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# **Aircraft Accident Investigation Report Summary**

## **Global 5000**

### **Berlin-Schönefeld, 16 April 2019**

#### **I. Preface**

The Directorate of Aviation Safety Bundeswehr (DASBw), will inform about an investigation of the Global 5000 accident, that took place on April 16, 2019. This Accident Investigation Report Summary was provided for industry partners in order to share insights into the causes of the accident and to allow independent analysis and assessment of the circumstances leading to the accident. The expressed intent of this investigation was not to determine any guilt, however to identify the root causes, and therefore mitigating factors for the sole purpose of improving flight safety.

The investigation of the aircraft accident also included internal areas of the maintenance company and also some design and procedural issue which leads to the manufacture. It is important to note the open and constructive way in which both, the maintenance company and the manufacturer participated in the investigation. Professional cooperation and transparency has played a significant role in the successful completion of the investigation, and the ability to garner useful lessons that will improve flight safety.

## II. Narrative

The accident aircraft, a BOMBARDIER Global 5000 BD-700-1A11 belonging to the Flugbereitschaft BMVg (FIBschft BMVg) was being ferried from Berlin-Schönefeld back to Köln-Bonn after routine maintenance was performed by the aircraft system-managing company. Shortly after takeoff, the crew experienced problems with the flight controls, and decided to abort the flight and return to Berlin-Schönefeld. In the flight back towards an approach to landing, during a normal turn, the aircraft departed controlled flight and was subsequently recovered by the crew. After recovering the aircraft, the crew continued the approach, and during the final phase of the landing, experienced severe control difficulties leading to ground contact of both wings, before the aircraft settled on the main gear. The crew was uninjured and only minor damages occurred to the airfield and signage. The aircraft was severely damaged



## III. Findings

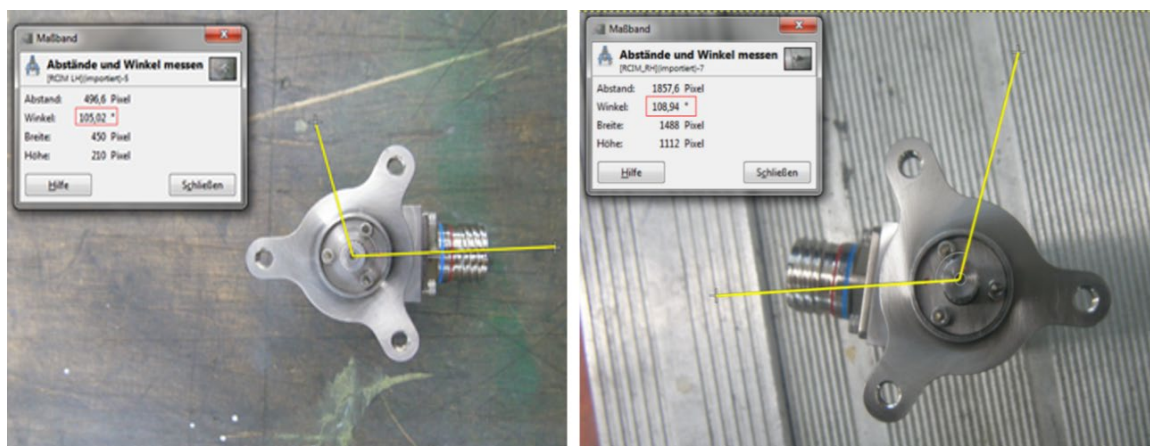
- Based upon the design of the system, the possibility exists, that an improperly installed and adjusted element of the FCS can pass an operational test, without generating a failure message.
- The maintenance company performed routine maintenance
- During the course of the routine maintenance a malfunction of an element of the FCS was determined which required troubleshooting
- In the completion of the troubleshooting and operational checks, the abnormal operation of the Multifunction Spoiler (MFS) was not recognized.
- The aircraft was deemed “ready for flight” and transferred to the flight crew.

- Prior to takeoff, while completing the flight control checks on the ground, the AC did not recognize the abnormal operation of the MFS.
- Shortly after takeoff, the crew recognized a problem in the flight controls and decided to return to Berlin-Schönefeld for landing.
- While flying with under the command of the autopilot, while attempting a left hand turn, the aircraft rolled towards the right and entered a steep uncommanded dive.
- The aircraft was recovered and brought back to a stable flight condition. The crew sought an expedient landing at Berlin-Schönefeld.
- During the final phase of the approach and landing, the aircrew experienced control difficulties resulting in ground contact of both wings, prior to the aircraft settling on the main gear. After touching down in the grass, the PF was able to steer the aircraft back towards the paved surface and eventually bring it to a stop on the runway.
- The crew was uninjured, and egressed the aircraft under their own power. The aircraft was severely damaged.

#### IV. Summary and Assessment

The Global 5000 accident, that took place at Berlin-Schönefeld on April 16, 2019, was the result of a series of omissions and errors that originated in different core areas, and involved many people either directly or indirectly.

The technical error that occurred during the installation and adjustment procedure of the RCIMs represents the event triggering the accident. The system design further enabled this failure, which allowed the RCIMs to be installed and adjusted in such a manner that the MFS functioned opposite of the corresponding input, and generated no error messages on the EICAS or the PMAT. Since the maintenance crew relied solely upon the EICAS warnings and the results given by the PMAT, the error remained undetected in the tests following the installation.



Finally, as a last chance for accident prevention, the installation errors could have been recognized and identified by the PF through the accomplishment of a thorough flight control check.

In conclusion, the faulty installation and adjustment of the RCIMs created an unforeseen error, which was detectable, but went unnoticed and lead to a major aircraft accident. Precisely because such an error could remain undetected, despite many established safety control mechanisms, demanded a full-scale flight safety investigation.