

Interim Report

Identification

Type of Occurrence:	Accident
Date:	31 March 2019
Location:	near Egelsbach
Aircraft:	Airplane
Manufacturer / Model:	Experimental Amateur built / EPIC LT
Injuries to Persons:	Pilot and 2 passengers fatally injured
Damage:	Aircraft destroyed
Other Damage:	Crop damage
State File Number:	BFU19-0272-CX
Date of Publication	May 2019

Factual Information

During go-around the airplane entered an uncontrolled flight attitude, impacted the ground, and caught fire.

History of the Flight

At 1357 hrs¹ the airplane had taken off from Cannes-Mandelieu Airport, France, to a private flight to Egelsbach Airfield, Germany. On board were the pilot and two passengers. According to the flight plan cruise flight was planned for Flight Level (FL)260.

At 1519:03 hrs the pilot established contact with Frankfurt Radar, and informed the controller that the airplane was in descent to FL60 towards reporting point UBENO. The radar recordings show that the airplane was flying towards 335° and transmitted the transponder code 4065. The radar controller issued the descent clearance to 4,000 ft AMSL and conveyed a QNH of 1,020 hPa.

At 1519:25 hrs the controller addressed the pilot: “[...] *proceed direct DELTA, runway zero eight in use.*” The pilot acknowledged the clearance. At 1520:20 hrs the controller instructed the pilot to descend to 3,500 ft AMSL.

After the pilot had acknowledged the controller’s question, the change of flight rules from IFR to VFR was conducted at 1521 hrs about 16 NM south of Egelsbach Airfield. At the time, the airplane was at about 5,000 ft AMSL with a ground speed of approximately 240 kt.

At 1522:34 hrs, the airplane was at 3,500 ft AMSL and about 14 NM from the airfield, the pilot established radio contact with Egelsbach Information with the words: “[...] *inbound DELTA, descending VFR.*” The Flugleiter (A person required by German regulation at uncontrolled aerodromes to provide aerodrome information service to pilots) answered: “*Hello [...] runway zero eight, QNH one zero two zero, squawk four four one.*” The pilot acknowledged the landing direction and the QNH. The communicated transponder code was not acknowledged, and did not change during the remainder of the flight, according to the radar recording.

At 1524:34 hrs the Flugleiter gave the pilot the hint: “[...] *the maximum altitude in this area is one thousand five hundred feet.*” The pilot answered: “*Roger, continue descent [...].*” At this time, altitude was still about 2,000 ft AMSL.

According to the radar recording, at 1524:45 hrs the airplane turned right in northern direction toward the DELTA approach path to runway 08 of Egelsbach Airfield. Altitude was about 1,900 ft AMSL, and ground speed 170 kt.

¹All times local, unless otherwise stated.

At 1526:30 hrs, at about the Tank- und Rastanlage Gräfenhausen (resting facility) at the Bundesautobahn A5 (motorway), it began to turn right up to north-eastern direction.

At 1526:44 hrs the Flugleiter addressed the pilot: “[...] *do you have the field in sight?*” The pilot responded: *“Ah, not yet [...].”* At the time, the airplane was about 1,000 m south-west of threshold 08 at the western outskirts of Erzhausen flying a north-eastern heading. The Flugleiter added: *“I suggest to reduce, you are now on right base.”* After the pilot had answered with “Roger”, the Flugleiter added: *“You are number one to land. The wind is zero four zero, one zero knots.”*

At 1527:04 hrs, the airplane was about 300 m south of threshold 08 flying a north-eastern heading, the radio message “[...] *approach*” of the pilot was recorded. From then on the airplane began to turn left.

At 1527:11 hrs, the airplane crossed runway 08 with a ground speed of about 100 kt at very low altitude with northern heading.

At 1527:24 hrs the pilot said: “[...] *may I the [...] make an orbit?*” The Flugleiter answered: *“Yes, do it to your left-hand side and do not overfly the highway westbound.”*

At 1527:31 hrs, the last radar target was recorded at approximately 600 m north-west of threshold 08 indicating an altitude of about 425 ft AMSL. About 100 m south-west of it the airplane crashed to the ground and caught fire. All three occupants suffered fatal injuries.

At the time of the accident, three persons were in the Tower of the airfield. The Flugleiter, as tower controller, his replacement, and the apron controller. They observed that the airplane flew directly towards the tower coming from the DELTA approach in descent with north-eastern heading, i.e. diagonal to the landing direction. In this phase the landing gear extended.

Two witnesses, who were at the airport close to the tower, stated that they had seen the airplane during the left-hand turn. They estimated the bank angle during the turn with 30-45°.

The two occupants of a Piper PA-28, which had been on approach to runway 08, stated that they had become aware of the other airplane, before changing from downwind leg to final approach. They also stated that during the turn the airplane went into a dive and impacted the ground after about a half turn.

Approximately 330 m north-east of the accident site, persons had been walking in a forest. One of them recorded a video. This recording was made available for investigation purposes. The video shows the shadow of the airplane moving west immediately prior to the accident. Consistent engine sounds and, 8 seconds after the shadow passed, the crash of the airplane can be heard.

Personnel Information

The 53-year-old pilot held an Airline Transport Pilot License (ATPL (A)) last issued on 12 April 2017 by the Russian civil aviation authority. His licence listed the ratings for Boeing 737CL and 737NG, Gulfstream G550 and for single engine piston land. In addition, the instructor rating for these aircraft types and the English Language Proficiency Level 4, valid until 24 March 2020, were listed.

His class 1 medical certificate was issued on 12 February 2019 and valid until 12 February 2020.

The operator of the EPIC LT stated that the pilot had a total flying experience of about 11,425 hours; of which approximately 7,687 hours as Pilot in Command (PIC). He had flown about 676 hours as PIC on the EPIC LT.

The statement of the operator reveals that 28 March 2019 was the pilot's last day off. On 29 March 2019 he had worked 6 hours in the office. On the day prior to the accident, 30 March 2019, he had begun pre-flight preparations at Moscow-Domodedovo Airport, Russia, at 0650 UTC for the flight to Krakow, Poland, and had taken off at 0752 UTC. After 02:53 hours, the airplane landed at Krakow Airport. At 1132 UTC, after refuelling, the airplane took off for Cannes Airport, France, where it landed at 1405 UTC (1505 hrs). On the day of the accident, the pilot arrived at Cannes Airport at 1230 hrs for pre-flight preparations for the flight to Egelsbach. At 1345 hrs the 2 passengers arrived at the airport.

Aircraft Information

The EPIC-LT was a single engine, low-wing, six-seat, retractable tricycle gear aircraft with a pressurized carbon fiber reinforced composite cabin.

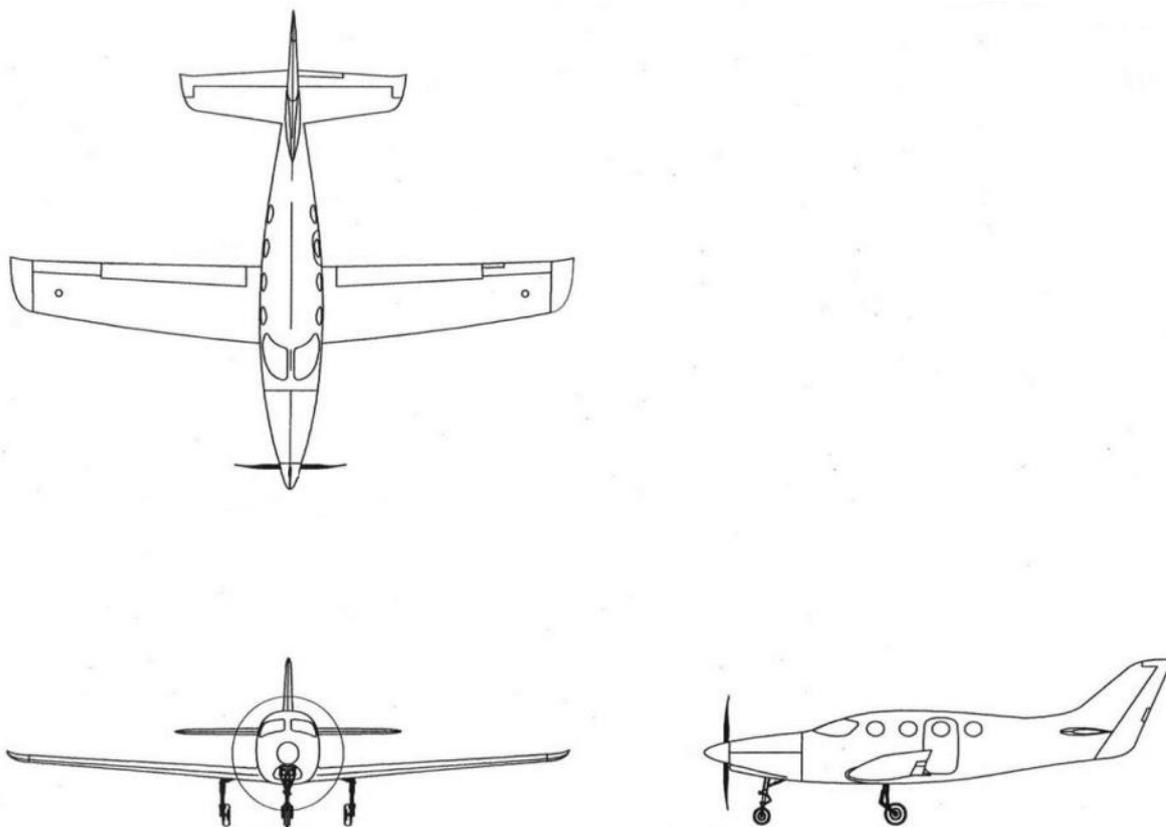


Fig. 1: Three-way view EPIC LT

Source: FAA

The airplane has a wingspan of 13.12 m and a fuselage length of 10.92 m.

Kit Manufacturer:	EPIC Aircraft
Manufacturer's Serial Number:	019
Year of Manufacture:	2008
MTOM:	3,402 kg
Total Flight Time:	2,221:46 hours and 1,317 cycles
Engine:	Pratt & Whitney Canada PT6A-67A
Propeller:	Hartzell HC-E4A-3D

On 4 December 2014, the civil aviation authority of the Russian Federation had issued a certificate of registration as Amateur Built Aircraft (*Единый экземпляр воздушного судна (ЕЭВС)*). On 11 December 2018, the last airworthiness certificate was issued by the West-Siberian department of the civil aviation authority of the Russian Federation and valid until 11 December 2019.

On 21 March 2019, a 300-h maintenance of the engine was performed.

The airplane was equipped with a Garmin G900X avionic system. It is an integrated system that presents flight instrumentation, position, navigation, communication, and identification information using flat-panel colour displays. It consists of three displays: the Primary Flight Displays (PFD) one each on the left and right side, and the Multi-Function Display (MFD) in the middle of the panel. There are also different Line Replaceable Units (LRU) which provide data for the displays. The displays are equipped with SD-card slots for navigation data cards or for recording technical flight parameters, respectively.

The airplane was equipped with a TruTrak Sorcerer AS autopilot.

Flight Manual

The operator of the airplane provided the EPIC LT airplane flight manual which contained speed information for the respective configurations, among other things:

The maximum speed with flaps in position 14° was 180 KIAS; for position 40° 130 KIAS.

Maximum speed for the extension of the landing gear was 170 KIAS, and minimum speed with retracted flaps 115 KIAS.

Stall speeds for the different flap positions were as follows:

V_{S0° 80 KIAS

V_{S14° 75 KIAS

V_{S40° 67 KIAS

Meteorological Information

At the time and place of the accident visual meteorological conditions prevailed.

According to the aviation routine weather report (METAR) of 1520 hrs at Frankfurt/Main Airport, located about 5 NM north-west of Frankfurt-Egelsbach Airfield, the following weather conditions were recorded:

Wind: 020°/6 kt, Wind direction varying 340°-360°

Visibility: More than 10 km

Clouds: 3-4 oktas Towering Cumulus (TCU)

Temperature: 18°C

Dewpoint: 4°C

Barometric air pressure (QNH): 1,020 hPa

According to the Flugleiter of Frankfurt-Egelsbach Airfield at the time of the accident wind velocity was 040° and 10 kt.

Aids to Navigation

The Aeronautical Information Publication (AIP) stipulated the following for approaches to and departures from the airfield of aircraft with jet or turboprop engines:

Approaches with jet aircraft and turboprops are only permitted subject to the following provisions:

a) For runway 08:

Entry via DELTA along the A5 motorway onto right base of runway 08.

b) For runway 26:

Entry via YANKEE directly onto final approach.

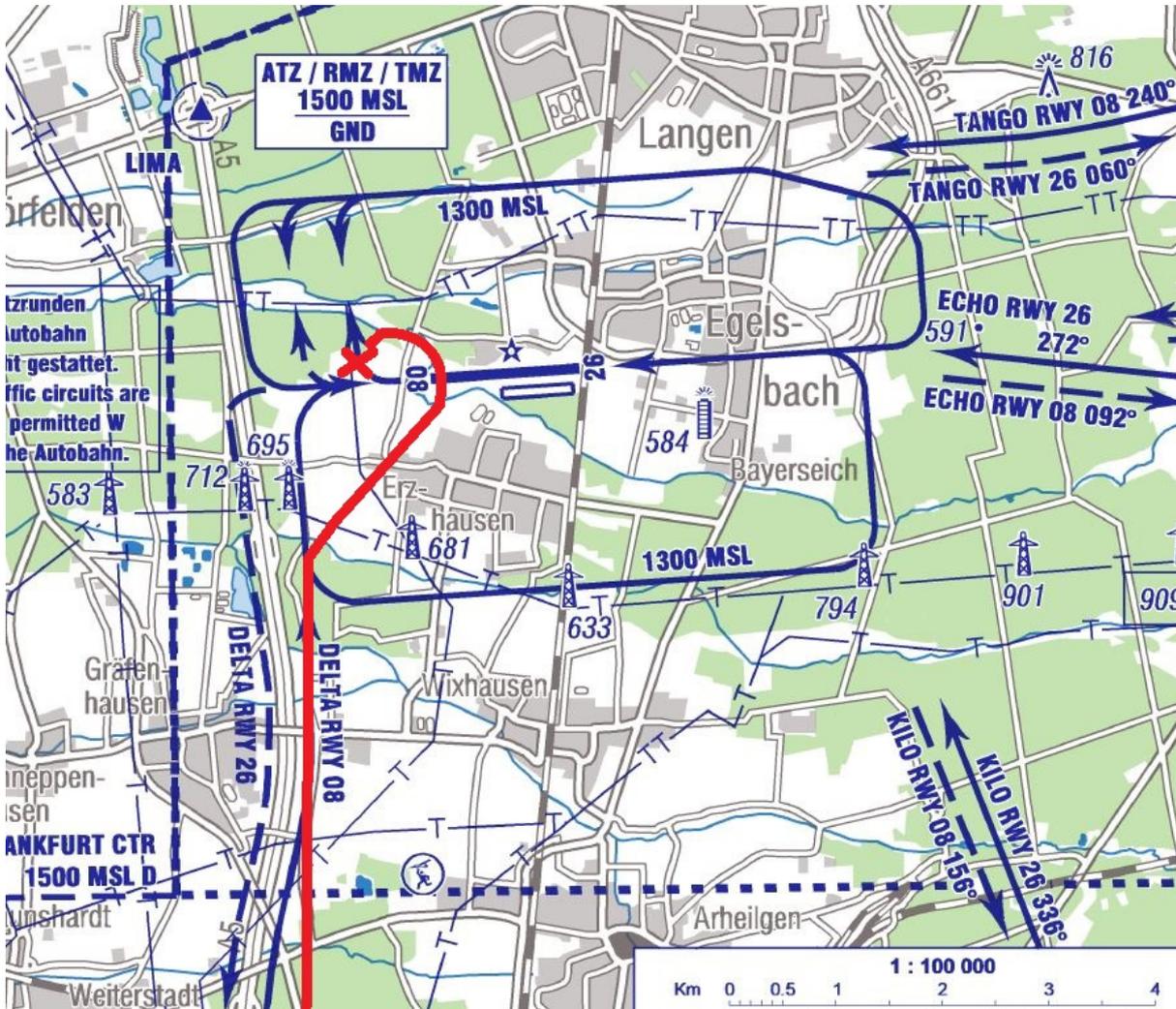


Fig. 2: Flight path of the aircraft and accident site: Excerpt of the visual approach chart of Frankfurt-Egelsbach Airfield with flight path of the aircraft (red line) and the accident site (red cross). Source: AIP/Adaptation: BFU

Radio Communications

There were radio communications in English between the airplane and Frankfurt Radar as well as with Frankfurt-Egelsbach Information. The BFU was provided with the voice recordings between 1519 hrs and the time of the accident for investigation purposes.

Aerodrome Information

Frankfurt-Egelsbach Airfield is located 0.27 NM south-west of Egelsbach in the Rhine-Main Region south-east of Frankfurt/Main Airport in the triangle of the cities Frankfurt/Main, Offenbach and, Darmstadt. The airport elevation is 385 ft AMSL.

The airfield has 2 parallel runways with the orientations 084° and 264°. The asphalt runway is 1,400 m long and 25 m wide. The grass strip has a length of 670 m.

Flight Recorders

The aircraft was not equipped with a cockpit voice recorder or flight data recorder. These recording devices were not mandatory.

The BFU was provided with the radar data of the flight path recorded by the air navigation service provider.

Wreckage and Impact Information

The accident site was located about 600 m north-west of threshold 08 and about 300 m north of the extended runway centre line, at a flat asparagus patch, which was partially covered with plastic.

The plastic had either burnt or melted in an almost circular area with a radius of about 20 m around the wreckage.

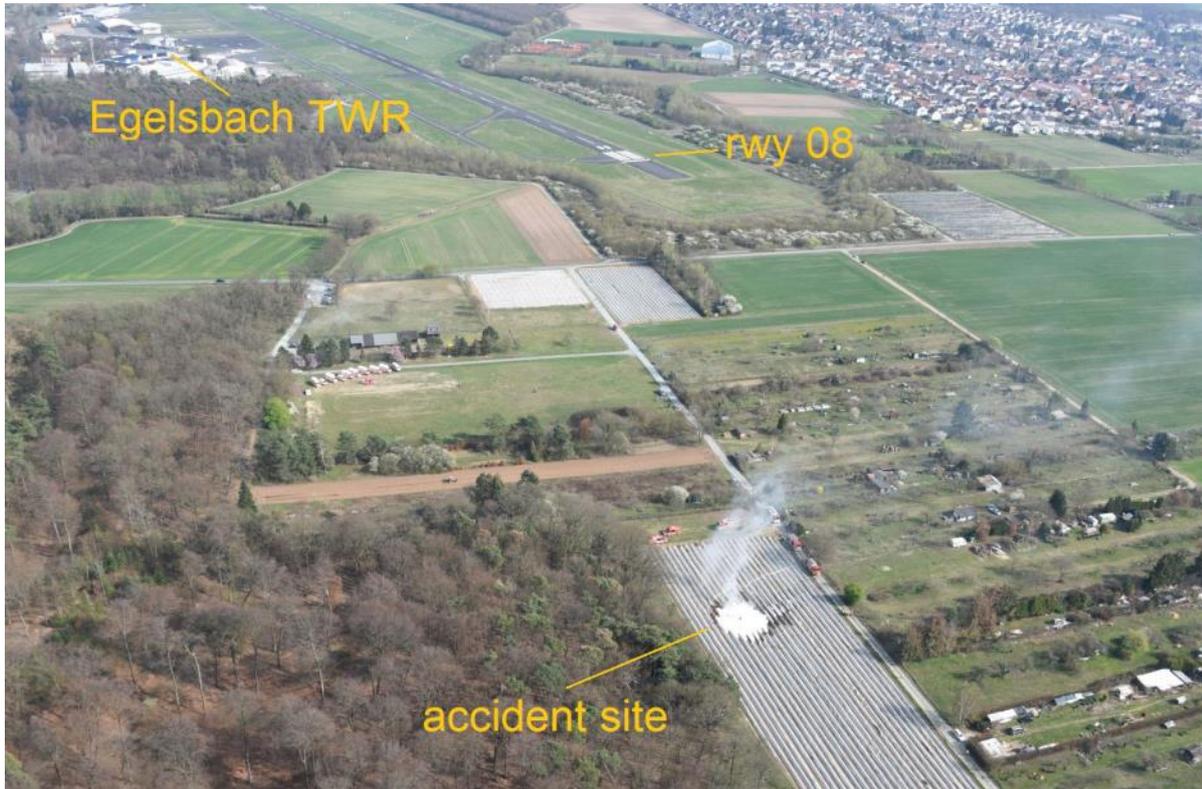


Fig. 3: Location of the accident site in relation to the airfield; viewed toward south-east

Source: Police/Adaptation: BFU

The traces at the accident site and the damages on the aircraft showed that the airplane had impacted the ground with an almost vertical flight path with nose down attitude and slight left bank angle. The fuselage nose including the spinner of the propeller pointed toward approximately 020°.

The entire fuselage and wing unit had been destroyed by fire. The form of the aft part of the fuselage, between trailing edge of the wings and the empennage, was intact, but the structure had been destroyed by fire. The front part of the fuselage including cockpit had been destroyed by fire except for the floor component. The cockpit displays (PFD and MFD) including SD-cards had been destroyed by fire.

The wings had separated from the fuselage and were lying about 25° turned left about the vertical axis. On the right wing the flap was folded beneath the wing spar. The weather radar had been torn off the right wing and was lying about 5 m north of the wreckage. The landing gear had been extended.



Fig. 4: Overview of the wreckage, viewed toward west

Source: BFU

Due to the high degree of destruction, investigation of the wreckage was limited.



Fig. 5: Damages on the propeller blades and the spinner

Source: BFU

Two of the four propellers blades were deformed contrary to their rotating direction. The examination of the engine with a Boroscope showed ingested earth and soot in the area of the first stage compressor rotor.

Fire

The airplane caught fire on impact. The police mission record showed that at 1527 hrs the police had received the first call reporting the accident and the fire. One minute later fire brigade and rescue personnel were requested. At 1530:10 hrs rescue personnel was on site. A police helicopter took aerial photos which document that at 1537 hrs fire-fighting operations were under way.

Organisational and Management Information

The operator was a company which had a permit of the Russian Ministry of Transport valid until 4 March 2020 for the conduct of general aviation flights. The company employed 5 pilots for the operation of the EPIC LT; the pilot of the accident flight was one of them.

Investigator in charge: Jens Friedemann

Field Investigation: Uwe Berndt, Stefan Maser, Jens Friedemann

This investigation is conducted in accordance with the 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 and the Federal German Law relating to the investigation of accidents and incidents associated with the operation of civil aircraft (*Flugunfall-Untersuchungs-Gesetz - FIUUG*) of 26 August 1998.

The sole objective of the investigation is to prevent future accidents and incidents. The investigation does not seek to ascertain blame or apportion legal liability for any claims that may arise.

This document is a translation of the German Investigation Report. Although every effort was made for the translation to be accurate, in the event of any discrepancies the original German document is the authentic version.

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