a change into the proper landing attitude can be made, back-elevator pressure is gradually applied to slowly increase the pitch attitude and angle of attack (AOA). [Figure 5]

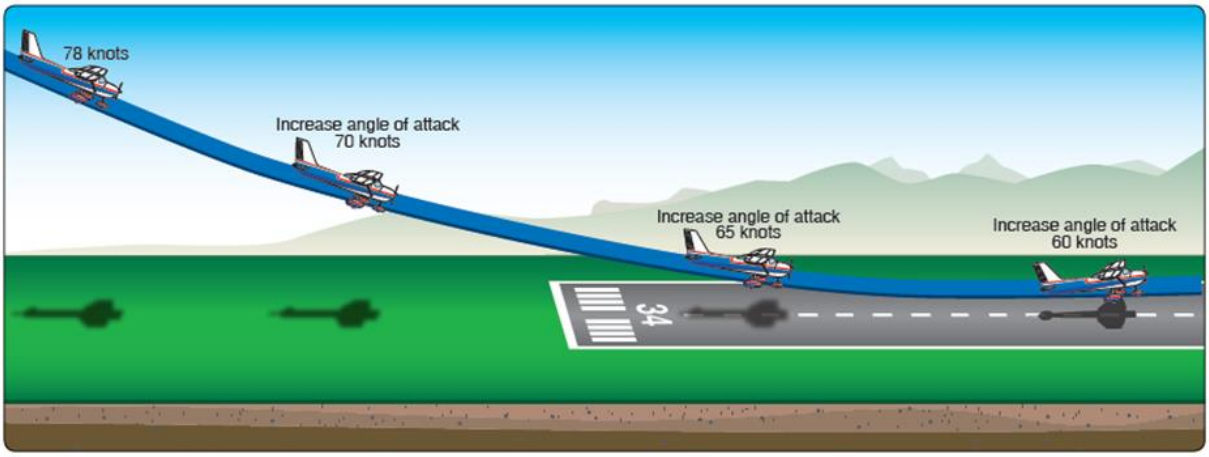

Figure 5: Changing angle of attack during round out.

This causes the airplane's nose to gradually rise toward the desired landing attitude. The AOA is increased at a rate that allows the airplane to continue settling slowly as forward speed decreases. The rate at which the round out is executed depends on the airplane's height above the ground, the rate of descent, and the pitch attitude. A round out started excessively high must be executed more slowly than one from a lower height to allow the airplane to descend to the ground while the proper landing attitude is being established. The rate of rounding out must also be proportionate to the rate of closure with the ground. When the airplane appears to be descending very slowly, the increase in pitch attitude must be made at a correspondingly slow rate.

Environment

- The weather information below was issued by the South African Weather Service (SAWS) for Lanseria International Airport (FALA) on 10 August 2022 at 1500Z. FALA is the closest airport to FAOI.

Wind Direction	350º	Wind Speed	9kts	Visibility	9999m
Temperature	22ºC	Cloud Cover	CAVOK	Cloud Base	CAVOK
Dew Point	3ºC	QNH	1023hPa		

Probable Cause

The aircraft approached at a high speed, which led to the aircraft ballooning during the flare; this was followed by a nose-first hard landing.

Contributing Factor(s)

None.

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 issued by:

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

Annexure A

Unmanned Airfields (Source:sacaa.co.za)

Transgressions and safety issues at unmanned airfields, the joining procedure by law is: Join overhead the field at 2000 ft AGL and observe the wind conditions. Descend on the "dead" side of the field and join the circuit at 1000 ft AGL. The purpose of the overhead join is to allow either non-radio aircraft, or aircraft arriving at a non-radio airfield, to overfly the airfield at a safe height, to observe, determine the runway in use and circuit direction, and then descend into the circuit pattern. The best course of action when visiting an unmanned aerodrome is:

- *Check the arrival procedures of the next destination first, before leaving.*

- *Effective radio communication and traffic awareness are all-important and will help prevent a collision.*

- *Keep the standard phraseology when communicating.*

- *Report your exact position to avoid confusion. PURPOSE The purpose of this report is to alert the industry (GA-SPORTS) of the transgressions and safety issues raised with the Department of Transport (DoT). The following incident illustrates the dangers posed when pilots neglect to follow the Standard Procedures: A.*

- *A pilot radioed overhead on frequency and announced his intentions to descend on the dead side of the airfield and to join on a left-hand crosswind runway XX. He heard another aircraft announce his intentions to route through the unmanned aerodrome and then route onward to his final destination.*

- *On reaching the crosswind position of Rwy XX, he called to announce that he was left-hand crosswind Rwy XX 'full stop'. He was expecting the aircraft to be passing overhead from the right as he called again on downwind and then again on base leg. At that point the other aircraft announced his intentions to do a low level runway inspection of runway YY in an opposite direction at 5300 ft and then route onward to his destination. The aircraft had no intention of actually landing at the aerodrome, despite conducting a runway inspection. The pilot called 'final' and cautioned the approaching aircraft that he was on final for Rwy XX, which was directly opposite to the direction that the other aircraft was approaching; and he realized that they were on a collision course. The other aircraft then called to ask if the pilot was on final Rwy XX, and the pilot confirmed.*

• Realizing that time had elapsed since the other aircraft had called overhead, he would have most likely been very close to the threshold of the runway, flying straight towards him. Although the pilot considered going around to avoid the dangerous situation that was about to occur, he realized that he had nowhere to go as he could not see the other aircraft, nor did he know from which direction the aircraft would be doing its runway inspection. So he committed to landing. By this time the other aircraft called to say he would fly as if he was on the left downwind of runway XX, but by this time the other pilot was on the flare.

• He was therefore forced to land due to the threat of the approaching aircraft. The pilot ended up landing deep on runway XX and this caused him to overshoot the end of the runway. B. When two aircraft were en route from an airport at 0700UTC, another aircraft was already in the circuit at an unmanned aerodrome, intending to land. The two aircraft approaching did not make any effort to join overhead; instead the first one joined final approach Rwy XX and the second one joined downwind Rwy YY. (Rwy XX was in use). The aircraft which had already been in the circuit averted two mid-air collisions from the first and the second aircraft.