AIR ACCIDENTS
INVESTIGATION INSTITUTE
Beranových 130
199 00 Prague 9 – Letňany

CZ-23-1410

FINAL REPORT

**Investigation of causes of an air accident
of the VL-3 Evolution UL aircraft,
registration mark I-B866,
in a field near the village of Pěšice
on 7 December 2023**

Prague
June 2025

Table of Contents

Abbreviations Used

A	Aircraft
AC	Altocumulus
ACC	Air Control Centre
AGL	Above ground level
ALT	Altitude
AS	Altostratus
ARP	Aerodrome reference point
ATZ	Aerodrome traffic zone
BKN	Broken
CAVOK	Visibility, cloud and present weather better than prescribed values or conditions
CHMI	Czech Hydrometeorological Institute
E	East
EFIS	Electronic Flight Instrument System
FIR	Flight information region
G	Ground
GS	Ground speed
FRS	Fire rescue service
IAS	Indicated air speed
IFR	Instrument flight rules
IMC	Instrument meteorological conditions
IRS	Integrated rescue system
KIAS	Knots indicated air speed
L	Left
LILF	Castelnuovo Don Bosco Airport, Italy
LKJH	Public domestic airport Jindřichův Hradec
LKPD	Public international airport Pardubice
LKPI	Public domestic airport Přibyslav
LKUO	Public domestic airport Ústí nad Orlicí
LKVM	Public domestic/private international airport Vysoké Mýto
FIR	Flight information region of Prague
MTNS	Military terminal navigation services
METAR	Aviation routine weather report
MSL	Mean sea level
N	North
NIL	None
P	Right
OVC	Overcast
PCR	Police of the Czech Republic

QNH	Atmospheric pressure in the area (reduced to mean sea level according to standard atmospheric conditions)
RADIO	Service providing information about known air traffic
RCC	Rescue Coordination Centre
REG QNH	Regional pressure, the lowest atmospheric pressure in the area (reduced to mean sea level according to standard atmospheric conditions)
RWY	Runway
MATC	Military air traffic controller
MAC	Mean aerodynamic chord
SC	Stratocumulus
CET	Central European Time
SSR	Secondary Surveillance Radar
ST	Stratus
SYNOP	Report on surface synoptic observations made by weather stations
UL	Ultralight
UTC	Coordinated Universal Time
MUH	Central Military Hospital
AAII	Air Accidents Investigation Institute
VFR	Visual Flight Rules
VMC	Visual meteorological conditions
VRB	Variable
MIFM	Military Institute of Forensic Medicine

Units Used

ft	Foot (unit of length – 0.3048 m)
hPa	Hectopascal (unit of atmospheric pressure)
kt	Knot (unit of speed – 1.852 $km.h^{-1}$)
hp	Horsepower
MHz	Megahertz (the sixth power of the frequency unit)

A) Introduction

Operator:	Natural person
Aircraft manufacturer:	JMB AIRCRAFT, s.r.o.
Type of aircraft:	VL 3 Evolution
Registration mark:	I-B866
Location of incident:	field about 300 m north of the village Pěšice
Event date and time:	7 December 2023, 12:15 UTC (all times are in UTC, except for times in witness statements, which are in CET)

B) Synopsis

On 7 December 2023, the AAII was notified of an air accident of the VL 3 Evolution UL aircraft in a field near the village of Pěšice in the Chrudim region, approximately 8 km west of the take-off airport.

The pilot and another person on board (hereinafter the “pilot of the other aircraft”) landed at LKVM at 10:09 to take over a new UL aircraft from the manufacturer. Both pilots were foreign nationals. After completing the necessary formalities, pre-flight preparation and two short flights over the airport, they took off at 12:09 in a group of two VL 3 UL aircraft from RWY 12L and turned left to follow a course of about 275 degrees. At the western edge of the LKVM ATZ, weather conditions deteriorated significantly, and the pilot climbed into clouds, where he manoeuvred horizontally and vertically, probably in an attempt to regain visual contact with the ground. A casual witness saw the UL aircraft falling in spin, but did not see the actual impact on the ground. The UL aircraft was destroyed on impact with the ground. The pilot died in the UL aircraft wreckage.

The pilot of the other aircraft, after entering the clouds, climbed to an ALT of 5,000 ft and continued to fly southwest over the clouds. Subsequently, he aborted the flight to the destination, flew above the cloud cover to the LKUO ATZ, where he regained visual contact with the ground and performed an approach and subsequent landing at LKVM under the cloud cover.

Various IRS units intervened at the accident site. On the same day, an AAII inspector arrived at the accident site and together with a forensic physician and the Police of the Czech Republic carried out a professional investigation.

The cause of the incident was investigated by the commission comprised of:

Commission Chairman:	Ing. Josef Bejdák
Commission members:	Ing. Lada Ouhrabková
	Jan Rychnovský
	MUDr. Václav Horák, MBA, MIFM MUH

The Final Report was issued by:

AIR ACCIDENTS INVESTIGATION INSTITUTE
Beranových 130
199 00 Prague 9 – Letňany

On 23 June 2025

This Final Report consists of the following main parts:

1 Factual Information
2 Analyses
3 Conclusions
4 Safety Recommendations
5 Appendices

1 Factual Information

Information on the flight history was obtained from the Garmin GDU 460 EFIS data storage media, the ACC summary display records, the radio-telephone communication records, witness statements, and the wreckage position.

1.1 History of the Flight

1.1.1 Circumstances preceding the critical flight

1.1.1.1 Flight description from Garmin GDU 460 data storage media

According to the UL flight data record, VL 3 UL aircraft, registration mark I-B866, took off from LILF at 06:41 and continued its flight to the Czech Republic via Switzerland and Austria. It entered FIR PRAGUE at 09:16 in the area west of the Lipno dam at the altitude of 6,600 ft MSL. It gradually descended to an altitude of 2,500 ft MSL, which it reached at the western edge of the LKJH ATZ. At the altitude of 2,500 ft MSL, it continued to the LKPI ATZ where it began a smooth climb to 5,000 ft MSL. At this altitude, it entered the LKVM ATZ. The pilot turned off the autopilot (AP OFF) during the descent at the altitude of approximately 4,000 ft MSL and after performing the landing manoeuvre shown in Fig. 2, landed on RWY 30L LKVM at 10:09.

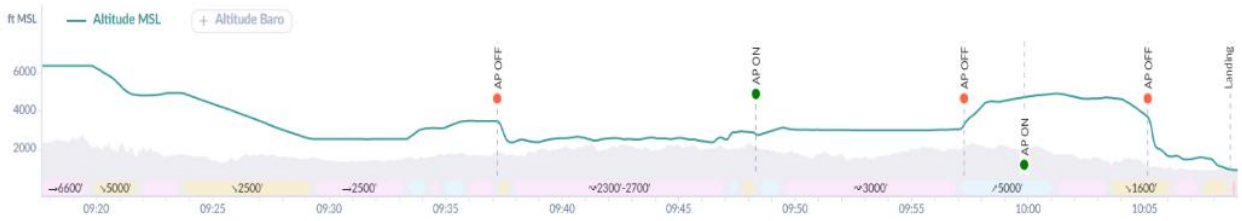

Fig. 1 – Flight altitude profile of VL 3 UL aircraft, registration mark I-B866, in FIR PRAGUE during flight from Italy

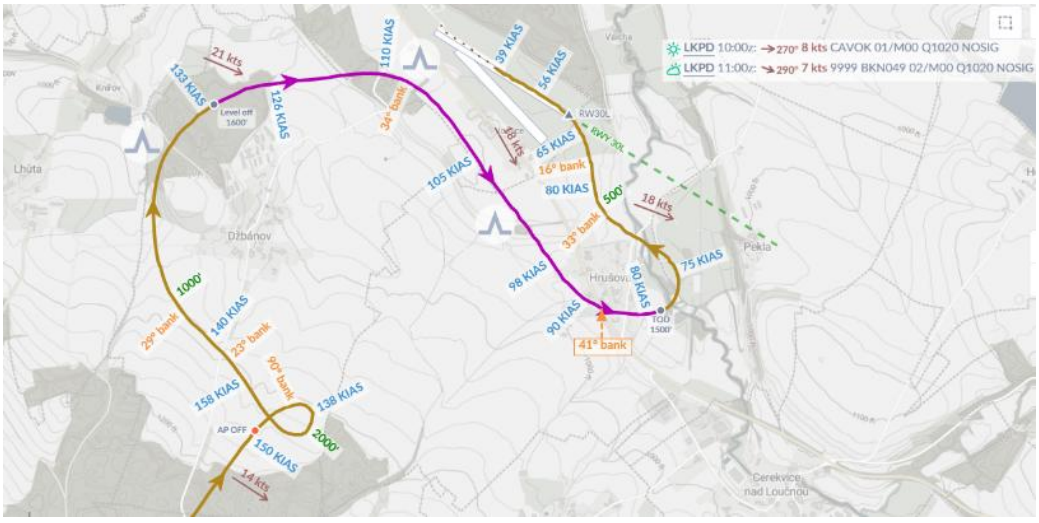

Fig. 2 – Landing manoeuvre of VL 3 UL aircraft, registration mark I-B866, at LKVM on arrival from Italy

1.1.1.2 Flight description by the pilot of the other aircraft

The circumstances that preceded the critical flight were described by an acquaintance of the pilot, an experienced UL pilot, who had flown with the pilot in the VL 3 UL aircraft, registration mark I-B866, on a morning flight from Italy to the Czech Republic and piloted the said UL aircraft. Before flying back to Italy, he made two short flights over the airport with a brand new VL 3 UL aircraft, registration mark I-E402, to assess the current weather conditions. First flight was executed from 11:07 to 11:11 at the altitude of 700–800 ft AGL and the second flight from 11:28 to 11:33 at the altitude of 500–600 ft AGL. Subsequently, in the afternoon, on a flight from LKVM to Italy, he again piloted the same brand new UL aircraft. In his statement in the police report, he stated, among other things: *"On this day, 7 December 2023 at 07:30, together with my friend (pilot's name), we took off from Castelnuovo Don Bosco airport, located near Turin, with an ultralight aircraft of VL 3 type, Italian registration number I-B866. This aircraft is owned by (pilot's name). I piloted the aircraft. Our destination was the airport in Vysoké Mýto, where we were to take over a brand new aircraft of the same type. The flight from Italy normally takes about three hours, but due to the bad weather around Munich, our flight stretched to three and a half hours. We landed in Vysoké Mýto at the local airport around 11:30. Our intention was to take over a new VL 3 aircraft from JMB Aircraft in Vysoké Mýto and then take off with both aircraft back to Italy. We had already made this decision on the flight from Italy, because according to the weather forecast the weather in Vysoké Mýto could be better in the afternoon.*

When we wanted to leave Vysoké Mýto airport around 12:30, the conditions for the flight were not right, because there was low visibility, slight fog and low cloud cover. We weren't allowed to fly without visual contact with the ground, so we weren't allowed to instrument fly in the clouds.
Due to bad weather, (pilot's name) contacted the nearest air traffic control in Pardubice by phone and asked for an exception to fly in controlled air traffic. (Pilot's name) told me that he received this exemption with the understanding that he had to keep to 277° to Pardubice Airport."

Fig. 3 – Recording from the security camera placed on the aeroclub building at LKVM (southeast view 24 min after landing from LILF)

1.1.2 Critical flight

1.1.2.1 Critical flight description from Garmin GDU 460 data storage media

After take-off from RWY 12L at 12:08:45, the UL aircraft climbed smoothly through a left turn onto a heading of 270°. In the LKVM ATZ, the aircraft maintained an altitude of approximately 1,700 ft MSL and its airspeed ranged from 106 to 130 KIAS. At the west edge of the ATZ at 12:11:56, it flew at 126 KIAS on a heading of 270° and initiated a climb, ascending to 2,000 ft MSL with a drop in airspeed to 100 KIAS. At 12:12:13, it executed a left turn onto a 200° heading at 100 KIAS and reached an altitude of 2,300 ft MSL at 67 KIAS. At 12:12:28, while flying at 67 KIAS, the heading changed to 270°, the altitude to 2,000 ft MSL and the airspeed to 105 KIAS. At 12:12:42 and at a location approximately 1.3 km northeast of the accident site, when the aircraft was flying on a heading of 280°, at an altitude of 2,000 ft MSL and a speed of 105 KIAS, the recording ended.

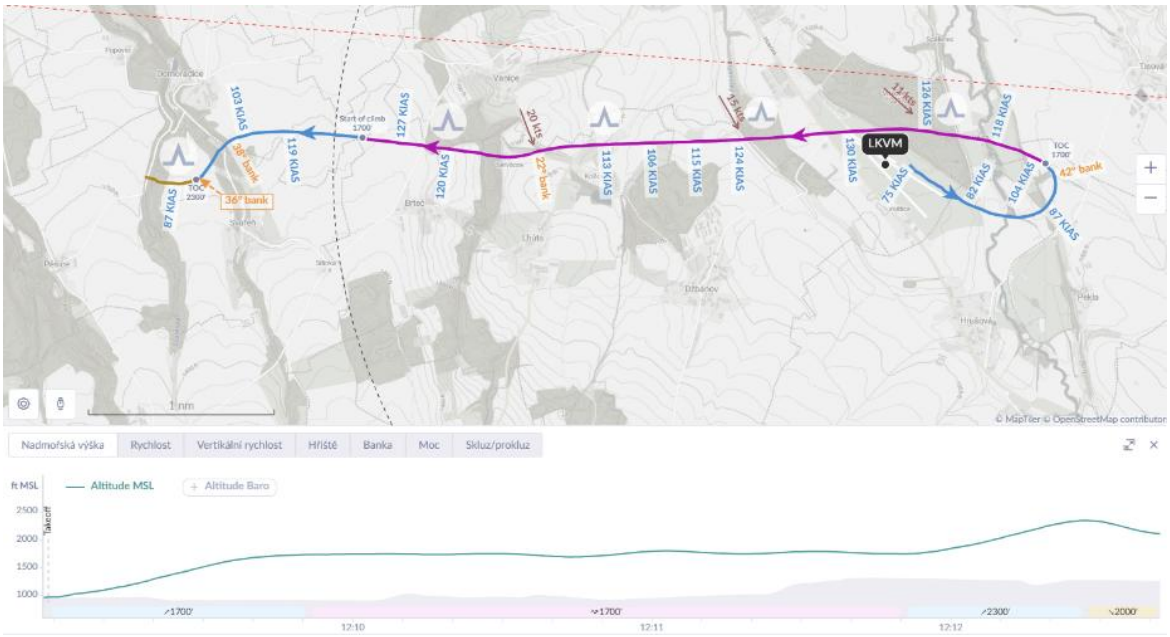

Fig. 4 – Graphic record of critical flight of VL 3 UL aircraft, registration mark I-B866

1.1.2.2 Description of the critical flight according to the ACC summary display records

The ACC summary display record showed the route of the event flight at the given place at that time.

Fig. 5 – ACC summary display records

Table 1 – Selected flight elements from the ACC summary display records

Čas [h: min: s]	**ALT** [ft]	**GS** [kt]	**Kurz** [°MAG]	**Vertikální pohyb**	**Poznámka**
12:09:40	1 500	90	060	stoupání	zatáčka doleva
12:10:20	1 700	110	270	horizont	severně letiště
12:11:55	1 700	120	270	horizont	horizontální hranice ATZ
12:12:13	1 900	110	180	stoupá	zatáčka doleva
12:12:28	2 300	90	180	stoupá	
12:12:33	2 400	80	270	horizont	zatáčka doprava
12:12:42	2 300	80	300	klesá	
12:12:45	2 000	100	300	horizont	
12:12:50	2 000	100	300	horizont	zatáčka doleva
12:12:55	2 400	60	270	stoupá	
12:13:00	2 600	30	180	stoupá	zatáčka doprava
12:13:05	2 600	50	190	stoupá	
12:13:10	2 500	80	190	stoupá	
12:13:15	2 400	100	240	klesá	zatáčka doleva
12:13:20	2 500	90	280	klesá	
12:13:25	2 400	90	300	horizont	zatáčka doleva
12:13:30	2 300	100	360	klesá	
12:13:35	2 700	80	040	stoupá	
12:13:40	2 800	60	010	stoupá	
12:13:45	3 100	20	300	stoupá	
12:13:50	2 700	90	210	klesá	
12:13:55	2 900	80	150	stoupá	
12:14:00	3 000	60	100	stoupá	
12:14:05	3 000	60	100	stoupá	
12:14:10	2 900	30	90	horizont	zatáčka doprava
12:14:15	2 900	20	100	horizont	
12:14:20	2 900	10	110	horizont	konec záznamu

The SSR position symbol appeared on the ACC summary display records at 12:09:40 when the UL aircraft was at ALT 1,500 ft approximately 1.8 km southeast of the LKVM ARP and

continued a left turn climb to ALT 1,700 ft into the area north of the airport. After passing the airport at 12:10:20, the UL aircraft continued its horizontal flight to ALT 1,700 ft, at GS 110 kt, heading 270° to the western boundary of the LKVM ATZ. After passing the western edge of the ATZ, there were significant changes in heading and ALT between 1,500 and 3,000 ft, and changes in GS between 120 and 20 kt. The SSR position symbol was lost from the summary display records at 12:14:20 when the UL aircraft was at ALT 2,900 ft.

1.1.2.3 Flight description by the pilot of the other aircraft

The critical flight was described by an acquaintance of the pilot from the point of view of a pilot piloting the new VL 3 UL aircraft, registration mark I-E402, and in his statement to the police report he said, among other things: *"According to the instructions received by my colleague after a phone call with Pardubice Airport, we both took off together from Vysoké Mýto Airport at around 13:00, heading for Pardubice Airport. We both had our radio frequency set to 123.45 MHz so that we could talk to each other during the flight. We both knew we were forbidden to fly in the clouds. (Pilot's name) told me during the flight to select a lower airspeed. (Pilot's name) flew first and I followed him at a small distance. As the weather worsened, we both flew into the clouds, and I lost visual contact with the aircraft of (pilot's name). I then asked (pilot's name) to try to get back under the clouds. But I knew it would be a dangerous manoeuvre. After about two minutes, a space in the clouds opened up to about 5,000 feet, and through this opening in the clouds I started to look for my fellow pilot, but I was not successful. When, even after a few minutes, I had no contact with the fellow pilot's aircraft, I realized that he had probably had an accident. For this reason, I wanted to return to the airport in Vysoké Mýto, but this intention was thwarted by the weather, when suddenly a gap in the clouds closed and I then had to find another gap, through which I climbed out and then headed to the airport in Vysoké Mýto, where I landed safely."*

1.1.2.4 Flight description of the other UL aircraft from the EFIS Garmin storage medium data

After take-off from RWY 12L at 12:08:46, the VL 3 UL aircraft climbed smoothly through a left turn onto a heading of 270°. In the LKVM ATZ, it maintained an altitude of about 1,700 ft MSL and its airspeed ranged from 106 to 130 KIAS. After leaving the ATZ on its western edge, it flew at 126 KIAS on a heading of 275°. At 12:12:15, it began an intense vertical climb at a speed of up to 2,000 ft·min^{-1} and climbed to 5,000 ft MSL. At 12:14:38 at 5,000 ft MSL, approximately 13 km southwest of LKVM, it made a left turn approximately 180° and returned to LKVM. It passed Vysoké Mýto Airport to the south and continued flying in a northeast direction. At 12:23:05, it entered the LKUO ATZ on its western edge. On the north-western edge of the ATZ, it performed a left turn manoeuvre in an intense descent of approximately 180°. After its termination at 12:25:05, it continued at 1,500 ft MSL on a 220° heading directly to LKVM. It circled above the airport at 300 ft AGL and landed at 12:30:10 on RWY 30R (see Fig. 6).

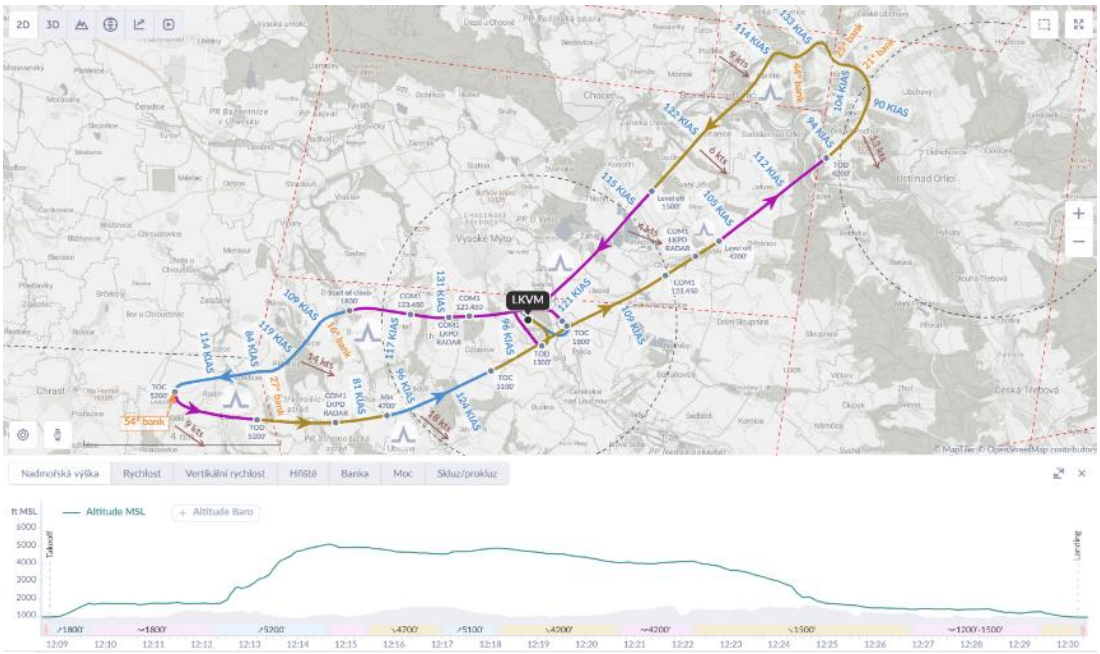

Fig. 6 – Graphic record of critical flight of VL 3 UL aircraft, registration mark I-E402

1.1.3 Witnesses' statements

Witness 1 was walking his dog along the field in the direction of the village shortly after 13:00 in the direction of Řepníky-Pěšice towards the village of Domoradice. In his testimony, he stated, among other things: "*At that time, I could hear the engine of one or two planes in the clouds above me, but I couldn't see any of them. It was cloudy, foggy, a kind of winter haze, clouds low. After about 3 to 4 seconds, I turned around and looked up again to the sky, where I could already see one plane flying in the direction from Vysoké Mýto to Chrudim. At that time, the plane was about 500 meters away and, in my rough estimation and given the sloping terrain, at an altitude of about 150–200 metres, within 500 metres. I saw it falling down to the ground in a spin until it disappeared behind the field horizon. The plane's engine was running quite normally, I couldn't hear any faltering or strange noises, but it seemed to me that it was very low. I couldn't see the plane hit the ground as it disappeared over the horizon. When I returned to the village of Řepníky-Pěšice after about five minutes, I could smell gasoline in the air, but I couldn't see anything. That is all I can say on the whole matter.*"

In his testimony, witness 2, a service technician for the UL aircraft manufacturer, stated, among other things: *"Today, 7 December 2023, I was at the airport in Vysoké Mýto, with which I also cooperate professionally. In the morning, two Italians arrived from Italy in one VL 3 aircraft to purchase one new VL 3 ultralight aircraft. At around 12:30, the same Italian pilots with two VL 3 aircraft wanted to fly from Vysoké Mýto Airport to Italy. At that time, the visibility was max. 1.5 km and clouds were low, which meant that the flight conditions for these flights were not met due to insufficient visibility. At about 13:00, one ultralight took off, circled above the airport and landed back. Subsequently, both pilots took off from Vysoké Mýto Airport. A few minutes later, one of the aircraft returned and landed safely. I then moved the aircraft to a local hangar."*

Witness 3 stated in the police report on the matter: *"Today, 7 December 2023, I was driving my personal motor vehicle from Řepníky-Pěšice towards Mravín at around 13:15, where I noticed a small plane crashed in a field to the right of the road, smoking. When I saw that, I stopped my vehicle. I immediately reported the matter to emergency number 112 and went*

to take a closer look at the plane. Upon reaching the plane, I found that inside the broken cockpit, there was a man whose face was smashed and who showed no signs of life. The field was covered in snow and there were no tracks around the plane, which led me to conclude that this must have happened in the short time before my arrival. After reporting the matter, I waited at the site until the arrival of the Czech Police patrol. I cannot say more about the matter because I did not see the event itself."

1.2 Injuries to persons

The pilot of the UL aircraft sustained injuries incompatible with life in the air accident. No one on the ground was injured.

Table 2 – Number of injured persons

Injury	Crew	Passengers	Other persons (inhabitants, etc.)
Fatal	1	0	0
Serious	0	0	0
Light/No injury	0/0	0/0	0/0

1.3 Damage to aircraft

The UL aircraft was completely destroyed on impact with the ground.

1.4 Other damage

There was no damage to third party property during the air accident or during the handling of the wreckage.

1.5 Personnel information

1.5.1 Pilot

Personal data:

- Male, aged 50 years,
- Valid class 2 medical certificate,
- a valid pilot licence issued by AERO CLUB D'ITALIA,
- valid qualification for *multi-axis microlight, two-seater,*
- valid licence of the aeronautical mobile service radio operator.

1.5.2 Flying experience

The left seat was occupied by the pilot who had obtained a pilot license for UL aircraft on 10 July 2022. He started training with VL 3 UL aircraft on 30 September 2023 and having flown 8 hrs 10 min, he conducted a solo flight on the type on 14 October 2023. On the day of the air accident, on a flight from Italy to the Czech Republic, he was sitting in the right seat of the same UL aircraft as another person on board.

Table 3 – Pilot's hours flown on UL aircraft as at 7 December 2023

Hours flown over:	24 hours	90 days	Total

Type VL 3 Evolution UL aircraft:	00:06	21:24	21:24
All types of UL aircraft:	00:06	30:42	241:06

1.6 Aircraft information

1.6.1 General information

The VL 3 Evolution ultralight aircraft has been certified for non-aerobatic VFR operation in accordance with Rule UL 2 issued by the Light Aircraft Association of the Czech Republic. It is intended mainly for recreational flights and basic flight training. VL 3 is a single-engine composite UL two seater with the seats in side-by-side configuration. It is equipped with a retractable tricycle landing gear with steerable nose wheel.

Fig. 7 – VL 3 Evolution UL aircraft, registration mark I-B866

1.6.2 Technical description

The fuselage is made as a carbon shell with integrated seats. The crew cabin is reinforced with carbon-kevlar fibres.

The composite wing has a single main spar with ribless carbon reinforcements. The overall structure is a sandwich design, featuring a foam core. The control and tail surfaces have the same design.

The elevator and ailerons are controlled by rods, the rudder is controlled by cables. On the right elevator, there is a longitudinal balancer, which is controlled by cables. The ailerons and elevator are controlled by control levers. The rudder is controlled by rudder pedals, the flaps are controlled by a control lever located between the pilot seats.

1.6.3 Information about the crashed UL aircraft

- Aircraft type — VL 3 Evolution
- Manufacturer — JMB Aircraft s.r.o., ČR
- Serial number — 137
- Year of manufacture — 2014
- Registration mark — I-B866
- Operator — natural person
- Total hours flown — not identified

- Liability insurance valid
- UL aircraft registration certificate valid

1.6.4 Dimensional and performance characteristics

- Span 8.44 m
- Length 6.24 m
- Height 2.05 m
- Never exceed speed V_{NE} 305 km·h^{-1} IAS
- Speed for normal operations V_{VNO} 235 km·h^{-1} IAS
- Manoeuvring speed V_A 165 km·h^{-1} IAS
- Stall speed V_{SO} 65 km·h^{-1} IAS

1.6.5 Mass and centre-of-gravity characteristics

- Empty weight 310 kg
- Maximum take-off weight 472.5 kg
- Allowed centre-of-gravity range 21–34% SAT
- Max. fuel quantity 118 litres

1.6.6 Power unit

Liquid and air-cooled, 4-cylinder, 4-stroke engine Rotax 914 F2 and 2-blade propeller Woodcomp s.r.o. were used for the propulsion of the UL aircraft.

1.6.6.1 Engine

- Type/model Rotax 914 F2
- Manufacturer BRP-Powertrain GmbH & Co. KG
- Serial number 4421080
- Year of manufacture 2011
- Total hours flown 410 hrs 5 min

1.6.6.2 UL aircraft operation

The UL aircraft was registered by the Italian Aero Club on 17 June 2014. The registration certificate lists two owners on page 5. They were natural persons who had owned the UL aircraft from 17 June 2014 to 14 December 2020. On 15 December 2020, another natural person became the new owner. Page 2 specifies the Rotax 914 UL engine with a power of 115 hp. Page 7 gives the maintenance date of 8 June 2022 with validity until 7 June 2025. On page 8, the UL aircraft is confirmed to be equipped with a ballistic rescue parachute system.

On the day of the air accident, two flights, including a critical one, were performed with the UL aircraft for a duration of 3 hrs 34 min. At the accident scene, the FRS unit recovered approximately 30 litres of petrol from the damaged fuel tanks.

1.6.7 Calculation of the UL aircraft take-off weight

The maximum take-off weight of the UL aircraft is 472.5 kg.

1.6.7.1 Calculation of take-off weight with 118 litres of fuel (full tanks)

Empty weight: 310 kg

Pilot's weight:	99 kg
Weight of cargo:	5 kg
Weight of fuel:	83 kg
Take-off weight:	497 kg

MTOW was exceeded by 24.5 kg

1.6.7.2 Calculation of take-off weight with 75 litres of fuel (fuel consumed from LILF to LKVM from Garmin GDU 460 EFIS data)

Empty weight:	310 kg
Pilot's weight:	99 kg
Weight of cargo:	5 kg
Weight of fuel:	53 kg
Take-off weight:	467 kg

1.7 Meteorological information

The analysis of the meteorological situation at 12:15 was based on an expert estimate of probable weather at the place of air accident made by the CHMI for the day of 7 December 2023.

1.7.1 General weather information

The situation:	The weather over the territory of the Czech Republic was under the influence of a weakening high-pressure area advancing eastwards over southern Germany. The east of the Czech Republic was influenced by a low air pressure furrow.
Ground wind:	west to north-westerly directions at 4–10 kt
Upper wind:	2,000 ft MSL 300°/11 kt, 5,000 ft MSL 310°/11 kt
Visibility:	over 10 km, sometimes 6–10 km, occasionally 2–5 km
Weather:	overcast/broken, occasionally mist and low clouds, occasionally light snow in the east
Cloudiness:	BKN/OVC ST 400–750 m AGL, BKN/OVC AC, AS 2,500–3,000 m
Zero isotherm level:	0–550 m
Turbulence:	weak from the ground up to 1,800 m
Ice:	weak to moderate, occasionally strong at 600–4,000 m
REG QNH:	1,019–1,020 hPa, unaltered

1.7.2 Abstract from METAR reports

Table 4 – Abstract from METAR reports from LKPD (25 km northwest)

[07.12.2023 13:00Z – 07.12.2023 14:00Z]
METAR LKPD 071300Z 29004KT 9999 SCT032 BKN050 02/00 Q1020 NOSIG RMK BLU BLU=

[07.12.2023 12:30Z – 07.12.2023 13:30Z]
METAR LKPD 071230Z 29005KT 9999 SCT032 BKN050 02/00 Q1020 NOSIG RMK BLU BLU=

[07.12.2023 12:00Z – 07.12.2023 13:00Z]
METAR LKPD 071200Z 29007KT CAVOK 02/M00 Q1020 NOSIG RMK BLU BLU=

1.7.3 Abstract from synoptic stations

Table 5 – Extract of data from synoptic stations Pardubice (PAR), Ústí nad Orlicí (UNO – 24 km north-east), Svratouch (SVR – 22 km south)

	Čas	Vítr (směr, rychlost)	Dohlednost (km)	Jevy	Oblačnost	Teplota	Tlak
PAR	1200	290/06	10		6 Sc 1500	02/00	1022
UNO	1200	300/06	6	BR	7 St 210	00/M02	1021
SVR	1200	350/10	0,7	FZFG	VV 60	M02/M02	
PAR	1300	290/04	10		4 Sc 950, 6 Sc 1500	02/00	1022
UNO	1300	300/08	9	BR	7 St 600	01/M02	1021
SVR	1300	340/10	0,8	FZFG	VV 30	M02/M02	

1.7.4 Radar, satellite and webcam images

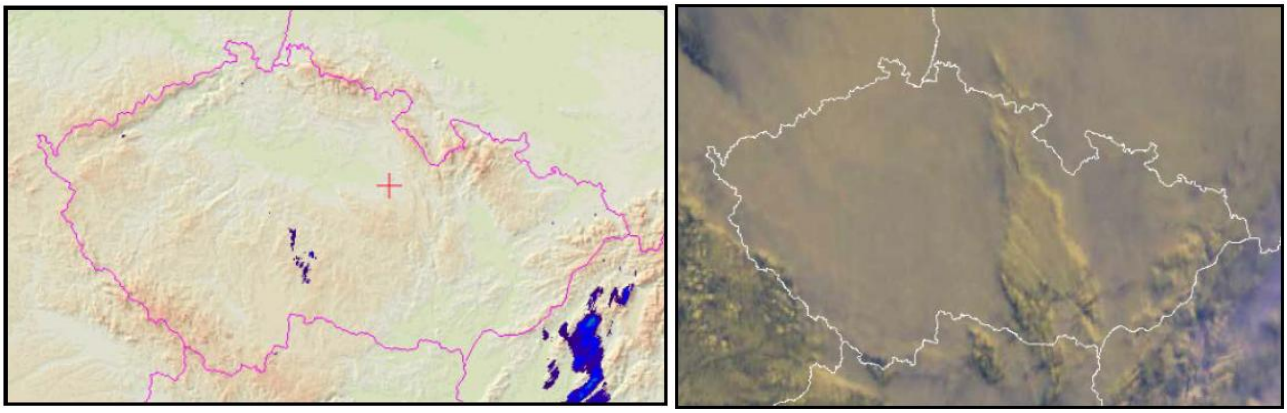

Fig. 8 – Radar and satellite image (the cross marks the accident site)

Fig. 9 – Image from the webcam located near the town of Ústí nad Orlicí
(view southwest/time 12:00)

The wind was blowing mainly northwest at 5 to 10 kt in the area of the air accident near the village of Pěšice at 12:15. Visibility was up to 10 km with occasional mist. The sky was almost cloudy on the whole route of the flight up to the border with Austria with mostly low clouds of ST or SC type. The temperature fluctuated between minus 2 to plus 2 °C. It is likely that frost, which was also predicted from 600 m, may have formed due to the low cloud cover and negative temperatures.

1.8 Radio navigational and visual aids

Visual aids at the LKVM corresponded to the airport class in line with L 14.

1.9 Communications

1.9.1 Telephone conversation between the pilot of UL aircraft and MATC in Pardubice

Shortly before take-off from LKVM at 12:01:43, the pilot contacted the LKPD MATC by telephone. He informed the MATC that he had submitted a flight plan for a VFR flight from LKVM to LILF and planned to fly at 500 ft AGL. Specifically, he inquired about a possible overflight through the controlled areas of Pardubice Airport, about the current state of weather at the airport and its development.

He was told by the MATC that the runway in use at LKPD was 27, wind from 280°/4 kt, weather condition CAVOK, temperature 2 °C, dew point 0 °C, QNH 1,020 hPa, conversion level 60. He confirmed stable weather with no changes.

1.9.2 Frequencies used during critical flight

The Vysoké Mýto airport was assigned the frequency of 130.605 MHz for the aeronautical station designed for communication in the airband. The communication on the operating frequency is not recorded. On the day of the air accident, the RADIO service was not activated at the LKVM.

The pilots of both UL aircraft communicated with each other on the frequency of 123.45 MHz.

The pilots briefly communicated with the Pardubice MTNS air traffic controller on the frequency of 128.365 MHz. The pilot established contact with LKPD MPPA once, shortly after take-off, at 12:10:16.

1.9.3 Transcription of radio communication between pilot (A) and LKPD MTNS (G)

A: *IB866 GOOD DAY*

G: *IB866 PARDUBICE RADAR HELLO. CROSSING TMA VIA FLIGHT PLAN ROUTE. QNH 1020. REPORT LEAVING DARK.*

A: *1020. HEADING 270. VIA FLIGHT PLAN ROUTE TO LILF. DIRECT INNSBRUCK.*

G: *RADAR*

At 12:16:00, LKPD MATC attempted to re-establish contact with the pilot, but he did not respond to the call. After a few seconds, he repeated the attempt to establish a connection. Subsequently, the pilot of the other aircraft, registration mark I-E402, responded to his call and, with great emotion in his voice, announced, among other things, the loss of visual contact with IB866 and the futile attempt to find it.

At 12:26:31, the pilot of the other aircraft announced that he had made visual contact with the ground and planned to land back at LKVM.

At 12:29:17, MATC terminated communication with the pilot of the other aircraft IE402.

At 12:30:00, the LKPD MATC contacted RCC Prague by telephone with a request to declare a state of EMERGENCY. The RCC reported that it has information about the crash of the UL aircraft, registration mark I-B866, and that the emergency services have already been dispatched to the accident site.

1.10 Airport information

Vysoké Mýto Airport is a public domestic/private international airport. Its operability is VFR day/night. With regard to weather conditions and the carrying capacity of the grass areas, the pilots of the UL aircraft used the asphalt runway 12L/30R with dimensions 600 × 18 m for take-offs and landings.

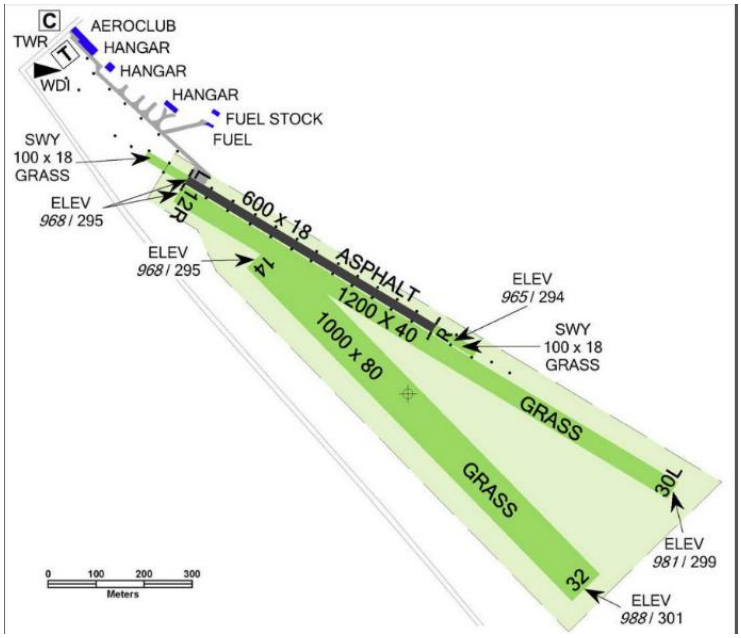

Fig. 10 – Scan of Vysoké Mýto Airport from the VFR manual

1.11 Flight recorders and other means of recording

There was no equipment installed on board the UL aircraft that was primarily used to record flight data.

1.11.1 Data from EFIS Garmin GDU 460

The commission's investigation of the accident was based on the recording of data from the Garmin GDU 460 EFIS, serial number IPH02136.

1.11.2 ACC summary display record

The ACC summary display record showed the route of the event flight at the given place at that time.

1.12 Wreckage and impact information

1.12.1 Wreckage and impact inspection

The UL aircraft landed on a ploughed field, covered with about 10 centimetres of snow. There were no traces in the snow to indicate that the UL aircraft was moving on the ground. The impact site was located approximately 300 m north of the edge of the village of Pěšice and approximately 100 m east of the adjacent road. For a precise location of the air accident see the below table.

Tab. 6 – Coordinates of air accident site

Geographical coordinates:	N 49°55'20,603"
	E 16°04'07,481"
Altitude:	415 m

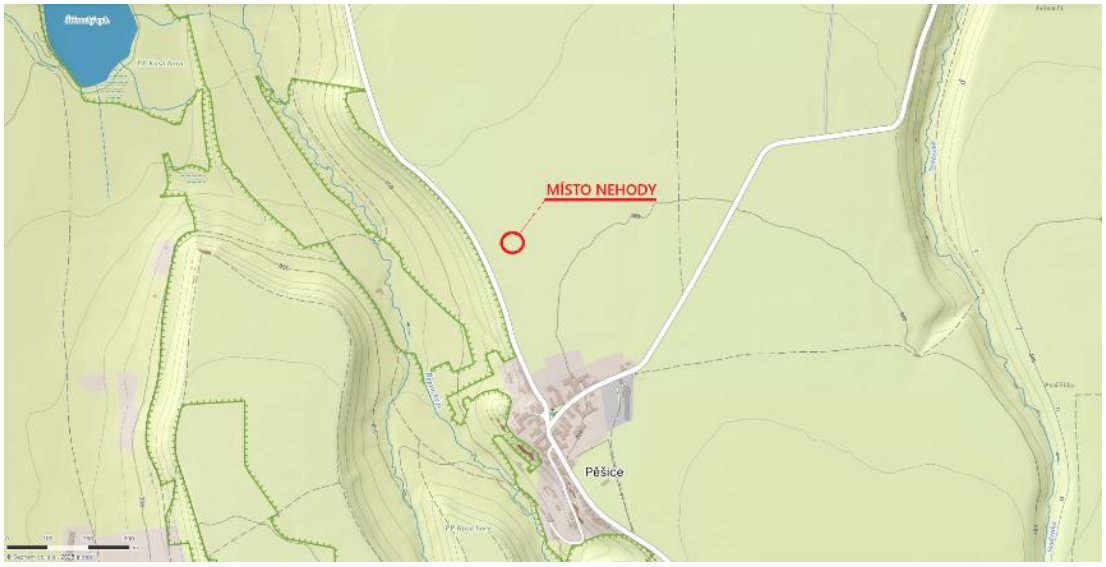

Fig. 11– Place of the air accident

The wreckage of the UL aircraft was lying in the belly-down position, in one place, in one piece. The nose was facing southwest and was partially buried in ploughed, waterlogged soil. The two wing halves remained joined to the fuselage. The flaps and landing gear were in the retracted position. The cockpit canopy was torn from its locking latch and destroyed

by the impact. The deformed frame of the cockpit canopy was broken in the front part and lay behind the left wing half in close proximity to the fuselage. Fragments of the organic glass of the cockpit canopy were located in close proximity to the fuselage. The tail surfaces remained intact, the elevator balancer was in the uppermost position. The elevator and rudder were attached to the control rods and cables. The rudders could be moved freely and were not damaged.

Before starting the manipulation with the wreckage of the UL aircraft, the called specialist deactivated the ballistic rescue parachute system. In view of the impassability of the waterlogged terrain by the heavy equipment of the FRS unit, the wreckage of the UL aircraft was transferred to the paved road using the ropes of the ballistic rescue parachute system by an agricultural loader. Here, both wing halves were mechanically separated from the fuselage and the wreckage was subsequently transported to the hangar of AAII for further examination.

Fig. 12 – UL aircraft wreckage at the accident site

1.12.2 Wreckage inspection

The AAII inspector carried out an inspection of the UL aircraft wreckage at the air accident site and subsequently a professional inspection of the wreckage was carried out by the AAII commission at the place of its storage in the AAII hangar.

The front part of the UL aircraft, including the cabin, was destroyed by impact with the ground. The power unit remained attached to the deformed engine bed, which remained partially attached to the fuselage. The propeller was destroyed. One propeller blade was broken off from the hub at the root of the blade and was found under the front of the fuselage. The second practically undamaged blade remained in the hub. The propeller cone was badly deformed. The Rotax 914F2 engine, serial number 4421080, was damaged to a small extent. The engine control unit was fixed in the usual place. The individual elements of the engine cowling were shattered into pieces of various sizes and were located in close proximity to the engine.

The front part of the cabin up to the seats was completely destroyed. It was broken off from the fuselage at the instrument panel. The instrument panel was bent in several places but remained intact. The individual flight instruments and other instrument panels, including the

Garmin GMC 507 autopilot control panel, were in place on the instrument panel. The controls on the individual panels were not damaged and were functional. The right EFIS screen was intact, the left EFIS screen was damaged extensively by the pilot's head impact. The left control lever was broken off at the bottom. The seat belts of the left seat were not damaged, but were torn from their attachment in the luggage compartment behind the left pilot seat.

The central part of the fuselage at the wing attachment was broken in several places. The right half of the wing was punctured at the bottom of the spar at a distance of about 1 m from the root in the direction of the leading edge. There were cracks and abrasions along the entire length of the upper part of the right wing. The wing was punctured at the end arch on the leading edge. The left half of the wing was punctured approximately 1 m from the root, from the leading edge to the trailing edge at the spar. There were full length cracks along the spar on the underside of the left wing half. Both halves of the wing were damaged along the entire length of the leading edge by scratches and scrapes.

The rear fuselage was not damaged. The elevator and rudder were attached to the control rods and cables. The rudders could be moved freely and were not damaged.

The UL aircraft was equipped with a ballistic rescue parachute system of GRS 6SD ASTM F 2316-12 type. The handle to activate the rescue system was found in an unlocked position, ready for use. The rescue system was manufactured in 2015. The review scheduled for February 2021 has not been carried out.

Fig. 13 – Unlocked rescue system activation control

1.13 Medical and pathological information

The forensic physician from MIFM MUH Prague prepared for the needs of the investigating AAII commission a forensic medical examination report with the following conclusions:

1. The immediate cause of pilot's death was polytrauma, i.e. multiple injuries to several organ systems. The pilot died very shortly after the UL aircraft hit the ground.
2. From both, forensic medical as well as aviation medical perspectives, it can be stated that there was a blunt violent force of great intensity affecting the pilot's body, with the vector of combined forces operating mostly from the front and below. The injury findings can be well explained by the UL aircraft striking the ground at a steep angle of descent. At the time of the accident, visibility was very poor with low clouds and fog.

3. At the time the body was examined by the forensic physician at the site, the seat belts were unbuckled. No specific injuries typical of seat belt use were found on the pilot's body. The body was protected by several layers of clothing. However, given the final position of the body in the seat of the aircraft, it can be judged from a forensic medical as well as aviation medical perspectives that the pilot was most likely wearing a seatbelt at the time of impact.
4. In view of the injuries to the lower extremities, it can be judged that the pilot had his lower extremities on the foot controls and was gripping the hand control lever with his right hand at the time of impact with the ground.
5. The autopsy has detected no traumatic alterations on pilot's corpse which could not have been explained by the mechanism of the said accident, such as a projectile wound, an explosion on board, etc.
6. The pilot's weight, as determined at autopsy, was 99 kg including clothing.
7. The autopsy and subsequent histological examination of the pilot's tissue samples did not reveal any significant pathological changes that could have caused the air accident or that could have contributed to the cause of death.
8. The toxicological examination did not prove that the pilot had been under the influence of alcohol or other toxicologically significant substances – addictive substances or medicines.
9. The biochemical examination of tissue samples collected during autopsy has been performed to determine the somatopsychic condition. On the basis of the results of laboratory examination, autopsy results, statistical evaluation of biochemical parameters, and the analysis of available data on the course of the flight, it can be stated that the pilot's energy metabolism was activated before death, drawing on carbohydrate reserves from all the tissues, accompanied by an increase in lactate only in the striated muscle tissues. Thus, it can be judged that the pilot was conscious during the last tens of seconds before death, under strong physical and mental stress, which briefly turned into an intense stress reaction in the last few seconds.
10. The comprehensive forensic medical examination showed that at the time of the accident, the pilot was not adversely affected by toxicologically significant substances and no pathological changes were detected that could be causally linked to the occurrence or course of the air accident. A medical cause of the incident in question can therefore be ruled out.

1.14 Fire

There was no fire in the wreckage. An undetermined amount of fuel from the damaged tanks partially evaporated and soaked into the soil. The FRS unit captured approximately 30 litres of petrol in the collection containers.

1.15 Search and rescue

The search was organised by the RCC immediately after receiving the COSPAS/SARSAT report. The accident was subsequently reported to emergency number 112 by a random witness and the IRS units were dispatched to the accident site. The military air traffic control unit at LKPD received information about the loss of contact with VL 3 UL aircraft, registration

mark I-B866, from the pilot of the other VL 3 aircraft, registration mark I-E402, and declared an emergency via RCC.

All IRS units intervened at the site. The pilot's lifeless body without signs of life was found strapped into the left pilot's seat with his seat belt.

1.15.1 Emergency locator beacon ELT

The ELT KANNAD emergency locator beacon, AF INTEGRA type, installed in the UL aircraft, was automatically activated on impact with the ground.

1.16 Tests and research

1.16.1 Assessing the engine condition

Engine control unit of TUR 113.0 type, part No.: 966 741, s/n 1030960078, was sent to the engine manufacturer BRP-Rotax for data download and subsequent analysis. The engine manufacturer has produced Technical Report FMD-2024-01 with this conclusion: *"The downloaded log files did not indicate any engine fault that could be identified from the recorded data."*

1.17 Organisational and management information

The UL aircraft was operated and owned by a natural person.

1.18 Supplementary information

1.18.1 Flight Manual

1.18.1.1 Flight Manual of VL 3 Evolution UL aircraft, Section 3 – Emergency procedures

3.6 Vybrání neúmyslné vývrtky

Pokud je použita normální technika pilotáže, nemá letadlo samo tendenci přejít do vývrtky.

Varování
Úmyslné vývrtky jsou zakázány !

Pokud dojde k neúmyslné vývrtce, použijte následující postup pro vybrání:

1. Plyn - ubrat na volnoběh
2. Řízení - křidélka v neutrální poloze
3. Pedály směrového řízení - plně vyšlápnout proti směru otáčení
4. Řízení - potlačit výškovku
5. Rudder pedals - okamžitě jakmile se zastaví rotace, srovnat pedály
6. Jakmile je dosažena dostatečná rychlost vybrat strmý sestupný let

1.18.1.2 Flight Manual of VL 3 Evolution UL aircraft, Section 5 – Performance

5.2.2 Pádové rychlosti

Pád	Poloha klapek	Výkon motoru	Pádová rychlost	
			IAS	CAS
Pád v přímočarém letu	ZASUNUTY	volnoběh	**75 km/h** (40 kts)	**82 km/h** (44 kts)
	"VZLET"	volnoběh	**65 km/h** (35 kts)	**73 km/h** (40 kts)
	"PŘISTÁNÍ"	volnoběh	**57 km/h** (31 kts)	**65 km/h** (35 kts)

1.18.2 Requirements of the Rules

1.18.2.1 Rule L 2 Rules of the Air

Title 4: Visual Flight Rules (4.11 Applicable to the Czech Republic)

> 4.11 The flights of VFR aircraft which are not equipped for IFR flights or are equipped for IFR flights, but the pilot is not qualified for IFR flights, must be conducted in constant visibility of the ground at all times. Flights above clouds may be performed if the coverage of the sky with clouds under the aircraft is not more than 4/8 and it is feasible to carry out the flight according to map matching.

1.18.2.2 Commission Implementing Regulation No. (EU) 923/2012

Commission Implementing Regulation (EU) No. 923/2012 of 26 September 2012 laying down the common rules of the air and operational provisions regarding services and procedures in air navigation and amending Regulations No. 1035/2011 and Regulations (EC) No. 1265/2007, (EC) No. 1794/2006, (EC) No. 730/2006, (EC) No.1033/2006 and (EU) No. 255/2010

Section 2 Applicability and compliance

SERA.2010 Odpovědnost za dodržování pravidel létání

a) Odpovědnost velícího pilota

Velící pilot letadla bez ohledu na to, řídí-li letadlo či nikoli, odpovídá za daný let v souladu s tímto nařízením, vyjma případů, kdy se smí od těchto pravidel odchýlit za podmínek, kdy je odchýlení absolutně nezbytné v zájmu zachování bezpečnosti.

b) Předletová příprava

Před zahájením letu se velící pilot seznámí se všemi dostupnými informacemi, které se týkají zamýšleného letu. Předletová příprava pro lety mimo blízkost letiště a pro všechny lety IFR musí zahrnovat pečlivé prostudování dostupných aktuálních meteorologických zpráv a předpovědí, s uvážením požadavku na palivo a určení náhradního postupu pro případ, že nebude možné let dokončit tak, jak byl plánován.

Section 5 Visual meteorological conditions, visual flight rules, special VFR and instrument flight rules

SERA.5005 Pravidla pro let za viditelnosti

a) S výjimkou zvláštních letů VFR se lety VFR musí provádět tak, aby letadlo letělo při dohlednosti a ve vzdálenosti od oblačnosti stejné nebo větší, než je stanoveno v tabulce S5-1.

SERA.5001 Minima VMC dohlednosti a vzdálenosti od oblačnosti pro let za viditelnosti

Minima VMC dohlednosti a vzdálenosti od oblačnosti pro let za viditelnosti jsou obsažena v tabulce S5-1.

Tabulka S5-1 (*)

Pásmo nadmořské výšky	Třída vzdušného prostoru	Letová dohlednost	Vzdálenost od oblačnosti
3 050 m (10 000 ft) nad střední hladinou moře a více	A (**) B C D E F G	8 km	1 500 m horizontálně 300 m (1 000 ft) vertikálně
Pod 3 050 m (10 000 ft) nad střední hladinou moře a nad 900 m (3 000 ft) nad střední hladinou moře nebo více než 300 m (1 000 ft) nad terénem, podle toho, která z výšek je větší	A (**) B C D E F G	5 km	1 500 m horizontálně 300 m (1 000 ft) vertikálně
900 m (3 000 ft) nad střední hladinou moře a méně než 300 m (1 000 ft) nad terénem, podle toho, která z výšek je větší	A (**) B C D E	5 km	1 500 m horizontálně 300 m (1 000 ft) vertikálně
	F G	5 km (***)	Mimo oblačnost a za viditelnosti země

(*) Kde je převodní výška nižší než 3 050 m (10 000 ft) nad střední hladinou moře, musí se použít letová hladina 100 namísto 10 000 ft.

(**) Minima VMC dohlednosti a vzdálenosti ve vzdušném prostoru třídy A jsou uvedena jako vodítko pro piloty a neznamenají přijetí letů VFR ve vzdušném prostoru třídy A.

(***) Když je tak předepsáno příslušným úřadem:
a) lety při snížené letové dohlednosti, ale ne nižší než 1 500 m, se smí provádět:
1) při rychlostech 140 kt IAS a nižších, které poskytnou přiměřenou možnost včas spatřit jiný provoz nebo překážky v čase tak, aby bylo možno se vyhnout srážce, nebo
2) za okolností, při kterých pravděpodobnost setkání s jiným provozem by byla normálně malá, např. v prostorech s malou hustotou provozu nebo při leteckých pracích v nízkých hladinách;

1.18.3 Informal testimony of the pilot of the other aircraft

The pilot of the other UL aircraft, after landing at the LKVM, in an informal statement in his native language, said, among other things, that he was still very shaken and shocked by what had happened. Regarding the extent of pre-flight preparation, he stated that he and a colleague used a mobile application to check the weather along the flight route and that he had made two short flights over the airport to ascertain the actual weather conditions. Given the conditions, they decided to call the military airport, which he said was about 10 minutes away by flight, and ask about the weather conditions there, which were reported to be good.

The pilot literally commented on the critical phase of the flight as follows: *"We took off together, each of us with our own aircraft, flying a course of 277 degrees. We managed to avoid entering the cloud and always maintained visual contact with the ground. Suddenly, my colleague asked me what altitude we were going to fly at and that he wanted to climb. At that moment, he accelerated, climbed and disappeared into the clouds. I was stunned, but remained under the clouds in visual contact with the ground. The last message I received from my colleague was that he was going up and that he was almost at 5,000 feet, but that he was still in the clouds. His last words were that he was in a spin. I called him repeatedly, but there was no response. Then I made a few turns hoping to see him. In the meantime, RADAR contacted me, and I reported that we had left in two aircraft, but one of them was no longer in sight, nor did I have radio contact with it. I then landed at Vysoké Mýto airport."*

2 Analyses

Majority of facts pointing to the determining of the causes of the air accident arise from the evidence found in the UL aircraft wreckage, the findings from the detailed inspection of the air accident location, information provided by witnesses in their testimonies, analyses of individual flight record data, and expert examinations.

2.1 Crew

2.1.1 Pilot's competence and qualification

The pilot was fit to fly only VFR and was a holder of adequate qualification for performing a VFR flight with the VL 3 Evolution UL aircraft along the planned route. Over the 16 months since the issuance of his pilot license by the Italian Aero Club, he has flown approximately 200 hours. Less than two months before the accident, he had been retrained on UL aircraft of VL 3 Evolution type, on which he subsequently flew 21 hours. On the day of the critical flight from Italy to the Czech Republic, he left the piloting of the UL aircraft to his more experienced colleague, with whom he probably also agreed to make two short flights with the new aircraft to check the current weather conditions over the airport and to fly the aircraft back to Italy. Although the weather conditions for departure from Vysoké Mýto Airport did not comply with the Visual Flight Rules, the pilot's decision to execute the flight was probably supported by the fact that the weather conditions at Pardubice controlled airport, 25 km northwest of LKVM, were CAVOK and that the meteorological situation on the return flight route did not change significantly after the two-hour break at LKVM.

No evidence of medical or other circumstances affecting his performance during the flight has been found. The pilot reported no facts which would suggest a defect, incorrect operation or failure of the aircraft and aircraft systems.

2.2 UL aircraft

It was clear from the records in the documentation found in the cabin of the aircraft that the UL aircraft was airworthy and even the pilot of the other aircraft did not mention any technical problems during the approximately 3.5-hour flight from Italy to the Czech Republic. Analysis of the data obtained from the engine control unit confirmed that the power unit was operating normally during the critical flight. The maximum take-off weight was not exceeded provided the pilot filled the fuel tanks with 75 litres of fuel required for the return flight. From the Garmin EFIS data, it was determined that the fuel tanks were filled to full capacity during take-off from LILF and the UL aircraft was crewed by two people; therefore, the MTOW on take-off from LILF was significantly exceeded. Assuming that the pilot had refuelled to the maximum fuel capacity before the critical flight, the MTOW was exceeded by 24.5 kg. The technical

certificate of the UL aircraft listed a different engine type than the one actually installed. The commission was unable to find out when and by whom the engine was replaced.

It was also possible to determine from the wreckage of the UL aircraft that its technical condition did not show any anomalies. All the damage to the UL aircraft was caused by a high angle impact with no signs of rotation and subsequent transfer of forces to the forward fuselage structure and lower wing section. After the air accident, all parts of the airframe were located in the impact area. It was not proven that any part of the UL aircraft had been separated before its fall on the ground. No UL aircraft control surface was missing. All the damage to basic supporting and control elements corresponded to the cause of an impact with the ground. The wreckage investigation revealed no defects or damage that could have occurred before the accident. According to a witness, the UL aircraft's power unit was working when it crashed and nothing fell off the aircraft, nor was there any smoke coming out of the aircraft. Upon subsequent technical investigation of the UL aircraft wreckage at the place of its deposition in the AAII hangar and technical investigation of the engine control unit, no facts that would indicate that the air accident was caused by a technical defect of the UL aircraft have been detected.

The UL aircraft was equipped with a ballistic rescue parachute system of GRS 6SD ASTM F 2316-12 type. The handle to activate the rescue system was found in an unlocked position, ready for use. The rescue system was manufactured in 2015. The review scheduled for February 2021 has not been carried out. The system manufacturer has confirmed that this has not adversely affected the functionality of the system.

2.3 Flight performance

2.3.1 Situation before the critical flight

During the morning flight from Italy to the Czech Republic, the pilots of the two UL aircraft had already agreed who would fly back with which aircraft and in what order. It was obvious from the recording of the security camera located on the aeroclub operations building and from the testimony of a witness present at the airport that the landing at LKVM on arrival from Italy was probably not entirely under VMC conditions. From the analysis of the EFIS data and the analysis of the meteorological situation, it is likely that the flight in FIR PRAHA was not performed largely in accordance with the Visual Flight Rules in accordance with the national Rule L 2.

2.3.2 Take-off from LKVM to LILF

Both UL aircraft took off together with a slight separation at 12:08:45 from RWY 12L and climbed steadily through a left turn to an altitude of 1,700 ft MSL and continued on a heading of 275° at approximately 800 ft AGL. After 2 min 45 sec of flight at 12:11:30, the flight altitude was reduced to about 4 km from the take-off airport due to a sudden increase in terrain altitude approx. 450 ft AGL and they flew together at that altitude for 26 sec. During that time, the weather conditions deteriorated significantly, and the pilot commenced the climb at 12:11:56.

The pilot of the other aircraft continued to fly at 450 ft AGL for another 24 sec and at 12:12:20 commenced an intense climb to 5,000 ft MSL where he was probably safely above cloud cover. After reaching this altitude, he aborted the flight to the destination and at a point approximately 13 km southwest of LKVM, he executed a left turn of approximately 180° with a planned return to LKVM. Vysoké Mýto Airport was under cloud cover, so he continued to

fly in a northeast direction to LKUO ATZ. On the northwest edge of the ATZ, where the cloud cover began to break, he regained visual contact with the ground and executed a left turn manoeuvre of approximately 180° in an intense descent. After its completion, he continued to fly under cloud at 250 to 500 ft AGL on a 220° heading directly to LKVM. He circled above the airport at 300 ft AGL and landed safely on RWY 30R at 12:30:10.

2.4 Critical situation

The critical situation arose when the pilot started a climb, during which he flew into the clouds. Instead of attempting to continue his climb on a 275° heading to Pardubice Airport, which was less than 5 minutes away under the given conditions, he began to manoeuvre horizontally (see Fig. 14) and vertically, probably in an attempt to regain visual contact with the ground. During a 2-minute flight in meteorological conditions for which he had not been trained, gross errors in piloting technique occurred. It is clear from the ACC data record that during the changes of altitude there was a dangerous loss of speed twice and the UL aircraft continued to fly only by lucky coincidence. The pilot did not react to the last loss of airspeed at 12:14:20 and the UL aircraft went from an altitude of approximately 1,500 ft AGL (450 m AGL) into a stall-spin. In such situation, which was unresolvable for the pilot, he did not activate the ballistic parachute rescue system but attempted spin recovery. The active effort to pilot the UL aircraft until the last moment was confirmed by the biochemical examination of the somatopsychic condition, from which it can be concluded that the pilot was conscious during the last tens of seconds before the accident, he was undergoing a high physical and mental stress, which turned into an intense stress reaction shortly in the last few seconds. From the finding of tracks on the ground, it is clear that only a stop of rotation low to the ground was achieved, without the possibility to recover the steep descent.

Fig. 14 – Horizontal view of 5 min 25 sec critical flight record (3 min 57 sec of Garmin GDU 460 EFIS record plus 1 min 38 sec of ACC record)

2.5 Weather effects

According to radar records, satellite images and witnesses' testimonies, it is clear that the weather conditions at the take-off airport and in its vicinity had an immediate impact on the course of the flight and the development of the critical situation. Visibility and low cloud cover with variable height of the lower base precluded planning and subsequent execution of VFR flight in FIR PRAGUE. Cloud cover and visibility at the air accident site and in the vicinity were worse than the prescribed minimum meteorological conditions for visual flights, and even moderate turbulence could have adversely affected the piloting of the UL aircraft in instrument meteorological conditions.

3 Conclusions

The accident investigation resulted in the following conclusions:

3.1 Findings of the commission

3.1.1 Pilot

- held the valid VFR licence and was medically fit for performing the flight,
- was not qualified to fly in sub-minimum VMC conditions,
- had little experience flying on the given type,
- was probably highly motivated to make the return flight,
- communicated with the pilot of the other aircraft on the unapproved frequency of 123.45 MHz,
- did not use the autopilot equipment to facilitate piloting,
- erred in his weather assessment when he failed to anticipate in time the threat of flying into conditions worse than the prescribed minimum meteorological conditions for visual flight, when the flight was not possible in constant visibility of the ground and according to comparative navigation,
- failed to fly in accordance with the Visual Flight Rules (SERA.5005),
- aborted the climb shortly after entering the clouds and did not continue the flight to LKPD, where the VMC flight was expected,
- lost spatial orientation and control of the aircraft while flying in conditions for which he had not been trained,
- failed to activate the ballistic parachute rescue system upon loss of control of the aircraft,
- managed to stop the UL aircraft's rotation in spin too low above the ground when the UL aircraft did not have enough altitude to recover the steep descent,
- did not have any identified health problems that could contribute to the occurrence of the emergency situation.

3.2 UL aircraft

- had a valid technical certificate and was airworthy,
- had a valid liability insurance,
- was filled with the required amount of all working fluids,
- was equipped with a ballistic parachute rescue system that was ready to be activated,
- periodic technical inspection of the ballistic parachute rescue system has not been carried out in accordance with the manufacturer's manual,
- was equipped with an autopilot that had been used during a previous flight and was functional,
- was flying in its normal cruise configuration at the time prior to the accident and the pilot did not report any failure or defect or other type of aircraft malfunction,
- was destroyed by the forces of the impact with the ground;

- Upon investigation at the place of air accident and subsequent technical investigation of the UL aircraft wreckage in the AAII hangar, no facts that would indicate that the air accident had been caused by a technical defect were detected.
- The Rotax 912F2 engine, according to the expert examination, was faultless, the analysis of the data from the control unit confirmed that it operated normally throughout the critical flight.

3.3 Weather conditions

- The weather conditions at the take-off airport and in its vicinity had an immediate impact on the course of the flight and the development of the critical situation.

3.4 Causes

The cause of the air accident was a flight in weather conditions that did not meet the specified minima for visual meteorological conditions (VMC) and in which the pilot lost control of the aircraft upon entering the clouds and subsequently crashed in a spin without using a ballistic parachute rescue system.

4 Safety Recommendations

Given the cause of the air accident, the AAII issues no safety recommendations.

5 Appendices

NIL

ÚZPLN

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