Bundesstelle für
Flugunfalluntersuchung

German Federal Bureau of
Aircraft Accident Investigation

Investigation Report

The investigation was completed stating facts only, i. e. no analysis and conclusions.

Identification

Type of Occurrence:	Accident
Date:	10 August 2023
Location:	Kassel-Calden
Aircraft:	Airplane
Manufacturer:	Piper
Type:	Meridian
Injuries to persons:	No injuries
Damage:	Aircraft substantially damaged
Other Damage:	None
State File Number:	BFU23-0705-3X

Abstract

During the landing, the aircraft touched down with the landing gear retracted and was substantially damaged.

Factual Information

History of the Flight

On 10 August 2023 at 1443 hrs[1], the Piper Meridian took off from Reichelsheim Airfield for a flight to Kassel-Calden Airport. On board were a flight instructor and two student *pilots. At Kassel-Calden Airport, traffic circuits and landing training to acquire the SET rating were to be conducted. After arrival at Kassel-Calden at 1542 hrs, two approaches and landings with touch and go were performed. At 1553 hrs, the last landing* occurred and the aircraft taxied to the local maintenance organisation. The reason for the disruption was a permanent acoustic warning by the Warn Horn which ended once the landing gear was extended. While the landing gear was retracted, the warning had sounded constantly in all operating phases and could not be silenced with the mute button, due to a sensor error (later determined). The maintenance organisation could not reproduce the error on the ground. Therefore, between 1707 and 1715 hrs, one mechanic was taken along for a traffic circuit. Subsequently, a torque sensor error was determined and agreed to order a new one.

The pilots decided to perform a few traffic circuits and then stop the training. At 1737 hrs, the Piper Meridian took off again and three traffic circuits were performed. During the third landing (0 flaps landing) at 1756 hrs, the airplane touched down on runway 27 with the landing gear retracted. The propellers and the lower surface of the airplane were substantially damaged. The occupants remained uninjured.

The flight instructor stated that due to the increased work load during the last traffic circuit (the traffic advisory system was triggered) and a certain acclimatization to the warning sound, the landing gear was not extended.

[1] All times local, unless otherwise stated.

Personnel Information

Pilot in Command

The 68-year-old flight instructor held a Commercial Pilot License (CPL(A)) issued by the European Union in accordance with Part-FCL. His licence listed the following ratings:

- PA-46 SET PIC IR, valid until 31 July 2024
- Pilatus PC12 SET PIC IR, valid until 31 August 2023
- MEP (land) PIC IR, valid until 31 July 2024
- SEP (land) PIC IR, valid until 30 April 2024
- Aerobatic, no expiry date
- FI(A) CPL, PPL, SE, SP, night, aerobatic (A), instructor, instrument rating, valid until 31 March 2025

His class 1 medical certificate with the restriction VML[2] was valid until 1 December 2023.

He had a total flying experience of about 11,340 hours, of which 6,709 hours were IFR.

Pilot in the Front Right-Hand Seat

The 54-year-old pilot held a Commercial Pilot License (CPL(A)) issued by the European Union in accordance with Part-FCL. His licence listed the following ratings:

- MEP (land) PIC IR, valid until 31 January 2022
- SEP (land) PIC IR, valid until 31 January 2024
- FI (A) rp PPL, SE SP, valid until 31 May 2024

His class 1 medical certificate with the restriction VML, RXO[3] was valid until 24 January 2024.

He had a total flying experience of about 887 hours, of which 650 hours were IFR. In the last 90 days he had flown about 11 hours.

Pilot in the Third Row

[2] Correction for defective distant, intermediate and near vision
[3] Specialist ophthalmological examinations required

The 50-year-old pilot held a Private Pilot License (PPL(A)) issued by the European Union in accordance with Part-FCL. His licence listed the following ratings:

- SEP (land) PIC IR, valid until 31 August 2023

His class 2 medical certificate without restrictions was valid until 22 May 2025.

He had a total flying experience of about 257 hours, of which 46 hours were IFR.

Aircraft Information

The Piper Meridian PA-46-500TP is a single-engine low-wing aircraft in metal construction with a retractable landing gear in nose-wheel configuration. The airplane, in private ownership, was built in 2002 and was equipped with a Pratt & Whitney Canada PT6A-42A turboprop engine. Maximum take-off mass was about 2,328 kg. At the time of the accident, the airplane had a total operating time of 1,500:13 hours. The airplane was equipped with a traffic advisory system.

The aircraft type is equipped with a warning system which should warn against landing with a retracted landing gear. This system consists of the Gear Warn Annunciator and the Gear Warning Horn. The Flight Manual described the system as follows:

The red GEAR WARN annunciator and gear warning horn will operate simultaneously under the following conditions:

(a) In flight when the throttle is reduced to low power settings and the landing gear is not in the DOWN position.

(b) In flight when the throttle is reduced to low power settings and the landing gear is not in the DOWN position.

(c) On the ground when the landing gear selector is in the UP position. The landing gear squat switch activates to prevent operation of the retract side of the hydraulic pump on the ground.

A landing gear warning horn mute switch, if installed, is located directly below the standby airspeed indicator. Activating the landing gear warning horn mute switch temporarily silences the landing gear warning horn only if the horn is triggered. When activated, the landing gear warning horn mute switch will illuminate. The horn can be cancelled by extending the landing gear or advancing the power lever.

Meteorological Information

According to witnesses, at the time of the occurrence, Visual Meteorological Conditions (VMC) prevailed.

Radio Communications

Radio communications were recorded by the air navigation service provider and made available to the BFU for evaluation purposes.

Aerodrome Information

Kassel-Calden Airport (EDVK) is located 15 km north-west of Kassel City, North Hessen. Airport elevation is 262 m AMSL. It had one asphalt runway with a length of 2,500 m and a width of 45 m, with the orientation 094°/274° (09/27).

Flight Recorder

The aircraft was not equipped with an FDR and a CVR. These recording devices were not mandatory.

Radar data were recorded by the air navigation service provider and made available to the BFU for evaluation purposes.

They showed a closest horizontal distance to a Piper Seneca of 1,125 NM at a vertical distance of 500 ft. Vertical approach rate was 0 m/sec.

Wreckage and Impact Information

The accident site was located on runway 27 of Kassel-Calden Airport and abeam of the Tower. Continuous skid marks were found on the runway. Propeller and aircraft underside (pressurized cabin) were substantially damaged.

Fig. 1: Aircraft during the salvage operation Source: Kassel-Calden Airport, adaptation BFU

Fire

There was no fire.

Additional Information

According to the Kinds of Operating Equipment List (KOEL), a functional Landing Gear Warning Horn must be available in the operating areas Day, Night, VFR, IFR and Icing.

Investigator in charge: Pfefferl

Braunschweig, 17 January 2024

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 - FlUUG*) 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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