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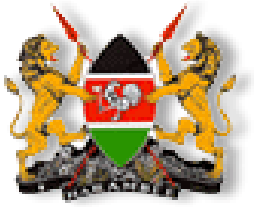
REPUBLIC OF KENYA



MINISTRY OF ROADS AND TRANSPORT

STATE DEPARTMENT FOR TRANSPORT

AIRCRAFT ACCIDENT INVESTIGATION

REPORT OF GYROPLANE

REGISTRATION 5Y-KWV

NEAR ORLY AIRPARK

ON 19TH NOVEMBER 2020

PARTICULARS OF THE GYROPLANE

OPERATOR/OWNER	:	Kenya Wildlife Service
GYROPLANETYPE/ MANUFACTURER	:	Auto Gyro-MTOSports/Auto Gyro GmbH
YEAR OF MANUFACTURE	:	2017
GYROPLANEREGISTRATION	:	5Y-KWV
GYROPLANESERIAL NUMBER	:	MO1535
DATE OF REGISTRATION	:	2 March 2020
NUMBER AND TYPE OF ENGINE	:	9576423
ENGINE SERIAL NUMBER	:	RROTAX 914ULOT
DATE OF OCCURRENCE	:	20 November 2020
TIME OF OCCURRENCE	:	0650 local time
LOCATION OF OCCURRENC	:	Orly Airport Kajiado
TYPE OF FLIGHT	:	Training
PHASE OF FLIGHT	:	Landing
PERSONS ONBOARD	:	1
INJURIES	:	Fatal
NATURE OF DAMAGE	:	Destroyed
CATEGORY OF OCCURRENCE	:	Accident
PILOT IN COMMAND (PIC)	:	PPL
PIC'S FLYING EXPERIENCE	:	149 hours

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 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.

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ABBREVIATIONS

KWS	-	Kenya Wildlife Service
ICAO	-	International Civil Aviation Organization
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KCAA	-	Kenya Civil Aviation Authority
LBS	-	Pounds
NM	-	Nautical miles
PPL	-	Private Pilot License
VHF	-	Very High Frequency

SYNOPSIS

The preliminary report describes the accident to a gyroplane, registration 5Y-KWV operated by Kenya Wildlife Service (KWS) on a flight training exercise with a student pilot on solo flight at Orly airport Kajiado on 19th November 2020 in which the gyroplane crashed causing fatal injuries to the pilot. There was severe fire after impact which burnt the gyroplane and the pilot.

According to the preliminary information obtained from the instructor, the student pilot was on solo flight training exercise when the accident occurred. Wind was not severe when the accident occurred. The student pilot was on a simulated exercise on engine failure after showing significant competence on flying.

The instructor had a two-way communication with student pilot while flying. He instructed the student pilot through radio to do a left hand circuit runway 07 and continue practicing simulated engine-out on the downwind leg. It was during the exercise when student pilot lost control of the aircraft.

During the accident flight, the instructor had him taking of the power as instructed and enter the left descending turn towards the runway. He kept on descending and from the ground all looked well. The next moment he flew away from runway 07 and descended rapidly to the ground. At that moment the instructor instructed him by radio to fly the aircraft. Unfortunately, the gyroplane kept on descending with no change. There was no radio response or any noticeable physical change in control input. No power was added or nose pulled up and no attempt was made to recover from the descent until he crashed causing fatal injuries.

Investigation is ongoing to establish cause of the accident.

1. FACTUAL INFORMATION

1.1 History of the flight

On 19th November 2020, the Air Accident Investigation unit at the Ministry of Transport, Infrastructure and Urban Development was notified of an accident involving a gyroplane type of aircraft, registration 5Y-KWV operated by Kenya Wildlife Service at Orly Airport at approximately 0650 am local time. The flight was on a flight training exercise within Orly Airport.

According to the preliminary information obtained from the instructor, on 19th November, 2020 the student pilot was number two in the line of training. Wind was not severe by that time. He made several full stop landings on runway 07. Every time he took off from runway 10. The quality of landings and take-off increased dramatically on that day. The last 3 take-offs the instructor advised him to take off on runway 07 (grass). He did that very well as he was now in full control of the take-off

The second last circuit before the accident he was instructed by radio to do a left hand circuit 07 so that he could practice a simulated engine-out on the downwind leg (dummy approach). This he did very successful and did a go around.

The last circuit before accident he was instructed to repeat the simulated emergency landing exactly the same as the previous one he just completed (Also dummy approach).

During this flight the instructor had him taking of the power as instructed and enter the left descending turn towards the runway. He kept on descending and from the ground all looked well. The next moment he flew away from runway 07 and descended rapidly to the ground. At that moment the instructor instructed him by radio to fly the aircraft. Unfortunately, the gyroplane kept on descending with no change. There was no radio response or any noticeable physical change in control input. No power was added or nose pulled up and no attempt was made to recover from the descent until he crashed causing fatal injuries. It had approximately 17 litres of fuel onboard by the time of the accident.

1.2 Injuries to Persons

Table 1: Injury chart

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

1.3 Damage to Gyroplane

Destroyed

1.4 Other Damages

Nil

1.5 Personnel Information

The pilot-in-command was 28 year old Kenyan citizen. He held a private pilot license, first issued on 18th October 2013, renewed on 16th March 2020 expiring on 21st March 2022. By the time of the accident he had a total of 149 hours. He had a total of 16.3 hours dual training on the type and had 3 hours solo flight on the type. His logbook indicated he had a total of 148 hours. He had a first class medical certificate issued on 14th February, 2020 valid for twelve months with no limitations

1.6 Gyroplane Information

Figure 1: Photograph showing the Auto MOTOSport type of the Gyroplane

1.6.1. General Information

The Auto Gyro-MOTSports was registered on 2nd March 2020. It had been issued with a restricted certificate of airworthiness on 10th July, 2020 valid until 9th July 2021 with no limitations. Further information obtained indicated that maintenance was carried out on 29th October, 2020 in which the gyroplane was recovered at Orly Airport with loaner reduction gearbox and propeller and after completion it was released to service. It was also fitted with communication radio; VHF P/N: 833-11(005)-(C100) Model.

1.6.2. Gyroplane Technical Data

Table 2: Gyroplane Technical Data

Size	5.1m x 1.9m x 2.7m
Empty weight	245-295kg
MTOW	450-600kg
Engine	Rotax 914UL
Take-off distance	50m/30m
Endurance	6.7h/6h
Maximum range	740km/700
Cruise speed	195km/h
Fuel capacity	94ltr
Pilot weight	80kg

1.6.3. Weight and Balance

The gyroplane basic weight and balance calculated from weighing report indicated it was 212LBS.

the Centre of Gravity of the gyroplane with landing gear was 56'' AFT of Datum.

1.7. Meteorological Information.

According to meteorological information obtained for the previous day before the accident showers was expected over few places overnight before the accident. Rain expected over few places the following morning giving way to sunny intervals. Showers expected over several places in the afternoon.

1.8 Aids to Navigation

N/A

1.9 Communication

The gyroplane was equipped with VHF radio and there was two-way radio communication between the instructor and the student pilot few minutes before the accident.

1.10 Aerodrome Information

Figure 2: Photograph showing aerial view of Orly Airport

Orly airport is S 01°34’31.2” E36°48’39.6”. It is 15 NM by air south of Wilson airport along Kiserian-Isinya road. It has two runways 10/28 and 07/25. Runway 10/28 is 1200m length and 15m wide. Runway 10 is 650m paved (cabro) and 450m murram. Runway 07/25 is 800m length and 15m width grass runway which is sometimes not advisable for use during wet seasons.

1.11 Flight Recorders

N/A

1.12. Wreckage and Impact Information

Most parts of the gyroplane got broken and burnt after impact. The wreckage of the gyroplane was confined within a small area of 10m radius after impact. One blade of the non-powered rotor got

broken and separated as the other section remained still attached to the assembly but got several dents. All the undercarriage got broken and burnt completely. Propeller on the powered-rotor got broken and burnt but was found attached to the engine.

Figure 3: Photograph showing wreckage of the Gyroplane engine and accessories

Figure 4: Photograph showing the Gyroplane empennage

Figure 5: Photograph showing the non-powered rotor of the Gyroplane

Figure 6: Photograph showing the accident site of the Gyroplane

Figure 7: Photograph showing the wreckage of the burnt Gyroplane wheel assembly.

1.13 Medical and Pathological Information

Not applicable

1.14 Fire

There was fire after impact which consumed the gyroplane and the pilot.

1.15. Survival Aspects

The accident was not survivable due to severe impact and fire after impact.

1.16. Tests and Research.

Not applicable

1.17. Organization and Management Information

1.17.1 Kenya Wildlife Service

Kenya Wildlife Service (KWS) is a State corporation established by Act of Parliament with the mandate to conserve and manage wildlife in Kenya and to enforce related laws and regulations. It manages biodiversity of the country, protecting and conserving the flora and fauna. It operates a fleet of more than 12 aircraft both fixed-wing, helicopter and gyroplanes. The fixed-wing types are C208, C206, C182, C180 and Huskys. The helicopter aeroplanes are Bell407 and Bell 206. The Gyroplanes which were recently acquired are Auto Gyro-MTOSports. It is non-commercial organization engaged only on the conservation of wildlife with a valid certificate of air operator issued on 21st September, 2020 expiring on 20th September 2021. It has an approved maintenance organization which was issued on 21st September 2020 expiring on 19th September 2021.

KWS had contracted an instructor to train some of their employees who are student pilots to acquire experience on gyroplane for wildlife surveillance. The instructor had made arrangement for training to be conducted at Orly airport located in Kajiado County. According to the information obtained from the instructor all solo flights are done early mornings to capitalize on good weather. At Orly airport all take-off are made on the paved runway surface (runway 10) to allow students to get a feel of gyro proper take off techniques'. Landings are made on grass as grass is more forging regarding proper landing. Once the student gain competence and confidence they progress to land on the paved runway.

During solo flights the instructor maintains two-way communication with the student pilot for instruction and monitoring. The instructor is armed with a hand-held radio and the student pilot is in possession of the VHF radio in gyro to allow private chat frequency for continuous instructor / student communication.

1.17.2. Kenya Civil Aviation Authority

According to KCAA Civil Aviation (Approved Training Organization) regulations 2018 section 3(1)(a), requirements for an approved training organization (ATO) an operator with air operator certificate (AOC) or approved maintenance organization (AMO) is qualified to conduct training for its own personnel.

KCAA Advisory Circular No. CAA-AC-AWS004C dated May 2018, section 3.2, KCAA may issue a restricted certificate of airworthiness to an aircraft which does not qualify for a certificate

of airworthiness. Normally, these are aircraft without type certificate which include, micro-light, amateur, kit built aircraft used for air races, kite, and aircraft flying for exhibition purposes.

1.18 Additional Information.

Not applicable

1.19 Useful or Effective Investigation Techniques

Not applicable

2. ANALYSIS

KWS was qualified to provide training to its personnel. Considering the circumstances of the accident it can only be assumed the student pilot had not acquired sufficient experience to control the gyroplane in engine-out during a solo flight.

3. CONCLUSIONS

3.1 Findings

3.1.1. The student pilot had a valid private pilot license.

3.1.2. The Gyroplane had a valid restricted certificate of airworthiness without limitation

3.1.3. KWS had a valid certificate of air operator and approved maintenance organization and therefore was qualified to provide training to its personnel.

3.1.4. There was no significant weather which would adversely affect the flight

3.1.5. The aircraft was destroyed after fire after impact

3.1.6. The accident was not survivable

3.2 Probable Cause

The probable cause of the accident was loss of control attributed to lack of sufficient experience to control the gyroplane in engine-out on a solo flight.

4. SAFETY RECOMMENDATIONS

4.1. KWS review safety risk assessment on training program provided to its personnel.

Martyn Lunani

CHIEF INVESTIGATOR OF ACCIDENTS

May 2023