

**PRELIMINARY ACCIDENT REPORT**

**Accident and Incident Investigations Division**

Accident  
- Preliminary Report -  
AIID Ref No: CA18/2/3/10007



**Figure 1:** A file photograph of the ZU-FXE aircraft. (Source:microlighters.co.za )

Description:

On 26 May 2021, the pilot on-board a Bushbaby Explorer was engaged in solo circuit exercises at Polokwane Civil Aerodrome (FAPI) Runway 08 (RWY08) and was in contact with Polokwane Tower air traffic control (ATC) at Polokwane International Airport (FAPP) on frequency 114.50 megahertz (MHz). During downwind of the fourth circuit, the pilot reported an engine failure to FAPP ATC. The pilot also stated that he intended to execute a forced landing at FAPI. On final glide path for landing at FAPI, the aircraft collided with a thorny tree approximately 200 metres from the aerodrome perimeter. The aircraft swung about 180 degrees and came to rest facing south. A post-impact fire erupted thereafter and consumed the aircraft. The pilot managed to escape from the burning wreckage after sustaining burn wounds. He was treated by emergency personnel at the scene, however, he later succumbed to the injuries in hospital the following day.

## INTRODUCTION

**Reference Number** : CA18/2/3/10007  
**Name of Owner/Operator** : Fire Creek Investments 59 CC  
**Manufacturer** : Kitplanes for Africa  
**Model** : Bushbaby Explorer  
**Nationality** : South African  
**Registration Marks** : ZU-FXE  
**Place** : Polokwane Civil Aerodrome (FAPI), Limpopo Province  
**Date** : 26 May 2021  
**Time** : 1451Z

### 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 AIID of the South African Civil Aviation Authority (SACAA) was informed about an aircraft accident involving a Bushbaby Explorer which occurred at Polokwane Civil Aerodrome on 26 May 2021. The accident was notified to the AIID investigator-on-call.

The AIID appointed an investigator-in-charge to conduct an investigation. Notifications were sent to the State of Registry, State of Operator and State of Manufacture and Design.

The information contained in this Preliminary Report is derived from the factual information gathered during the on-going investigation into the occurrence. Later, an Interim Report or the 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.

### Notes:

1. *Whenever the following words are mentioned in this report, they shall mean the following:*

- *Accident — this investigated accident*
- *Aircraft — the Bushbaby Explorer 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 different 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:

*This report is produced without prejudice to the rights of the AIID, which are reserved.*

## TABLE OF CONTENTS

Executive Summary .....	1
Introduction .....	2
Contents Page .....	3
Abbreviations .....	4
1. FACTUAL INFORMATION .....	5
1.1. History of Flight .....	5
1.2. Injuries to Persons .....	6
1.3. Damage to Aircraft .....	6
1.4. Other Damage .....	7
1.5. Personnel Information .....	7
1.6. Aircraft Information .....	8
1.7. Meteorological Information .....	9
1.8. Aids to Navigation .....	9
1.9. Communication .....	9
1.10. Aerodrome Information .....	9
1.11. Flight Recorders .....	10
1.12. Wreckage and Impact Information .....	10
1.13. Medical and Pathological Information .....	12
1.14. Fire .....	12
1.15. Survival Aspects .....	12
1.16. Tests and Research .....	12
1.17. Organisational and Management Information .....	12
1.18. Additional Information .....	12
1.19. Useful or Effective Investigation Techniques .....	12
2. FINDINGS .....	13
3. ON-GOING INVESTIGATION .....	14

<b>ABBREVIATION</b>	<b>DESCRIPTION</b>
AGL	Above Ground Level
AIID	Accident and Incident Investigations Division
AMO	Aircraft Maintenance Organisation
AMSL	Above Mean Sea Level
ATC	Air Traffic Control
AP	Approved Person
°C	Degrees Celsius
CAR	Civil Aviation Regulations
CVR	Cockpit Voice Recorder
FAPI	Polokwane Civil Aerodrome
FAPP	Polokwane International Airport
FDR	Flight Data Recorder
ft	Feet
GPS	Global Positioning System
hPa	Hectopascal
m	Metre
METAR	Meteorological Terminal Air Routine Report
MHz	Megahertz
MPI	Mandatory Periodic Inspection
NPL	National Pilot Licence
PIC	Pilot-in-command
QNH	Barometric Pressure Adjusted to Sea Level
SACAA	South African Civil Aviation Authority
SAWS	South African Weather Service
TBO	Time Between Overhaul
UTC	United Time Co-ordinated
VFR	Visual Flight Rules
VHF	Very High Frequency
Z	Zulu (Term for Universal Co-ordinated Time – Greenwich)

# 1. FACTUAL INFORMATION

## 1.1. History of Flight

1.1.1 On 26 May 2021, an amateur built Bushbaby Explorer aircraft, registered ZU-FXE was engaged in a private flight at Polokwane Civil Aerodrome (FAPI). The solo pilot on-board the aircraft was also the owner who built the aircraft. The aircraft took off at approximately 1425Z from Runway 08 (RWY08) to conduct circuit exercises. The flight was conducted while in contact with Polokwane International Airport (FAPP) air traffic control (ATC) on frequency 114.50 megahertz (MHz).

1.1.2 Three circuits were completed uneventfully. On the fourth circuit following take-off while the aircraft was in a right turn on downwind, the pilot reported an engine failure. According to the FAPP ATC, the pilot advised that he intended to execute a forced landing at FAPI.



**Figure 2:** The flight path of the aircraft leading to the accident. (Source: Google Earth)

1.1.3 During a right turn, the aircraft lost height significantly. According to an eyewitness who was on guard duty at the fire station facing the direction of the aircraft's approach, the aircraft approached from the south-easterly direction and came into contact with a 3-metre tall tree located approximately 400 metres (m) from the aerodrome before disappearing behind some short trees. The eyewitness later heard a loud bang coming from the direction from which the aircraft had disappeared. The loud bang was followed by dark smoke. Upon seeing the dark smoke, the eyewitness alerted the fire-fighting personnel who dispatched to the accident scene.

1.1.4 It was determined that during the accident sequence, the aircraft's nose section and the left wing inner leading edge collided with a thorny tree. The aircraft swung around and came to rest facing south. A post-impact fire erupted thereafter.



- 1.1.5 The aircraft was consumed by post-impact fire, causing serious burn injuries to the pilot. However, he managed to escape from the wreckage with 95 percent burn wounds. Upon arrival at the accident site, the Polokwane Municipal Fire-fighting personnel treated the pilot who was later rushed to the hospital. The fire-fighting personnel also extinguished the fire on the aircraft. They further controlled/extinguished the veld fire which had started around the aircraft. The aircraft was destroyed by post-impact fire; however, the aircraft's engine was recovered for further investigation. The pilot succumbed to his injuries in hospital the following day.
- 1.1.6 The aircraft accident occurred during daylight on a bushy terrain with obstacles (trees, electrical power lines and perimeter fence) and near FAPI at Global Positioning System (GPS) readings: S 23°55'54.19" E 029°28'40.86" and at a field elevation of 4250 feet (ft).



**Figure 3:** An aerial view of the accident site. (Source: Google Earth)

## 1.2. Injuries to Persons

Injuries	Pilot	Crew	Pass.	Total On-board	Other (On Ground)
Fatal	1	-	-	1	-
Serious	-	-	-	-	-
Minor	-	-	-	-	-
None	-	-	-	-	-
Total	1	-	-	1	-

Note: Other means people on ground.

## 1.3. Damage to Aircraft

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



**Figure 4:** The burnt wreckage after the fire was put out.

#### 1.4. Other Damage

1.4.1 None.

#### 1.5. Personnel Information

Nationality	South African	Gender	Male	Age	69
Licence Number	0279007900	Licence Type	National Pilot Licence		
Licence Valid	Yes	Type Endorsed	Yes		
Ratings	None				
Medical Expiry Date	8 November 2022				
Restrictions	To wear corrective lenses				
Previous Accidents	None				

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

1.5.1 The pilot was initially issued a National Pilot Licence on 14 September 2011. The licence was revalidated and reissued on 9 November 2020 with an expiry date of 8 November 2022. The pilot's Class II medical certificate was issued on 12 July 2019 with an expiry date of 12 July 2021.

## Flying Experience:

Total Hours	63.6
Total Past 24 Hours	1.4
Total Past 7 Days	15
Total Past 90 Days	31.2
Total on Type Past 90 Days	31.2
Total on Type	31.2

### 1.6. Aircraft Information

- 1.6.1 The Bushbaby is a side-by-side two-seater single engine high-wing with composite tanks and fixed undercarriage light land aircraft. It is of welded steel tube and polyfibre fabric construction. The foldable wings are constructed from tubular aluminium spar with plywood ribs. This tail dragger was fitted with a BMW boxer GS1200 4-stroke 2 cylinders pull engine. According to the aircraft manufacturer, the standard kit is equipped with a Rotax 912 ULS type engine.

#### Airframe:

Manufacturer/Model	Kitplanes for Africa/Bushbaby Explorer	
Serial Number	154-06-11 EXP	
Year of Manufacture	2011	
Total Airframe Hours (At Time of Accident)	65.3	
Last MPI (Date & Hours)	4 June 2020	52.3
Hours Since Last MPI	18.6	
ATF (Issue Date)	13 October 2020	
ATF (Expiry Date)	12 October 2021	
C of R (Issue Date) (Present Owner)	21 January 2013	
Type of Fuel Used in the Aircraft	Mogas	
Operating Categories	Normal	
Previous Accidents	None	

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

#### Engine:

Manufacturer/Model	BMW 1200 GS
Serial Number	122EF17087229
Hours Since New	1987.3
Hours Since Overhaul	TBO not reached



**Propeller:**

Manufacturer/Model	IVO
Serial Number	DL/74/3313
Hours Since New	20.8
Hours Since Overhaul	TBO not reached

**1.7. Meteorological Information**

1.7.1 Meteorological information was sourced from the South African Weather Service (SAWS) for 26 May 2021 at 1500Z.

Wind Direction	120°	Wind Speed	01KT	Visibility	≥10000
Temperature	22°	Cloud Cover	CAVOK	Cloud Base	CAVOK
Dew Point	00°	QNH	1023		

**1.8. Aids to Navigation**

1.8.1 The aircraft was equipped with standard navigational equipment as approved by the Regulator (SACAA) for the aircraft type. There was no record indicating that the navigation system was unserviceable prior to the accident.

**1.9. Communication**

1.9.1 The aircraft was equipped with standard communication equipment as approved by the Regulator for the aircraft type. There was no record indicating that the communication system was unserviceable prior to the accident. The pilot was in contact with FAPP ATC on frequency 114.50 MHz.

**1.10. Aerodrome Information**

1.10.1 The aircraft accident occurred 30m from the aerodrome (FAP) perimeter fence on the eastern side.

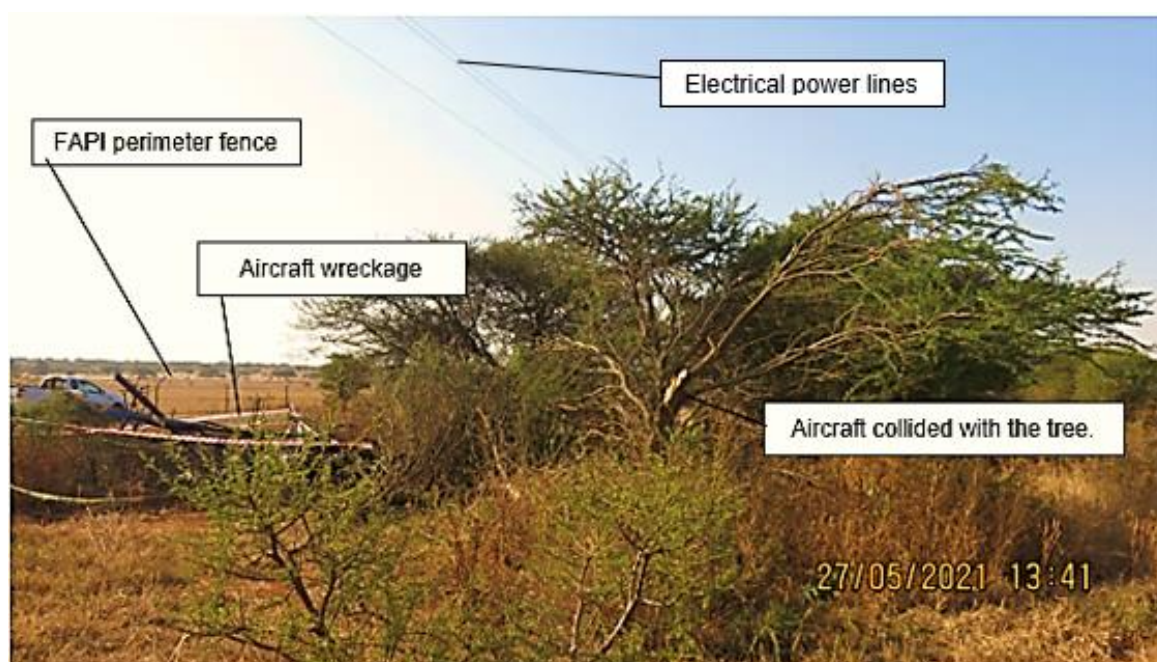
Aerodrome Location	Polokwane Civil, Limpopo Province
Aerodrome Status	Licensed
Aerodrome Co-ordinates	S 23°55.56' E 029°29.06'
Aerodrome Altitude	4354 ft
Runway Headings	08/26
Runway Dimensions	2200 X 25 meters
Runway Used	RWY08
Runway Surface	Asphalt
Approach Facilities	None
Radio Frequency	114.50 MHz

## 1.11. Flight Recorders

1.11.1 The aircraft was not equipped with a flight data recorder (FDR) or a cockpit voice recorder, (CVR) and neither was required by regulation to be fitted to this aircraft type.

## 1.12 Wreckage and Impact Information

1.12.1 The aircraft accident occurred 30m from FAPI's perimeter fence on the eastern side. The aircraft crashed on a bushy terrain close to electrical power lines. The aircraft collided with a thorny tree and swung around approximately 180 degrees to face the opposite direction of approach before coming to rest; thereafter, a post-impact fire ensued.



**Figure 5:** The accident site and obstacles in the area.

1.12.2 The left-side main gear was found near the right-side main landing gear. The left-side landing gear strut was bent towards the right-side main landing gear.



**Figure 6:** Both landing gears were found on the right-side of the wreckage.

1.12.3 The aircraft was equipped with a three-bladed propeller and two of the propeller blades were damaged by post-impact fire. One of the propeller blades was found with no damages. The damage to the composite propeller blades was indicative of an engine that was not turning during collision with the tree and impact with the ground.



**Figure 7:** The damage on the propeller blades.

1.12.4 All aircraft control surfaces and cabling were found intact and were accounted for at the crash site.

### **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 considered not survivable. Although the cockpit structure was intact, survivability was diminished as a result of the post-impact fire that consumed the aircraft. The aircraft contained full fuel tanks at the beginning of circuit training exercises.

### **1.16 Tests and Research**

1.16.1 To be discussed in the final report.

### **1.17 Organisational and Management Information**

1.17.1 The aircraft was operated privately under the provisions of Part 94 of the Civil Aviation Regulations (CAR) 2011 as amended. The aircraft had a valid Certificate of Authority to Fly issued by the Regulator on 2 July 2020 with an expiry date of 30 July 2021.

1.17.2 The aircraft was maintained by the Approved Person (AP) who was in possession of an authorised AP122 certificate issued by the Regulator on 2 August 2019 with an expiry date of 1 August 2021. The aircraft was issued a Certificate of Release to Service on 4 June 2020 at 39.5 airframe hours with an expiry date of 4 November 2020 or at 56.43 airframe hours, whichever comes first.

1.17.3 The aircraft was originally equipped with a four-cylinder Rotax 912 ULS engine, which was removed and replaced with a BMW GS1200 two-cylinder motorcycle engine by the owner.

### **1.18 Additional Information**

1.18.1 None.

### **1.19 Useful or Effective Investigation Techniques**

1.19.1 To be discussed in the final report.



## 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 particular 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

- 2.2.1 The pilot was initially issued a National Pilot Licence (NPL) on 14 September 2011. The licence revalidation was issued on 9 November 2020 with an expiry date of 8 November 2022.
- 2.2.2 The pilot's Class II medical certificate was issued on 12 July 2019 with an expiry date of 12 July 2021.
- 2.2.3 The aircraft was issued a Certificate of Registration on 21 January 2013.
- 2.2.4 The aircraft was issued an Authority to Fly (ATF) on 13 October 2020 with an expiry date of 12 October 2021.
- 2.2.5 The flight was conducted in Visual Flight Rules (VFR) by day under the provisions of Part 94 of CAR 2011 as amended.
- 2.2.6 The aircraft was maintained by an AP licensed by Aeroclub of South Africa with an AP number 122. The AP's licence/certificate number was issued on 2 August 2019 with an expiry date of 1 August 2021.
- 2.2.7 The last annual maintenance inspection was carried out on 4 June 2020 at 39.5 airframe hours, 52.3 engine hours and 2.0 propeller hours. An application for extension of Proving Flight Authority was filed on 4 June 2020 with an expiry date of 4 November 2020 or at 56.43 airframe hours, whichever occurs first. The aircraft had flown a further 26.9 hours after the annual inspection.
- 2.2.8 The pilot reported to ATC at FAPP that his aircraft had experienced an engine failure and that he intended to execute a forced landing at FAPI. On final glide path for a forced landing at FAPI, the aircraft collided with a thorny tree approximately 200m from the aerodrome's perimeter. The aircraft swung around about 180 degrees and came to rest facing south. A post-impact fire erupted thereafter, causing burn injuries to the pilot as well as consumed the aircraft. The pilot managed to escape from the burning aircraft with 95% burn wounds. He was treated by emergency personnel at the accident scene, however, he succumbed to the injuries in hospital the following day.



### **3. On-going Investigation**

- 3.1 The AIID investigation is on-going and the investigator/s will be looking into 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**