

THE REPUBLIC OF KENYA



MINISTRY OF ROADS AND TRANSPORT

STATE DEPARTMENT FOR TRANSPORT

AIRCRAFT ACCIDENT INVESTIGATION DEPARTMENT

PRELIMINARY INVESTIGATION REPORT 25/09/22

SERIOUS INCIDENT INVOLVING A FOKKER 27 MK0502

AIRCRAFT REGISTRATION 5Y-FAI

JOMO KENYATTA INTERNATIONAL AIRPORT, NAIROBI COUNTY

ON 25 SEPTEMBER 2022

SERIOUS INCIDENT PRELIMINARY REPORT SUMMARY

OPERATOR	:	Freedom Airline Express Limited
AIRCRAFT TYPE	:	Fokker 27 MK 0502
AIRCRAFT MANUFACTURER	:	Fokker BV, Netherlands
YEAR OF MANUFACTURE	:	1993
AIRCRAFT REGISTRATION	:	5Y-FAI
AIRCRAFT SERIAL NUMBER	:	20282
DATE OF REGISTRATION	:	20 June 2017
NUMBER AND TYPE OF ENGINE	:	2, Pratt & Whitney
DATE OF OCCURRENCE	:	25 September 2022
LAST POINT OF DEPARTURE	:	Jomo Kenyatta International Airport, Nairobi.
POINT OF INTENDED LANDING	:	Mogadishu, Somalia
TIME OF OCCURRENCE	:	0435 (0735)
LOCATION OF OCCURRENCE	:	Jomo Kenyatta International Airport, Nairobi
TYPE OF FLIGHT	:	Commercial, Scheduled
PHASE OF FLIGHT	:	Taxi
NUMBER OF PERSONS ON BOARD	:	55
INJURIES	:	None
NATURE OF DAMAGE	:	Substantial
CLASS OF OCCURRENCE	:	Serious incident
PILOT IN COMMAND	:	ATPL Holder
PIC's FLYING EXPERIENCE	:	4392.3 Hours

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

OBJECTIVE

This Preliminary 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 Fokker 27 MK0502 passenger aircraft registration 5Y-FAI 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 Jomo Kenyatta International Airport Control Tower personnel.

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
HKJK	-	Jomo Kenyatta International Airport
FT	-	feet
GPU	-	Ground Power Unit
ICAO	-	International Civil Aviation Organization
IFR	-	Instrument Flight Rules
KCAA	-	Kenya Civil Aviation Authority
LH	-	Left Hand
LT	-	Local Time
MGQ	-	Aden Adde International Airport
RH	-	Right Hand
TBN	-	To Be Notified
T	-	Terminal

SYNOPSIS

The report describes the events of a serious incident that occurred on 25 September 2022 at 0430 (0735) involving a Fokker 27 MK0502 aircraft registration 5Y-FAI operated by Freedom Airlines Express Limited. The incident was notified to AAID on the same day.

The aircraft under the command of a Captain was carrying out a Scheduled flight from Jomo Kenyatta International Airport in Nairobi County to Mogadishu, Aden Adde International Airport.

The cause of the incident was the impact between the R/H propeller blades and the Ground Power Unit.

At the time of the occurrence, there were 55 persons onboard the aircraft. No injuries were reported in the aircraft or on the ground. Damage to the aircraft was limited to the RH propeller blade, power plant and fuselage.

1.0 FACTUAL INFORMATION

1.1 History of the Flight

At the time of occurrence, the aircraft Fokker 27 MK0502 registration 5Y-FAI was operated by Freedom Airlines Express Limited. On 25 September 2022, the aircraft was to perform a scheduled commercial flight from Wilson Airport to Mogadishu, Aden Adde International Airport (MGQ) but was rescheduled to depart from Nairobi, JKIA (HKJK) to Mogadishu.

The crew ferried the aircraft from Wilson to the JKIA and on arrival, the aircraft was taxied to terminal 2-M22 where the chocks were placed and the Ground Power Unit connected. The captain reported that the crew then disembarked to perform walk rounds as per the relevant checklist from which no anomalies were reported.

The flight crew then proceeded to do their briefing with the ground handling personnel and gave the boarding clearance. On completion, the captain reported, having obtained the engine start clearance and requested the ground handlers to remove the GPU and the chocks. The GPU was, however, not clear at the time the aircraft began taxiing and consequently, the aircraft engine no.2 propeller impacted the GPU, causing the separation of two propeller blades and damage to the remaining four blades. Shrapnel penetrated the fuselage above RH window number 5.

The Captain immediately shut down the engines and commanded the cabin crew to evacuate the passengers to the terminal building as per emergency evacuation procedures.

The aircraft sustained substantial damage to its RH Engine and shrapnel penetrated the upper part of the fuselage above the RH window NUMBER 5. The GPU was damaged and no injuries were reported.

1.2 Injuries to Persons

Table 1: Injury chart

Injuries	Crew	Passenger	Others
Fatal	0	0	0
Serious	0	0	0
Minor/None	5	50	

1.3 Damage to Aircraft



Figure 1: The aircraft viewed from the front after the occurrence.

The 2 propeller blades on engine no.2 separated from their attachment at the root and the other four disintegrated at various lengths after striking the GPU. The top right side of the fuselage suffered abrasion and puncture due to the impact of the shrapnel. The power plant suffered external visual damage.

1.4 Other Damage

There was damage to the upper part of the rear section of the GPU.

1.5 Personnel Information

1.5.1 Captain

At the time of the occurrence, the 35-year-old Kenyan male held a valid Airline Transport Pilots License first issued in 2019 by the Kenya Civil Aviation Authority (KCAA) and valid up to 17 March 2023. The pilot also held a valid Flight Radio Telephony Operator's License valid until 17 March 2024. The pilot held a valid medical certificate class 1 issued on 28 February 2022 and valid for 12 months and indefinite level 6 Language Proficiency Requirement endorsed on 25 February 2022.

He held a Fokker 27- 50 type and Piper PA 34 ratings endorsed on his ATPL Group 1

Table 2: Summary of the pilot's relevant information

D.o.B/Age	17 August 1987/35
Sex	Male
Nationality	Kenyan
Type of License	ATPL
Issuing Authority	KCAA
Date of issue	17 July 2019
Validity of License	17 March 2023
Ratings	Fokker 27- 50 and Piper PA 34
Total Flying hours	4400.3
Total hours on type	TBN
Total last 90 days (hours)	TBN
Total last 30 days (hours)	TBN
Total last 7 days (hours)	TBN
Total last 24 Hours (hours)	TBN
Medical Certificate (Class/Validity)	Class 1 with no restrictions/limitations, issued on 28 February 2022, Valid for 12 Months.

1.5.2 First Officer

At the time of the occurrence, the 32-year-old Kenyan male held a Commercial Pilots License issued on 6 August 2015 by Kenya Civil Aviation Authority (KCAA). The license was valid until 3 November 2022. The pilot also held a valid Flight Radio Telephony Operators License issued on 4 November 2021 valid until 3 November 2023. The pilot held a class 1 medical certificate with no restrictions/limitations issued on 28 February 2022 and valid for 12 months.

Table 2: Summary of the first officer's relevant information

D.o.B/Age	17 October 1989/32
Sex	Male
Nationality	Kenyan
Type of License	CPL
Issuing Authority	KCAA
Date of issue	6 August 2015
Validity of License	3 November 2022
Ratings	Fokker 27-50, Embreair 120, Pipper PA 34, Cessna C172
Total Flying hours	1488.3
Total hours on type	31
Total last 90 days (hours)	111.88
Total last 30 days (hours)	81.38
Total last 7 days (hours)	22.32
Total last 24 Hours (hours)	TBA
Medical Certificate (Class/Validity)	Class 1 with no restrictions/limitations, issued on 28 February 2022, Valid for 12 Months.

1.5.3 Ground Handler

The Ground Handler held a valid Ground Support Equipment (GSE) license issued on 1 August 2021 valid for 24 months, a KAA-approved Aviation Development Program (ADP) license valid until 30 April 2023, and a Tradewinds GPU operation certificate until 16 June 2024.

He was authorized to drive ramp vans, tractor, lav/water equipment, conveyor, forklift, prime mover, GPU, side step and high loader.

1.6 Aircraft Information

1.6.1 General information

The aircraft, a Fokker 27 MK0502 serial number 20282, was manufactured in 1993 by Fokker BV Netherlands and entered the Kenyan register on 20 June 2017. It is a twin turboprop-powered airliner, a high-wing monoplane of all-metal, equipped with a retractable tricycle landing gear. The steerable nose gear is equipped with an air/hydraulic fluid shock strut.

The aircraft has fifty-place seating; it is powered by two (2) Pratt and Whitney PW125B or PW127B turboprop engines, reduction gearing 0.060:1. The engines drive 2 Dowty Rotol propellers, diameter 3.65m (144inch) with 6 blades each.

1.6.2 5Y-FAI



Figure 2: 5Y-FAI Aircraft before the occurrence

Table 3: Aircraft data at the time of the incident

Manufacturer:	Fokker BV, Netherlands
Model:	Fokker 27 MK0502
Manufacturer Serial Number:	20282
Year of manufacture:	1993
Total hours since new	36,241.5
Nationality and registration mark:	Kenyan, 5Y-FAI
Certificate of airworthiness	
Number:	S/No. 12
Renewal date	16 May 2022
Valid until:	16 May 2023
Certificate of registration	
Number:	S/No. 2760
Issue date:	20 June 2017
Engines	Pratt & Whitney
Engine 1 RH Serial Number	125-109
Engine 2 LH Serial Number	124-010
Total time since new (TTSN)	43,854.5
Engine 1	42,782.67
Engine 2	
Last major inspection and date:	12 September 2022
Total hours since the last inspection:	607.5 hours
Total hours since the last COA:	607.5 hours
Maximum take-off Weight	19,950 kg (43.980 lb)
Maximum Landing Weight	19,500 kg (42.990 lb)
Maximum Operating Altitude	25,000 ft
R/H Propeller Type	R352/6-123-F/2
Propeller Weight	TBN
No of Blades	6
Constructor/ Constructor's No	DOWTY AEROSPACE PROPELLERS/ DRG6466/91

L/H Propeller Type	R352/6-123-F/2
Propeller Weight	N/A
No of Blades	6

The aircraft was maintained at the Freedom Airlines hangar at Wilson airport, an Approved Maintenance Organization (AMO) with Certificate number K/AMO/L/047 issued on 16 April 2022, with a validity up to 15 April 2023. A maintenance history review of the aircraft's documentation showed it had a valid certificate of release to service with no noted 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 an Instrument IFR flight a.

1.8 Aids to Navigation

No known difficulties with aids of navigation.

1.9 Communication

The flight crew carried out normal radio communications with the relevant ATC units.

1.10 Aerodrome information

The serious incident occurred at Nairobi's Jomo Kenyatta International Airport (JKIA) Terminal 2-M22, Latitude 011939.4S and Longitude 0365458.88E at an elevation of 5330 feet above the mean sea level (AMSL).

The aerodrome operates on a 24-hour basis. It has an asphalt runway 06/24 of dimension 4200 meters. The airport is equipped with manned air traffic control facilities.

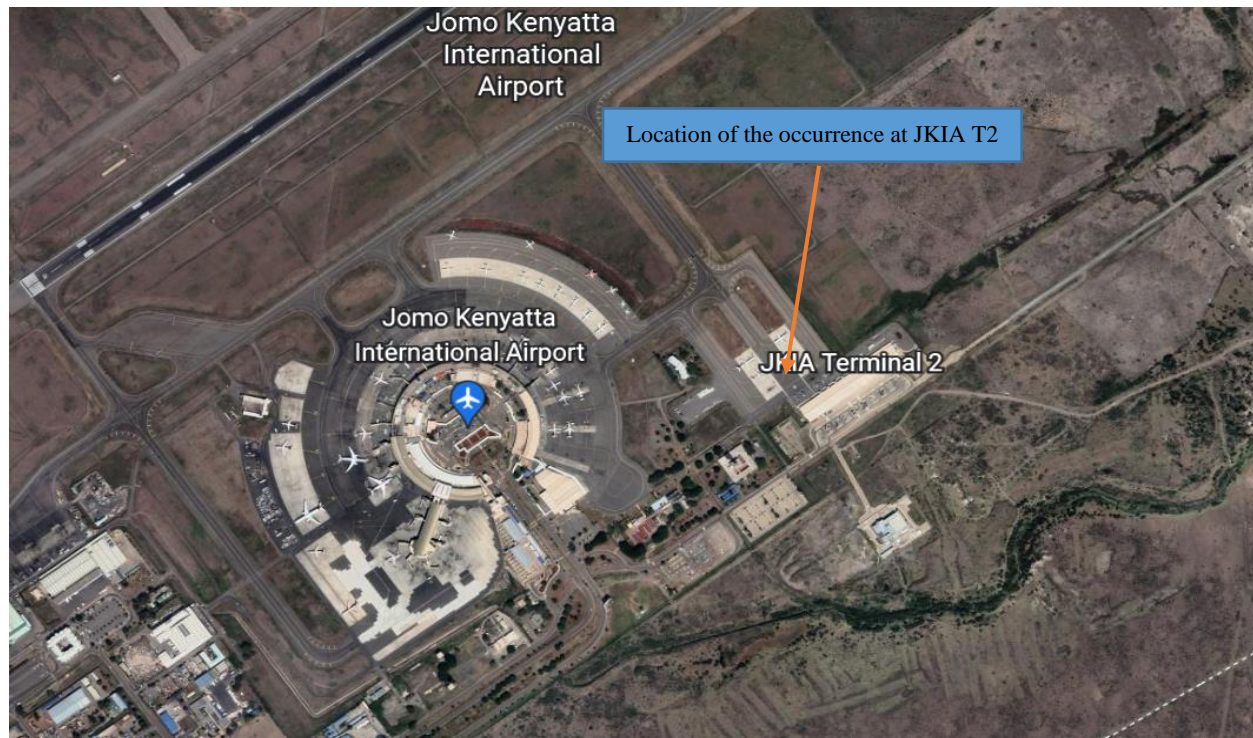


Figure 3: The Aerial view of Jomo Kenyatta International Airport

1.11 Flight Recorders

The aircraft was fitted with flight recorders (FDR) and a cockpit voice recorder (CVR) as per the KCAA requirements. The recorders were not retrieved for purposes of investigation.

1.12 Wreckage and Impact Information

The aircraft structure remained intact except for the damage of 4 R/H propeller blades and the separation of 2 other propeller blades on impacting with the stationary GPU. The GPU sustained substantial damage on impact with the propeller blades. The two separated propeller blades were recovered 140metres from the aircraft with remnants of the propeller blades penetrating the upper forward section of the fuselage above window number 5.

1.12.1 Recovery operations

The aircraft was largely intact except for the damage on the R/H wing propeller blades and the right upper part of the fuselage. The aircraft was later moved to the operator's maintenance hangar for further investigation.



Figure 4: Damage on the GPU



Figure 5: Damage on the R/H propeller blades



Figure 6: The RH side AFT section



Figure 7: Fuselage penetrated by the Shrapnel.



Figure 8: Damaged propeller blades and the GPU



Figure 9: One of the propeller blades that separated from the aircraft

1.12.2 Emergency locator transmitter

The aircraft is equipped with an ELT as per the KCAA requirements.

1.13 Medical and Pathological Information

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

1.14 Fire

There was no pre or post-crash fire

1.15 Survival Aspects

The incident was survivable. No injuries were reported.

1.16 Tests and Research

Not applicable

1.17 Organizational and Management Information

Freedom Airline (trading as Freedom Airline Express Ltd) is a modern, hybrid airline, established in 2008 with its base at Wilson Airport hangar 6, and registered under address, P.O. Box 24632-00100, Tel: +254 (20)2308560 Nairobi, Kenya.

The Airline is licensed to operate across the African continent and the Middle East with a fleet of aircraft comprising; turboprops and jets. It is also a certified aircraft maintenance service provider, authorized to provide specialized services to third parties at JKIA and Wilson Airport in Nairobi.

1.18 Additional information

Not applicable

1.19 Useful or Effective investigation techniques

Not applicable

2.0 Conclusion

2.1 Initial Findings

- i) According to the documents obtained by AAID from the operator's base at Wilson airport, the aircraft was certified, equipped and maintained in compliance with the existing regulations and approved procedures;
- ii) The aircraft had a valid Certificate of Airworthiness and had been maintained in compliance with the regulations;
- iii) There was no evidence of any defect or malfunction in the aircraft that could have contributed to the occurrence;
- iv) The aircraft had sufficient fuel for the flight;
- v) The flight crew held the appropriate qualifications and experience to fly the Fokker 27 MK0502 in accordance with the existing regulations;
- vi) The pilot had a valid medical certificate;
- vii) The flight crew's actions and statements indicated that their knowledge and understanding of the aircraft systems were adequate.
- viii) The Ground Handler held the appropriate qualifications and experience to handle the ground service equipment.
- ix) The weather conditions at the time of the occurrence were favourable for operations under IFR and considered suitable for the flight crew to conduct the flight.
- x) There was confirmation bias between the Flight Crew and Ground handler and this situation contributed to the occurrence;
- xi) There were emergency services to attend to the situation;

3.0 Summary

An investigation into the probable cause(s) of the occurrence is ongoing.

Fredrick Kabunge.

Investigator-In-Charge

23/09/2022