

FINAL REPORT

on

investigation of an aviation event, realized on 02.08.2015 with helicopter R22 BETA, without registration marks, operated by its owner, in the land domain of Uzundzhovo village, Haskovo district



2015

Purpose of the Report and responsibility

In accordance with Annex 13 for aircraft accident and incident investigation to the Chicago Convention on International Civil Aviation dt. 07.12.1944, Regulation Nr. 996/2010 of the European Parliament and the Council on the investigation and prevention of civil aviation accidents and incidents, and Ordinance Nr. 13 of the Ministry of Transport, Information Technology and Communications (am. and suppl. 16.11.2012), the purpose of the investigation of an aviation event shall be: establishment of the cause of its realization, in view of its elimination and prevention in the future, **without searching for anybody's guilt or responsibility.**

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01. LIST OF ABBREVIATIONS

A/C	- Aircraft;
DG CAA	- Directorate General “Civil Aviation Administration”;
SG	- State Gazette;
CAA	- /Civil Aviation Act;
AMRAIUD	- Aircraft, Maritime and Railway Accident Investigation Unit Directorate;
MTITC	- Ministry of Transport, Information Technology and Communications;
TSP	- Technical service program;
AOM	- Aircraft Operation Manual;
USA	- The United States of America;
AAIU	- Aircraft Accident Investigation Unit;
TLB	- /Technical logbook;
OPC	- Operation Permit Certificate;
EASA	- European Aviation Safety Agency;
FAA	- Federal Aviation Administration;
ICAO	- International Civil Aviation Organization;
UTC	- Universal coordinated time.

1. Introduction

Date and hour of the aviation event: 02.08.2015, 09:00 a.m. local time (06:00 h UTC).

Informed authorities: Aircraft, Maritime and Railway Accident Investigation Unit Directorate and “Civil Aircraft Administration” Directorate General at the Ministry of Transport, Information Technology and Communications of the Republic of Bulgaria, the European Aviation Safety Agency and the European Commission on the grounds of Art. 9, par. 2 of Regulation 996/2010, ICAO and the National Transport Safety Board of the USA.

On the grounds of Art. 9, par. 1 (am. – State Gazette, issue 83 dt. 2004, suppl., issue 77 dt. 2005, issue 90 dt. 2012) of Ordinance Nr. 13 dt. 27.01.1999 on investigation of aviation events, the event is classified by the Aircraft Accident Investigation Unit at the “Unit for Investigation of Accidents in the Air, Water and Railway Transport” Directorate at the Ministry of Transport, Information Technology and Communications as an aviation accident. The materials on the aviation event are filed in case Nr. 06/02.09.2015 to the archive of the Unit for Investigation of Aviation Events.

On the grounds of Art. 5, par. 1 of Regulation (EU) Nr. 996/2010 on the investigation and prevention of accidents and incidents in civil aviation, Art. 142, par. 2 of the Civil Aviation Act of the Republic of Bulgaria dt. 01.12.1972 and Art. 10. Par. 1 of Ordinance Nr. 13 of the Ministry of Transport dt. 27.01.1999 on the investigation of aviation events, by Order Nr. ПД-08-441/24.08.2015 of the Minister of Transport, Information Technology and Communications a commission is appointed for the investigation of the aviation event.

The difference between local and universal coordinated time is +3 h. The time applied everywhere in the report is local time.

On 02.08.2015 at about 11.00 a.m. in the land domain of Uzundzhovo village, Haskovo district, upon its try to take off from an unregulated temporary flight platform, helicopter R22 BETA, without registration marks, undergoes a crash. Two persons without capability to operate the helicopter are found onboard, the one of them, occupying the left seat, has piloted the helicopter. The persons are not injured but the helicopter is destroyed.

The direct cause for realization of the event is:

Lack of experience and capability of the piloting pilot.

The major cause is:

Performance of a flight with an unregistered aircraft, without certified airworthiness, by a crew not possessing the requested capability.

2. Factual information

2.1. History of the flight

2.1.1. Flight number, type of operation, last point of departure, time of departure and point of intended landing

Number of flight: a second flight for the day.

Type of operation: a training purpose flight, without a flight plan.

Last point of departure: an unregulated temporary platform in a lucerne field at 3,34 km in 54,29⁰ direction from the village of Uzundzhovo.

Time of departure: about 09:00 a.m.

Point of intended landing: the platform from which the helicopter takes off.

2.1.2. Flight preparation and description of the flight

The helicopter is parked in the yard of its owner in the village of Uzundzhovo, Haskovo district. On 02.08.2015 the son of the helicopter's owner (found onboard upon the realization of the event) carries out a check within the scope of a pre-flight examination of the helicopter with the intention to perform training flights. After the examination, he tanks 30 l of fuel and checks the distance from the combustion filter. At about 8:00 a.m. he starts the engine and together with his father (the owner of the helicopter) takes off from the yard and performs a flight of about one hour duration in the vicinities of Uzundzhovo village, including over the former military aerodrome of Uzundzhovo. At about 9:00 a.m. the helicopter lands on an unregulated temporary platform in a lucerne field at 3,34 km in 54,29⁰ direction from the village of Uzundzhovo. The landing platform is located at the bank of a micro artificial dam where the owner of the helicopter uses agricultural buildings. During the flight there are not any indicated signs and indications for improper operation of the helicopter, its systems or engine. After landing, the pilot's place is occupied by the father. Upon the takeoff, on starting from the ground the helicopter inclines on the left and the blades of the main propeller come into contact with the earth. The helicopter is destroyed, the engine switches off, the crew leaves the helicopter without visible injuries, and the son of the owner uses a fire extinguisher to prevent the outburst of fire. According to his explanations, upon the takeoff try a strong wind started blowing on the left and from the back of the helicopter and the piloting pilot was unable to take control of the aircraft.

2.1.3. Location of the aviation event

An unregulated temporary platform in a lucerne field at 3,34 km in 54,29⁰ direction from the village of Uzundzhovo, with coordinates N 41⁰58'40.91", E 025⁰41'22,43" and an altitude of 199 m. Figures 1 to 4 from Appendix 1 exhibit photos of the place of the aviation event. The photos show also the helicopter's remnants.

2.2. Injuries to persons

Bodily injuries	Crew	Passengers	Other persons
Mortal outcome	0	0	0
Serious	0	0	0
Absent	2	0	0

2.3. Damages to aircraft

Upon the performed examinations of the aircraft after realization of the aviation event the following damages were established:

- Destroyed supporting skis.
- Destroyed bearing screw.
- Destroyed automatic incliner.
- The tail screw and the stabilizer of the tail beam are torn apart.
- Destroyed glazing of the cabin.

These damages may be seen on photos on Figures 1 to 6, Appendix 1.

2.4. Other damages

There are no other damages.

2.5. Personnel information

There were two persons onboard of the helicopter, not possessing capability to operate it. The one sitting on the right seat has piloted the helicopter and is its owner. The piloting person has no pilot's capability and has never been trained at helicopter operator's training aviation centers.

The second person has piloted the helicopter till the time of landing at the temporary platform in the lucerne field. This person is a son of the piloting owner. He is an agronomist and has never been trained at helicopter operator's training aviation centers; he does not possess capability as such.

According to the assertions of the second person, the two of them have flown with the helicopter for about 30 hours, without this being documented in any manner.

The requirements of par. 1, Art. 34 of the Civil Aviation Act are infringed in their part providing: "The members of the crew of an aircraft, registered in the Republic of Bulgaria, must possess capability certificates, issued or recognized as valid by the "Civil Aviation Administration" Directorate General." .

2.6. Aircraft information

2.6.1. Airworthiness information

The helicopter has no Registration Certificate, Airworthiness Certificate, Annual Airworthiness Check Certificate, Form of helicopter, engine and propellers, there is no Technical service program, there is no Operation Permit Certificate from the last technical servicing, and no technical onboard logbook is maintained on it. The motoclock of the helicopter shows 3018,1 h.

The central instrumentation panel of the helicopter exhibits identification number N2364B. This may be seen on the photo on Figure 8 from Appendix 1. This number is from the register of the Federal Aviation Administration of the USA, where the number refers to helicopter Robinson R22 Beta, serial number 2362. A helicopter of such number is manufactured in 1993 and is deleted from the register on 13.05.2015 because of the expiry of time term.

Art. 19. Par. 1 of the Civil Aviation Act stipulates that: "The aircraft shall be permitted to operation after checking, registration and verification of its airworthiness".

In conformity with the above requirement of the law, the helicopter having realized the aviation event was not to perform any flights.

According to the assertions of the owner, the helicopter is assembled by him from parts, whose origin he refuses to clarify.

In the case, commenced is infringement of par. 1, Art. 24a of the Civil Aviation Act, stipulating: "The manufacture or rebuilding of aircrafts or products, parts and devices for such shall be carried out by physical persons or legal entities, registered after the Commercial Act, or by persons, registered as merchants after the legislation of an EU member state, or of another state – a party under the European Economic Area Agreement, that are certified thereof."

The helicopter's owner does not possess such certificate and does not have the right to manufacture or rebuild aircrafts.

2.6.2. Brief information on the technical characteristics of the aircraft

Robinson R22 is a light helicopter with two seats and one engine, a two-blade main propeller and a two-blade tail airscrew. Normally the helicopter is equipped with sliding skis. The basic structure of the helicopter is made from welded chrome-plated steel pipes. The front part of the body is made from fiber glass and aluminum with prexiglass glazing. The tail beam

and the vertical and horizontal stabilizers are made from aluminum. The seats of the pilot and the passenger are located side by side.

The helicopter uses horizontally mounted, four-cylinder, carburetor air-cooling engine Lycoming O-320. Engine power is transferred to the propellers by means of belts.

Maximum total weight of helicopter: 1370 lb (622 kg).

Minimum total weight of helicopter: 920 lb (417 kg).

Maximum permissible velocity V_{NE} – 102 KIAS (189 km/h).

Maximum height of flight: 14000 ft (4267 m).

Fuel quantity: 116 l (main reservoir 75 l and additional reservoir 41 l). Type of fuel: aviation benzene 100/130.

The helicopter is approved for visual flights.

2.6.3. Information on the type of fuel used and its condition

According to the explanations of the crew, at the time of realization of the event the helicopter has had onboard about 60 liters 100 octane automobile benzene. A significant portion of it has leaked at the place of the helicopter's crash.

2.7. Meteorological information

According to the explanations of the crew, the meteorological conditions correspond to simple, but at the time of takeoff a strong wind starts blowing from the left and the back.

2.8. Navigation

The helicopter having realized the event has no aviation horizon which makes it inoperable for training purposes. The height measurement device and the bends' indication device are Russian made and are not from this helicopter.

2.9. Communications

Standard communication equipment.

2.10. Aerodrome information

An unregulated temporary platform in a lucerne field at 3,34 km at $54,29^0$ direction from the village of Uzundzhovo, with coordinates N $41^058'40.91''$, E $025^041'22,43''$ and an altitude of 199 m. There are not any designations or marking on the platform.

2.11. Flight recorders

Not used for this type of aircraft.

2.12 Wreckage and impact information

During the try to take off from the place it is found at, upon a strong wind from the left and the back, the helicopter crushes down from a height of about one meter, the main propeller realizes contact with the earth surface, and the helicopter crashes. Thereupon destroyed are the tail beam, the blades of the main and the tail propellers and the cabin's glazing. The helicopter's body inclines, laying down on its left side. This is exhibited by photos on Figures 1 to 4. The helicopter has laid aside in a compass course of 128^0 .

Upon the performed examination of the helicopter the following was established:

- Destroyed supporting skis.
- Destroyed bearing screw.
- Destroyed automatic incliner.
- The tail screw and the stabilizer of the tail beam are torn apart.
- Destroyed glazing of the cabin.

- The switches of the accumulator battery and the alternator are switched off by the pilot upon starting of the helicopter, Figure 5, Appendix 1.
 - The magnets switch is in “off” position – switched off upon starting of the helicopter.
 - The admixture saturator is in position “saturated admixture”.
 - The carburetor’s heating is pulled to 0,5 cm.
 - Available fuel – immediately before takeoff the helicopter is tanked with 30 l automobile benzene 100 octane, a part of it has leaked at the place of the event after the crash. 1 l benzene was drained from the left reservoir for study. The fuel tap is in a closed position, Figure 6, Appendix 1.
 - The belt reductor is in a good condition, Figure 7, Appendix 1.
 - On the central instrumentation panel of the helicopter an identification number N2364B is exhibited, Figure 8, Appendix 1.
 - The helicopter’s motoclock reads 3018,1 h, Figure 9, Appendix 1.
 - The helicopter’s tail beam bears the inscription „22 NIN“
- Onboard there is no one document from the documents which according to the International Convention on Civil Aviation and the Civil Aviation Act of the Republic of Bulgaria have to be maintained onboard of each aircraft performing a flight in the air space of the Republic of Bulgaria.

2.13. Medical and pathological information

There are no consequences for the crew upon realization of the event, so no medical and pathological studies have been performed.

There is no information that any physiological factors or loss of capability have influenced the working capability of the crew.

2.14. Fire

No traces of fire are noticeable on the helicopter’s remnants, but the son of the owner has used fire extinguisher to prevent fire.

2.15. Survival aspects

The crew have used protective belts. The height from which the helicopter has collapsed is small, as the substantial destructions of the aircraft are due to the rotation of the propeller, caused by the operation of the engine in takeoff mode of operation.

2.16. Tests and research

For the purposes of the technical investigation the following measures are carried out:

- examination of helicopter Robinson R22, without registration marks, after the realized event;
- examination of the place of the event, a temporary uncertified platform in the land domain of the village of Uzundzhovo;
- discussions with the pilot owner and the second participant in the event;
- discussions with the passenger and witnesses of the event;
- investigation and analysis of information on the aircraft;
- assessment of the flying & operational characteristics of the aircraft;
- logic & probability analysis of eventual causes for the aviation event.

2.17. Additional information

Paragraph 1, Art. 143 of the Civil Aviation act stipulates: “Punished by levy from BGN 3000 to BGN 10 000 shall be any person who:

1. ...

2. allows the performance or performs a flight with an aircraft which is not registered or has no airworthiness certification;

3. (am. – State Gazette, issue 52 dt. 2004) operates or partakes in the operation, servicing, provision of the aircraft or servicing of passengers without holding capability certificate thereof, as well as any person who orders or allows such performance;

...“

3. Analysis

In accordance with the collected information, upon the examination at the place of the realized event and the performed discussions with the crew members, the helicopter's flight is not in conformity with the legislation and the normative base of the Republic of Bulgaria regarding aviation and is performed by persons who are not trained and have no right to perform such activity.

In spite of the absence of documentation on the maintenance of helicopter's airworthiness, there is no direct evidence to prove that the cause of the aviation event is the occurrence of a technical malfunction of the units and aggregates of the helicopter and its systems.

The lack of professional training of the piloting pilot and the second crew member are a substantial prerequisite for the existence of possibilities for permission of mistakes in the process of takeoff, especially under complicated meteorological conditions due to the appearance of a side wind. An eventual mistake, connected with increasing of the helicopter's inclination, has lead to contact of the propeller with the ground and has caused the realization of the event.

4. Conclusion

In view of the contents, exposed in the present Report, it may be stated that,

Direct cause of the realized event:

Lack of experience and capability of the piloting pilot.

Main cause:

Performance of a flight with an unregistered aircraft, without certified airworthiness, by an incapable crew.

5. Safety recommendations

Considering the causes for the realized aviation event and the insufficiencies detected upon the investigation, the commission recommends the fulfillment of the following safety measures.

1. The “Aviation Safety” Directorate at the “Civil Aviation Administration” Directorate General shall perform an internal check for the establishment of conditions for aircraft operation in the air space of the Republic of Bulgaria without registration, as the check shall be completed with the development of an opinion for solving of the problem.

2. In respect of the persons engaged with the realized event, the “Civil Aviation Administration” Directorate General shall apply the requirements of par. 1, Art. 143 of the Civil Aviation Act.

3. The “Civil Aviation Administration” Directorate General shall undertake legislative initiative for the provision of penalties for persons breaching par. 1, Art. 24a of the Civil Aviation Act.

On the grounds of Art. 18, §5 of Regulation 996/2010, the prescribed measures shall be enlisted in the centralized European safety measures system.

Comment:

In accordance with par. 2, Art. 19 of Ordinance Nr. 13 dt. 27.01.1999 on investigation of aviation events, the draft of the present Final Report was submitted to the “Civil Aviation Administration” Directorate General. By letter, of incoming ref. Nr. 14-00-1265/22.10.15 at the records keeping office of the Ministry of Transport, Information Technology and Communications, signed by the Main Director of the “Civil Aviation Administration” Directorate General, comments are made on the rendered safety recommendations from the draft Report, and their elimination or amendment is recommended.

The safety investigation commission in connection with the aviation event, realized by helicopter R22 BETA, does not accept the objections of the “Civil Aviation Administration” Directorate General in respect of the safety recommendations, provided in the Final Report on investigation of an aviation event, realized on 02.08.2015 with helicopter R22 BETA, without registration marks, in the land domain of Uzundzhovo village, Haskovo district. Response letter, outgoing ref. Nr. 14-00-1265/26.10.15, states the reasons for not accepting the objections.

Appendix 2 to the present Report publishes copies of the above cited letter of the “Civil Aviation Administration” Directorate General and the response letter of the safety investigation commission.

Enclosures: Appendix 1 and Appendix 2, constituting an inseparable part of the present Report.

The investigation commission reminds hereby to all organizations, to which safety measures have been communicated, that on the grounds of Art. 18 of Regulation 996/2010 on the investigation and prevention of accidents and incidents in civil aviation, and Art. 19, par. 7 of Ordinance Nr. 13 on the investigation of aviation events they are obliged to notify in writing the Unit for Accident Investigation in Air, Water and Railway Transport with the Ministry of Transport, Information Technology and Communications on the status of safety measures.

Chairman of the commission:

..... (Hr. Hristov)

Members:

..... (St. Petrov)

..... (V. Karaliyski)

ATTACHMENT 1



Фиг. 1.



Фиг. 2.



Фиг. 3.



Фиг. 4.



Фиг. 5.



Фиг. 6.



Фиг. 7.



Фиг. 8.



Фиг. 9.