

REPUBLIC OF KENYA



**MINISTRY OF TRANSPORT, INFRASTRUCTURE,
HOUSING, URBAN DEVELOPMENT & PUBLIC WORKS**

STATE DEPARTMENT FOR TRANSPORT

AIRCRAFT ACCIDENT INVESTIGATION DEPARTMENT

PRELIMINARY ACCIDENT REPORT TO

ROBINSON R44 HELICOPTER, 5Y-MEP

17.10.2020

ELDAMAT-MELILI, NAROK COUNTY

November, 2020

PRELIMINARY ACCIDENT REPORT SUMMARY

OPERATOR	:	Karen Blixen Camp Trust
AIRCRAFT TYPE	:	Robinson Helicopter R44, Raven II
AIRCRAFT MANUFACTURER	:	Robinson Helicopter Company.
YEAR OF MANUFACTURE	:	May 2019
AIRCRAFT REGISTRATION	:	5Y-MEP
AIRCRAFT SERIAL NUMBER	:	14327
DATE OF REGISTRATION	:	20 June 2019
NUMBER AND TYPE OF ENGINE	:	One, Lycoming IO-540-AE1A5
DATE OF OCCURRENCE	:	17 October 2020
LAST POINT OF DEPARTURE	:	Eldamat-Melili, Narok County (0°55'38.96"N, 36°05'20.18"E)
POINT OF INTENDED LANDING	:	Olenkipejus Village
TIME OF OCCURRENCE	:	1315 (1615)
LOCATION OF OCCURRENCE	:	Eldamat-Melili, Narok County
TYPE OF FLIGHT	:	Passenger
PHASE OF FLIGHT	:	Take-off
NUMBER OF PERSONS ON BOARD	:	Three (3)
INJURIES	:	0
NATURE OF DAMAGE	:	Substantial
CLASS OF OCCURRENCE	:	Accident
PILOT IN COMMAND	:	YK-9740-PL (H)
PIC's FLYING EXPERIENCE	:	1471 Hours

All times given in this report is 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 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 occurrence involved a Robinson Helicopter R44 Raven II passenger helicopter, registration 5Y-MEP was notified to the Aircraft Accident Investigation Department (AAID), State Department for Transport (SDT), Ministry of Transport, Infrastructure, Housing, Urban development, and Public Works through a phone call by the Chief Executive Officer, Karen Blixen Camp Trust.

Under the provisions of Annex 13 to the Convention on International Civil Aviation and Kenya laws and regulations, a team of AAID investigators was dispatched to the site on 17 October 2020 for initial onsite investigation and witness interviews.

After the initial on-site investigation phase, the occurrence was classified as an ‘Accident’ owing to the substantial damage to the Aircraft.

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LIST OF ABBREVIATIONS/GLOSSARY OF TERMS

AAID	-	Aircraft Accident Investigation Department
AGL	-	Above Ground Level
AMSL	-	Above Mean Sea Level
FAA	-	Federal Aviation Authority
PPL	-	Private Pilot License
ELT	-	Emergency Locator Transmitter
FT	-	Feet
GPS	-	Global Positioning System
ICAO	-	International Civil Aviation Organization
KCAA	-	Kenya Civil Aviation Authority
KBCT	-	Karen Blixen Camp Trust
KTS	-	Knots
LBS	-	Pounds
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 helicopter accident that took place on 17 October 2020 involving a Robinson R44 Raven II registration 5Y-MEP operated by the Karen Blixen Camp Trust.

The helicopter took off at 1315 (1615) on a private Visual Flight Rules flight to Olenkipejus Village. Onboard were the pilot and two passengers who were on a private flight after attending a burial ceremony before the accident occurred at Melili Village in Narok County.

In conformity with ICAO provisions, AAID notified the State of manufacture of Robinson R44 helicopter.

Investigation of the accident involving 5Y-MEP is still ongoing to determine the facts, conditions, and circumstances in order to establish the probable cause(s).

2.0 FACTUAL INFORMATION

2.1 History of the Flight

On 17 October 2020 at 1330(1630), Aircraft Accident Investigation Department (AAID) was notified of an accident at Melili, Narok County by the Chief Executive Officer of Karen Blixen Camp Trust (KBCT). The accident involved a Robison R44 Raven II helicopter registration 5Y-MEP operated by Karen Blixen Camp Trust. The pilot reported that before the fateful flight he had conducted three flights that day each with two passengers on board. The three flights were uneventful. His client for the day was the Governor of the county.

The governor graced a burial ceremony at Melili and after the function, the pilot planned to fly him to the southeastern side of the Mau forest to inspect the extent of deforestation en-route to Olenkipejus village. He reported having aborted the plan due to unfavourable weather conditions at the destination.

The helicopter lifted off at 1315 (1615) from a wheat-filled area at Melili for Olenkipejus village (see Figure 1). Onboard were the pilot, the governor, and his security guard. The Governor occupied the left front seat while his guard occupied the left rear one.

The pilot reported that whilst the helicopter was in a hover on a northerly heading (at approximately 15 meters above ground), with 15knots indicated airspeed, he got a low RPM warning and slightly lowered the collective control descending into a wheat field. The pilot made right yaw turn with the intention that the spot turn would stop at 180° (half a revolution) so that the helicopter could be stabilized in a hover facing the terrain of the Melili area before transitioning to forward flight over the wheat field. This subsequently developed into a continuous uncontrolled forward movement. The helicopter then impacted the terrain with a nose-down orientation on a southerly heading at approximately 100 m to the southwest of the lift-off position.

The helicopter eventually came to rest on its left side after the nose tipped over with the tail boom section detached from the main body. The tail boom severely fractured, locally twisted, and bent to the starboard near the damper bearing of the tail rotor drive shaft. The left skid was substantially damaged. The main rotor blades remained attached to the helicopter but were significantly bent and twisted. Both blades of the tail rotor were severed.

There was no post-impact fire

There were no reported injuries to the persons on board.



Figure 1: The Wheatfield area

2.2 Injuries to Persons

Table 1: Injury chart

Injuries	Crew	Passenger	Others
Fatal	0	0	0
Serious	0	0	0
Minor/none	1	2	0
Total	1	2	

2.3 Damage to Aircraft

The helicopter was substantially damaged.



Figure 2: The wreckage of the helicopter

2.4 Other Damage

The destruction of the Wheatfield area spread across a diameter of approximately 38metres.

2.5 Pilot's Information

Records available showed that at the time of the crash, the pilot of 5Y-MEP was a 35-year old Kenyan male. He held a valid Private Pilot License (Helicopters) granted by the KCAA on the 02 November 2015 on the strength of his FAA license PPL Number 3736156 dated 14 December 2013. The pilot had a single aircraft type rating endorsed on his license under Group II.

On 7 August 2019, the pilot underwent a medical examination and was declared fit and issued with a class two certificate valid for 24 months.

He held a Flight Radio Telephony Operator's License number YK-9740-RL, issued by the KCAA on 16 August 2019 with a validity of up to 21 August 2021.

Table 2: Summary of the pilot’s relevant information

D.o.B/Age	1 March 1985 (35 years)
Sex	Male
Nationality	Kenyan
Type of License	Private Pilot License (Helicopters)
Issuing Authority	KCAA
Date of issue	2 November 2015
Last Issue	16 August 2019
Validity of License	Expires on 21 August 2021
Ratings	Robinson R44
Total Flying hours	≈1471
Total hours on type	≈1399
Total last 90 days (hours)	101
Total last 30 days (hours)	55
Total last 14 days (hours)	27
Total last 24 Hours (hours)	04
Medical Certificate (Class/Validity)	Class two medical Examined on 7 August 2019 Valid for 24 months

2.6 Aircraft Information

2.6.1. General

The Robinson R44 Raven II manufactured in the United States of America is a single-engine helicopter of the conventional layout (Figure 3) with a semi-rigid two-bladed main rotor, a two-bladed tail rotor, and a maximum gross weight of 2,500 pounds (Lbs). As of November 2018, the manufacturer had constructed approximately 12,000 R44s.

The primary fuselage structure is constructed of welded steel tubing covered with a riveted aluminum skin and is fitted with a skid landing gear. The tail cone is a monocoque aluminum structure. There are two front and two rear seats; the pilot normally occupies the front right seat.

It has a two-bladed rotor system, T-bar cyclic. It is equipped with dual controls and certified for single-pilot operations on the right front seat.

2.6.2. 5Y-MEP



Figure 3: 5Y-MEP before the accident

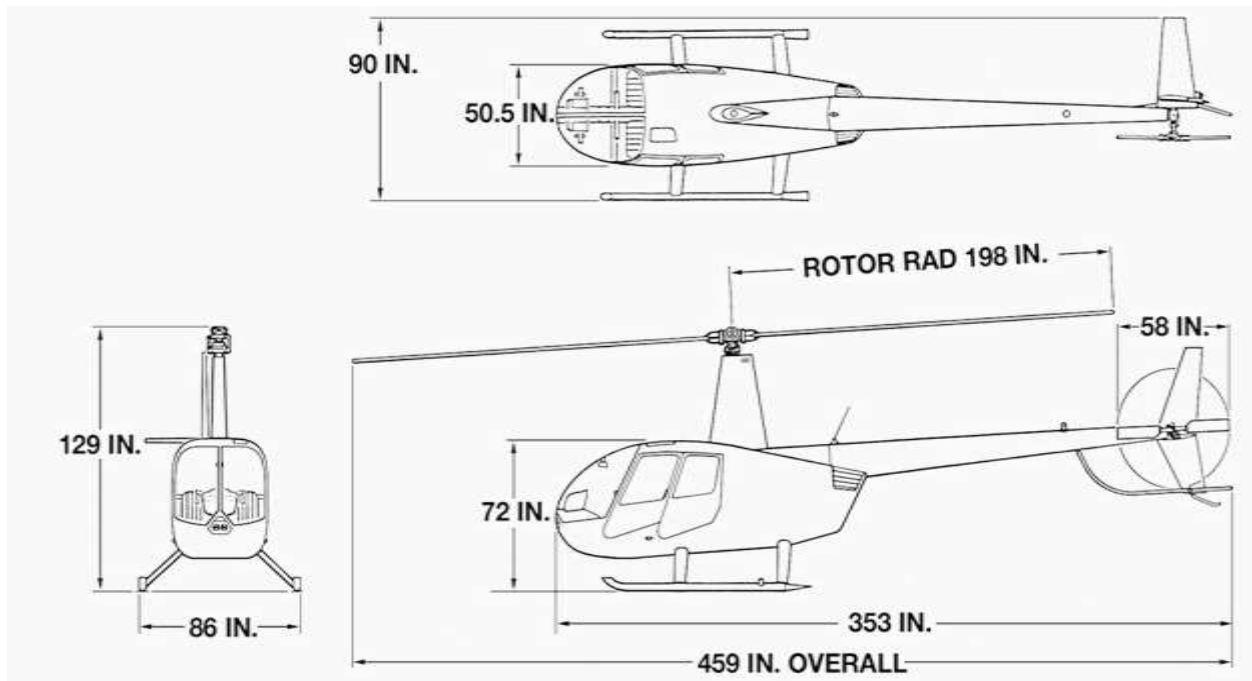


Figure 4: The Helicopter Dimensions



Figure 5: Robinson R44 Raven II Helicopter Cockpit layout

Table 1: Aircraft data at the time of the accident

Aircraft data at the time of the Accident	
Manufacturer:	Robinson Helicopter Company
Model:	Robinson Helicopter R44 RAVEN II
MSN:	14327
Date of manufacture:	May 2019
Nationality and registration mark:	Kenyan, 5Y-MEP
Certificate of airworthiness	
Number:	S/No 0742
Issue date:	12 August 2020
Valid to:	11 August 2020
Certificate of registration	
Number:	S/No 0138
Issue date:	20 June 2010
Date of delivery	TBN
Engine	Lycoming IO-540-AE1A5
Engine Serial Number	L-37217-48E
Total hours since new	405.7
Total cycles since new	TBN
Last major inspection and date:	TBN
Total hours since the last inspection:	TBN
Total cycles since the last inspection:	TBN
Maximum take-off Weight	1136 Kgs (2500LBS)
Maximum Landing Weight	1092 Kgs (2400LBS)
Maximum Operating Altitude	14,000ft

The Aircraft technical records indicated that the helicopter had been maintained per Maintenance Schedule AMP/HCEA/02/2019, Work order No 20200080016 and there had not been any significant airworthiness problems. The most recent scheduled maintenance check was a 50-hour Inspection carried out on 14 August 2020. At the time of that inspection, the airframe had accumulated 405.7 flight hours since new.

A review of the Aircraft logbook indicated that the helicopter had no known defects before the accident flight.

2.6.3 Fuel

The fuel used was AVGAS 100 and the quantity on board was reported to be sufficient for the flight.

2.7 Meteorological Information

The pilot mentioned during the initial interview after the accident that he had carried out a self-briefing in the morning before the series of flights by checking through the internet website for weather information that consisted of the actual and forecast weather for aviators, sunrise and sunset, high and low tide times.

From the self-briefing, the pilot gathered that the weather conditions, in general, were fine with light and variable winds, mainly southwesterly; and the temperature was 30°C with good visibility.

2.8 Aids to Navigation

The flight was conducted in the daytime under VFR.

2.9 Communication

The helicopter was fitted with VHF radio communication equipment and the radio was serviceable on the day of the accident.

2.10. Aerodrome information

The accident took place at an open wheat field area in Melili village.

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2.11. Flight Recorders

The helicopter was not fitted with flight recorders and there was not a requirement by the KCAA regulations.

2.12. Wreckage and Impact Information

The impact point was approximately 100m to the south of the lift-off position. The wreckage rested on a slightly sloping Wheatfield surface with the fuselage toppled to the left. The engine remained attached to the airframe with no deformation. The fuel tanks were intact.

Damage to the helicopter as a result of the impact was as follows (see Figure 4).

- (a) The left skid was substantially damaged.
- (b) The main rotor blades remained attached to the helicopter but were significantly bent and twisted.
- (c) Both blades of the tail rotor were intact although detached from the tail boom.
- (d) The tail boom was severely fractured and detached from the main wreckage.



Figure 6: Helicopter Wreckage



Figure 7: Helicopter Wreckage after it was tilted with the detached tail rotor on the side.



Figure 8: The wreckage after it was tilted.



Figure 9: Damaged tail rotor assembly



Figure 10: Helicopter damaged components

2.12.2 Emergency locator transmitter

5Y-MEP aircraft was equipped with an emergency locator transmitter (ELT). There was no ELT signal recorded at the time of the accident.

2.13 Medical and Pathological Information

The Pilot

The pilot had a valid Class 2 Medical Certificate. There was no evidence to suggest that he suffered from any pre-existing illness that might have contributed to the accident.

According to the pilot's statement, he was not taking any medicines prescribed by a doctor or purchased over the counter.

Left Front Seat Passenger

The passenger was leaning on the side of his seat and was entrapped. He managed to vacate the wreckage with the assistance of the accident pilot.

Left Rear Seat Passenger

This passenger was unhurt and decided to remain inside the wreckage until the Governor was evacuated.

2.14 Fire

There was no post-crash fire

2.15. Survival Aspects

The accident was survivable.

2.16. Tests and Research

N/A

2.17. Organizational and Management Information

Karen Blixen Camp Trust is a Kenyan non-profit organization located in the Maasai Mara in Kenya. The organization supports the conservation of wildlife and wilderness, community empowerment, and childhood and vocational education. It is registered under the address; PO Box 9913-00100 GPO NBO, Marula Lane no. 40C Karen, Nairobi, Kenya

2.18 Search and rescue.

According to the accident pilot, the three occupants were evacuated shortly after the accident.

2.19 Additional Information

N/A

Martyn Lunani

CHIEF INVESTIGATOR OF ACCIDENTS

03 November2020