

THE REPUBLIC OF KENYA



MINISTRY OF ROADS AND TRANSPORT

STATE DEPARTMENT FOR TRANSPORT

AIRCRAFT ACCIDENT INVESTIGATION DEPARTMENT

INVESTIGATION REPORT 05/03/22

**INVESTIGATION REPORT OF A SERIOUS INCIDENT INVOLVING
A CESSNA C-152N AIRCRAFT REGISTRATION 5Y-BWM ON 07
MARCH 2022 AT NYARIBO AIRSTRIP, NYERI COUNTY**

SERIOUS INCIDENT REPORT SUMMARY

OPERATOR	:	Flight Training Centre Limited
AIRCRAFT TYPE	:	Cessna 152N
AIRCRAFT MANUFACTURER	:	Textron Aviation Inc.
YEAR OF MANUFACTURE	:	1979
AIRCRAFT REGISTRATION	:	5Y-BWM
AIRCRAFT SERIAL NUMBER	:	152-83933
DATE OF REGISTRATION	:	26 February 2009
NUMBER AND TYPE OF ENGINE	:	One, Lycoming O-320-E2D
DATE OF OCCURRENCE	:	07 March 2022
LAST POINT OF DEPARTURE	:	Nyaribo airstrip, Nyeri County (0° 22' 25"S, 36° 59' 00"E)
POINT OF INTENDED LANDING	:	Nyaribo Airstrip
TIME OF OCCURRENCE	:	0630 (0930)
LOCATION OF OCCURRENCE	:	Nyaribo airstrip
TYPE OF FLIGHT	:	Training
PHASE OF FLIGHT	:	Landing
NUMBER OF PERSONS ON BOARD	:	One
INJURIES	:	None
NATURE OF DAMAGE	:	Minor
CLASS OF OCCURRENCE	:	Serious incident
PILOT IN COMMAND	:	SPL
PIC's FLYING EXPERIENCE	:	36 Hours

All times given in this report are Coordinated Universal Time (UTC), with East African Local Time in Parenthesis

OBJECTIVE

This report contains factual information that has been determined up to the time of publication. The information in this report is published to inform the aviation industry and the public of the general circumstances of the incident.

This investigation has been carried out in accordance with The Kenya Civil Aviation (Aircraft Accident and Incident Investigation) Regulations, 2018, and Annex 13 to the ICAO Convention on International Civil Aviation.

The sole objective of the investigation of an accident or incident under these Regulations shall be the prevention of accidents and incidents. It shall not be the purpose of such an investigation to apportion blame or liability.

The information contained in this report is derived from the data collected during the investigation of the Incident.

INVESTIGATION PROCESS

The occurrence involving a Cessna 152N passenger aircraft registration 5Y-BWM was notified to the Aircraft Accident Investigation Department (AAID), State Department for Transport (SDT) of the Ministry of Roads and Transport, through a phone call by Wilson airport Control Tower.

Under the provisions of Annex 13 to the Convention on International Civil Aviation, Kenya's civil aviation act, and regulations, an investigation into the circumstances leading to the occurrence was initiated immediately.

After the initial on-site investigation phase, the occurrence was classified as a 'Serious Incident' owing to the nature of the occurrence.

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LIST OF ABBREVIATIONS/GLOSSARY OF TERMS

AAID	-	Aircraft Accident Investigation Department
AMSL	-	Above Mean Sea Level
FT	-	feet
ICAO	-	International Civil Aviation Organization
KCAA	-	Kenya Civil Aviation Authority
LH	-	Left Hand
LT	-	Local Time
RH	-	Right Hand
TBN	-	To Be Notified
VFR	-	Visual Flight Rules

SYNOPSIS

The report describes the events of a serious incident that occurred on 07 March 2022 at 0630 (0930) involving a Cessna 152N aircraft registration 5Y-BWM operated by Flight Training Centre Limited. The incident was notified to AAID on the same day at (0840) 1140.

The aircraft under the command of a Student Pilot (Trainee) was carrying out Local flying (touch and go) at the Nyaribo airstrip in Nyeri County. This was the seventh solo flight of the day for the student pilot having performed six solo flights which were uneventful. During the seventh landing, the aircraft touched down, on runway 16, veered off the runway to the left and came to a halt 146 metres off the runway centerline. There was no pre or post-impact fire.

The probable cause of the incident was the incorrect technique applied by the student pilot on touchdown that led to the aircraft veering off the runway.

1.0 FACTUAL INFORMATION

1.1 History of the Flight

On 07 March 2022, touch and go flights were planned for the Student pilot on Cessna 152N aircraft registration 5Y-BWM. The student pilot reported that after six touches and go which took him approximately an hour, on the seventh landing, he made a right downwind approach to land at Nyaribo airstrip, turned base runway 16 and descended to about 6,300ft on the QNH 29.92Hg with a fairly stable approach and speed varying between 55-60 knots. Coming in view of the runway, the pilot cut off power past the runway locator and began the flare until touch down, slightly off the centre line to the left. This was corrected with right rudder input momentarily but the aircraft continued with the ground roll and travelled about 146 metres from the initial point of touch down before veering off to the left into the grass, striking trees with the left wing and eventually coming to a stop.

The left-wing, the propeller and the rear windows were damaged. There were no injuries and the pilot disembarked from the aircraft unaided.

1.2 Injuries to Persons

Table 1: Injury chart

Injuries	Crew	Passenger	Others
Fatal	0	0	0
Serious	0	0	0
Minor/None	1	0	

1.3 Damage to Aircraft



Figure 1: The aircraft in a grassy area within the confines of the Aerodrome

The aircraft sustained damage along the outer length of the left-hand wing leading edge, the tip of the right-wing and the propeller blades.

1.4 Other Damage

There was no other damage.

1.5 Pilot's Information

At the time of the occurrence, the 32-year-old Kenyan male held an SPL issued by Kenya Civil Aviation Authority (KCAA).

Table 2: Summary of the pilot’s relevant information

D.o.B/Age	3 July 1989/32
Sex	Male
Nationality	Kenyan
Type of License	SPL
Issuing Authority	KCAA
Date of issue	9 March 2019
Validity of License	24 June 2023
Ratings	Nil
Total Flying hours	31
Total hours on type	31
Total last 90 days (hours)	N/A
Total last 30 days (hours)	N/A
Total last 7 days (hours)	N/A
Total last 24 Hours (hours)	1.7
Medical Certificate (Class/Validity)	Class 2 with no restrictions/limitations, issued on 25 June 2021, Valid for 24 Months.

1.6 Aircraft Information

1.6.1 General information

The aircraft, a Cessna 152N serial number 152-83933, was manufactured in 1980 by Textron Aviation Inc. and entered the Kenyan register on 26 January 2009. It is a high-wing monoplane of all-metal, semi-monocoque construction, equipped with a fixed tricycle landing gear. The steerable nose gear is equipped with an air/hydraulic fluid shock strut.

The aircraft has four-place seating, and a double, fold-up auxiliary rear seat. It is powered by four-cylinder, horizontally opposed air-cooled” Blue streak” (Lycoming) engines. The engine drives a fixed-pitch propeller. It has rear side windows, a “wrap-around” rear window, and a swept-back fin and rudder.

1.6.2 5Y-BWM



Figure 2: 5Y- BWM Aircraft before the incident

Table 3: Aircraft data at the time of the incident

Manufacturer:	Textron Aviation Inc.
Model:	Cessna 152N
Manufacturer Serial Number:	152-83933
Year of manufacture:	1980
Total hours since new	12,290.0
Nationality and registration mark:	Kenyan, 5Y-BWM
Certificate of airworthiness	
Number:	S/No. 2325
Renewal date	3 February 2022
Valid until:	2 February 2023
Certificate of registration	
Number:	S/No 2181
Issue date:	26 January 2009
Engine	Lycoming O-235-L2C
Engine Serial Number	L-23479-215
Total time since new	7,747.2 hours
Last major inspection and date:	4 January 2022
Total hours since the last inspection:	40.2 hours
Total hours since the last COA:	40.2 hours
Maximum take-off Weight	1,043 Kgs (1670 lbs)
Maximum Landing Weight	757.5Kg (1670 lbs)
Maximum Operating Altitude	14,000ft
Propeller Type	SENSENICH 72CKS6-0-52
Propeller Weight	12.88Kg (28.4 lbs) at an arm of 36.5 inches
No. of Blades	2
Constructor/ Constructor's No.	SENSENICH/ K11976

The aircraft was maintained at the Kenya Wildlife Service Airwing, an Approved Maintenance Organization (AMO) with Certificate number K/AMO/L/30 issued on 6 October 2021, and validity up to 6 October 2022.

The Aircraft technical records indicated that Check 1 inspection was carried out on 22 December 2020 per Approved Maintenance Program Ref: 99s/TECH/MS/172/01-ISSUE 2-Rev-0, Work order 2020084 and there were no significant airworthiness issues. The total aircraft hours recorded during that maintenance was 10505.0 since new. A maintenance history review of the aircraft's documentation showed it had a valid certificate of release to service with no defects.

1.6.3 Fuel

The fuel used was AVGAS 100/100LL.

1.7 Meteorological Information

At the time of the incident, the weather was reported to be favourable for a VFR flight and the prevailing visibility was greater than 6 km.

1.8 Aids to Navigation

The flight was conducted in the daytime under VFR.

1.9 Communication

There was no recorded failure or defect in communication before or during the flight. This was not considered a factor.

1.10 Aerodrome information

The serious incident occurred a few metres from the edge of the runway at Nyaribo airstrip which is located at a high altitude on the slopes of Mt. Kenya in Nyeri County and is about 1,707 meters (5830 ft) AMSL. The airstrip is unmanned, has one asphalt runway which is about 2 kilometres long and it is not equipped with ILS equipment. The airstrip serves domestic flights primarily tourist and private charters.



Figure 3: The Nyaribo Airstrip

1.11 Flight Recorders

The aircraft was not fitted with flight recorders and it was not a requirement by the KCAA regulations.

1.12 Wreckage and Impact Information

The aircraft came to a final stop about 29 meters to the left of the runway. It was largely intact. The right-wing came into contact with the ground at its tip damaging it within that area while the left-wing struck trees damaging the leading edge along its outer length and the propeller blades struck the ground at the tips.

1.12.1 Salvage operations

To remove the aircraft from the location, the right-wing was lifted manually and thereafter the right main landing gear strut was forced down to support the fuselage. The aircraft was then pushed to the hangar.



Figure 4: The front section of the aircraft after the final stop



Figure 5: The occurrence aircraft viewed from the rear.



Damaged left wing leading edge due to impact with the trees

Figure 6: The damage to the left-wing



Figure 7: Right-wing outboard damage.



Figure 8: The Empennage section after the Incident



Fig 8: Cockpit Instruments

1.12.2 Emergency locator transmitter

The aircraft is equipped with an ELT.

1.13 Medical and Pathological Information

There was no evidence to indicate that physiological factors or incapacitation affected the performance of the pilot.

1.14 Fire

There was no pre or post-crash fire

1.15 Survival Aspects

The incident was survivable. The pilot did not suffer any injuries.

1.16 Tests and Research

Not applicable

1.17 Organizational and Management Information

Aircraft Owner : **ICARUS AVIATION LIMITED**
Aircraft Operator : **FLIGHT TRAINING CENTRE LIMITED**
Address : **WILSON AIRPORT, NAIROBI**
P.O Box 45538-00100, Nairobi, Kenya.

1.18 Additional information

Not applicable

1.19 Useful or Effective investigation techniques

Not applicable

2.0 Analysis

On the day of the occurrence, the student pilot was released by the flight instructor to carry out touch and go exercises (A total of 7 touch and go exercises). After takeoff for the last circuit, the student pilot reported that the performance of the aircraft was normal. Thereafter he began to descend on downwind & finals for runway 16 while maintaining an approach speed of between 55-60 Kts. Although the aircraft was not aligned with the runway on approach for landing, the student pilot cut off power near the airstrip fence, glided past the runway numbers and began the flare until touchdown. Upon realizing that the aircraft was off the centre line to the left, he initiated the right rudder input to correct the situation. The aircraft responded momentarily but continued to the left into the grass coming into contact with the terrain damaging the left wing, the propeller blades and the rear windows. The aircraft came to a stop facing the opposite direction of flight. Given that the aircraft was serviceable and no defect was reported on the aircraft by the pilot before the training flights, the Student Pilot's improper technique to maintain the centre line cannot be ruled out to have made the aircraft veered off the runway.

3.0 Conclusion

3.1 Findings, Probable Causes, and/or Contributing Factors

3.1.1 Findings

- i) The aircraft had been maintained under the applicable airworthiness regulations.
- ii) The aircraft had a valid airworthiness certificate. According to the documents obtained by AAID from the operator's base at Wilson airport, the aircraft was equipped and maintained in compliance with the requirements in effect and with the approved procedures.
- iii) The weather conditions at the time of the occurrence were within the limits for operations under VFR and considered suitable for the pilot to conduct the flight.
- iv) The aircraft had no outstanding defects and was serviceable for the occurrence flight.
- v) The aircraft had sufficient fuel for the flight.
- vi) The pilot had conducted six touch and go earlier in the morning and all were uneventful.
- vii) The pilot had a valid medical certificate.
- viii) Due to the presence of an obstacle (terrain) after veering off the runway, a significant left turn was made. This turn was necessitated by the gradient of the terrain leading towards the chain-link which would have provided less impact;
- ix) There were no emergency services to attend to the situation.

3.2 Probable Cause(s)

The probable cause of the incident was the mismanagement of the landing phase by the student pilot, which resulted in the aircraft veering off the runway and colliding with the terrain.

Martyn Lunani

CHIEF INVESTIGATOR OF ACCIDENTS

May 2023