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Air, Maritime and Railway Traffic Accident Investigation Agency

Air Traffic Accident Investigation Department

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INTERIM STATEMENT

**ON ACCIDENT OF THE HELICOPTER
type Alouette II, SE-313B,
registration 9A-HAT**

Zlarin, 3 July 2018



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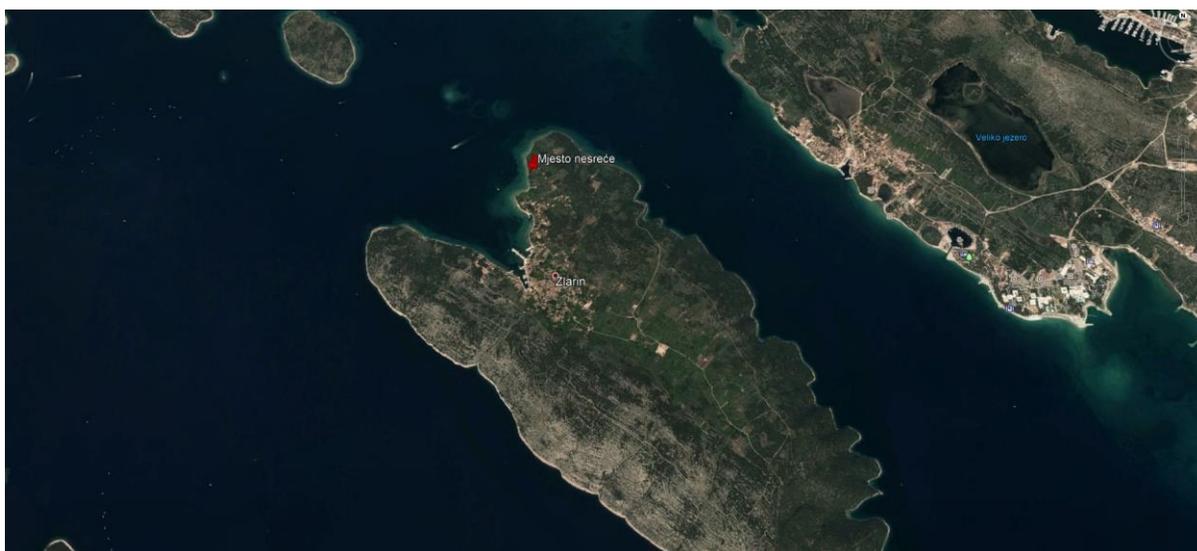
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OCCURENCE INFORMATION

Type of the occurrence:	Accident
Date:	3 July 2018
Local time:	11:00 LT
Place:	Island of Zlarin, town of Zlarin
Type of the aircraft:	Helicopter, Annex II
Manufacturer / model:	Sud Aviation Aerospatiale
Registration:	9A-HAT
Owner:	Eudora Let d.o.o.
Operator:	Eudora Let d.o.o.
Number of persons on board:	Three (pilot, male and female passenger)
Injuries:	Two persons with minor injuries
Damage to the aircraft:	Significantly damaged



Picture 1. Accident site marked with a red mark

INVESTIGATION

AIA received the first information about the accident from the National Protection and Rescue Directorate (DUZS) and the Operational Communication Centre of the Ministry of the Interior (OKC MUP).

AIA investigators started the inquest on the same day, and performed interviews with people related to the accident and the investigation was opened. During the inquest, a search of a larger area around the accident site was performed for detection of parts that were disconnected from the helicopter during the flight and dropped to the ground.

A Press release was published, which provided basic information about the occurrence.

According to the provisions of ICAO Annex 13, one month after the accident AIA issued a Preliminary Report stating the occurrence information and the findings obtained during the early stage of investigation.



As a part of the investigation, statements of eyewitnesses and other persons relevant for the investigation of the subject accident were taken.

Given the clear indications, the investigation was in the further development directed towards the dynamic power transmission system.

SUMMARY

On 3 July 2018, at 11:00 LT, three persons took off by a helicopter registration 9A-HAT, from the heliport Gaćeze, with the intention of making a panoramic flight over the wider area of the city of Šibenik.

Above the island of Zlarin, the pilot noticed that the manoeuvrability of the helicopter was getting worse and he made a forced landing to the island, on which occasion the male and female passengers sustained minor injuries, while the pilot sustained no injuries. There was a significant material damage to the helicopter. After landing, there was a small fire that the pilot had successfully extinguished.

The helicopter registration 9A-HAT was owned by the company Eudora Let d.o.o.

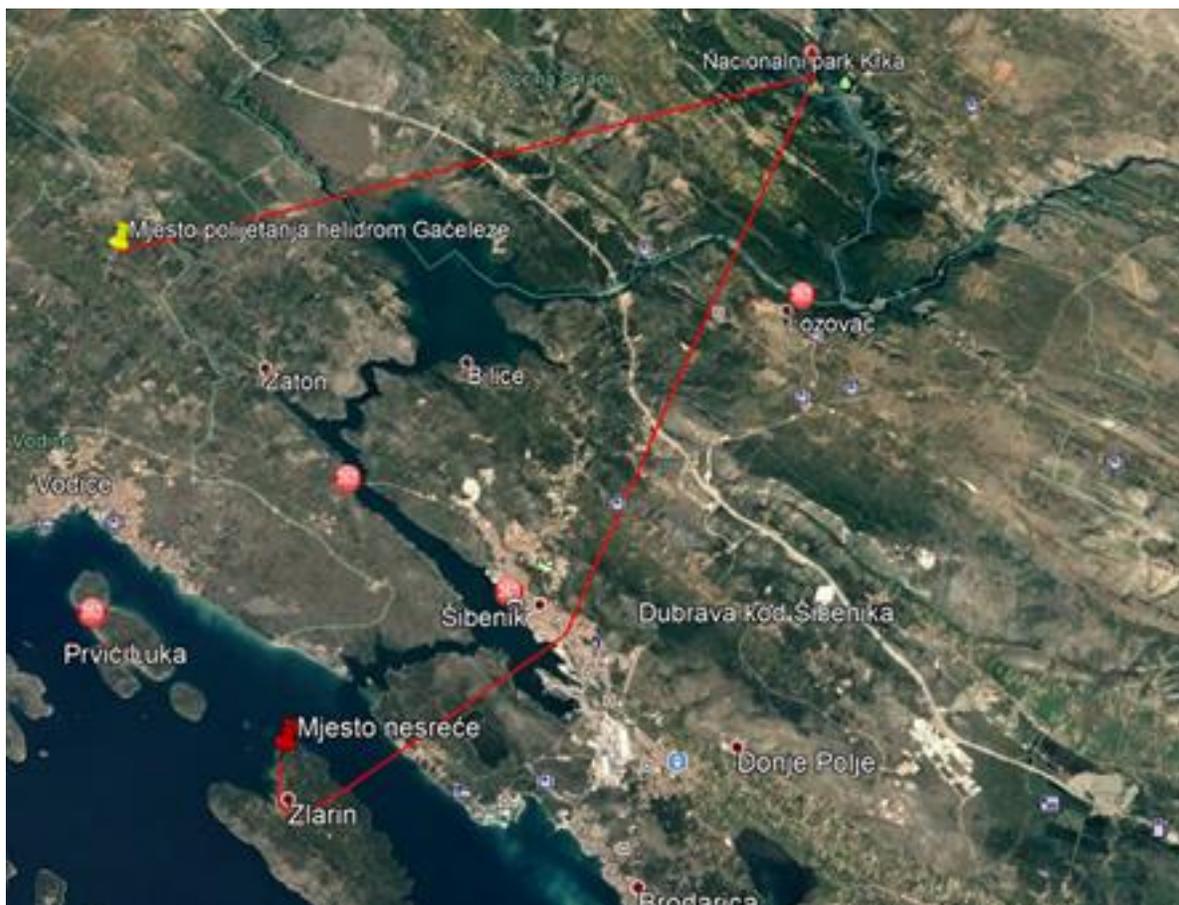
During the inspection of the helicopter after the accident, technical failures in the dynamic power transmission system were detected.

Upon completion of the investigation, AIA shall, in accordance with conclusions and findings, issue appropriate safety recommendations.

1. FACTS AND INFORMATION

1.1. FLIGHT INFORMATION

On 3 July 2018 around 10:15 hours, the pilot with two passengers took off from Vodice heliport (place Gaćeze), with the intention of making panoramic VFR flight over the wider area of the city of Šibenik. After the take off, the flight of the helicopter took place over the National Park Krka (three turns) at 10:25 hours, the city of Šibenik (three turns) at 10:40 hours and the island of Zlarin at 10:43 hours (Picture 2). Around 10:43 hours, the pilot felt a strong twitch of the helicopter, followed by light vibrations. After a minute and 20 seconds the pilot noticed the occurrence of strong vibrations and decided to perform a forced landing. The helicopter landed about 900 meters aerial distance north of Zlarin, at the area covered with grass, trees and low vegetation.



Picture 2 – Flight route of the aircraft

1.2. INJURIES

Injuries	Crew	Passengers	Other
fatal	0	0	0
serious	0	0	0
minor / none	1	2	0

During the accident, the pilot did not suffer bodily injuries, while the passengers suffered minor bodily injuries in form of scratches.

1.3. DAMAGE TO THE HELICOPTER

In this accident the helicopter was significantly damaged (Picture 3). Damages were present on parts of the construction, landing gear, power transmission system, controls, and single units around the powertrain and the main gearbox. The tail construction was found next to the helicopter. During the landing there was a minor fire on the helicopter, which was extinguished thanks to the rapid reaction of the pilot. No signs of birds or other flying objects such as drone were found on the helicopter.



Picture 3 – Helicopter at the accident site

1.4. OTHER DAMAGE

During the subject accident no other damage occurred.

1.5. INFORMATION ON THE COMPANY EUDORA LET D.O.O

The company Eudora Let d.o.o was established in 1998 with registered office at Vodice. The company provides panoramic flights, air photography, and use of helicopters for agricultural, forestry or construction, fire protection, hail defence, search and rescue, publicity, surveillance and patrolling, flight crew training, radio navigation equipment testing, air shooting and similar.

At the time of the accident, the company operated only with the subject helicopter.

1.6. PILOT INFORMATION

A male person, a Croatian citizen born in 1963. The pilot is also the owner of a company that is an operator of the subject helicopter and also a responsible person in several functions at Eudora Let d.o.o. At the time of the accident, he had possessed a helicopter pilot license issued on 15 April 2014 while the authorisation expiry date for the helicopter type SA318 / SE313 was 30 April 2019. The pilot also holds a flight instructor's license for the helicopter, expiring on 31 July 2020.



1.7. HELICOPTER INFORMATION

Manufacturer:	Sud Aviation
Type:	SE313B
Capacity:	1 pilot and 4 passengers
Length:	9.66 m
Height:	2.75 m
Maximum take-off weight:	1600 kg
Main rotor diameter:	10.20 m
Cruise speed:	170 km/h
Maximum speed:	185 km/h
Ascending speed:	4.2 m/s
Range:	565 km

Alouette II is a helicopter produced by the French company Sud Aviation. Production of the helicopter lasted from 1956 to 1975. In that period, a total of 1300 helicopters were produced. For military purposes, the helicopter was mostly used for air photography, rescue and training, while in civilian use it was often used for underslung load transport, fumigation, and transport of injured persons.

Alouette II, S/N: 1841

The subject helicopter was manufactured in 1963 and on 11 July 2011 it was registered in the Croatian Register with the owner, a legal entity, company Eudora Let d.o.o. under the ordinal number 344 and the registration number 9A-HAT. The said company used the helicopter for panoramic flights and underslung load transport. On the day of the accident, the helicopter was airworthy. The last check of the airworthiness of the helicopter was performed on 28 December 2017 by the Croatian Civil Aviation Agency, during which no findings were determined. By inspecting the aircraft logbook, it was determined that the last flight before the subject flight was performed on 25 June 2018.

Total flight hours of the helicopter:	7302.40 hours
Total number of helicopter cycles:	3842
Total flight hours of the helicopter during the last maintenance:	7299.00 hours
Date of the last helicopter maintenance:	17.4.2018
Total flight hours of the powertrain:	6919.00 hours
Total flight hours from the last general overhaul of the powertrain:	918.00 hours

On the day of the accident, the total helicopter flight hours was 7302.40, with the number of cycles of 3842. At 7299 hours, a 25-hour (T1) helicopter inspection was performed, i.e. 3 hours prior to the subject accident and 918 hours after the general overhaul of the powerplant.

The last performed helicopter maintenance included the following inspections:

- 25, 50, 100, 200-hour inspection
- T-1 inspection
- T-2 inspection, point 1-141
- Major inspection, point 142-183



The helicopter was equipped with the powertrain Artouste C6, serial No. 782. At the time of the accident, 828 hours of engine operation remained until the next general overhaul.

1.8. METEOROLOGICAL INFORMATION

At the time of the accident (around 10:15 LT), the meteorological data measured at the weather station Vodice indicate the sunny weather with intermittent low clouds, wind of speeds of 2 km/h from east, north-east, temperature of 26°C, humidity of 74% and air pressure of 1013 hPa. The visibility on the day of the accident was more than 10 km, satisfactory for the subject flight, and the weather conditions had no influence to the flight.

1.9. NAVIGATIONAL INFORMATION

The planned flight took place in the Class G airspace above the National Park Krka, and the Šibenik water area.

1.10. COMMUNICATION

Before the flight and during the flight, the pilot communicated with the air traffic control at the corresponding frequencies. He did not communicate with other subjects through the radio.

1.11. FLIGHT DATA RECORDERS

The helicopter was not equipped with the flight data recorder or the cockpit voice recorder.

1.12. INFORMATION ON THE IMPACT AND REMAINS OF THE AIRCRAFT

The helicopter force-landed about 900 meters air distance north of the centre of the town of Zlarin, on the dirt road connecting the centre of Zlarin to the north side of the island. During the last few minutes of the flight, the mechanical parts which had completely been separated from their corresponding system, were falling from the helicopter. In the last moments of flight up until the landing, the eyewitnesses noticed the smoke coming out of the helicopter.

1.13. MEDICAL INFORMATION

In the subject accident, the pilot did not suffer severe bodily injuries while the male and female passenger suffered minor bodily injuries during moving through the low vegetation when they were leaving the helicopter. In form of surface scratches of the legs. None of the participants to the accident had requested medical assistance.



1.14. FIRE

During the last moments of the flight, the eyewitnesses noticed the smoke coming out of the helicopter. In their statements, they did not specify precisely from which part of the helicopter the smoke had been coming from. After the forced landing and exiting the helicopter, the pilot noticed the fire in the opening of the main gearbox caused by cracking of the drive shaft, and also noticed that the fire had caught the dry grass in area of the left skid. The pilot successfully extinguished the fire using a firefighter device that was on the helicopter.

1.15. RESCUE AND SURVIVAL ASPECTS

Considering the fact that the place of the forced landing was close to the inhabited area and that the accident participants did not suffer severe bodily injuries, there was no need for search and rescue action.

1.16. TESTING AND RESEARCH

1.16.1. Preliminary inspection of the helicopter

By arriving at the accident site, the helicopter was inspected on 3rd and 4th of July 2018 by the AIA investigators and the employees of the Ministry of the Interior.

It was established that the helicopter was not moved from the landing site, that it was inclined to the left due to the breakage of the left skid and that some components on the helicopter were completely missing, namely:

- Drive shaft assy. with associated parts,
- Inclined drive shaft assy. with associated parts,
- Rotor brake disc assy. with associated parts.

The helicopter's main battery was found a few meters away from the helicopter, taken out by the pilot after landing to prevent fire. A part of the tail structure with the tail rotor and its associated parts was found several meters from the helicopter.

Since the pilot suspected that a bird or a drone stroke during the flight, the helicopter was inspected for possible traces of impact. No traces of impact of birds or drone were found.

Based on the notices from citizens and search of the terrain during those days, some of the missing parts were found.

1.16.2. Detailed inspection of the helicopter and its components

Given the nature of the accident, a detailed inspection of the helicopter and its individual components was performed by AIA investigators and the employees of the PART 145 maintenance organization engaged by AIA for the purposes of the subject investigation.



1.16.3. **Inspection of dynamic transmission system components**

For the purpose of determining of details of the technical failures, individual components were subjected to a laboratory test.

1.17. **ADDITIONAL INFORMATION**

1.17.1. **Maintenance of the helicopter 9A-HAT**

At the time of the accident, the subject helicopter was maintained in accordance with the approved Aircraft Maintenance Program, 2nd Issue, 3rd Revision, dated 28 December 2015 issued by the Croatian Civil Aviation Agency (CCAA). The approved Helicopter Maintenance Organization that was contracted was Hidroplan Nord, HgCAA. MF.0082, of Hungary, which possessed Part 145 approval for the subject helicopter type.

The last helicopter maintenance works were carried out in the period from 16 March 2018 until 17 April 2018 by the company Hidroplan Nord. After the completed works, the helicopter had a total of 7299.00 flight hours.

1.17.2. **Continuing airworthiness of the 9A-HAT helicopter**

At the time of the accident, the continuing airworthiness of the helicopter was maintained by the company Eudora Let d.o.o., as an approved Annex II CAMO organization by CCAA.

Investigation in Charge
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