

MINISTRY OF INFRASTRUCTURE

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SUMMARY OF THE FINAL REPORT

ON THE INVESTIGATION OF THE ACCIDENT INVOLVING

THE POWERED SAILPLANE

DG-808C, REGISTRATION D-KEAJ

ON 4 MAY 2016 IN THE AREA OF GRAŠKA GORA

Republic of Slovenia

» 2016 «

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INTRODUCTION

The final report on the aircraft accident investigation contains the facts, analysis, causes and safety recommendations of the accident investigation committee with regard to the circumstances in which the accident occurred.

In accordance with paragraph 3.1 of Chapter 3 of Annex 13 to the Convention on International Civil Aviation (11th Edition, July 2016), Article 1 of Regulation (EU) No 996/2010 of the European Parliament and of the Council of 20 October 2010 on the investigation and prevention of accidents and incidents in civil aviation (OJ L 295, 12.11.2010, p. 35), Article 137(4) of the Aviation Act (Official Gazette of the Republic of Slovenia, Nos 81/10 – official consolidated text and 46/16) and Article 2 of the Decree on the investigation of aircraft accidents, serious incidents and incidents (Official Gazette of the Republic of Slovenia, Nos 72/03 and 110/05), it is not the purpose of the final report on the aircraft accident investigation to apportion blame or liability.

The final investigation report shall serve solely the interests of aviation safety.

It is important that the final investigation report be used for the prevention of aircraft accidents and incidents. Use of the final report on the aircraft accident investigation for any other purpose may lead to misinterpretation.

COMPOSITION OF THE INVESTIGATION COMMITTEE

Pursuant to Article 5(4) of Regulation (EU) No 996/2010 of the European Parliament and of the Council on the investigation and prevention of accidents and incidents in civil aviation (OJ L 295, 12.11.2010, p. 35), Article 138(3) of the Aviation Act (Official Gazette of the Republic of Slovenia, Nos 81/10 – official consolidated text and 46/16) and Article 7 of the Decree on the investigation of aircraft accidents, serious incidents and incidents (Official Gazette of the Republic of Slovenia, Nos 72/03 and 110/05), the Head of the Air, Maritime and Railway Accident and Incident Investigation Unit, by Decision No 37200-7/2016/4-00121171 of 10 October 2016, appointed an aircraft accident investigation committee to investigate the circumstances in which the accident occurred, determine the causes of the aircraft accident and prepare safety recommendations to prevent similar aircraft accidents in the future.

Composition of the committee:

1. **Toni STOJČEVSKI – Investigator-in-Charge**, Head of the Unit, aircraft accident and incident investigator, and

SYNOPSIS

1. Date and time of the accident: 4 May 2016 at 07:25 local time (LT)

2. Accident site: Graška Gora, Slovenj Gradec, N 46° 25' 11.31" / E 15° 7' 33.85"

3. Type of flight: VFR private flight (VFR – Visual Flight Rules)

4. Aircraft: Single-seat powered sailplane

- **Aircraft manufacturer:** DG Flugzeugbau GmbH, D-76646 Bruchsal, Germany
- **Manufacturer's designation:** DG 808 C Competition
- **Aircraft registration:** D-KEAJ (entered in the aircraft register of the Federal Republic of Germany)
- **Aircraft serial number:** 8-390B289X51
- **Airworthiness valid until:** 22 March 2017
- **MTOM:** 600 kg

5. Owner/Operator: Private

6. Crew and passengers:

- **Crew:** 1 (pilot)
- **Number of passengers:** /
- **Total on board:** /

7. Injuries to persons:

<i>Injuries</i>	<i>Crew</i>	<i>Passengers</i>	<i>Others</i>
Fatal	1	/	/
Serious	/	/	/
Minor / None	/	/	

Damage to aircraft and equipment:

The aircraft, engine and equipment were 100 % destroyed and are beyond repair.

1 GENERAL

On 4 May 2016, the pilot of the DG-808C powered sailplane, German registration D-KEAJ, was conducting a flight following take-off from Slovenj Gradec Aerodrome (LJSG). After reaching an altitude of approximately 1,337 m AMSL, control of the aircraft was suddenly lost.

With the engine running, the aircraft entered a regime of steady left-hand orbits with a gentle descent, in which the bank angle remained within a narrow range (estimated at approximately 50–55°) for the entire remainder of the flight, with no tendency to increase or to level out. During this time, the strong northerly wind gradually drifted the aircraft towards the Graška Gora area. After just under ten minutes of flight in this regime, with no recorded attempt to correct the heading, reduce engine power or transmit a distress call, the aircraft – without at any time rolling out of the orbit – collided with a wooded slope at an elevation of 819 m. The aircraft was completely destroyed on impact and the pilot sustained fatal injuries.



Figure 1: Flight path of the aircraft prior to the crash

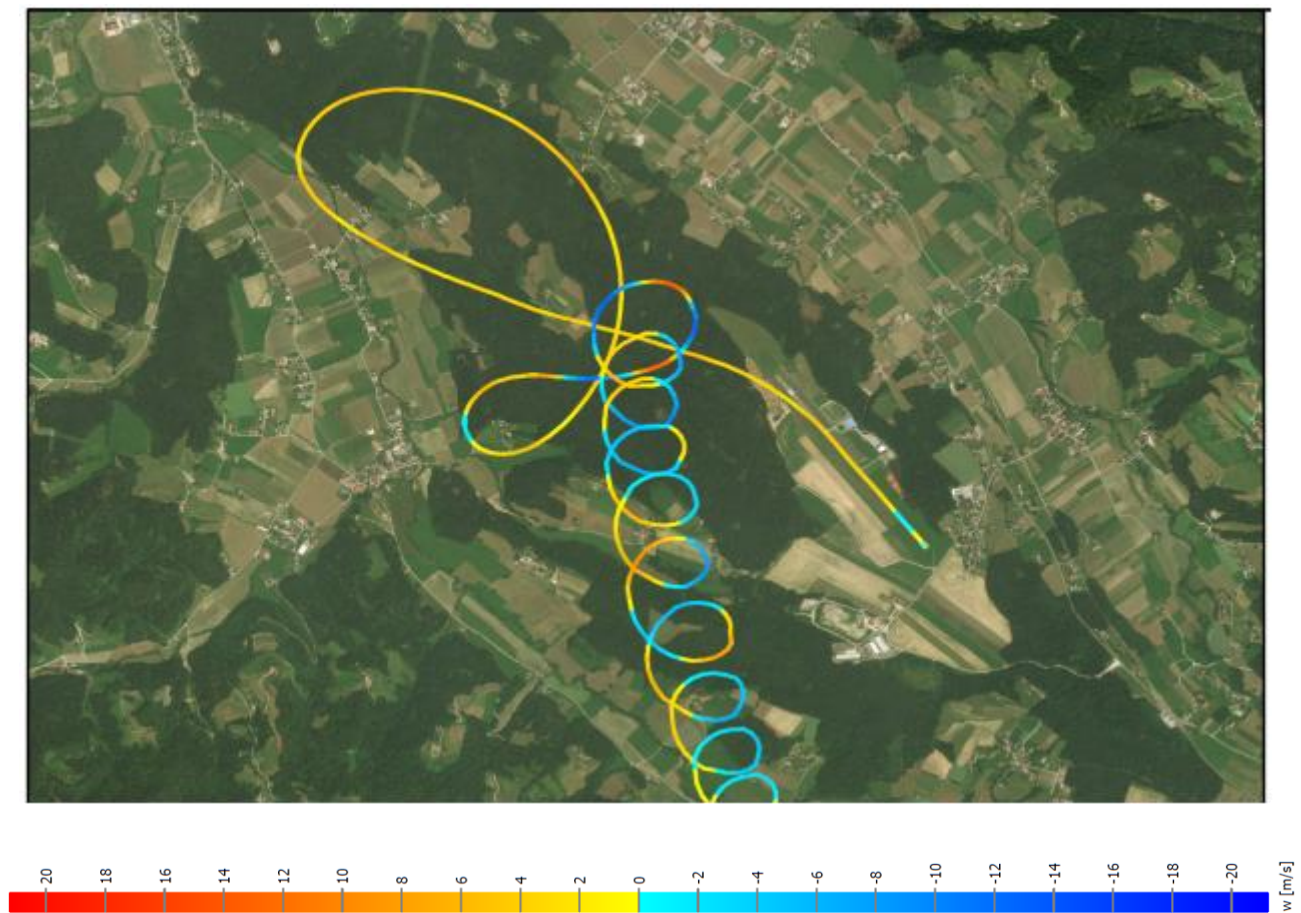


Figure 2: Flight profile showing climb and descent values

1.1 Pilot information and medical condition

- **Licences and ratings:** Holder of a valid Sailplane Pilot Licence (SPL) with the appropriate privileges to fly powered sailplanes.
- **Medical certificate:** Formally valid Class 2 medical certificate (valid until 17 June 2016).
- **Medical condition:** The available medical records indicate that the pilot had previously been diagnosed with serious cardiovascular conditions, which deteriorated towards the end of 2015. The pilot did not report the onset and treatment of these conditions to an aeromedical examiner (AME), thereby failing to comply with the obligation laid down in MED.A.020 (Part-MED).
- **Findings of the forensic medical expert (autopsy):** The forensic medical examination confirmed the presence of advanced chronic pathological changes to the heart and blood vessels. Owing to the severe impact injuries and the nature of acute cardiac rhythm disturbances

(e.g. arrhythmia or syncope), which leave no morphological traces in the tissue, the autopsy cannot confirm with absolute certainty the direct onset of an acute cardiac event in flight.

- **Toxicology:** The toxicological examination did not detect the presence of alcohol, illicit drugs or psychoactive medication.

1.2 Meteorological information

- **Wind:** Northerly wind from 340° at speeds between 16 and 45 knots (kt).
- **Turbulence and air currents:** Severe orographic turbulence, lee waves and pronounced downdraughts were present which, in the absence of pilot control inputs, accelerated the vertical descent of the aircraft towards the Graška Gora ridge.

2 HISTORY OF THE FLIGHT AND RECONSTRUCTION

- **07:08:37 LT (Climb):** Normal take-off from runway 32 at Slovenj Gradec Aerodrome. Within 5 minutes and 17 seconds the aircraft climbed to an altitude of 1,337 m AMSL (rate of climb 2.7 m/s, average speed 133 km/h), with continuous and uninterrupted operation of the SOLO 2625 01 engine (high ENL signal level).
- **07:13:54 LT (Onset of the critical event):** After reaching 1,337 m AMSL, the aircraft suddenly entered a steep and continuous left turn. From this point onwards, the telemetry recorded no deliberate control inputs by the pilot.
- **07:13:54 – 07:23:28 LT (Steady left-hand orbits):** For 9 minutes and 34 seconds, the aircraft flew steady left-hand orbits with a radius of about 200 m (one revolution every 20–25 seconds) and an average bank angle of about 50–55°, which did not change significantly throughout the interval. The average speed of 186 km/h considerably exceeded the speed during the preceding climb (133 km/h), while the average rate of descent was 0.9 m/s. Within individual orbits, the vertical speed fluctuated between approximately –12 m/s and +13 m/s, indicating unsteady altitude oscillation within each orbit rather than a steady, controlled descent. The engine operated at full power throughout, with no attempt to reduce throttle, level the wings or transmit a distress call, and the aircraft did not roll out of the orbit even in the last recorded seconds before impact. The strong wind

drifted the aircraft towards Graška Gora.

- **07:23:28 LT (Impact):** At high speed and in a left bank, the aircraft struck trees on the slope of Graška Gora at an altitude of 819 m AMSL. The aircraft broke up completely on impact and the pilot sustained instantly fatal injuries.

3 FINDINGS

- The pilot held a formally valid licence and medical certificate; however, owing to an undisclosed advanced heart condition, he was in all probability not medically fit to operate the aircraft safely.
- There were no technical failures or structural damage to the aircraft or engine prior to impact with terrain.
- The weather conditions, including downdraughts, contributed to the more rapid loss of altitude of the uncontrolled aircraft.

4 CAUSES

Probable cause: Sudden in-flight medical incapacitation of the pilot, most probably as a result of an acute cardiovascular event. Although, owing to the nature of such disorders, the forensic autopsy cannot provide incontrovertible material evidence of the exact moment of onset of cardiac arrest or loss of consciousness, the chronic cardiovascular changes identified, together with the characteristic profile of an uncontrolled spiral flight without any reaction by the pilot, constitute the most probable explanation of the accident.

Contributing factors:

- Failure to notify an aeromedical examiner (AME) of the onset and treatment of serious cardiac conditions (non-compliance with MED.A.020).
- Absence of legal and information channels for the direct exchange of data between personal/specialist physicians and aeromedical examiners (AMEs).
- Strong orographic downdraughts and turbulence, which accelerated the descent of the aircraft towards the slope.

In accordance with Article 5(1) and (3) of Regulation (EU) No 996/2010 of the European Parliament and of the Council of 20 October 2010 on the investigation and prevention of accidents and incidents in civil aviation, AMRAIU hereby concludes the investigation of this aircraft accident with this

notice and, in accordance with aviation regulations, forwards the occurrence data to the Civil Aviation Agency of the Republic of Slovenia (CAA) for any further action within its competence.

Toni Stojčevski – Head of AMRAIU
Investigator-in-Charge