Investigation Report

The Investigation Report was written in accordance with para 18 Law Relating to the Investigation into Accidents and Incidents Associated with the Operation of Civil Aircraft stating facts only.

Identification

Type of Occurrence: Serious incident
Date: 18 July 2018
Location: Near Meschede Airport
Type of aircraft: 1. Airplane
          2. Glider
Manufacturer / Model: 1. Embraer / ERJ 190-100 LR
                      2. Schleicher Flugzeugbau / ASK 21
Injuries to Persons: None
Damage: None
Other Damage: None
State File Number: BFU18-1181-GX
Factual Information

On 18 July 2018 at about 1715 hrs\(^1\) during descent of the Embraer ERJ 190-100 LR (ERJ) an airprox with the ASK-21 occurred. The pilot of the glider estimated the closest horizontal distance with approximately 300 m to 500 m and the closest vertical distance with approximately 100 m. The crew of the transport aircraft estimated the respective distances with 50 m and 20 m.

History of the Flight

The ERJ was on a flight in accordance with Instrument Flight Rules (IFR) from Frankfurt to Paderborn. Four crew members and 20 passengers were on board the airplane. At 1711:20 hrs the crew received the descent clearance to Flight Level (FL) 60 from the responsible controller. 1516:01 hrs the crew reported: "[…] we have to deviate due to a glider." The co-pilot, who was Pilot Flying (PF) at the time of the occurrence, stated that he had suddenly and coincidentally seen a glider circling in a thermal in their direction of flight. At the time the ERJ had been in FL 60. In his opinion maintaining their heading could have resulted in a collision. There had been two other gliders below this one. An aggressive avoidance manoeuvre in accordance with visual flight rules had been required immediately. About three to four seconds passed between the initial visual contact and the initiation of the avoidance manoeuvre. He had deactivated the autopilot, pulled the airplane nose up, and pushed the engine throttles to full speed. The flight data recorders (see Fig 1) document the pilot’s actions. At the time of the transition between descent and climb he had seen the glider flying by below and to the right of his own position. The vertical distance had been about 20 m and the horizontal 50 m. The lowest altitude had been 6,025 ft (AMSL). During the avoidance manoeuvre the ERJ climbed to 7,888 ft (AMSL) and then descended again. The flight data recorder documents the engines acceleration from 33 to 93.9 % N1 and the control input to climb.

The ASK-21 was on a flight in accordance with Visual Flight Rules (VFR). Point of departure and destination was Brilon. One pilot and one passenger were on board. During circling in thermal, together with to other unknown gliders, he had detected the ERJ as the nose of his glider had pointed west. The ERJ had crossed from left to

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\(^1\)All times local, unless otherwise stated.
right. It had been in climb. He had continued circling in thermal to the left because this had increased the distance to the ERJ.

Fig. 1: Flight data recorder data of the ERJ
Source: BFU

The responsible controller (Langen Radar) stated that none of the gliders had been visible on his monitor. The depiction on the controller’s monitor (Fig. 2) confirms this statement.

Subsequently, the ERJ landed at Paderborn/Lippstadt and the ASK-21 in Brilon.
Personnel Information

Flight crew ERJ 190-100 LR

Pilot in Command

The 41-year-old pilot in command held an Airline Transport Pilot's License (ATPL(A)), which had been issued by the Luftfahrt-Bundesamt (German civil aviation authority, LBA) on 26 August 2014 and was valid until 31 August 2018. He had a total flying experience of about 12,050 hours.

Co-pilot

The 33-year-old co-pilot held a Commercial Pilot's License (CPL(A)), which had been issued by the LBA on 31 August 2015 and was valid until 30 April 2019. He had a flying experience of about 4,850 hours.
Pilot ASK 21
The 22-year-old pilot held a Glider Pilot's Licence (GPL) issued by the Royal Netherlands Aeronautical Association on 8 September 2014 and valid until 8 September 2018. He had a flying experience of about 1,013 hours, of which about 67 hours were flown on gliders.

Air Traffic Control
The 29-year-old controller held an Air Traffic Controller's License issued by the Bundesaufsichtsamt für Flugsicherung (BAF, Federal Supervisory Authority for Air Navigation Services) and valid until 20 June 2020.

Aircraft information

Embraer / ERJ 190-100 LR
This ERJ is a twin-engine passenger aircraft with fan jet engines. It is mostly used as short and medium range aircraft and can seat up to 100 passengers. The aircraft had a German certificate of registration and was operated by a German operator.

Schleicher Flugzeugbau / ASK 21
The ASK-21 is a twin seater, mid-wing glider in glass-fibre reinforced plastic construction. The aircraft was registered in the Netherlands and operated by a Dutch flying club.

The glider was not equipped with a transponder. There was no legal requirement for a transponder.

Meteorological Information
The aviation routine weather report (METAR) of Paderborn/Lippstadt Airport of 1720 hrs showed the following information:

- Surface wind 330°, 6 kt (varies between 280° and 040°)
- ground visibility of more than 10 km
- no significant clouds below 5,000 ft (GND)

The sun was in approximately 225° and 52° above the horizon.
Radio Communications

Radio communications between the controller and the ERJ crew were recorded by the air navigation service provider and made available to the BFU as transcript and audio file for the purpose of the investigation. There was no radio contact with the glider.

Radar data

The air navigation service provider recorded the radar data and made it available to the BFU for the purpose of the investigation. Since the glider was not equipped with a transponder it was not displayed on the monitor of the controller.

Flight data

The ERJ was equipped with a Flight Data Recorder (FDR) and a Cockpit Voice Recorder (CVR). Since the occurrence was not reported to the BFU until 16 August 2018 the FDR and CVR data had already been overwritten. The company still had the FDR data as data file. When this data is stored, time and date are deleted.

Airspace Information

Airspace E is a controlled airspace in which IFR and VFR flights occur. IFR flights are separated to other IFR flights but not to VFR flights. Whenever possible, IFR flights receive information about VFR flights. VFR flights also receive traffic information whenever possible.

In addition, for VFR flights the following weather conditions apply: 5 km flight visibility (8 km above FL 100); distance to clouds 1.5 km horizontally and 1,000 ft vertically. Above 5,000 ft AMSL transponders are mandatory for powered aircraft.

Additional Information

Due to other similar occurrences in the past, on 1 March 2017 the Federal Bureau of Aircraft Accident Investigation published the Study Concerning Airpoxes and Collisions of Aircraft in German Air Space 2010 - 2015. Two safety recommendations were the result of this study:
Safety Recommendation No. 02/2017

The Federal Ministry of Transport and Digital Infrastructure (BMVI) should cancel the existing exception that allows neglect of transponder transmission for the operating mode gliding above 5,000 ft AMSL or 3,500 ft GND according to the Verordnung über die Flugsicherungsausrüstung der Luftfahrzeuge (FSAV) (Regulation Concerning Avionics Equipment of Aircraft).

Safety Recommendation No. 03/2017

The Federal Ministry of Transport and Digital Infrastructure (BMVI) should ensure commercial flights in accordance with Instrument Flight Rules with aircraft of more than 5.7 t take-off mass or more than 19 seats only occur in airspaces where air traffic control is able, at any time, to issue traffic information and avoidance recommendations regarding all other aircraft operating in the same airspace, and on-board or ground-based collision warning systems (ACAS and STCA) can warn about impending collisions.

Investigator in charge: Blanke
Assistance: Hempelmann

Braunschweig, 05 March 2019
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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