PRELIMINARY ACCIDENT REPORT

Accident and Incident Investigations Division

Accident
- Preliminary Report -
AIID Ref No: CA18/2/3/10443

Figure 1: File picture of the aircraft. (Source: https://www.airteamimages.com/ZS-KNE_id)

Description:

On Sunday afternoon, 21 April 2024, a pilot and two passengers on-board a Cessna 172 RG aircraft with registration ZS-KNE took off from Nelspruit Airfield (FANS) in Mpumalanga province to Witbank Airfield (FAWI) in the same province. The flight from FANS to FAWI was uneventful. After landing at FAWI, one of the passengers disembarked from the aircraft, and two more passengers boarded the aircraft with the intention to fly in the area and, thereafter, return to FANS. The flight was conducted under visual meteorological conditions (VMC) and under the provisions of Part 91 of the Civil Aviation Regulations (CAR) 2011 as amended.

Eyewitnesses stated that during the take-off phase on Runway 22 (RWY 22), the aircraft struggled to accelerate; it rotated towards the end of the runway. Whilst on the climb, the right wing dropped slightly, thereafter, the left wing also dropped. The aircraft was then seen in a nose-down attitude. It impacted the ground in Blesbok Coal Mine approximately 582 metres (m) from the threshold of RWY 22. Black smoke rose shortly after impact. The pilot and two of the passengers were fatally injured; the third passenger sustained serious burn injuries and was taken to the local hospital in an ambulance. He later succumbed to his injuries on the 30 April 2024. The aircraft was destroyed by post-impact and fuel-fed fire.

Occurrence Details

Reference Number	**:** CA18/2/3/10443
Occurrence Category	**:** Category 1
Type of Operation	**:** Private (Part 91)
Name of Operator	**:** Kishugu Aviation
Aircraft Registration	**:** ZS-KNE
Aircraft Make and Model	**:** Cessna 172 RG
Nationality	**:** South African
Registration Marks	**:** ZS-KNE
Place	**:** Blesbok Coal Mine, approximately 582m from the threshold of Runway 22
Date and Time	**:** 21 April 2024 at 1340Z
Injuries	**:** Four fatalities
Damage	**:** Destroyed

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.

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.

Investigation Process

The Accident and Incident Investigations Division (AIID) of the South African Civil Aviation Authority (SACAA) was notified of the occurrence involving a Cessna 172RG at Blesbok Coal Mine in Mpumalanga province on 21 April 2024 at 1340Z. The occurrence was classified as an accident according to the CAR 2011 Part 12 and the International Civil Aviation organisation (ICAO) STD Annex 13 definitions.

The AIID has appointed an investigator-in-charge who was dispatched to the accident site to commence with the full investigation. Notifications were sent to the State of Registry and Operator in accordance with the CAR 2011 Part 12 and the ICAO Annex 13 Chapter 4. The States did not appoint an accredited representative and/or advisor. The AIID will lead the investigation and issue the final report of this accident in accordance with the CAR 2011 Part 12 and the ICAO Annex 13.

The information contained in this preliminary report is derived from the information gathered during the on-going investigation into the occurrence. Later, an interim or final report may contain altered information in case new evidence is found during the on-going investigation that requires changes to the information depicted in this report.

The AIID reports are made available to the public at:
http://www.caa.co.za/Pages/Accidents%20and%20Incidents/Aircraft-accident-reports.aspx

Notes:

1. *Whenever the following words are mentioned in this report, they shall mean the following:*
   Accident — this investigated accident
   Aircraft — the Cessna 172RG involved in this accident
   Investigation — the investigation into the circumstances of this accident
   Pilot — the pilot involved in this accident
   Report — this accident report

2. *Photos and figures used in this report were taken from various sources and may have been adjusted from the original for the sole purpose of improving clarity of the report. Modifications to images used in this report were limited to cropping, magnification, file compression; or enhancement of colour, brightness, contrast; or addition of text boxes, arrows, or lines.*

Disclaimer

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Abbreviation	Description
°	Degrees
°C	Degrees Celsius
ACCID	Accident
AIID	Accident and Incident Investigations Division
AMO	Aircraft Maintenance Organisation
ARCC	Aeronautical Rescue Coordination Centre
C of A	Certificate of Airworthiness
C of R	Certificate of Registration
CAR	Civil Aviation Regulations
CAVOK	Cloud and Visibility OK
CPL	Commercial Pilot Licence
CRS	Certificate of Release to Service
CVR	Cockpit Voice Recorder
FANS	Nelspruit Airfield
FAWI	Witbank Airfield
FDR	Flight Data Recorder
ft	Feet
GPS	Global Positioning System
hPa	Hectopascal
kt	Knots
m	Metres
METAR	Meteorological Routine Aerodrome Report
MHz	Megahertz
nm	Nautical Miles
PPL	Private Pilot Licence
QNH	Altitude Above Mean Sea Level
RWY	Runway
SACAA	South African Civil Aviation Authority
SAWS	South African Weather Service
VMC	Visual Meteorological Conditions
Z	Zulu (Term for Universal Co-ordinated Time - Zero Hours Greenwich)

1. FACTUAL INFORMATION

1.1. History of Flight

1.1.1. On Sunday afternoon, 21 April 2024, a pilot and two passengers on-board a Cessna 172 RG aircraft with the registration ZS-KNE took off from Nelspruit Airfield (FANS) in Mpumalanga province to Witbank Airfield (FAWI) in the same province. One of the passengers had a Private Pilot Licence (PPL). The flight from FANS to FAWI was uneventful. After landing at FAWI, one of the passengers disembarked from the aircraft, and two more passengers boarded the aircraft. The aircraft was a hire-and-fly. The intention of the flight was to build hours for the pilot's Commercial Pilot Licence (PPL). Clear weather conditions prevailed at the time of the flight which was conducted under visual meteorological conditions (VMC) and under the provisions of Part 91 of the Civil Aviation Regulations (CAR) 2011 as amended.

1.1.2. According to the passenger who disembarked from the aircraft at FAWI, the flight to FAWI was uneventful. There were no anomalies with the aircraft and the engine performance was normal. She stated that the pilot invited her on this flight and, when they arrived at FAWI, the pilot asked her to disembark from the aircraft to make room for the other two passengers. She witnessed the aircraft when it taxied to RWY 22, however, she did not observe the seating arrangement or the take-off. Later, she heard from the people at the airfield that there had been a crash.

1.1.3. The first eyewitness was standing near the hangar at FAWI with a hand-held radio; he stated that the pilot conducted the radio calls. He further stated that the aircraft flew in the area for about 10 minutes before he approached to land at FAWI. *The first eyewitness watched the aircraft as it was about to land.* The pilot conducted an unmanned joining procedure before landing. The aircraft approached from the north and touched down normally on Runway 22 (RWY 22). It vacated the runway and stopped on the apron. After the pilot had switched off the engine, one of the passengers disembarked from the aircraft and two more passengers boarded the aircraft with the intention to fly around Witbank. After the engine started, the aircraft taxied to RWY 22. During the take-off roll, the aircraft struggled to accelerate, it rotated almost near the end of the runway. After rotation, the aircraft climbed but still with difficulty; the undercarriage was retracted as it climbed. Thereafter, the aircraft yawed sharply to the right before the right wing dropped slightly, then the left wing also dropped and the aircraft nose-dived until it impacted the ground in Blesbok Coal Mine, approximately 582 metres (m) from the threshold of RWY 22. A cloud of black smoke rose shortly after impact. The first eyewitness rushed to the scene and called for help. The mine emergency response unit

responded and administered medical assistance to the injured passenger. He later succumbed to his injuries on 30 April 2024.

1.1.4. The second eyewitness works at Blesbok Coal Mine. He stated that on Sunday afternoon he was driving from the main coal yard to Pit 3. As he approached Pit 3, he saw an aircraft flying low towards the trees located opposite the stockpile. He noticed that the aircraft's engine sound was not as loud as the noise made by other aircraft he had observed in the area previously. The aircraft approached from the north north-south direction and flew over the tree line, almost touching the trees, and over the light-duty vehicle (LDV) in which he (the second eyewitness) was travelling. He stated that he heard the aircraft's engine revving up after flying over his LDV and out of his sight. He then saw the flames and smoke and, thus, drove towards the accident site. He stated that he heard screams coming from the aircraft. One of the occupants vacated the aircraft and took off his yellow T-shirt which was on fire.

1.1.5. The third eyewitness, a member of the FAWI Aero Club, stated that on Sunday, 21 April 2024, he was at a social gathering at FAWI with some of his club members. At approximately 1300Z, a Cessna 172RG with registration ZS-KNE landed at FAWI with three persons on-board; the aircraft was parked mid-section of the airfield on the western side of the runway, off the taxiway at the hangars. He stated that three persons disembarked from the aircraft (the pilot and two passengers). A while later, a vehicle drove into the airfield with two persons who joined the three people who had deplaned the aircraft. Thereafter, the pilot, one of the two passengers who landed at FAWI and who had a CPL, and the two people who had arrived in a vehicle boarded the aircraft. The second passenger (who initially arrived with the pilot) remained on the ground. Around 1340Z, the ZS-KNE engine was started with four persons on-board. When the pilot broadcasted a radio request for a "radio check", the third eyewitness responded, confirming a 5 out of 5 as the broadcast was received clearly. *The witness had a hand-held radio*. After making a radio call to state their intent, the ZS-KNE proceeded to taxi to the holding point of RWY 22. Before take-off, the third eyewitness heard a broadcast on his hand-held radio stating that they intended to take-off from RWY 22. According to the third eyewitness, the weather conditions were conducive for the flight with clear skies, warm temperature and a moderate to light southern wind at the time. He noticed that the aircraft took off from the northern side. It took off approximately two-thirds down the runway; whilst it climbed, the landing gear was retracted. He stated that he did not observe if the flaps were in use at the time of take-off. The third eyewitness noticed when the aircraft abruptly slowed down before it yawed to the left and then right, and inadvertently stalled. He stated that it seemed that there was left rudder input at that moment. He further stated that there was a sudden loss of altitude and the aircraft

descended beyond the tree line on the south side of the airfield. Immediately after, he saw a plume of smoke and he requested his friend to contact the ambulance and emergency services. The third eyewitness got into his vehicle and drove to the crash site. Upon his arrival at the accident site, there were already multiple vehicles and employees of the mine, and the aircraft was engulfed in flames. He noticed that one of the occupants had serious burn injuries and was receiving medical attention from one of the vehicles that were at the accident site. Later, the ambulance arrived and assisted the survivor, as well as transported him to the hospital. ARCC requested the mine safety officer to cordon the area and limit access to the site to avoid tampering with the wreckage.

1.1.6. The South African Police Service (SAPS) and the local fire services personnel had also arrived at the scene. A water tanker was used to douse the fire.

1.1.7. The pilot and two passengers were fatally injured, the third passenger managed to vacate the aircraft; he sustained serious burn injuries and was taken to the local hospital in an ambulance. He succumbed to his injuries on 30 April 2024. The aircraft was destroyed by post-impact fire.

1.1.8. The accident occurred on the grounds of the Blesbok Coal Mine approximately 582m from the end of RWY 22 at satellite Global Positioning System (GPS) co-ordinates determined to be 25° 50' 34.2" South 029° 11' 22.3" East, at an elevation of 5 155 feet (ft).

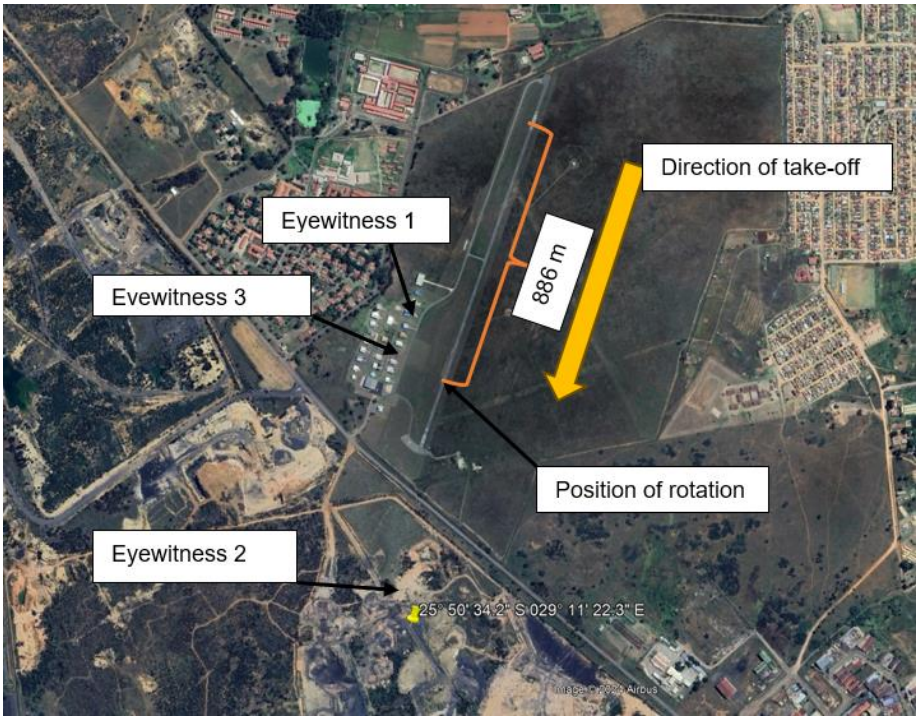

Figure 2: The accident site indicated by the yellow pin. (Google Earth)

1.2. Injuries to Persons

Injuries	Pilot	Crew	Pass.	Total On-board	Other
Fatal	1	-	3	4	-
Serious	-	-	-	-	-
Minor	-	-	-	-	-
None	-	-	-	-	-
Total	**1**	**-**	**3**	**4**	**-**

Note: Other means people on the ground.

1.2.1. The pilot and two passengers were fatally injured during the accident sequence, and the third passenger sustained serious burn injuries; he was transported to the nearby hospital. However, he succumbed to his injuries on 30 April 2024.

1.3. Damage to Aircraft

1.3.1. The aircraft was destroyed by impact and post-impact fire.

Figure 3: The wreckage post-accident.

1.4. Other Damage

1.4.1. None.

1.5. **Personnel Information**

Nationality	South African	Gender	Male	Age	30
Licence Type	Private Pilot Licence (PPL)				
Licence Valid	Yes	Type Endorsed	Yes		
Ratings	None				
Medical Expiry Date	13 July 2026				
Restrictions	None				
Previous Accidents	None				

Note: Previous accidents refer to past accidents the pilot was involved in, when relevant to this accident.

Flying Experience:

Total Hours	154.7
Total Past 24 Hours	Unknown
Total Past 7 Days	Unknown
Total Past 90 Days	25.4
Total on Type Past 90 Days	11.5
Total on Type	94.3

1.5.1. The pilot was initially issued a Private Pilot Licence on 25 April 2023 the licence was renewed on 27 March 2024 with an expiry date of 31 March 2026.

1.5.2. The pilot was issued a Class 2 aviation medical certificate on 14 July 2022 with an expiry date of 13 July 2027 with no medical restrictions.

1.6. **Aircraft Information**

1.6.1. Aircraft Description (Source: Pilot's Operating Handbook [POH])

The airplane is an all-metal, four-place, high-wing, single-engine airplane equipped with retractable tricycle landing gear and designed for general utility purposes. The construction of fuselage is a conventional formed sheet metal bulkhead, stringer, and rear carry-through spars to which the wings are attached, a bulkhead with attaching plates at the base of the forward doorposts for the lower attachment of the wing struts, and the forgings and structure for the retractable main landing gear in the lower aft portion of the fuselage centre section. Four engine mount stringers are also attached to forward doorposts and external forward to the firewall. A tunnel incorporated into the fuselage structure below the engine, in front of the firewall, is required for the forward retracting nose wheel.

The externally braced wings, containing the fuel tanks, are constructed of a front and rear spar with formed sheet metal ribs, doublers, and stringers. The entire structure is covered with aluminium skin. The front spars are equipped with wing-to-fuselage and

wing-to-strut attach fittings. The aft spars are equipped with wing-to-fuselage attach fittings and are partial-span spars. Conventional hinged ailerons and single-slot type flaps are attached to the trailing edge of the wings. The ailerons are constructed of a forward spar containing balance weights, formed sheet metal ribs and "V" type corrugated aluminium skin joined together at the trailing edge. The flaps are constructed basically the same as ailerons, with the exception of balance weights and the addition of formed sheet metal leading edge section.

The empennage (tail assembly) consists of conventional vertical stabiliser, rudder, horizontal stabiliser, and elevator. The vertical stabiliser consists of a forward and aft spar, formed sheet metal ribs and reinforcements, a wrap-around skin panel, formed leading edge skin, and a dorsal. The rudder is constructed of a formed leading edge skin containing hinge halves, a centre wrap-around skin panel, ribs, an aft wrap-around skin panel which is joined at the trailing edge of the rudder by a filler strip, and a ground adjustable trim tab at the base of the trailing edge. The top of the rudder incorporates a leading-edge extension which contains a balance weight. The horizontal stabiliser is constructed of a forward and aft spar, ribs and stiffeners, centre upper and lower skin panels, left and right upper and lower skins panels, and formed leading edge skins. The horizontal stabiliser also contains the elevator trim tab actuator. Construction of the elevator consists of formed leading edge skins, a forward spar, ribs, torque tube and bellcrank, left upper and lower "V" type corrugated skins, and right upper and lower "V" corrugated skins incorporating a trailing edge cut-out for the trim tab. The elevator trim tab consists of spar, rib and upper and lower "V" type corrugated skins. Both elevators tip leading edge extensions incorporated balance weights.

Airframe:

Manufacturer/Model	Cessna Aircraft Company, Cessna 172 RG	
Serial Number	172RG0363	
Year of Manufacturer	1980	
Total Airframe Hours (At Time of Accident)	Unknown	
Last Inspection (Date & Hours)	3 March 2024	4 856.5
Hours Since Last Inspection	Unknown	
CRS Issue Date	4 March 2023	
C of A (Issue Date & Expiry Date)	30 September 2023	30 September 2024
C of R (Issue Date) (Present Owner)	27 September 2018	
Type of Fuel Used	Avgas 100LL	
Operating Category	Private Part 91	
Previous Accidents	The aircraft was involved in a runway excursion on 23 January 2015.	

Note: Previous accidents refer to past accidents the aircraft was involved in, when relevant to this accident.

Engine:

Manufacturer/Model	Lycoming O-360-FIA6
Serial Number	L-28174-36A
Part Number	N/A
Hours Since New	4856.5
Hours Since Overhaul	1467.7

Propeller:

Manufacturer/Model	MC Cauley
Serial Number	140614
Part Number	N/A
Hours Since New	1467.7
Hours Since Overhaul	672.9

1.6.2. According to the engine logbook, the left and right magnetos in the engine were removed and sent to an approved overhaul facility for the 500-hour/4-year inspection. They were re-installed on 22 February 2024.

1.6.3. The alternator part number DOFF103008R serial number H-N110092 was removed and sent to an approved facility for the 500-hour inspection. They were re-installed on 23 February 2024.

1.6.4. The aircraft underwent a 100-hour mandatory periodic inspection (MPI) on 5 March 2024 and a Certificate of Release to Service (CRS) was issued on 4 March 2024 at 4 856.5 hours with an expiry date of 4 February 2025 or at 4 956.5 hours, whichever comes first.

1.6.5. The approved maintenance organisation (AMO) that certified the inspection was issued an approval certificate on 25 January 2024 with an expiry date of 31 January 2025.

1.7. Meteorological Information

1.7.1. To be included in the final report.

1.8. Aids to Navigation

1.8.1. The aircraft was equipped with standard navigational equipment as approved by the Regulator (SACAA). There were no records indicating that the navigational equipment was unserviceable prior to the flight.

1.9. **Communication**

1.9.1. The aircraft was equipped with a standard communication system as approved by the Regulator. There were no recorded defects with the communication system prior to the flight.

1.10. **Aerodrome Information**

1.10.1. The accident occurred approximately 582m from RWY 22 at FAWI.

Aerodrome Location	Witbank, Mpumalanga Province
Aerodrome Status	Unlicensed
Aerodrome GPS coordinates	25°49'46" South, 029°11'41" East
Aerodrome Elevation	5 155 ft
Runway Headings	04/22
Dimensions of Runway Used	1 123m x 11m
Heading of Runway Used	RWY 22
Surface of Runway Used	Asphalt
Approach Facilities	None
Radio Frequency	123.50 MHz

1.11. **Flight Recorders**

1.11.1. The aircraft was neither equipped with a flight data recorder (FDR) or a cockpit voice recorder (CVR), nor was it required by regulation to be fitted to the aircraft type.

1.12. **Wreckage and Impact Information**

1.12.1. The wreckage was found in an inverted position with the nose facing north-west. The wreckage was contained in one area. The fuselage was consumed by the post-impact fire. The tail section was still intact with impact damage observed on the left elevator tip. The pitch control surfaces were still secured. The flight control cables were still intact and secured to their respective control surfaces. The left and right wings had impact damage, buckling and deformation was also noticed in the mid-section, outboard sides and on the leading edge which is indicative of impact with the ground whilst in a yaw. The landing gears were found retracted.

Figure 4: The aircraft after impact.

Figure 5: The deformed left-wing tip and aileron.

Figure 6: The deformed right wing.

1.12.2. The engine was still secured in the cradle. The exterior condition of the engine appeared intact. The propeller flange was still connected to the engine. One of the three propeller blades had dislodged from the hub. The propeller blades were found twisted in the middle section and the tips were slightly bent backward. Deep impact markings on the leading edge indicated power signatures.

Figure 7: Damaged propeller blades.

Figure 8: The damaged leading-edge tip.

1.13. **Medical and Pathological Information**

1.13.1. To be discussed in the final report.

1.14. **Fire**

1.14.1. The aircraft was consumed by post-impact fire.

1.15. **Survival Aspects**

1.15.1. The accident was not survivable as the cabin structure was damaged and consumed by post-impact fire.

1.16. **Tests and Research**

1.16.1. To be discussed in the final report.

1.17. **Organisational and Management Information**

1.17.1. This was a private flight conducted under the provisions of Part 91 of the CAR 2011 as amended.

1.17.2. The AMO that conducted the last MPI was issued the AMO approval certificate on 25 January 2024 with an expiry date of 31 January 2025.

1.17.3. The aircraft was registered to the present owner on 27 September 2018.

1.17.4. The aircraft's Certificate of Airworthiness (C of A) was issued on 30 September 2023 with an expiry date of 30 September 2024.

1.17.5. The operator had a lease agreement in terms of Part 48 of the CAR 2011 as amended.

1.18. **Additional Information**

1.18.1. To be discussed in the final report.

1.19. **Useful or Effective Investigation Techniques**

1.19.1. None.

2. FINDINGS

2.1. **General**

From the available evidence, the following preliminary findings were made with respect to this accident. These shall not be read as apportioning blame or liability to any organisation or individual.

To serve the objective of this investigation, the following sections are included in the conclusions heading:

- **Findings —** are statements of all significant conditions, events, or circumstances in this accident. The findings are significant steps in this accident sequence, but they are not always causal or indicate deficiencies.

2.2. **Findings**

2.2.1. The pilot was initially issued a Private Pilot Licence on 25 April 2023. The licence was reissued on 27 March 2024 with an expiry date of 31 March 2026. The aircraft type was endorsed on his licence and logbook.

2.2.2. The pilot was issued a Class 2 aviation medical certificate on 14 July 2022 with an expiry date of 13 July 2027 with no medical restrictions.

2.2.3. The aircraft underwent a 100-hour MPI on 5 March 2024 and a Certificate of Release to Service (CRS) was issued on 4 March 2024 at 4 856.5 hours with an expiry date of 4 February 2025 or at 4956.5 hours, whichever comes first.

2.2.4. The AMO that conducted the last MPI was issued the AMO approval certificate on 25 January 2024 with an expiry date of 31 January 2025. The AMO was authorised to conduct maintenance on this type of aircraft.

2.2.5. The engine was recovered to the AMO for further inspection after the accident.

3. ON-GOING INVESTIGATION

3.1. The AIID investigation is on-going, and the investigator will be investigating other aspects of this occurrence which may or may not have safety implications.

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