

THE REPUBLIC OF KENYA



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

STATE DEPARTMENT FOR TRANSPORT

AIRCRAFT ACCIDENT INVESTIGATION DEPARTMENT

PRELIMINARY INVESTIGATION REPORT

**ACCIDENT TO THE AIRCRAFT 5Y-KWL, AVIAT HUSKY A-1C 180 ON
11.02.2021 AT NANYUKI CIVIL AIRSTRIP, LAIKIPIA COUNTY**

PRELIMINARY ACCIDENT REPORT SUMMARY

OPERATOR	:	Kenya Wildlife Service (KWS)
AIRCRAFT TYPE	:	Aviat Husky A-1C 180
AIRCRAFT MANUFACTURER	:	Aviat Aircraft Inc.
YEAR OF MANUFACTURE	:	May 2009
AIRCRAFT REGISTRATION	:	5Y-KWL
AIRCRAFT SERIAL NUMBER	:	3071
DATE OF REGISTRATION	:	26 January 2010
NUMBER AND TYPE OF ENGINE	:	One, Lycoming 0-360-AIP
DATE OF OCCURRENCE	:	11 February 2021
LAST POINT OF DEPARTURE	:	Nanyuki civil airstrip, Laikipia County (00° 03' 51.6"S, 037° 02' 26.0"E)
POINT OF INTENDED LANDING	:	Kinna Airstrip, Meru County
TIME OF OCCURRENCE	:	1435 (1735)
LOCATION OF OCCURRENCE	:	Nanyuki Civil Airstrip, Laikipia County
TYPE OF FLIGHT	:	Private
PHASE OF FLIGHT	:	Initial Climb
NUMBER OF PERSONS ON BOARD	:	Two (2)
INJURIES	:	Fatal
NATURE OF DAMAGE	:	Destroyed
CLASS OF OCCURRENCE	:	Accident
PILOT IN COMMAND	:	TBN
PIC's FLYING EXPERIENCE	:	TBN

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.

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

INVESTIGATION PROCESS

The occurrence involving an Aviat A-1C Husky passenger aircraft, registration 5Y-KWL 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 Kenya Wildlife Service.

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 12 February 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	-	Aircraft Accident Investigation Department
AMSL	-	Above Mean Sea Level
CPL	-	Commercial Pilot License
ELT	-	Emergency Locator Transmitter
FT	-	feet
GPS	-	Global Positioning System
ICAO	-	International Civil Aviation Organization
KCAA	-	Kenya Civil Aviation Authority
KWS	-	Kenya Wildlife Service
KTS	-	Knots
LBS	-	Pounds
LH	-	Left Hand
LT	-	Local Time
METAR	-	Meteorological Terminal Air Report
RCC	-	Rescue Coordination Centre
RH	-	Right Hand
TBN	-	To Be Notified
VFR	-	Visual Flight Rules

SYNOPSIS

The report describes the events of an aircraft accident that occurred on 11 February 2021 involving an Aviat A-1C Husky registration 5Y-KWL operated by the Kenya Wildlife Service (KWS).

The aircraft was regularly stationed at Meru national park for aerial patrols in support of the KWS daily ground teams.

The aircraft took off from Nanyuki civil airstrip, Laikipia County at 1435 (1735) on a private Visual Flight Rules (VFR) flight to Kinna Airstrip, Meru County. Onboard was a pilot and a passenger (a KWS company commander).

The accident occurred during the initial climb at Nanyuki civil airstrip.

In strict adherence to requirements by ICAO, AAID notified the National Transportation Safety Board of USA being the accident authority of the State of manufacture of the Aviat A-1C Husky aircraft and its engine.

Investigation to determine the facts, conditions, and circumstances leading up to the accident is ongoing.

1.0 FACTUAL INFORMATION

1.1 History of the Flight

On 11 February 2021 at 1440 (1740), Aircraft Accident Investigation Department (AAID) was notified of an accident at Nanyuki civil airstrip, Laikipia County by the Kenya Wildlife Service. The accident involved an Aviat A-1C Husky registration 5Y-KWL operated by Kenya Wildlife Service.

The aircraft which is under the National Air Support Department had flown from Meru National park to Nanyuki civil airstrip to pick a KWS company commander. It took off on 11 February 2021 at 1435 (1735) from Nanyuki Civil airstrip with two persons on board, a pilot and a KWS company commander.

An eyewitness reported that on takeoff, there was unusual noise from the aeroplane, and then it adopted a very steep nose-down attitude. It was then reported to have descended almost vertically to the ground before he lost sight of it.

Examination of the accident site determined that on takeoff, the pilot banked to the left when he lost control of the aircraft before colliding with the terrain. It was evident that the aircraft impacted the ground at a high velocity, high angle. The wreckage was found in a grassy area within the confines of the Aerodrome. There was no pre or post-impact fire.

The two occupants suffered fatal injuries.

The safety investigation is ongoing.



Figure 1: The Accident site within the Aerodrome

1.1.1 Eyewitness account

At about 1435 (1735), an eyewitness standing about 57metres north of the accident site saw an aircraft just to the east, travelling in an easterly direction, on a constant heading. He stated that the aircraft was banking to the left. The engine sounded as though it was faltering and stopped. He was visual with the aircraft throughout this time. It then disappeared from his view because of the barrier located in front of him.



Figure 2: The Location of the eyewitness

1.1.2 Accident site

The aircraft wreckage was located within the aerodrome on the eastern side about 230metres from the end of runway 21 at an elevation of 1905ft AMSL (Figure 2) orientated in the direction of 196⁰(M)

The ground impact marks showed that the aircraft struck the ground with the propeller first, at a steep angle; this was followed by a heavy nose impact (Figure 4). The aircraft had then flipped forward before turning in an inverted position resting inverted, and 9.7 m from the initial impact point.

1.2 Injuries to Persons

Table 1-1: Injury chart

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

1.3 Damage to Aircraft

The aircraft was destroyed on impact.



Figure 3: The wreckage of the aircraft in a grassy area within the confines of the Aerodrome

1.4 Other Damage

Not applicable.

1.5 Pilot's Information

From the available records, at the time of the crash, the Pilot of 5Y-KWL was a 30-year old Kenyan male and held a Private Pilot License (PPL) issued by KCAA on 16 February 2017. He was employed by the Kenya Wildlife Service on 3 August 2020 and had accumulated a total of 600 flying hours.

The pilot had four aircraft type ratings endorsed on his license; Cessna 172, Piper PA-18-150 Super Cub, Aviat A-1C Husky and a Gyrocopter respectively.

His most recent medical examination was conducted on 5 July 2019 and issued a class two certificate with a validity of 24 months with no limitations/restrictions.

The pilot had a Flight Radio Telephony Operator's License issued by KCAA on 25 July 2019 with a validity of 24 July 2021.

Table 1-2: Summary of the pilot’s relevant information

D.o.B/Age	14 April 1990 (30 Years)
Sex	Male
Nationality	Kenyan
Type of License	PPL
Issuing Authority	KCAA
Date of issue	16 February 2017
Last Issue	25 July 2019
Validity of License	26 July 2021
Total Flying hours	600
Total hours on type	334.4
Ratings	Cessna 172, Piper PA-18-150 Super Cub, Aviat A-1C Husky and a Gyrocopter.
Total last 90 days (hours)	TBN
Total last 30 days (hours)	TBN
Total last 14 days (hours)	TBN
Total last 24 Hours (hours)	TBN
Medical Certificate (Class/Validity)	Two Issued on 5 July 2019 Expiry 26 July 2021

1.6 Aircraft Information

1.6.1 General information

The aircraft, an Aviat A-1C Husky serial number 3071, was manufactured in 2009 and entered the Kenyan register on 20 June 2010. It is a tandem two-seat, dual controls, braced high-wing, utility light aircraft built by Aviat Aircraft Inc. of Afton, Wyoming, USA. The structure is steel tube frames and Dacron covering overall but the rear of the fuselage, plus metal leading edges on the wings. The high wing was selected for good all-around visibility, making it ideal for observation and patrol roles. Power is supplied by 180 HP (134 KW) Textron Lycoming O-360-

AIP flat-four piston engine turning a constant speed 2-bladed Hartzell Propeller of 6 ft 4 in (1.93 m) diameter.

The aircraft journey log showed the last periodic inspection was conducted on 2 February 2021. At that time the aircraft had accumulated 5,268.50 hours since new.

The Aircraft technical records indicated that the aircraft had undergone a 50-hour inspection on 2 February 2021 per Approved Maintenance Schedule CA-1H-180SERIES/AMP/001. Work order No.202100020002 showed that there had not been any significant airworthiness issues. The total aircraft hours recorded during that maintenance was 5268.50 since new. A review of the Aircraft logbook indicated that the aircraft had no known defects before the accident flight.

1.6.2. 5Y-KWL



Figure 4: A photo of 5Y- KWL Aircraft before the accident

Table 1-3: Aircraft data at the time of the accident

Aircraft data at the time of the Accident	
Manufacturer:	Aviat Aircraft Inc.
Model:	Aviat Husky A-1C 180
MSN:	3071
Date of manufacture:	2009
Nationality and registration mark:	Kenyan, 5Y-KWL
Certificate of airworthiness	
Number:	S/No. 0742
Initial Issue date:	4 February 2011
Renewal date	5 November 2020
Valid until:	4 November 2021
Certificate of registration	
Number:	S/No. 2242
Issue date:	20 June 2010
Date of delivery	26 January 2010
Total Aircraft hours since new	5,268.50 up to 2 February 2021
Maximum take-off Weight	998 Kgs (2,200 lbs)
Maximum Landing Weight	998 Kgs (2,200 lbs)
Maximum Operating Altitude	20,000 ft

Table 1-4: Summary of the Engine details

Manufacturer	Lycoming Textron
Number and Type	One, O-360-AIP
Part Number	O-360-AIP
Serial Number	RL-32720-36E
Date of Construction	01 November 2016
Condition at installation	Rebuilt -Installed, 19 September 2017
Total Engine hours (as of 19 September 2017)	0
Total Engine Hours as of (8 February 2021)	1858.2
Total Hours since the last inspection	TBN

1.6.3 Fuel

The fuel used was AVGAS 100/100LL.

1.7 Meteorological Information

The METAR for Laikipia Meteorological station is the representative station to the area under consideration at Latitude 0.017°N, Longitude 37.07°E, and altitude 1928.77 meters. The prevailing weather conditions between 1200 (1500) and 1445 (1745) were comprised of light to moderate winds, broken clouds and good visibility. Based on the information gathered during the preliminary investigation, it was established that the prevailing weather conditions posed no hazard to aviation activity within Nanyuki.

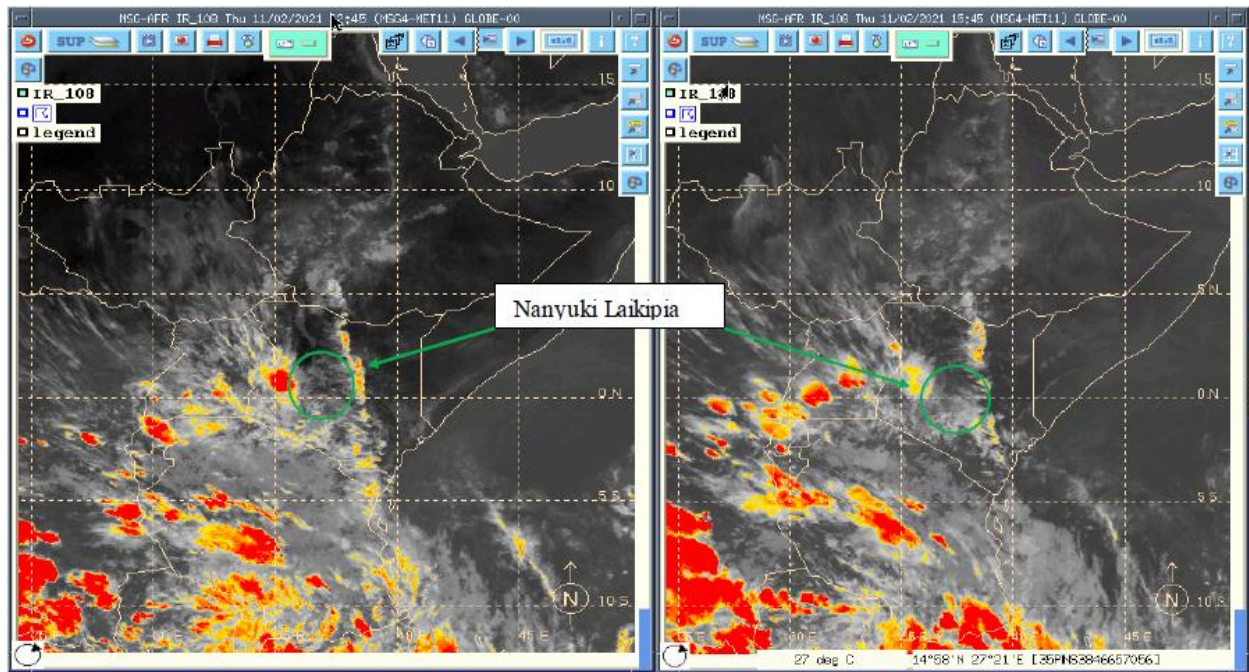


Figure 5: Satellite Imageries at 1545 and 1745 on 11/02/2021: indicating no remarkable weather activity in Nanyuki (Laikipia County)

(Courtesy of Kenya Meteorological Department)

1.8 Aids to Navigation

The flight was conducted in the daytime under VFR.

1.9 Communication

The aircraft was fitted with VHF radio communication equipment.

1.10. Aerodrome information

HKNY is an unmanned aerodrome. It is owned by Kenya Airports Authority and located along the Nanyuki – Naro Moru road about 10 kilometres (6.2 miles), out of Nanyuki town, Laikipia County, and 8 kilometres (5.0 miles), south of the Equator.

The official airport elevation is 6250 ft (1905 meters) at Latitude: -0.0583 and Longitude: 37.0369. The airport has a gravelled runway, 21/03 of 900 meters (2953 ft) long by 23 meters (75 feet) wide. At the time of the accident runway, 21/03 was in use.

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 impacted the ground and slid approximately 9.7 meters before coming to rest in an inverted position, with both the right and left wings resting on the ground. The airframe sustained significant damage to its nose; from the front instrument panel forwards it was almost disintegrated from the rest of the airframe. The left and rightwing leading edge sustained damage and the wingtips sustained impact damage. The entire propeller assembly separated from its attachment point on the hub. There was rotational damage and curling along the length of the propeller blades. The propeller assembly was found at 7.3 meters away from the initial point of impact and 2.4 meters to the main wreckage.



Figure 6: The Engine section of the aircraft after the accident.

1.12.1 Livable space

From the initial onsite assessment of the wreckage, the occupied cabin area within the fuselage was compromised by the impact sequence. Figures 6 and 8 show how the forward floor of the cabin under the instrument panel was crushed when the nose gear collapsed. The impact had buckled the floor under the seats, and the fuselage was breached behind the rear cabin bulkhead. The instrument panels had become dislodged and pushed rearward on impact. The cabin roof and wings had moved forward as a result of the nose section of the aircraft impacting the ground thus reducing the cabin height. All of this damage reduced the survivable space within the cabin area.



Figure 7: Wreckage damage to accident aircraft



Figure 8: The section of the Cockpit after the accident.



Figure 9: Damaged propeller assembly



Figure 10: The Section of the Cockpit Instruments

1.13 Medical and Pathological Information

1.13.1 The Pilot

The toxicological and pathological examinations result to follow.

1.14 Fire

There was no pre or post-crash fire.

1.15. Survival Aspects

The accident was not survivable. The structures of the liveable area failed and the occupants suffered fatal injuries.

1.15.1 Search and rescue

A KWS mountain rescue team, KDF personnel from Nanyuki airbase, and other airport personnel rushed to the site immediately after the crash.

1.15.2 Emergency locator transmitter

The aircraft was equipped with a functional Emergency Locator Transmitter (ELT). ELT signal was recorded at the time of the accident by the RCC and relayed to KWS.

1.16. Tests and Research

To follow.

1.17. Organizational and Management Information

KWS is a state corporation that was established by an Act of Parliament (Cap 376), with the mandate to conserve and manage wildlife in Kenya and to enforce related laws and regulations. KWS undertakes conservation and management of wildlife resources across all protected areas systems in collaboration with stakeholders

It is registered under the address; P.O. Box 54582-00200, Nairobi. Kenya. Tel: +254 (20) 2379407 Nairobi, Kenya.

1.18 Additional information

Not applicable

1.19 Useful or Effective investigation techniques

Not applicable

2.0 Summary

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

Fredrick Kabunge

Investigator-In-Charge

23/02/2021