

Untersuchungsbericht

Identification

Type of Incident:	Accident
Date:	2. November 2010
Location:	near Gubin / Poland
Aircraft:	Airplane
Manufacturer / Model:	The New Piper Aircraft Inc. / PA 46-350P
Injuries to Persons:	Two persons fatally injured
Damage to Aircraft:	Aircraft destroyed
Other Damage:	Terrain damage
Source of Information:	Investigation by BFU
State File Number:	BFU 4X040-10

Factual Information

History of the Flight

At the day of the accident, the pilot, accompanied by his wife, planned to fly from Karlsruhe/Baden-Baden Airport to the Cottbus-Drewitz Special Airfield under Instrument Flight Rules (IFR) with a Piper PA 46-350P. Prior to the flight he refueled 400 liters and submitted a flight plan.

According to the radar recording of the responsible air traffic control center, the airplane started at 0923 hrs¹ and flew the planned route at Flight Level (FL) 190 to Cottbus-Drewitz, following the flight plan. The airplane started to descend at approx. 1044 hrs. The Initial Approach Fix (IAF) Cottbus-Drewitz NDB (DRW) was overflown in an altitude of approx. 3,900 ft AMSL with a Ground Speed (GS) of approx. 170 kt, at approx. 1104 hrs, and the descent was continued for the approach NDB-RWY-25. After flying over the intermediate approach fix in approx. 2,800 ft AMSL with a GS of approx. 190 kt, the airplane flew a turn to the left in order to intercept the final approach. The radar recording ended at 1107:34 hrs. At that time the airplane was turning into the final approach in an altitude of 2,400 ft AMSL with a GS of approx. 200 kt.

According to radar recordings of the German Federal Armed Forces, the airplane was captured several more times within the turn radius: at 1107:50 hrs in an altitude of 1,200 ft AMSL, at 1108:01 hrs in an altitude of 2,700 ft AMSL, and finally in 1,700 ft AMSL and 1,000 ft AMSL. The recording ended at 1108:21 hrs in an altitude of 600 ft AMSL.

The airplane crashed into a field south of the Polish city of Gubin and caught fire. Both occupants lost their lives.

The Polish Aircraft Accident Investigation Authority asked the BFU to take over the investigation of this accident.

Personnel Information

The 49-year-old pilot held a Commercial Pilot's License (CPL(A)), valid until 4 April 2015, first issued on 23 March 2004. The license included instrument flight rating and the ratings as pilot in command for the type PA 46 and SE piston (land). His Class 1 Medical Certificate with the requirement to wear glasses was valid until 3 October 2011. Furthermore the pilot held a Private Pilot's License (PPL(A)) since 1994, and a license for the operation of micro lights since 2002.

The pilot completed the instrument flight training in 2003. Acquirement of the type rating for the PA 46 could be traced back to 2004.

His total flying experience according to the pilot log book was approx. 1,315 hours, 645 of which on the type PA 46.

¹ All times local, unless otherwise stated

Aircraft Information

The aircraft was a PA 46-350P of the manufacturer The New Piper Aircraft Inc., year of manufacture 1998, with the serial number 46-36168. The maximum take-off weight was 1,969 kg with an empty weight of 1,421 kg. It was equipped with a Lycoming TIO-540-AE2A engine with 350 HP and a Hartzell variable pitch propeller.

The total operating hours of the aircraft was approx. 1,735 hours. It was operated in private possession and maintained commercially. The last Airworthiness Review Certificate (ARC) was issued on 16 February 2010. The last 50 hour check was performed on 17 September 2010 after an operating time of 1,720 hours.

The airplane was equipped with a King KFC-150 autopilot. According to manufacturer statements this autopilot was capable of performing bank angles up to a maximum of 22 degrees in the type PA 46.

The aircraft type PA 46 is considered a High Performance Aircraft (HPA); prior to its operation, pilots require training and must obtain the type rating.

Meteorological Information

According to the indication of the German Weather Service (DWD), the weather was marked by a falling inversion in approx. 2,500 ft AMSL at the day of the accident. Below that there were widespread deep stratus clouds. Above the inversion there were very isolated thin cloud layers up to FL 200. The zero degree level was at approx. 8,000 ft AMSL.

The visibility at Cottbus-Drewitz Special Airfield was approx. 1,700 m and the cloud base was at approx. 400 ft at the time of the accident. The temperature was 8°C with a dew point of 7°C. Air pressure (QNH) was 1,015 hPa.

Aids to Navigation

At Cottbus-Drewitz Special Airfield, the Non-Directional radio Beacon (NDB) DRW and the Distance Measuring Equipment (DME) CCD were available.

This equipment was inspected by an employee of the air traffic control service provider after the accident. No malfunctions were detected.

Communications

The pilot had continuous radio contact to air traffic control during the flight. He was controlled by “Bremen Radar” in the Cottbus-Drewitz area. The radio communication was recorded and was available for the investigation.

According to these recordings, the pilot received the clearance for the NDB-RWY-25 approach at 1055:38 hrs and acknowledged it. At 1106:29 hrs the controller gave his last instruction to the pilot thereby asking him to report when reaching final approach. The pilot acknowledged the reception of this instruction. When the controller contacted the pilot again at 1108:37 hrs for further questions and whether he had reached the final approach he did not receive an answer.

Aerodrome Information

Cottbus-Drewitz Special Airfield (EDCD) is located 9.7 Nautical Miles (NM) to the north-east of the city of Cottbus at an elevation of 274 ft AMSL. The paved runway has a length of 2,484 m, a width of 45 m, and a direction of 249°/069°.

The airfield is equipped with a Non-Directional Beacon Approach (NDB Approach) in approach direction 07 and 25. The Minimum Descent Altitude (MDA) in landing direction 25 is 690 ft AMSL.

Flight Recorders

The airplane was neither equipped with a Flight Data Recorder (FDR) nor a Cockpit Voice Recorder (CVR). These recording devices were not mandatory.

A Flightcom DVR 300i was installed in the instrument panel, a so-called “Digital Voice Recorder Clock”. When switched on, this device records conversation on board and over the radio of the last five minutes. This device was neither found in the wreckage nor during recovery.

The flight path was recorded by air traffic control service provider as well as by the radar stations of the German Federal Armed Forces. These recordings were available to the BFU for evaluation purposes.

Wreckage and Impact Information

The accident site was approx. 1.6 NM south to the city of Gubin, north of the main road 32, on an uncultivated meadow. The altitude at the accident site was approx. 300 ft AMSL.

The outer area of the right wing hit the ground first. From the place of initial impact wreckage parts were spread out over a distance of about 60 m in a direction of approx. 190°.

Approx. 6 m behind the initial ground contact, the nose wheel was found, and two of the three propeller blades were stuck in the ground. The third propeller blade was found approx. 40 m away in southeasterly direction. The engine was found approx. 30 m behind the initial ground contact and 5 m to the west. The burnt out main wreckage had come to a stop after approx. 52 m against the impact direction, stopped by two trees.



Initial ground contact in viewing direction towards the main wreckage

Photo: BFU



Main wreckage

Photo: BFU

All main assemblies of the airplane were found at the accident site. All rudder surfaces were present. Due to the high degree of destruction, it was impossible to make statements about the functioning of the flight controls.

Medical and Pathological Information

An autopsy of the pilot's body was not possible. An investigation of the alcohol level in the pilot's blood showed no findings.

The medical history of the pilot was examined in the scope of the investigation. It did not reveal any indications for a possible cause of the accident.

Fire

There were a total of four fire areas along the debris distribution on the meadow: In the area of the initial ground contact, after approx. 16 m in the area of debris of the right wing, at the main wreckage, and at a small tree standing to the east.

The fire of the main wreckage destroyed large parts of the cabin and instrument panel.

Survival Aspects

The impact occurred in a steep angle and with high speed. For both persons it was not possible to survive the impact forces.

Additional Information

The pilot had already an accident with an aircraft of the same type on 18 April 2007. That accident happened during a landing in Karlsruhe / Baden-Baden; the aircraft was destroyed.

According to the statements of the aircraft manufacturer and of an expert for the type PA 46 appointed by the Luftfahrt-Bundesamt (LBA), an NDB-25 approach in Cottbus-Drewitz should have been flown on the outbound track with approx. 130 KIAS, in the turn towards the final approach with approx. 120 KIAS and on final approach with approx. 100 -110 KIAS.

With a speed of approx. 190 kt, a constant bank angle of approx. 30 degrees would be necessary in order to not overshoot the final approach.

Analysis

The pilot held the required licenses and ratings. He had a very good, long-term type and total flying experience.

He certainly knew the characteristics of the aircraft type PA 46 (HPA) because he had used this type for several years. The recorded radio communication did not show any abnormalities. Due to the fact that it was not possible to conduct an autopsy, an impairment of health cannot be excluded completely; however the evaluation of his medical documents did not reveal any evidence for an impairment of health.

The aircraft had a valid certificate and was properly maintained. There were no indications of technical problems. The centre of gravity was within the allowed limits, the maximum take-off mass was not exceeded.

After take-off, the airplane flew above the deep clouds, until taking the turn towards the final approach. It is very probable that the aircraft dived into the clouds at the beginning of the turn. Due to the weather data it was not certain whether the cloud base would be sufficient to perform a landing in Cottbus-Drewitz. As a consequence of the zero degree level at high altitude and the almost cloudless sky above the inversion, icing conditions or problems due to ice accretion can be excluded.

The radar data showed a conspicuously high speed during the landing approach. The recorded speed data were significantly above the speeds normally flown for an approach of this kind with the aircraft type PA 46. The high speed during the turn towards the final approach required manual control of the aircraft when flying without visual reference, in order to not overshoot the final approach. The autopilot could not control the high bank angle needed. The flight track recorded up until the turn suggests that flight control was performed by the autopilot until the beginning of the turn.

Apart from controlling the airplane manually, the pilot should have reconfigured the airplane before landing; i. e. he should have reduced speed, set the flaps and extend the landing gear. Furthermore, a missed approach should have been prepared, because the landing was not guaranteed due to the weather data which had been transmitted to the pilot.

From the BFU point of view it is very probable that the pilot became disoriented in the turn towards the landing approach, which is a flight phase with increased workload. Loss of control over the airplane was the result. The BFU interprets the fact that no emergency call was recorded as a sign that it is very likely no technical defect existed.

Conclusions

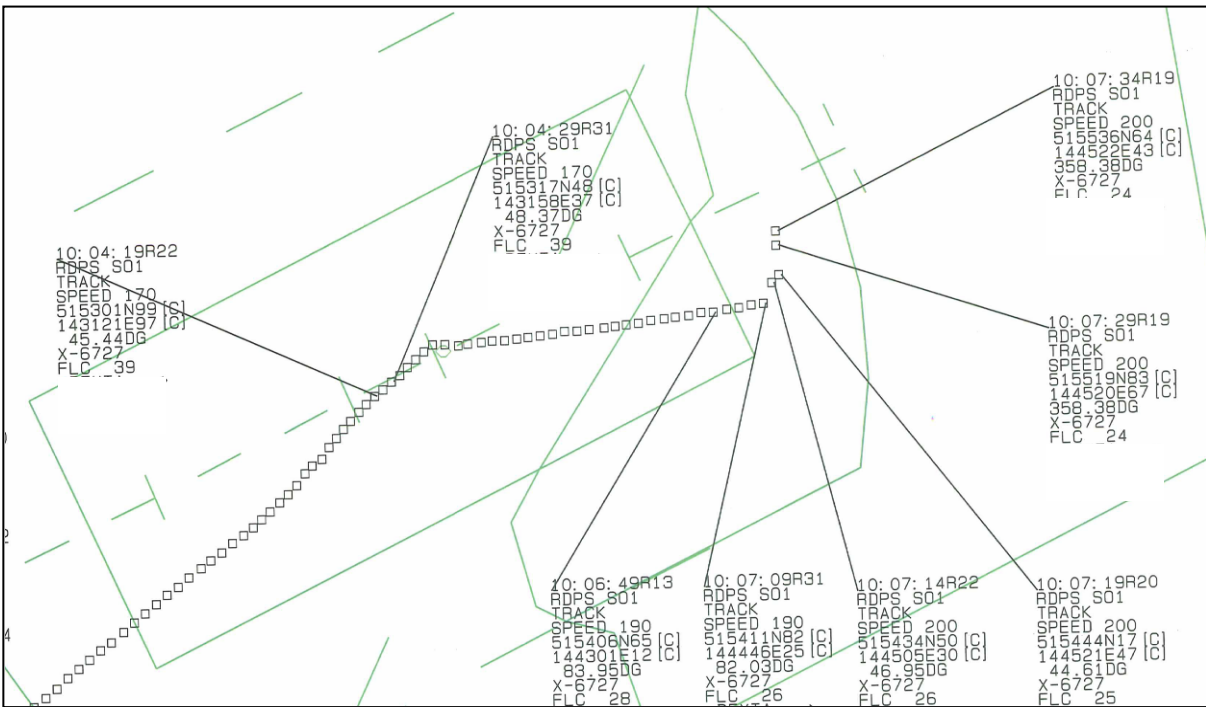
The accident is caused by a loss of control, when the aircraft changed from visual to instrument flight conditions during landing approach.

The following contributing factors were:

- the loss of visual reference in the turn
- the change from automatic to manual flight control during a bank attitude
- the permanently high speed during the landing approach

Investigator in charge: Axel Rokohl
 Assistance: Philipp Lampert
 Field Investigation: Philipp Lampert, Axel Rokohl
 Braunschweig: 30. May 2011

Appendices



Radar recording

Source: Air traffic Control

This investigation was conducted in accordance with 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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