



REPUBLIC OF KENYA

MINISTRY OF TRANSPORT, INFRASTRUCTURE, HOUSING, URBAN

DEVELOPMENT AND PUBLIC WORKS

STATE DEPARTMENT FOR TRANSPORT

AIRCRAFT ACCIDENT INVESTIGATION

PRELIMINARY AIRCRAFT ACCIDENT REPORT TO

CESSNA 208B

REGISTRATION 5Y-JKN

AT MARSABIT HILL

ON 20 MARCH 2021

SUMMARY OF THE ACCIDENT

OPERATOR/OWNER	:	Aeronav Air Services Ltd
AIRCRAFT TYPE/ MANUFACTURER	:	C208/Cessna (Textron)
YEAR OF MANUFACTURE	:	1998
AIRCRAFT REGISTRATION	:	5Y-JKN
AIRCRAFT SERIAL NUMBER	:	208B-0688
DATE OF REGISTRATION	:	17 July 2012
NUMBER AND TYPE OF ENGINE	:	One-PT6A-114A
ENGINE SERIAL NUMBER	:	PCE-PC2350
DATE OF OCCURRENCE	:	20 March 2021
TIME OF OCCURRENCE	:	10:00am (0700Z)
LOCATION OF OCCURRENCE	:	Marsabit Hill
TYPE OF FLIGHT	:	Commercial
PHASE OF FLIGHT	:	Approach
PERSONS ONBOARD	:	2
INJURIES	:	Fatal
NATURE OF DAMAGE	:	Destroyed
CATEGORY OF OCCURRENCE	:	Accident
PIC'S FLYING EXPERIENCE	:	ATPL/4235.5hours

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

OBJECTIVE

This report contains factual information which 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 accident.

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.

Investigation Process

The accident involving the C208B type of aircraft, registration 5Y-JKN was notified to the Aircraft Accident Investigation Department (AAID), State Department for Transport (SDT) of the Ministry of Transport, Infrastructure, Housing, Urban development, and Public Works through a phone call by Aeronav Air Services Ltd.

Under the provisions of Annex 13 to the Convention on International Civil Aviation, Kenya civil aviation act, and regulations, a team of AAID investigators was sent to the accident site on 21 March 2021 for initial onsite investigation and witness interviews.

After the initial on-site investigation phase, the occurrence was classified as an ‘Accident’ owing to the extent of injuries to the occupants and nature of damage to the Aircraft.

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LIST OF ABBREVIATIONS/GLOSSARY OF TERMS

AAID	-	Air Accident Investigation Department
AGL	-	Above Ground level
AMSL	-	Above Mean Sea Level
AOC	-	Air Operation Certificate
ATC	-	Air Traffic Services
ATPL	-	Airline Transport Pilot License
CPL	-	Commercial Pilot License
CPL	-	Commercial Pilot License
HKMB	-	Marsabit Airstrip
HKNW	-	Nairobi Wilson
IAS	-	Indicated airspeed
ICAO	-	International Civil Aviation Organization
KCAA	-	Kenya Civil Aviation Authority

SYNOPSIS

The report describes the accident to C208B type of aircraft, registration 5Y-JKN with two crew on onboard that occurred on Marsabit Hill on 20th March 2021 in which the aircraft crashed killing two crew onboard.

The aircraft with 2200lbs fuel onboard was chartered to ferry Marsabit County Officials to a peace keeping mission at Illeret 156 nautical miles North West of Marsabit town. Preliminary information revealed that the aircraft departed Wilson Airport at 08.20am (0520Z) and arrived within the vicinity of Marsabit town at around 10.00a.m (0700Z). It collided with Kofia Mbaya Hill - Marsabit terrain while attempting to approach Marsabit airstrip. The aircraft first impacted the terrain with its nose-wheel and the main landing gears leaving parts of the fuselage and iron box with its content kept in the lower baggage compartment on the sport. It then ballooned and missed a house before it flipped upside down and impacted the ground and came to rest facing opposite direction. It left a trail of aircraft parts along its path before it came to rest. The nose-wheel and its assembly separated and fell off and was found next to the house 110m from its first point of impact. There was no fire after impact but all the occupants received fatal injuries

1. FACTUAL INFORMATION

1.1 History of the Flight



Figure 1: Photograph of the accident aircraft at the accident site



Figure 2: Google earth map showing the position of the accident and the runway

On 20^h March 2021, the Air Accident Investigation unit at the Ministry of Transport, Infrastructure and Urban Development was notified of an accident involving a Cessna208B type of aircraft, registration 5Y-JKN operated by Aeronav Air Services Ltd at Marsabit Hill (Karantina). The aircraft departed Wilson Airport (HKNW) with a total of 2200lbs fuel on board on charter flight to ferry Marsabit County Officials to a peace keeping mission at Illeret 156 nautical miles North West of Marsabit town. Preliminary information revealed that the aircraft departed Wilson Airport at 08.20am (0520Z) and arrived within the vicinity of Marsabit town at 10.00am (0700Z). It collided with Marsabit Hill terrain while attempting to approach Marsabit airstrip 1.6 nautical miles from threshold runway 13. The aircraft first impacted the terrain with its nose-wheel and the main landing gears leaving parts of the fuselage and iron box with its content kept in the lower baggage compartment on the spot. It then ballooned and missed a house before it flipped upside down and impacted the ground and came to rest facing opposite

direction. It left a trail of aircraft parts along its path before it came to rest. The nose-wheel and its assembly separated and fell off and was found next to the house 110m from its first point of impact. There was no fire after impact but all the occupants received fatal injuries.

1.2 Injuries to Persons

Table 1: Injury chart

Injuries	Crew	Passenger	Others	Total
Fatal	2	0		0
Serious	0	0		0
Minor/none	0	0		0
Total	2	0		2

1.3 Damage to Aircraft

The aircraft was destroyed

1.4 Other Damages

Fuel spillage and damage to trees

1.5 Personnel Information

1.5.1. Captain

The Captain of the flight was 30 years old, he held valid medical certificate with no limitations and an Airline Transport Pilot License (ATPL) valid until 19th May 2021. He held ratings for Piper34, Cessna 208B and Let 410 aeroplanes. He had a total of 2329.6 hours on C208 and a total of 4235.2 hours.

1.5.2 First Officer

The first Officer was 24 years old, held a valid medical certificate with no limitation and had a commercial pilot license valid until 21st February 2022. He held ratings for Cessna 150, Piper34 and Cessna 208B aeroplanes. He had a total of 104.15 hours on Cessan 208B and a total of 344.1 hours.

1.6 Aircraft Information



Figure 3: Photograph of the aircraft before the accident

The accident aircraft registration 5Y-JKN, C208B type was constructed by Textron (Cessna) Co. in 1998. Aeronav purchased the aircraft in 2012 and was issued with a valid certificate of registration on 17th July 2012. Its certificate of airworthiness was issued on 7th February, 2021 expiring on 6th February 2022.

It is a single-engine turboprop with 1 or 2 crew compliment. It had a seating capacity of 12 passengers plus the two crew. It had 1 Engine Pratt & Whitney PT6A-114A turboprop,

constructed on 13th December, 2019 construction number PCE-PC2350 and had 291 hours since new. The airframe had a total of 17.1 hours since renewal of certificate of airworthiness and a total of 16343.8 hours since new. It had three propeller blades McCAULEY 3GFR34 C703, construction number 902400 with a total of 505 hours since major overhaul.

The last certificate of release to service dated 4th March 2021 indicated it was due for routine maintenance on 1st June 2021 or after 16442.8 airframe hours.

1.7. Meteorological Information.

1.7.1 Background Information

Long rains start in this area from mid-March until July every year. Marsabit hills are characterized by creation of their own weather marked by thick fog and rain showers during this period.

On 10th April, 2006 a Kenya Air force Y12 aircraft crashed on the same spot in thick fog killing 14 people on board.

1.7.2 Forecast Weather

The weather information obtained from the station indicated that it was expected to be strong winds above 25knots North West of Marsabit with few scattered AC clouds at the top highest between 6000' to 15000' clouds and at the lowest base between 1200' and 3000' above ground level. Surface visibility over 10km unless in fog, rain showers or thunderstorms.

1.7.3 Actual Weather at the time of the Accident

The weather information obtained from the station indicated as follows:

- a) Sunrise up to 0840 LMT(0540Z)-Weather was clear and all hills visible with visibility of more than 7 km, light winds and zero cloud cover.
- b) From 0840 LMT (0540Z) until 1225 LMT (0925Z) fast generating thick fog encompassed the entire family of hills reducing the visibility to less than 200 meters.

- c) During this period of thick fog, now and again gaps of improved, forward visibility occurred but they were closing almost as soon as they formed.
- d) After 0925Z, the sky cleared fully.

1.8 Aids to Navigation

There were no ground navigational aid at Marsabit Airstrip but the aircraft was equipped with ATC transponder 066-1062-0C S/N 17670, GPS Germin Aera 550 and EGPWS

1.9 Communication

It had onboard radio equipment make Bendix/King Model KX 165 AND Bendix/King Model KHF 950 approved by Communication Authority of Kenya valid until Jun 2021.

1.10 Aerodrome Information

Marsabit is a Government airstrip runway orientation of 13/31, coordinates N 02°20'49.5" E 037°59'03.2" with an elevation of 1339.9m, measuring length 1km, width 20m located 1km from Marsabit town. It is covered with gravel surface runway which was found to be in good condition. It is a gravel covered surface runway.

According to the information obtained from Flying Doctor's airfield information, booklet, it indicates that it has lots of high ground, watch-out in low weather and use Segel as alternate. There are aerial masts and wind turbines as well.



Figure 4: Google earth map showing Marsabit airstrip and the accident site

1.11. Flight Recorders

The aircraft was not equipped with flight recorders nor was it required to be fitted by KCAA regulations

1.12. Wreckage and Impact Information

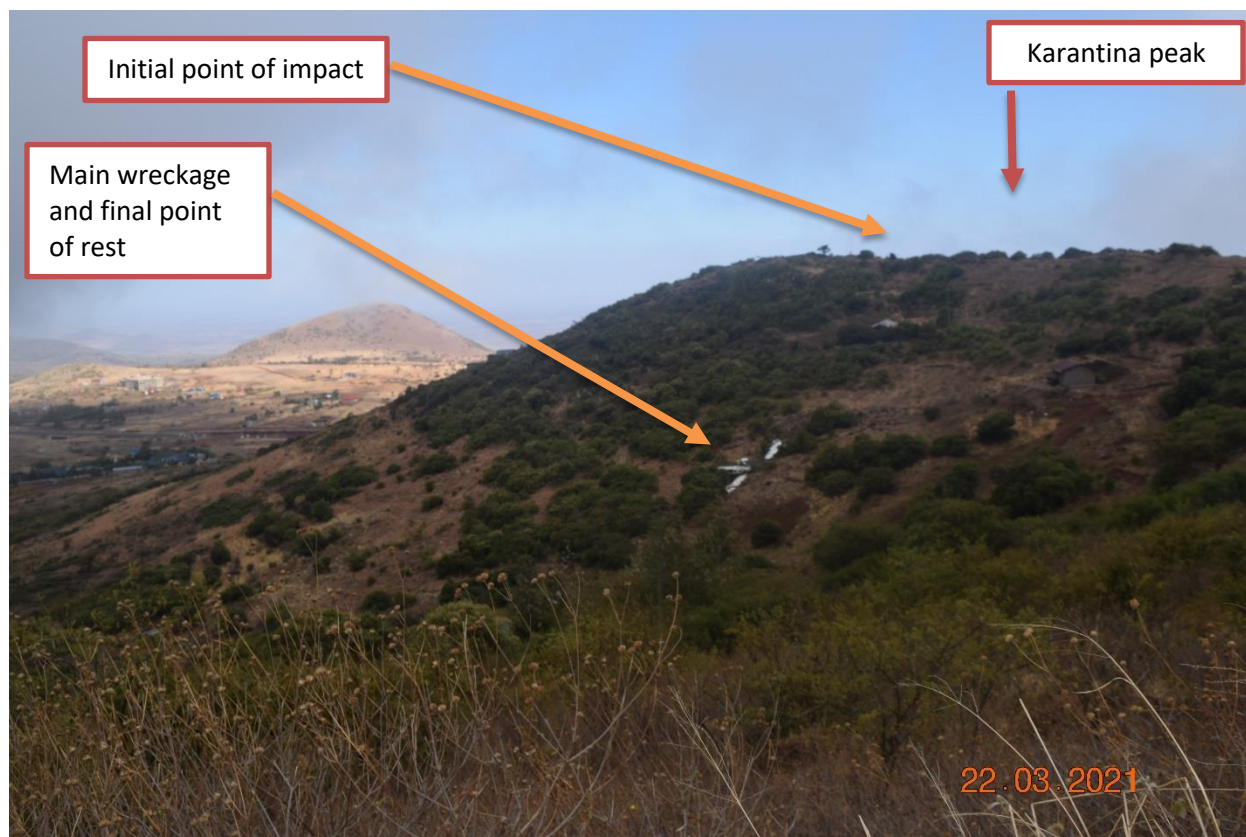


Figure 5: Photograph showing the first point of impact and final wreckage position



Figure 6: Photograph showing the wreckage of the accident aircraft

The aircraft impacted the hill top with its nose wheel and landing gear after which the nose wheel collapsed and separated. The fuselage also contacted the ground and some parts peeled-off. An iron box containing aircraft oil lubricants, mechanic rags, locking wire and water was found at the first point of impact. A bag containing personal effects for the first officer was also found at the first point of impact. The right wing broke off and separated from the main fuselage but remained near the main wreckage (7m) away. The propeller and its assembly separated and was not accounted for except a single piece of the propeller blade was collected along the path. The nose wheel landing gear was found next to a house along the wreckage flight path.

1.13 Medical and Pathological Information

The report is yet to be notified

1.14 Fire

There was no post fire after impact

1.15. Survival Aspects

The accident was not survivable due to high impact forces, however two men who noticed the accident raised the alarm and arrived at the accident site within 2 minutes but were unable to remove the crew because the aircraft was inverted and they were trapped within the cabin until the arrival of the security officers

1.16. Tests and Research.

Not applicable

1.17. Organization and management information

Aeronav Air Services Ltd is a local charter airline based at Wilson airport Kenya that operates non-scheduled passenger and cargo air charter services. It has a fleet of C172, C206, PA34, B58, and C208. It had a valid air operation certificate (AOC) issued on 30th July 2020 expiring on 29th July 2021.

1.18. Additional Information

Not applicable

1.19 useful or effective investigation techniques

Not applicable

2. CONCLUSION

Investigation is ongoing to establish cause of the accident.

Martyn Lunani

CHIEF INVESTIGATOR OF ACCIDENTS

30th March 2021

