

# Investigation Report

EX013-1-2/05  
January 2007

## Identification

Type of occurrence: Serious incident  
Date: 27 September 2005  
Location: Within control zone  
Mönchengladbach  
Aircraft: 1. Airplane  
2. Airplane  
Manufacturer / Type: 1. Piper Aircraft Corporation /  
PA-28-161  
2. Cessna / 680  
Injuries to persons: No injuries  
Damage: Aircraft not damaged  
Other damage: None  
Information Source: Investigation by BFU

"Kaarst" of the motorway A46. The evaluation of the ATC radar recordings showed that the pilot initiated a left turn and ended it with a heading of about 055°. At the same time, he established radio communication with Düsseldorf flight information service (FIS).

At 11:15 hrs the Cessna 680 likewise departed Mönchengladbach for a flight according to instrument flight rules (IFR) to Berlin. As described in the enroute clearance, the Cessna's pilot followed the standard instrument departure route (SID) MEVEL5M. He changed frequencies immediately after departure to Düsseldorf radar as was described in the SID. At 11:16 hrs Düsseldorf radar identified the Cessna 680 and instructed them to maintain the altitude of 2,000 ft and the current heading. Based on the SID the Cessna 680 was already in a right turn and the heading was about 200°. Following the controller's instruction the turn was stopped and the heading of 175° resumed.

At 11:16 hrs the Cessna 680 reported a TCAS resolution advisory (RA) to climb and followed its instruction. Additionally, the responsible air traffic control unit issued respective traffic information.

The controller responsible for the control zone tried to give traffic information about the Cessna 680 to the PA28 by using blind transmission.

The pilot of the PA28 stated that he had seen the Cessna 680 and promptly initiated a descent so as to avoid the Cessna.

The ATC radar recordings showed that the flight paths of the two aircraft crossed in the same altitude and with a horizontal distance of 0.1 NM. Both aircraft continued their flights and reached their respective destinations safely.

## Factual information

### Synopsis

An airprox occurred with a horizontal distance of 0.1 NM at the same altitude.

### History of the flight

At 11:10<sup>1</sup> hrs the PA28 departed Mönchengladbach for a flight according to visual flight rules (VFR) to Fritzlar and left the control zone via the compulsory reporting point "G". At 11:15 hrs the pilot reported to be above "G" in 1,900 ft and was cleared to leave the frequency by the responsible air traffic control unit. According to the pilot's statement, the flight was continued with terrestrial navigation. He wanted to orient himself by looking for the three-leg motorway interchange

---

<sup>1</sup> Unless otherwise specified, all times are indicated in local time

#### Personnel information

##### Pilot of the PA-28

The pilot held a private pilot licence (aircraft) (PPL(A)) issued according to JAR-FCL. He had a total flight experience of 80 hours, 55 hours of which were on the type.

##### Pilot of the Cessna 680

The pilot held an American airline transport pilot licence (ATP). He had a total flight experience of 6,100 hours.

#### Aircraft information

##### Piper PA28

The Piper 28 is a single-engine piston aircraft with a maximum take-off weight of 1,055 kg. The aircraft's equipment included a transponder (Mode C).

##### Cessna 680

The Cessna 680 is a twin-engine jet aircraft with a maximum take-off weight of 14,000 kg. The aircraft was equipped for operations according to IFR. This includes a transponder (Mode C) and a collision avoidance system (TCAS).

#### Meteorological information

At the time of the incident daylight and visual meteorological conditions prevailed. The wind had a south-westerly direction. The region's METAR were:

EDLN 270850Z 20007KT CAVOK 18/12 Q1018=

EDDL 270850Z 20011KT 9999 FEW025 BKN130 17/11 Q1018 NOSIG=

ETNG 270850Z 22007KT CAVOK 17/11 Q1017=

EDDK 270850Z 20007KT CAVOK 17/12 Q1019 NOSIG=

#### Communication

The Cessna 680 was in contact with the responsible air traffic control unit. The PA28 was in contact with the responsible flight information service (FIS). Radio communications were recorded.

#### Flight recorders

The recordings from the ATC radar (radar plots) were available for evaluation.

#### Additional information

The flight paths of both aircraft intersected in airspace D control zone (CTR). VFR and IFR flights are permitted in this airspace according to para 10 (2) and

appendix 4 LuftVO. A clearance issued by the responsible air traffic control unit is required to enter the airspace under VFR. Within the airspace only IFR flights are separated. IFR flights receive traffic information concerning VFR flights and vice versa.

Air traffic control procedures and agreements between control tower (TWR) and departure and approach control provide that departing and approaching aircraft must be coordinated by telephone. The accepting ATC unit decides whether it can handle the aircraft in a safe, orderly and expeditious fashion after its transferral.

#### Analysis

The pilot of the PA28 used terrestrial navigation without the help of radio or satellite navigation. After he left the control zone his heading was about 050°. The Pilot's statements indicate that the motorway junction Jüchen should have been the reference point and was mixed up. However, a heading change to about 050° would never have taken him to his destination.

Because the course of events occurred so fast, ATC was not in a position to prevent the airprox. The Cessna's departure clearance and the clearance for the PA28 to leave the TWR frequency occurred back-to-back. One minute later the two aircraft passed each other.

- The controller responsible for the control zone was not in any position to take corrective action because he was no longer in radio contact with the two aircraft. According to the SID and the agreements concerning IFR departures the Cessna 680 was already in contact with departure control. The attempt to give the PA28 traffic information concerning the Cessna 680 by means of blind transmission remained unsuccessful.
- Neither was Düsseldorf information in a position to give the PA28 any information on the Cessna's position or other air traffic. The PA28 established contact with FIS five seconds before the airprox with the Cessna 680. This short time period was not sufficient for FIS to exactly determine the location of the PA28. Thus, he was not in a position to issue the respective traffic information.
- Düsseldorf radar the responsible departure control for the Cessna 680 identified the Cessna 20 seconds prior to the airprox. At this point in time, the controller could not see a potential

danger. The instruction to retain the heading was issued almost at the same time. Once the controller realized the impending airprox, he instructed the Cessna to climb and related traffic information concerning the PA28 in order to prevent the collision.

That both aircraft were equipped with a transponder (Mode C) and the installation of TCAS in the Cessna 680 played a significant role in the avoidance of the impending collision. The climb instruction issued by the ATC controller and the TCAS RA to climb reached the Cessna crew simultaneously. The Cessna crew carried it out immediately.

## Conclusions

As a result of the mix up of reference points (motorway junction), the pilot of the PA28 experienced a loss of orientation which led to the airprox of the two aircraft.

Investigator in charge	Reuß
Assistance	Hohensee

Appendices

Chart: AIP-VFR of the control zone Mönchengladbach

Flight path PA28



Flight path Cessna 680

