



AIRCRAFT ACCIDENT FINAL REPORT

A 07/19

Air Accident Investigation Bureau (AAIB)

Ministry of Transport, Malaysia

Gyroplane ELA07-075 Registration 9M-EBZ

at Kampong Jejawi,

Perak Tengah, Perak

on the 09 November 2019



AIR ACCIDENT INVESTIGATION BUREAU (AAIB)

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AIR ACCIDENT INVESTIGATION BUREAU (AAIB)

MALAYSIA

ACCIDENT REPORT NO. : A 07/19

OPERATOR : FELCRA BHD. (PRIVATE)

AIRCRAFT TYPE : GYROCOPLNE

NATIONALITY : MALAYSIA

REGISTRATION : 9M-EBZ

**PLACE OF OCCURRENCE : KAMPUNG JEJAWI
PERAK TENGAH, PERAK**

DATE AND TIME : 09 AUGUST 2018 AT 1025LT

This investigation is carried out to determine the circumstances and causes of the accident with a view to the preservation of life and the avoidance of accident in the future: It is not the purpose to apportion blame or liability (Annex 13 to the Chicago Convention and Civil Aviation Regulations 2016).

INTRODUCTION

The Air Accident Investigation Bureau of Malaysia

The Air Accident Investigation Bureau (AAIB) is the air accident and serious incident investigation authority in Malaysia and is responsible to the Ministry of Transport. Its mission is to promote aviation safety through the conduct of independent and objective investigations into air accidents and serious incidents.

The AAIB conducts the investigations in accordance with Annex 13 to the Chicago Convention and Civil Aviation Regulations of Malaysia 2016.

In carrying out the investigations, the AAIB will adhere to ICAO's stated objective, which is as follows:

“The sole objective of the investigation of an accident or incident shall be the prevention of accidents and incidents. It is not the purpose of this activity to apportion blame or liability”.

Accordingly, it is inappropriate that AAIB reports should be used to assign fault or blame or determine liability, since neither the investigation nor the reporting process has been undertaken for that purpose.

AIRCRAFT ACCIDENT/SERIOUS INCIDENT REPORT

Aircraft Type : Gyroplane

Model : ELA 07-078

Owner : FELCRA BHD.

Nationality : Malaysia

Year of Manufacture : 2016

Aircraft Registration : 9M-EBZ

Serial Number : 0375

State of Registration : Malaysia

Place and State of Occurrence : Kampung Jejawi, Perak
(N 4° 2'5'' E100° 53' 42'')

Date and Time of Occurrence : 09 November 2019 (1025LT)

All times in this report are Local Time (LT) (UTC +8 hours)

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SYNOPSIS

On 09 November 2019 at approximately 1015LT (Local Time), a Gyroplane owned and operated by Felcra, bearing registration 9M-EBZ took off from the Felcra airstrip for pesticide spray over paddy field at Kampung Jejawi area.

As it arrived the spraying area (block L1B7 T3A), the gyroplane was seen flying low over the paddy field. It started the pesticide spraying work by putting the aircraft low over the field at approximately 3 meters height.

The field was being marked by several poles with white flags on top to ensure the area of operations. The poles were placed 7 meters apart.

The pilot was engrossed in flying the aircraft without realising the bun which was at higher elevation towards the flight path. Realising the bun getting nearer he immediately climbed the aircraft trying to avoid from hitting them. With all his effort to climb higher, he did not noticed the pole with flag in front of his flight path and flew over it. The aircraft struck the poles and severed the tips of the engine propellers. The damage consequently resulting loss of forward thrust for the pilot to continue climbing. The pilot executed a 180 degrees turn and attempted an emergency landing besides a main road. While approaching for the landing the aircraft struck several internet cables and land hard on the grass area. The aircraft damaged substantially and the pilot escaped without any injury.

1.0 FACTUAL INFORMATION

1.1 History of the flight

On 08 November 2019, at 0730LT a gyroplane depart Felcra airstrip (Perak Tengah) for pesticide work at paddy field at Block LIBS T4A. It completed spraying at an area of 13 hectares. It stopped flying at 1000LT uneventfully due to rainy condition.

On the following day 09 November 2019, the same gyroplane bearing registration 9M-EBZ at approximately 0730LT, owned and operated by Felcra, took off from the Felcra airstrip for pesticide spray over paddy field at Block L1B7 T3 near Kampung Jejawi area. The pesticide spray was carried out for 13 Hectares without any incident. Upon completion of the spray, the gyrocopter returned to the airstrip for refuelling and replenishment of the pesticide. The operations completed at 1000LT.

When ready the gyroplane took off again for the second sortie. It proceeded to block L1B7 T3A to continue the operations. The gyroplane was seen flying low over the designated paddy field and started the pesticide spraying work by maintaining the aircraft low over the field at approximately 3 meters.

The field was being marked by several poles with white flags on top to ensure the area of operations. The poles were placed 7 meters apart.

During the flight, the pilot was engrossed in flying the aircraft without noticing a bun (high ground) towards the flight path. As the flight got closer to the bun, the pilot realising insufficient terrain clearance, immediately climbed the aircraft trying to avoid from hitting them. With all his focus to climb higher, he did not noticed the pole with the white flag in front of his flight path and flew over it. He felt engine propeller struck the pole and continued flying. The impact on the engine propeller causing the aircraft lose its power. The pilot immediately executed a 180 degrees turn with intention to make an emergency landing besides a main road. While attempting the landing the aircraft strike several internet cables and had a hard landing besides the main road. The landing further damaged the engine propeller by striking the ground during the impact. The aircraft sustained extensive external damage, however the pilot escaped unhurt.

The wreckage were transferred to the hangar near the airstrip for safe keeping. Two investigators from AAIB arrived at the hangar on the 12 November 2019 and begin the investigation into the accident.

1.2 Injuries to persons

<i>Injuries</i>	Crew	Passenger
Fatal	-	-
Serious	-	-
Minor/None	0	0

1.3 Damage to aircraft

Damage to the nose gear.

Damage to the rotor blade and all three blades of the propellers were badly damaged at the tips (6 inches).

The tail section was severed.

Damage to the instruments parts.

Rotor mast and airframe were damaged.

1.4 Other damage

The internet cables were severed due to impact by the aircraft before hard landing on the ground.

1.5 Personal Information

Pilot in command

Status	Commander
Nationality	Malaysian
Age	29 years old
Gender	Male
License Type	CPL/A 5723
License Validity	29 February 2020
Medical Examination	29 February 2020
Aircraft Rating	DA 42
Instructor Rating	Nil
Certificate of Test	4 July 2012
Flying Hours	Total exp. : 335 Hours (Cirrus, D 42) Type exp. :135 Hours

1.6 Aircraft Information

Aircraft	Gyroplane
Owner	ELA 07-075.
Registration	9M-EBZ
Serial No.	03164730714
Permit to fly	PTF,2017/037
Permit Expiry	Valid until 24 July 2018
C of R No.	AR/16/40
C of R Expiry	17 August 2019
Year of Manufacture	2016
Manufacturer	BRP Powertrain GMBH&CO
Fuel used	RON 97

1.6.1 Aircraft general description

The Gyroplane ELA 07 series features a single main rotor, a two-seats-in-tandem open cockpit with a windshield, tricycle landing gear with wheel pants and a four-cylinder, air-cooled, four-stroke, dual-ignition 100hp (75kW) Rotax 914 UL 2 engine in pusher configuration. The turbocharged 115hp (86kW) Rotax 914 power plant is optional.

The aircraft fuselage is made from TIG (tungsten inert-gas) welded, CNC laser-cut stainless steel tubing for corrosion resistance. The cockpit fairing is non-structural carbon fibre and resin. Its 8.23m (27.0ft) diameter rotor has a chord of 22cm (8.7in) and is mounted to a rotor head made from a combination of stainless steel and 7075 T6 aluminium. The triple tail is also made from carbon fibre and resin. Equipment fitted includes a pre-rotator, pneumatic pitch trim and mechanical roll trim. The Cougar version has an empty weight of 250kg (550lb) and a gross weight of 450kg (990lb), giving a useful load of 200 kg (440lb). A forward baggage compartment with a volume of 60 litres (13 imp gal; 16 US gal) is optional.

[Agricultural aircraft](#) version with the rear seat replaced by a 120 litres tank that can be used to apply liquids or solids in ultra-low volumes. The aircraft fits an 8m (26.2ft) spray boom and an enlarged windshield. The Agro can be quickly returned to two-seat configuration by removal of the spraying equipment.

1.7 Meteorological Information

The weather was fine during the occurrence.

1.8 Aids to navigation

Not applicable.

1.9 Communications

There was no radio communication established with the operating Air Traffic Control (ATC) and other station for search and rescue or air traffic separation. Upon checking with ATC Ipoh, they have no information on the operation of the gyrocopter in that area. There was no co-ordination or notification made on their operations, especially aerial application operations. The accident location (Kampung Jejawi, Perak Tengah) is outside Ipoh Control Zone. KL ATCC will provide traffic information to all VFR flight flying through or transiting outside Ipoh CTR prior co-ordination with FIS. Furthermore radio communication when aircraft operating low level is poor due to radio coverage limitation.

1.10 Aerodrome information

Not applicable

1.11 Flight Recorders

There is no flight recorders installed in the gyroplane.

1.12 Wreckage and impact information

Not applicable.

1.13 Medical and pathological information

Not applicable.

1.14 Fire

There was no fire before, during and after the accident.

1.15 Survival aspects

Not applicable.

1.16 Tests and research

Not applicable.

1.17 Organisational and management information

The gyrocopter was owned and operated by FELCRA Berhad in Jejawi, Kampong Gajah Perak in a loose organisation. FELCRA Berhad is a fully owned government agency, headquartered in Kuala Lumpur.

1.18 Additional information

Not applicable.

1.19 Useful or effective investigation techniques

Not applicable

2.0 ANALYSIS

2.1 General

The pilot admitted that the engine propellers hit one of the poles during the aerial spray operations and thus executing an overshoot.

Upon inspection of the wreckage, it was obvious that the main rotors had been exposed to low rotational speed/energy conditions. The reduction in the main rotor speed was due to the 180 degrees turn made by the pilot subsequently after the propeller strike. This manoeuvre resulted in the reduction of the forward speed and caused the loss of total rotor thrust.

This occurrence obviously demonstrated lack of planning and understanding of the performance of the gyroplane by the pilot. AAIB's investigation did not find any hazards or causal factors initiated by mechanical or maintenance factors that could have led to the accident. The investigation was therefore focussed into human factors especially on the pilot. The pilot was making most of the decision and pilot in-command on the operations.

The pilot attended the flying course conducted by the gyroplane manufacturer in Cordova, Spain. He did not pose any rotary pilot experience prior to the type training on gyroplane. Basically he had ab-initio aeroplane flying experience and awarded with Commercial Pilot License with Instrument Rating (CPL/IR). He has also passed his Air Transport Pilot Licence (ATPL) theory papers and being awarded a frozen ATPL. Being an aeroplane pilot, he lacked the understanding of the rotary aerodynamics especially on low speed flying. The training that he has gone through may not be able to make him fully understand on the rotary low speed principle of flights especially during turns. The aerial spray operations normally require at least 300 hours of flying experience on rotary wing in order to fully understand the flying characteristics of the gyroplane. He had only 100 hours plus experience including his type rating training. He was alone in his decision making without any supervision of chief pilot or even constant oversight by the regulatory authority. There was no documentations or operations manual on the guidance or procedures for him to follow for the safe conduct of aerial spray operations.

This analysis will focus on the aerial work operations, pilot competency, and supervision by regulatory body including permit to fly.

2.2 Aerial work operations

The aerial spray or pesticide operations is categorised under Aerial work operations. As explained in the Civil Aviation Regulation 2016, Aerial work means an aircraft operation in which an aircraft is used to provide specialised services in agriculture, construction, photography, surveying, observation and petrol, search

and rescue, aerial advertisement and other similar activities. However the pilot claimed that he was given clearance to operate by the Civil Aviation Authority Malaysia (CAAM) for flight not more than 100 feet Above Ground Level. There was no aerial work certificate issued by Director General as required by the Regulation.

On another note dropping of articles and animals from any aircraft is not permitted by the CAR 2016 as well. Dropping any articles from an aircraft in flight will require written permission of the Director General. This permission was not issued for this operations.

The investigation is convinced that the aerial applicator or pesticide operations conducted by FELCRA gyroplane was not having any Certificate issued by the Director General (CEO) of CAAM. They operate privately without proper supervision and guidance by the qualified personnel and lacked surveillance from the regulatory body.

2.3 Pilot competency

Based on the flying license shown to AAIB, the pilot possessed a fixed wing commercial pilot license endorsed with DA 40 and DA 42, and the Certificate of Test was carried out on 4 July 2012. There was no other endorsement or qualification stated in the license. His gyroplane training which was done in a factory approved training in Spain was not endorsed or transferred into his CPL or being given any other form of license to allow him to fly the Malaysian registered gyroplane. Upon interviewing the pilot he was not aware and ignorance of the requirement. The investigation team could not able to find the requirement in the regulation on the prerequisite of gyrocopter pilot, however upon inquiring with CAAM inspector, there is no specific prerequisite requirement either fixed or rotary pilot to become gyroplane pilot.

2.4 Supervision

The gyrocopter was a new type in Malaysia. It was bought by FELCRA in 2013 and became the first operator to operate in Malaysia. They have gone through tedious work to register them in Malaysia. Eventually CAAM issued them with Permit to Fly on 25 July 2017. The validity of the Permit is for one year and has lapsed. The permit has stipulated the conditions for the gyrocopter to fly. The permit to fly is as attached in Attachment A. Besides allowing the Permit to lapsed, several conditions has been breached as stated in condition 1, 3 and 5.

CAAM flight operations Inspector has conducted an audit on the operations of the gyroplane at the forward base Kampung Jejawi, Perak Tengah on 9 July 2019 and the report are as attached. (See attachment B). However upon interviewing

the Inspector, he admitted that the objective of the audit was to support FELCRAs application to renew the Permit to Fly by the Airworthiness Division.

Based on the investigation team observation, there was no proper and adequate organisation and experience to run aerial spray operations. For an ideal Aerial work operations as required by CAR, the operation has to be issued with aerial work certificate, which has its own specific requirements. Ideally the certificate when issued has to satisfy the following requirements as contained in an operations manual among others as follows:

- a. Operational Organisation - Key personnel and Facilities.
- b. Aircraft description, Performance and Handling.
- c. Maintenance of Aircraft and Equipment.
- d. Operations – Planning and preparation, Reconnaissance, obstruction data, Chemical, Flight Planning, Fuel planning, Weather minima and limitations, prior notice of operations, Warning notices, ground crews, Execution of flight operations and safety management system.
- e. Chemicals hazard and precautions.
- f. Company administration.

3.0 CONCLUSION

3.1 Findings

3.1.1 The pilot has attended the manufacturer's course on gyroplane, however he did not formalise his Malaysian flying license endorsement. He did not meet the flying experience for aerial pesticide operations.

3.1.2 The aircraft Permit to fly was issued on 25 July 2017 and its validity was only for one year and the gyroplane was flying without any valid Permit to fly,

3.1.3 The maintenance was carried out in accordance with the CAAM published procedures.

3.1.4 The operation was on aerial application which required aerial work certificate issued by the Director General of DCA/CAAM. This operations did not possess the certificate and meeting the certificate programme.

3.1.5 There was no communication between aircraft and operating ATC.

3.1.6 The operations lacked supervision by experienced personnel and not being adequately supervised by regulatory body.

3.2 Probable cause

The most probable cause of the accident is the low experience pilot flying Aerial work (pesticide application) without proper supervision by qualified supervisor.

4.0 SAFETY RECOMMENDATIONS

It is recommended that:

4.1 The CAAM to review the operations of this organization to ensure meeting all the safety requirements on aerial work operations.

4.2 The absent of radio communication or NOTAM for this operations will create hazards for other aircraft flying low level at this area.

4.3 CAAM to ensure on the pilot's qualification prior to allowing aerial work operations.

4.4 The validity of the Permit to fly should be shown clearly on the certificate to prevent oversight by the certificate holder.

4.5 CAAM should come up with guideline to support the CAR 1996, Regulation 136 and 137 on Aerial Work (aerial application) operations certification.

**CHIEF INSPECTOR
Air Accident Investigation Bureau
Ministry of Transport
MALAYSIA
26 November 2019**