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CZ-19-0369

FINAL REPORT

Investigation of causes of an air accident of the CASA 1.131-E aircraft, registration mark D-EHDT, at the Cheb airport on 1 June 2019

Prague
July 2020

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Abbreviations Used

Ac	Altocumulus (cloud type)
ADC	Aerodrome Chart
AGL	Above Ground Level
ARP	Aerodrome Reference Point
BFU	German Federal Bureau of Aircraft Accident Investigation
BKN	Broken
Ci	Cirrus (cloud type)
Cu	Cumulus (cloud type)
E	East, eastern longitude
EDQM	Public International Airport Hof-Paulen, FRG
FEW	Few (amount of clouds)
FL	Flight level
GmbH	Limited liability company (Ltd.)
FRS	Fire Rescue Service
FIR	Flight information region of Prague
LKCB	Public domestic airport Cheb
LKMR	Public domestic airport Mariánské Lázně
MLS	Mean sea level
MTOW	Maximum take-off weight
N	North, northern latitude
NIL	None
PIC	Pilot-in-command
PPL(A)	Private Pilot Licence
QNH	Altimeter sub-scale setting to obtain elevation when on the ground
RWY	Runway
ERS	Emergency Rescue Service
Sc	Stratocumulus (cloud type)
SCT	Scattered
SEP (Land)	Qualification for single-engine piston aircraft
SYNOP	Report on synoptic observations made by weather stations
TMG	Powered glider pilot qualification
TWY	Taxiway
CAA	Civil Aviation Authority
ULL (A)	Ultralight aircraft
UTC	Coordinated Universal Time
AAII	Air Accidents Investigation Institute
VFR	Visual Flight Rules
FOM	Flight Operation Manager
VRB	Variable

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A) Introduction

Owner and operator	Natural person, foreign national
Aircraft manufacturer and model	CASA 1.131-E series 2000
Registration mark	D–EHDT
Location	Cheb airport (LKCB)
Date and time:	1 June 2019, 13:14 (all times are UTC)

B) Synopsis

On 1 June 2019, at 13:30, the AAII was notified by the Police of the Czech Republic, the Flight Operation Manager, and FRS, respectively, of an air accident of the CASA 1.131-E foreign aircraft, registration mark D-EHDT, at the Cheb airport. The female pilot, who was leading an aircraft formation, landed by mistake not on RWY 23, but next to the runway on the grass gliding strip. Shortly after the aircraft touched down, it overturned during landing run.

A passenger suffered a minor injury and the aircraft sustained substantial damage in the air accident.

The German Federal Bureau of Aircraft Accident Investigation (BFU) was notified of the air accident in compliance with ICAO Annex 13.

The cause of the air accident was investigated by the AAII commission comprised of:

Investigator-in-charge	Karel BURGER, Inspector
Member	Pavel MRÁČEK, Inspector

The Final Report was issued by:

AIR ACCIDENTS INVESTIGATION INSTITUTE
Beranových 130

199 01 PRAGUE 99

on 7 July 2020

C) This Final Report consists of the following main parts:

1) Factual Information
2) Analysis
3) Conclusions
4) Safety Recommendations

1 Factual Information

1.1 History of the Flight

1.1.1 Description of the Event Flight

On 1 June 2019, the pilot was flying in the formation of four aircraft from the Hof-Paulen aerodrome (EDQM) to the Cheb airport (LKCB). In the pre-flight preparation, the German overflight organiser advised the pilots that they would land on the grass RWY 05/23, south of the concrete RWY 06/24 in Cheb. The CASA 1.131-E aircraft, registration mark D-EHDT, was flying as the leading aircraft in the formation of four aircraft with registration marks D-EHDT, D-EFMH, D-EAYL, and OE-AHA. The entire flight went smoothly. Before arriving to LKCB, the leading aircraft pilot reported to the 122.205 MHz Cheb RADIO frequency. The controller informed her about runway usability. The concrete RWY 24 was usable with some limitations given its condition, and the grass RWY 23 was fully usable. Before accessing the village of Dřenice, the aircraft formed separation. Having been given clearance for landing, the D-EHDT aircraft continued by left-hand turn in approach to landing while flying in the left roll of approx. 3–7° and departing to the right so that the pilot sitting in the back seat could see the runway. During the entire approach to landing, the aircraft was flying at a higher speed, and was well above the descent line (Fig. 1). It was heading to the left of RWY 23 to the mown area used as a gliding strip.

Fig. 1 – CASA 1.131-E aircraft, registration mark D-EHDT, in approach to landing on the presumed RWY 23.

The aircraft landed on the freshly mown area to the left of RWY 23 between the lines of high piles of mown grass at the level of the last quarter of the RWY 23 length (Fig. 2). According to the witnesses' statements, upon touchdown, the aircraft had a higher speed than usual for this type. Upon touchdown, the pilot was braking, but during the landing run, the left gear wheel ran into a small but deep trench in the surface of the area (Fig. 3) where the aircraft landed. The area is used as a gliding strip. However, at the time of the incident, it was not visually marked according to Rule L 14 Aerodromes.

Fig. 2 – CASA 1.131-E aircraft upon touchdown of the main wheels with the area of the gliding strip to the left of RWY 23. The concrete RWY 24 can be seen in the front.

Fig. 3 – Trench in the surface of the gliding strip into which the left gear wheel ran.

Fig. 4 – Traces of soil on the left gear wheel and broken streamline fairing of the wheel after running into a trench on the gliding strip.

Left gear wheel's running into a trench caused aircraft bouncing and departing to the left. At the same time, the left wheel leg was damaged. The aircraft then got caught in a line of freshly mown piled grass with its undercarriage and a lower wing. Abrupt deceleration caused by getting caught in the piled grass caused the aircraft turnover (Fig. 5). After aircraft turnover, the pilot closed the fuel feed and switched off the ignition system. She climbed out of the cockpit and tried to help the passenger stuck in the front cockpit.

The people present at the airport provided immediate assistance, raised the rear part of the aircraft, and got the passenger out of the cockpit. At the same time, they informed the FRS, ERS, and the Police of the Czech Republic. The other three aircraft in the formation landed without any defects.

Fig. 5 – CASA 1.131-E aircraft, registration mark D-EHDT, at the accident site

1.1.2 Pre-flight preparation and overflight procedures

The pilot piloted the aircraft in the navigated formation overflight on the flight line EDQM – Quebec point – Mitterteich – Mariánské Lázně (closed LKMR) – landing at LKCB. The formation was then supposed to take off from LKCB and continue via the Quebec point to the EDQM home aerodrome. According to the records in the navigation preparation document, the flight was planned at the altitude of 3,500 ft MSL, at speed of 140 km/h, and the flight was supposed to take approx. one hour.

At the Hof-Paulen aerodrome (EDQM), the German overflight organiser issued flight instructions recorded in the navigation preparation document:

- No flight plan is required for the flight. The flight will be conducted at their own risk in a free formation of 3 to 4 aircraft. Aircraft shall not overtake each other during the flight. Take-offs and landings shall be carried out individually.
- When departing from and arriving to EDQM, the formation shall maintain the max. altitude of 3,000 ft above the Quebec point.
- When approaching the arrival airport, the formation shall break on the airport circle on the downwind leg at the latest.
- Landing in Cheb shall be done individually on the grass RWY 05/23 located south of the concrete RWY 06/24.
- After landing, aircraft shall taxi to the end of the runway, cross the concrete RWY 24 on TWY B to TWY A, and TWY F. Crossing of RWY 24 shall be done upon TWR clearance.

1.1.3 Course of the flight as stated by the pilot

In her testimony from 1 June 2019, the pilot said (translation of her written testimony from German): "*At the Hof aerodrome, it was agreed during the briefing as follows:*

- *Landing in Cheb shall be done on the grass runway (RWY 23) located south of the concrete RWY.*
- *After landing, taxi to the end of the runway, and cross the concrete runway to the taxiway.*

The flight went smoothly until the accident. I was leading a formation of 4 aircraft (D-EFMH, D-EAYL, OE-AHA, D-EHDT). Five minutes before Cheb, I contacted the Cheb RADIO (122.205 MHz).

I received information about two runways (concrete RWY 24 with restrictions and usable grass RWY 23). I continued in the direction of the southern grass runway 23 as instructed in the briefing.

It was not clear from the air where to land. Just behind the concrete runway, the grass was high, that's why I assumed we had to land on the mown area. From the north to the south, there were lines of mown and raked grass, but it was not possible to estimate their height and volume (size). Their orientation and the distance between them were normal. The aircraft touchdown and landing run were standard. During a short landing run, the aircraft bounced (at a speed lower than 50 km/h) and overturned."

1.1.4 Description of the incident according to witnesses' statements

Witness No. 1 – Cheb RADIO controller was in his office. The witness has flying experience, is an active ULL (A) pilot, and commented on the incident as follows: *"The*

affected aircraft was making a final approach at a higher landing speed and in slip. At the place of touchdown, the aircraft was already in the last third of the runway. I expected another attempt, but the aircraft touched down (outside the marked RWY 23), and then I saw it bounce slightly and turn over the wing.

The rescue team immediately went ahead to the incident site. I advised the surrounding traffic by radio and informed the IRS, AAII, FOM, etc. I also coordinated the arrival of IRS and arrival of a rescue helicopter."

Witness No. 2 – He was standing next to the Cheb RADIO office at the time of the incident. The witness has flying experience, is a ULL (A) pilot. The witness stated: *"I saw the final landing phase and I was convinced that it had to be repeated given the speed and aircraft position. The aircraft touchdown was followed by intense braking and subsequent aircraft turnover."*

1.2 Personal injuries

The passenger suffered a minor injury – abrasions on the forehead.

Table 1 – Summary of injured persons

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

1.3 Damage to Aircraft

The aircraft was damaged beyond repair in the air accident (Fig. 6).

Fig. 6 – Extent of damage to the CASA 1.131-E aircraft.

1.4 Other Damage

No other damage was reported to the AAII Commission.

1.5 Personnel Information

1.5.1 Pilot

Personal data:

- Female, age 26,
- foreign national (FRG),
- holder of a valid DE pilot licence. FCL, PPL (A),
- SEP Land qualification,
- additional TMG qualification,
- class 2 medical certificate – valid,
- limited radio operator licence – valid.

Data on hours flown (according to the data in the pilot logbook):

- Total hours flown 580 hrs / 1,890 flights
- Hours flown on the type 15 hrs / 90 flights
- On the type as PIC 12 hrs

1.5.2 Passengers

- Male, aged 90 years,
- foreign national (FRG),
- without flying experience.

1.6 Aircraft Information

1.6.1 General Information

The CASA 1.131-E aircraft is a licence-built Spanish version of Bücker Bü-131 Jungmann. It is originally a German two-seat single-lattice trainer biplane with a fixed undercarriage. Spain-based Construcciones Aeronauticas SA (CASA) from Sevilla produced 550 such aircraft between 1938 and 1960. Many of them are still in operation following remotorisation.

The aircraft structure is combined: the fuselage and tailplanes are made of welded steel tubes, the wings have a combined structure, and the whole unit is covered in fabric. There are two pilot cockpits in tandem in the fuselage. The undercarriage is fixed, tail type. It was originally powered by the standard air-cooled four-stroke Hirth HM 504 A-2 engine. After WW2, the type was powered by various versions of the ENMA Tigre engines, and at present, many are powered by the standard in-line air-cooled four-stroke Lycoming AEIO 0360 engine. The engine drives a two-blade non-adjustable wooden propeller with a 1,800mm diameter.

Basic characteristics:

Span	7.40 m
Length	6.76 m
Height	2.25 m
Main plane	13.5 m^2

Empty Weight	516 kg
Max. take-off weight	720 kg
Maximum speed	200 km/h
Cruise speed	170 km/h
Landing speed	82 km/h
Initial climb capability	5 m/s
Height of climb	5,400 m
Range of flight	650 km

1.6.2 Aircraft Information

Aircraft manufacturer	C. A. S. A. Construcciones Aeronáuticas, S.A.
Type and model	CASA 1.131-E series 2000
Serial number	2181/564
Registration mark	D–EHDT
Year of manufacture	unknown
Airworthiness inspection certificate	issued on 2 August 2018, valid
Liability insurance	valid until 5 March 2022
Total hours flown	888 hrs / 2,235 landings

On 26 July 2018, aircraft revision was performed after 100 hours by a servicing organisation at 875:07 hours flown and 2,198 landings.

Engine	Lycoming AEIO 0360 – B2F with power of 134 kW
Manufacturer	Lycoming Engines U.S.A.
Serial No.	L-20285-51A
Manufactured in	1983
Propeller	Wooden, two-blade, non-adjustable
Propeller type	HO 27 HM180-160
Manufacturer	Hoffmann Propeller, GmbH, FRG
Serial number	77380
Made in	1993

Fig. 7 – CASA 1.131-E aircraft, registration mark D-EHDT.

1.7 Meteorological Conditions

According to the report of the Czech Hydrometeorological Institute (CHMI), on 1 June 2019 at 13:14, the meteorological situation at the air accident site at LKCB was as follows:

1.7.1 Weather Information

Situation	High-pressure area in Central Europe with a centre above the Alps
Surface wind	VRB up to 4 kt
Upper wind	2,000 ft MSL from 320–030°/2–5 kt, 5,000 ft MSL from 310°/6 kt
Visibility	Over 10 km
Weather	Scattered, gradually broken
Cloud	SCT-BKN Ci, Ac, Cu, the lowest layer FEW, gradually up to BKN Cu FL 045–070, the highest layer Cu FL100
Zero isotherm level	FL100–110
Turbulence and icing	NIL
QNH pressure	1,023–1,025 hPa mild decline
REG QNH	LKAA 12/15 1018 hPa

Table 2 – Abstract from the SYNOP reports from the closest CHMI professional meteorological weather stations in Cheb (CHE) and Karlovy Vary (LKV) dated 1 June 2019.

MS	Cloud cover	Visibility (km)	Wind	Cloud (m) AGL		Temperature (°C)	Dew point (°C)
Hour: 13:00							
CHE	5/8	50	VRB 2 m/s	3/8 Sc 1200	3/8 Ci 7800	24.3	11.5
LKV	5/8	50	300° 3 m/s	4/8 Cu 1500	5/8 Ci 6000	23.3	9.5
Hour: 14:00							
CHE	4/8	50	VRB 1 m/s	3/8 Sc 1800	-	25.1	11.3
LKV	5/8	50	350° 2 m/s	4/8 Cu 1500	4/8 Ci 6000	23.4	7.7

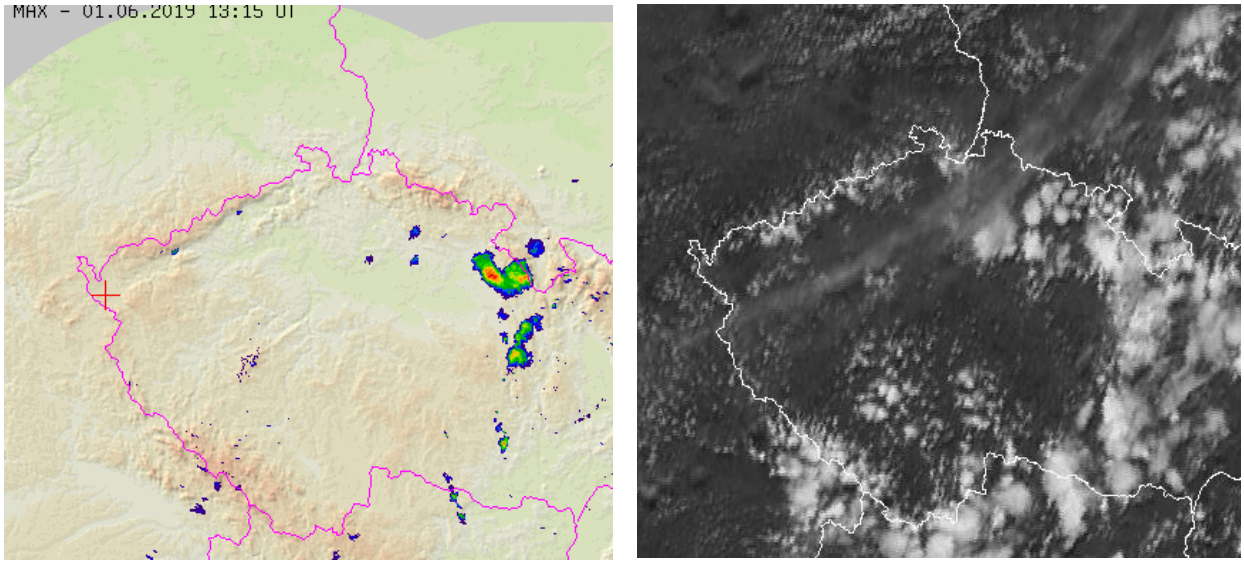

Fig. 8 – Radar and satellite images dated 1 June 2019 at 13:10 UTC (the red cross denotes the location of Cheb).

1.7.2 Conclusion

On 1 June 2019, at the time of the air accident at about 13:14 UTC, the clouds at the Cheb airport were mostly scattered (4/8) with a small amount (2–3/8) of low Cu clouds at the altitude of 5,000 ft proceeding slowly from the north-west direction. The rest of the clouds formed a high floor of the Ci type. Visibility was well over 10 km (50 km). The ground surface temperature was 24°C and the humidity was approximately 45%. The ground wind was mostly variable and reached an average speed of 3 kt, at maximum up to 8 kt. The upper wind up to the level of 5,000 ft MSL flew from the north-east direction at a speed of 6 kt.
There were no dangerous weather phenomena at the Cheb airport.

1.8 Radio Navigational and Visual Aids

The visual aids at LKCB marking RWY 24 and the gliding strip failed to comply with the requirements of Rule L 14. RWY 23 marking was partially covered with high grass.
At LKCB, there is a radio navigation device VOR/DME OKG on the frequency of 115.700 MHz, 520 m t.c. 260° from ARP.

1.9 Communications

From arrival to LKCB until the incident, the aircraft pilot was in contact with the CHEB RADIO station on the 122.205 MHz frequency.

1.10 Airport Information

The Cheb airport (LKCB) is a public domestic airport with VFR Day operation.

ARP position: 50° 03' 59" N, 012° 24' 46" E, altitude of 1,585 ft / 483 m.

The airport has two parallel runways. One RWY 06/24 with the dimensions of 1,000 x 18 m is covered with concrete, and the second RWY 05/23 with the dimensions of 1,000 x 25 m is covered with grass. Both runways have bearing capacity for aircraft with MTOW 5,700 kg / 0.7 MPa. Next to RWY 05/23, there is a grass strip with the dimensions of 1,060 x 30 m, which is used as a gliding strip (GLD STRIP).

At the time of the incident, RWY 06/24 and GLD STRIP failed to comply with the requirements for visual marking according to Rule L 14 Aerodromes. At the time of the incident, the gliding strip (GLD STRIP) was not entered in the airport documentation (Fig. 9).

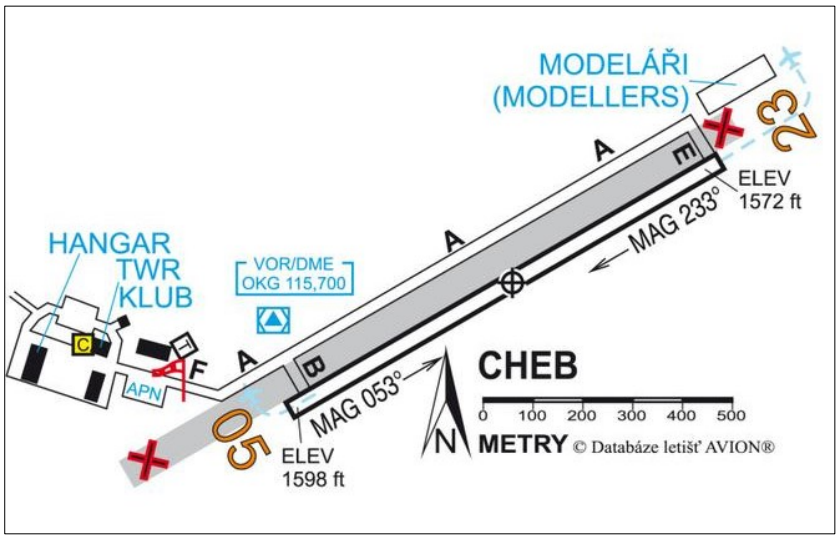

Fig. 9 – GLD STRIP was not entered in the Cheb airport chart in the VFR Manual of Airports in the Czech Republic issued for 2019.

*(Valid **until** 5 December 2019).*

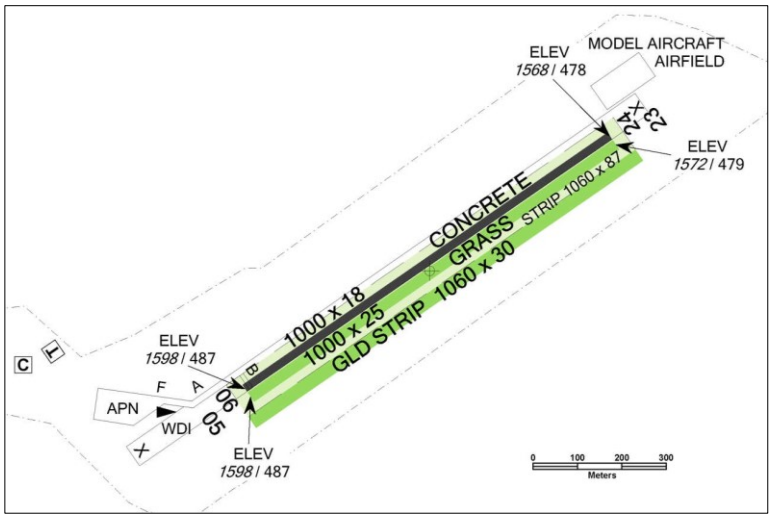

Fig. 10 – GLD STRIP was already marked in the Cheb airport chart in the VFR Manual of Airports in the Czech Republic issued for 2020.

*(Valid **since** 5 December 2019)*

The gliding strip (GLD STRIP) appeared in the airport chart in ADC and in the text of the VFR Manual of Airports in the Czech Republic issued for 2020, valid since 5 December 2019 (Fig. 10), i.e. as late as some six months after the air accident.

1.11 Flight Recorders and Other Means of Recording

The aircraft was equipped with neither any means of objective flight control nor any recording device. The relevant aeronautical regulations do not require their use.

1.12 Wreckage and Impact Information

1.12.1 Air Accident Location

The location of the air accident was the Cheb airport where the aircraft landed not on RWY 23 but on the gliding strip (GLD STRIP). The aircraft crashed and turned over approximately 83 m in front of the end of RWY 23 and 47 m to the left of the left edge of RWY 23 (Fig. 9).

Coordinates of air accident site:

- 50°03´49,48“ N,
- 012°24´31,32“ E,
- altitude – 488 m.

Fig. 11 – Place of accident on the unmarked GLD STRIP to the left of RWY 23 (in the flight direction) is marked with a yellow asterisk.

1.12.2 Damage to Aircraft

The aircraft engine was shut down forcibly, the wooden propeller had one blade broken off. The aircraft undercarriage was completely destroyed, the tube structure of the left wheel leg was torn apart at the place of force nodes, and the undercarriage was deformed (Fig. 12).

Fig. 12 – Damaged undercarriage, broken left wheel leg with a damaged wheel streamline fairing. Broken upper wing struts can be seen in the middle of the picture.

The structure of both halves of the upper and lower wing was deformed both close to the fuselage and at the ends, and the wing fabric was torn at several places (Fig. 9). The left half of the lower wing was badly deformed in the downward direction at the place of mounting to the fuselage. The wing strut system was deformed and the upper wing mounting to the fuselage was destroyed (Fig. 12).
The front part of the fuselage between the engine frame and the front cockpit was deformed and the upper part of the vertical tail unit was damaged by a contact with the ground upon aircraft turnover.

1.13 Medical and Pathological Information

The patrol of the Police of the Czech Republic asked the pilot to take a breath test using the Dräger breathalyzer with a negative result (see the official report with Ref. No. KRPK-45501-1/TČ-2019-190220).

The passenger suffered a minor head injury – abrasions on his forehead and temples which were treated on site. Due to the passenger's age, the ERS helicopter from Pilsen was called to transport the injured person to the Faculty Hospital in Pilsen. The presented medical report from the Pilsen-Lochotín University Hospital pertaining to the passenger,

born on 3 January 1929, residing at Azelbergers, FRG, reads that the patient was found to have suffered only abrasions on his forehead without any other injury.

1.14 Fire

Cheb FRS vehicles were present at the accident site to prevent fire during the accident and further aircraft handling. No aviation consumables leakage took place.

1.15 Search and Rescue

Due to the location of the accident, there was no need to organise search or rescue. The aircraft was equipped with an automatic emergency locator radiobeacon of the Kannad 406 type, which was not activated in the accident.

1.16 Tests and Research

NIL

1.17 Organisational and Management Information

The aircraft was used by the operator for recreational flying. It was regularly serviced and maintained in excellent technical and operational condition.

1.18 Supplementary Information

There are two parallel runways at the LKCB. One RWY 06/24 with the dimensions of 1,000 x 18 m is paved with concrete, and the second RWY 05/23 with the dimensions of 1,000 x 25 m is covered with grass and is located to the right. Right next to RWY 05/23, there is a grass strip with the dimensions of 1,060 x 30 m which is used as a gliding strip (GLD STRIP).

At the time of the incident, the grass RWY 05/23 was marked with visual daytime markings in compliance with Rule L 14 Aerodromes. The entire runway surface was covered with 25–30cm high grass.

At the time of the incident, the concrete RWY 06/24 failed to meet the requirements for visual daytime runway markings. Runway threshold, centreline, and side-strip markings were missing. The numerical runway marking was damaged by surface erosion and was practically illegible. At both ends of the runway, there was the ‘X’ mark denoting a closed runway whose use is governed by the following rules as per Rule L 14 Aerodromes, Chapter 7, Section 7.1(7.1):

> “7.1.1 A closed marking shall be displayed on a runway or taxiway or portion thereof which is permanently closed to the use of all aircraft.
>
> 7.1.2 A closed marking should be displayed on a temporarily closed runway or taxiway or portion thereof, except that such marking may be omitted when the closing is of short duration and adequate warning by air traffic services is provided.
>
> 7.1.3 On a runway, a closed marking shall be placed at each end of the runway, or portion thereof, declared closed, and additional markings shall be so placed that the maximum interval between markings does not exceed 300 m. On a taxiway, a closed marking shall be placed at least at each end of the taxiway or portion thereof closed.

7.1.4 The closed marking shall be of the form and proportions as detailed in Figure 7-1a), when displayed on a runway, and shall be of the form and proportions as detailed in Figure 7-1b), when displayed on a taxiway. The marking shall be white when displayed on a runway and shall be yellow when displayed on a taxiway.

7.1.5 When a runway or taxiway or portion thereof is permanently closed, all normal runway and taxiway markings shall be obliterated."

The gliding strip (GLD STRIP) is an area entered in the Manual of Airports in the Czech Republic, the 2020 edition, in the airport chart; nevertheless, at the time of the incident, it was not visually marked in accordance with Rule L 14 Aerodromes, as defined in Chapter 5, Section 5. 5.10:

"5.5.10 Glider landing markers

Use 5.5.10.1 The glider landing marker must be used for the gliding strip or where it is appropriate to define the glider landing area.

Location 5.5.10.2 The glider landing marker must be located on the left side of the gliding strip at the level of the required touchdown point.

Characteristics 5.5.10.3 The glider landing marker must be of arrow shape and dimensions as per Fig. 5–32 and must be of contrasting colour, preferably white or orange."

At the time of the incident, the gliding strip was freshly mown, and the grass was piled in longitudinal 50–70 cm high lines. The distance between the lines was approximately 8 m, and the distance between the lines where the aircraft landed was 17 m (Fig. 13). Other grass areas to the right of the concrete RWY 24 were also freshly mown.

Fig. 13 – View of the gliding strip in the aircraft landing direction between the lines of mown and piled grass.

1.19 Useful or Effective Investigation Techniques

Air accident investigation was carried out in compliance with ICAO Annex 13.

2 Analyses

Information from the pilot's testimony, witnesses' testimonies, airport camera footage, the records of the patrol of the Police of the Czech Republic, and publicly available airport information (VFR Manual of Airports in the Czech Republic, 2017 and 2020 editions) was used in the investigation of the event.

2.1 General Information

2.1.1 Pilot qualification

The pilot held the necessary qualification and was medically fit for performing the given flight. She had experience with flying on this type. It was her first time landing at LKCB.

2.1.2 Aircraft

Until the incident, the aircraft was airworthy and in good technical condition. The crew consisted of two people, a pilot sitting in the rear cockpit and a passenger sitting in the front cockpit. The landing weight and the centre of gravity were within the permitted limits and had no impact on the occurrence of the event.

2.1.3 Weather

The weather at the LKCB and EDQM was suitable for overflight and landing and had no effect on the occurrence of the air accident.

2.2 Arrival at the Airport and Landing

Until the arrival to the LKCB, the pilot was adhering to the instructions issued during the pre-flight briefing. When flying from the turning point of Mariánské Lázně (LKMR), after the formation broke on the circle, she was approaching RWY 23 from the left from the area of Dřenice.

With regards to forming sufficient aircraft separation, she decided to land in the second half of the presumed RWY 23. During the preflight preparation, she was instructed to land on the grass RWY 05/23 located south of the concrete RWY 06/24. During the final approach, she was maintaining a slight left roll while moderately departing to the right. The aircraft altitude and speed were higher than usual. According to the videofootage, at the altitude of approximately 5 m above the area, she levelled the aircraft roll and kept the direction of the longitudinal axis of the area where she was landing.

Shortly after the touchdown, in the landing run, the aircraft ran into a trench with its left gear wheel, causing the aircraft to bounce to the left over a pile of mown grass. Abrupt deceleration caused by a line of piled grass caused the aircraft turnover.

2.3 Airport Area Condition

All the grass areas except for RWY 05/23 were freshly mown with lines of piled grass clippings (Fig. 14). The grass RWY 05/23 was covered with 25–30cm high grass. Visual

markings (of RWY 06/24 and GLD STRIP) failed to comply with the requirements of Rule L 14 Aerodromes (Fig. 15 and 16).

At the time of the incident, the gliding strip (GLD STRIP) was not published in the airport documentation. It was not published until December 2019.

The above facts probably resulted in mistaking the gliding strip for RWY 23 (Fig. 17).

Fig. 14 – Mown areas with piled grass next to the concrete RWY 06/24. View in the direction from the runway.

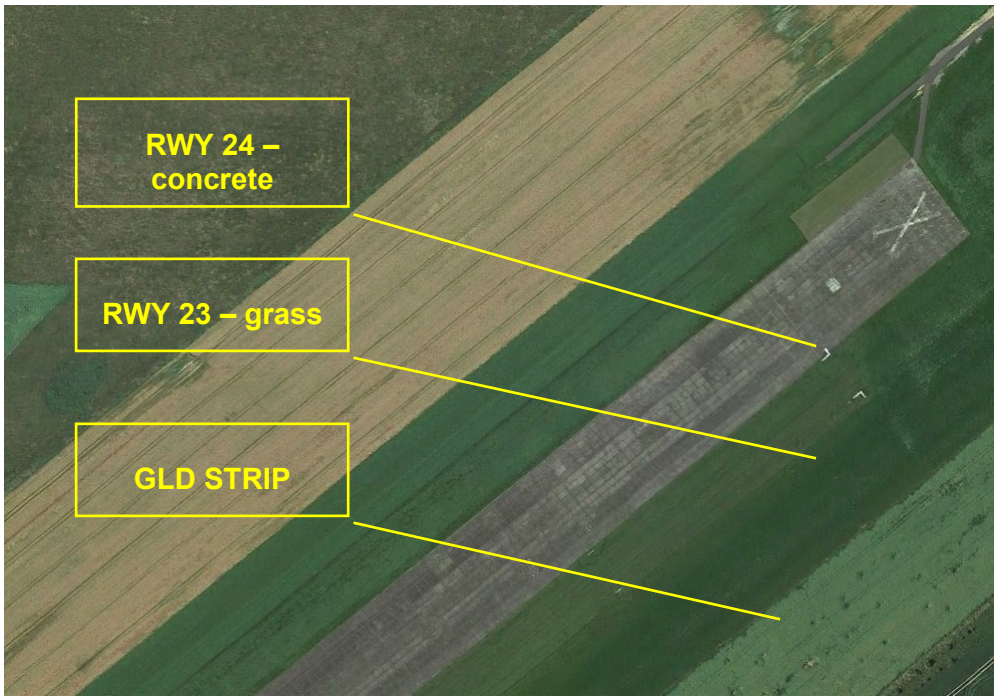

Fig. 15 – Visual markings of RWY 24 and GLD STRIP non-compliant with the requirements of Rule L 14 Aerodromes and RWY 23.

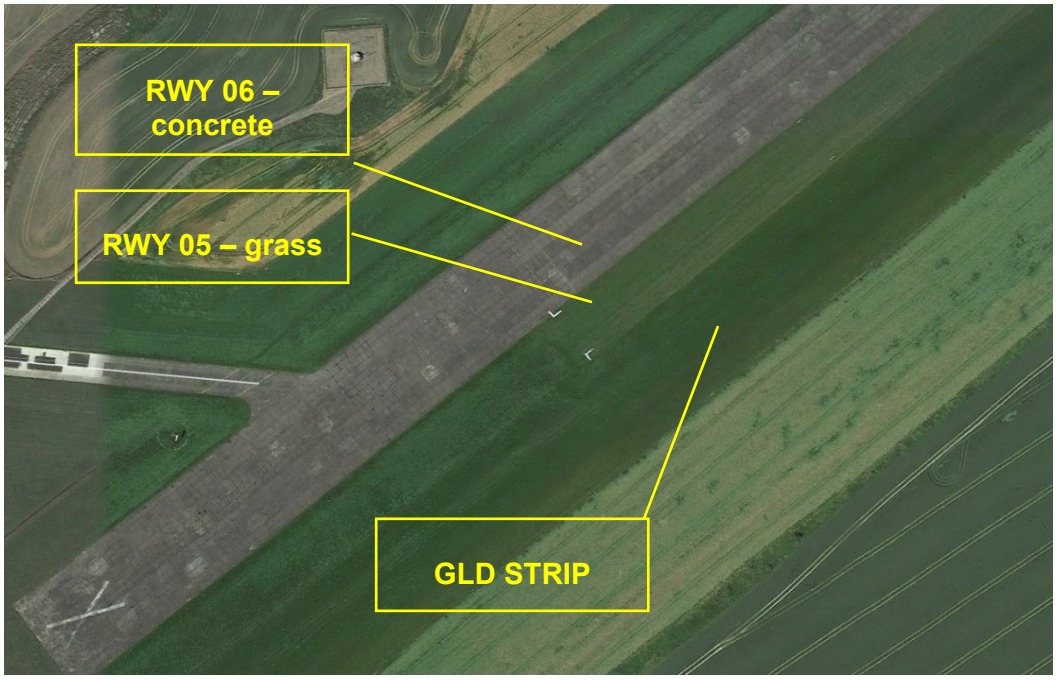

Fig. 16 – Visual markings of RWY 06, RWY 05 and missing GLD STRIP markings.

Fig. 17 – View of RWY 06/24 (far left), RWY 05/23 (unmown area next to the concrete runway) and the gliding strip (GLD STRIP) with mown piled grass.

3 Conclusions

3.1 Findings

- The pilot held the necessary qualification and was medically fit for performing the given flight. She had sufficient experience with flying on this type.
- The aircraft documentation, including insurance, was valid. Until the moment of the air accident, the aircraft was defect-free and airworthy.
- During the navigation flight, the pilot adhered to all the instructions issued during pre-flight preparation, including the advice to land on the grass RWY 05/23 south of RWY 06/24.
- At the time of the event, all the grass areas except for RWY 05/23 were mown at the Cheb airport. Visual markings of RWY 06/24 and the area used as a gliding strip were not in compliance with Rule L 14 Aerodromes.
- The area used as a gliding strip was not published in the relevant airport documentation at the time of the air accident. The condition of the surface of the area used as a gliding strip was not suitable for air operation.
- The aforementioned circumstances led to the pilot's mistaking the area used as a gliding strip for RWY 23.

3.2 Causes

The air accident was caused by the fact that the pilot mistook the area unsuitable for air operation for RWY 23 and landed there.

4. Safety Recommendations

AAII issues no safety recommendations.

In Prague, 7 July 2020