

Investigation Report

Identification

Type of Occurrence:	Accident
Date:	28 July 2011
Location:	Röhrhof
Aircraft:	Airplane
Manufacturer / Model:	Rutan Aircraft Factory / COZY III
Injuries to Persons:	Pilot seriously injured
Damage:	Airplane destroyed
Other Damage:	Crop damage
Information Source:	Investigation by BFU
State File Number:	BFU CX007-11

Factual Information

History of the Flight

On the day of the accident the aircraft started at 0955 hrs¹ on runway 16 of Arnbruck Special Airfield with one pilot aboard to a sight-seeing flight. After about 10 minutes flight time the aircraft crashed into a forest south of the airport and was destroyed. The seriously injured pilot was rescued from the wreckage.

¹ All times local, unless otherwise stated.

Personnel Information

The 53 year-old pilot had a Private Pilot's Licence (PPL A) since 1996. The license was issued in accordance with JAR-FCL, German and valid to 18 June 2014. He held the ratings for single-engine land and powered gliders valid to 22 June 2012. His class 2 medical certificate was first issued on 11 June 2010, and valid to 22 June 2012. His total flying experience was about 1,500 hours since the acquisition of the PPL. The pilot stated he had flown about 280 hours on this type since 28 July 2004. In the last 90 days, he had conducted two take-offs and landings with a flight time of 2 hours and 38 minutes.

Aircraft Information

The single-engine aircraft COZY III has a self-supporting midwing configuration and is manufacturer in composite construction with two seats. Originally the aircraft had three seats. The wing configuration is that of a canard aircraft and the engine with the pusher propeller is mounted to the end of the fuselage.



COZY III

Photo: Experimental Aircraft

The nose landing gear can be retracted during the flight. The airplane was manufactured in France in 2001 as self-construction and received a French certificate of registration as Experimental. The pilot bought it five years ago and operated it privately ever since. The aircraft was equipped with a WAM-120 three cylinder two-stroke engine; according to the manufacturer it should be operated with JET A-1 fuel.

Manufacturer: Rutan Aircraft Factory, Marc Pichot (Experimental - Self-made)
Type: COZY III
Manufacturer's Serial Number (MSN): 20
Year of manufacture: 2001
Empty weight: 471 kg
Maximum take-off mass: 726 kg
Engine: WAM-120
Propeller: MTV-6-D/LD165-112

Up until the accident the aircraft had a total of 695 operating hours. The last annual inspection took place on 5 November 2010. Witnesses stated that the aircraft had been on the ground for about six weeks prior to the accident due to an oil leakage.

The permission for entry for Germany for the French registered aircraft was valid to 31 December 2010.

Meteorological Information

Witnesses stated that at the time of the accident Visual Meteorological Conditions (VMC) prevailed.

The Deutscher Wetterdienst (German meteorological service provider, DWD) stated that the wind came from the west with 3 to 6 kt, visibility was 8,000 m; scattered clouds (SCT) and the lower limit was in 4,000 ft.

Communication

Between the Flugleiter (A person required by German regulation at uncontrolled aerodromes to provide aerodrome information service to pilots) and the airplane radio communications on frequency 118.550 MHz (Arnbruck Info) took place in German. The radio communications were not recorded.

Aerodrome information

Arnbruck Special Airfield has one asphalt runway oriented 160°/340° which is 610 m long and 10 m wide. Aerodrome elevation is 1,716 ft AMSL.

Flight Recorders

A GPS was seized at the accident site to reconstruct the flight path. After the recovery the GPS was inoperable. In the laboratory of the BFU the memory of the GPS was read out. There was no evaluable radar track available for reconstruction of the flight path.

Wreckage and Impact Information

The accident site was located south of Arnbruck Special Airfield about 1.3 km from the end of the runway in a forest. About 80 m prior to the accident site the aircraft had collided with trees of a coniferous forest which was about 30 m high.



Accident site

Photo: BFU

During the impact with the ground the front part of the aircraft was smashed. The nose landing gear was found in the retracted position.

Due to the degree of damage, the position of the power levers could not be determined. Control elements could be checked. The wings had several fractures and one fuel tank was damaged. All three propeller blades had been fractured at the same length. Both wing tanks are lockable and each carried a sign with the label JET A-1 in its filling area. A large amount of fuel had leaked from the damaged tank. Samples were taken for further examination. The engine was also subjected to further examination. The examination of the wreckage at the accident site did not reveal any technical deficiencies.

Fire

There was no fire at the accident site.

Tests and Research

Petro Lab GmbH, Speyer, conducted the fuel sample test on 11 August 2011. The analysis certificate stated that the tank contained heating oil EL DIN 51 603-1. The test record stated that the red dye and the yellow marker matched the customs specifications for pure heating oil EL.

On 18 August 2011 the specialised company Dachsel, Baierbrunn, conducted the engine examination. One of the three cylinders showed a jammed outflow valve.

Analysis

The pilot was sufficiently qualified to conduct the flight. He held a valid PPL and medical certificate.

The aircraft had a valid certificate of registration and was properly maintained and inspected.

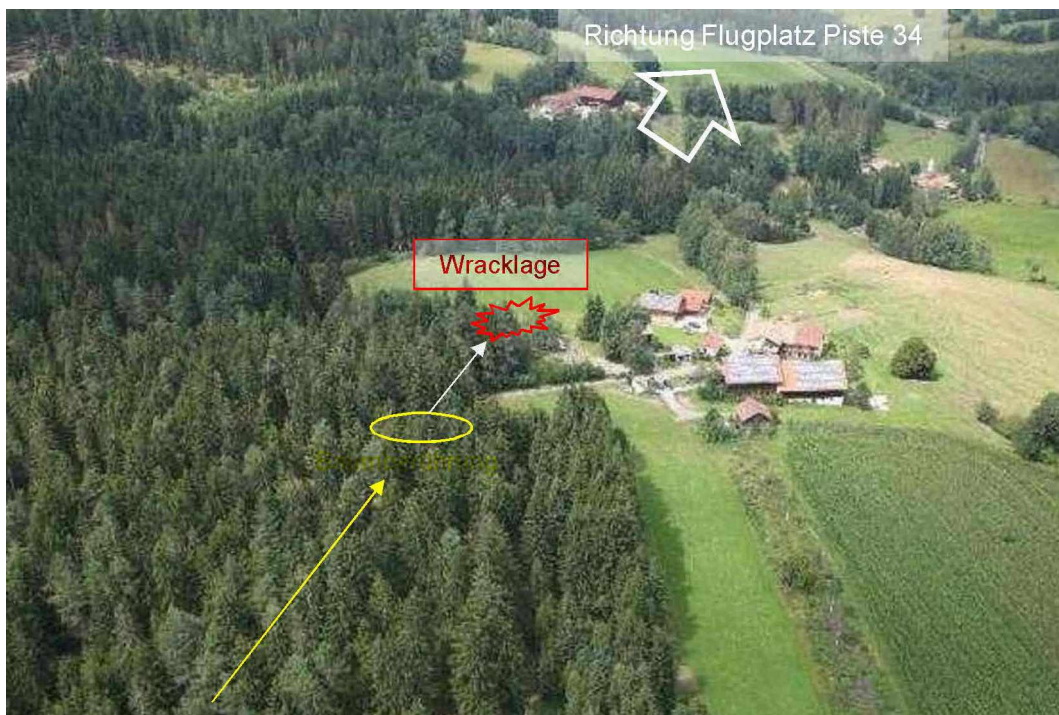
The permission of entry for the French registered experimental aircraft had expired and the operator had not applied for an extension at the Luftfahrt-Bundesamt (German civil aviation authority, LBA).

Loading and centre of gravity were within the prescribed limits.

The fuel aboard the airplane was sufficient for a flight of more than two hours. Contrary to the information of the manufacturer the aircraft was not operated with JET

A-1 fuel but with heating oil. It was not part of the investigation to determine whether or not the use of heating oil had an adverse effect on the WAM-120.

Examination of the engine revealed a malfunction of one outflow valve on the third cylinder. Based on this malfunction, a significant reduction in engine performance has to be assumed. Since the airplane was in the landing phase, there was no sufficient altitude reserve to reach a suitable off-field landing site. Due to the loss of power, the pilot could not retain the altitude and, therefore, the airplane flew in horizontal flight into the forest in front of the airfield.



Position of the collision with trees and accident site

Photo: Rachi

Conclusions

The air accident is due to the fact that during the approach to Arnbruck Special Airfield the engine failed and the aircraft collided with obstacles prior to reaching the airfield.

Investigator in charge: Stahlkopf

Assistance: Lampert

Braunschweig: 9 May 2012

This investigation was 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.

According to the law the sole objective of the investigation shall be the prevention of future accidents and incidents. It is not the purpose of this activity to assign blame or liability or to establish claims.

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