# Preliminary Safety Review – 2017


## Executive Summary

This document provides an early overview of the aviation safety statistics for 2016 in the domain of Commercial Air Transport Aeroplanes. This reports covers both Worldwide operations and those involving the 32 EASA Member States.

- In January 2016, a Bombardier CRJ-200 operated by a cargo operator from one of the EASA Member States crashed in Sweden, killing the two flight crew. This was the only fatal accident involving any EASA Member State operators of Commercial Air Transport involving aeroplanes during 2016. In the last decade, there have been a total of 12 fatal accidents involving operators from the EASA Member States, one every year since 2014.
- In 2016, there were 16 accidents and 100 serious incidents, 3 and 16 per million flights respectively. While the accident rate has decreased 43%, the serious incident rate has increased 38 % when compared with 2015. EASA will conduct a focused analysis to understand this increase.
- The most relevant key risk areas continue to be Aircraft Upset, Runway Excursion and Aircraft System failure, together with their associated safety issues: Flight crew awareness, monitoring of aircraft parameters, handling of technical failures and CRM (factors present also in the crash of the Bombardier CRJ-200 in Sweden).

## Content

# 1 Introduction

Following is an early overview of the 2016 aviation safety statistics for Commercial Air Transport (CAT). Most of the accidents and serious incidents that occurred in 2016 are still under investigation. Therefore, figures and statements in this document may be rendered inaccurate in the course of the present year once investigations have been completed.

As used in this document, the term "occurrence" refers only to accidents and serious incidents as defined in Regulation 996/2010. Lower severity events, known as incidents, are not included in this review.

# 2 Commercial Air Transport – Aeroplanes above 5,700kg

## 2.1 Worldwide Fatal Accidents and Fatalities[1] Key Facts

Figure 1 shows the evolution of the number of fatal accidents and fatalities for Commercial Air Transport Large Aeroplane operations (MTOW above 5,700 kg) – CAT Aeroplane for the period 2007- 2016.

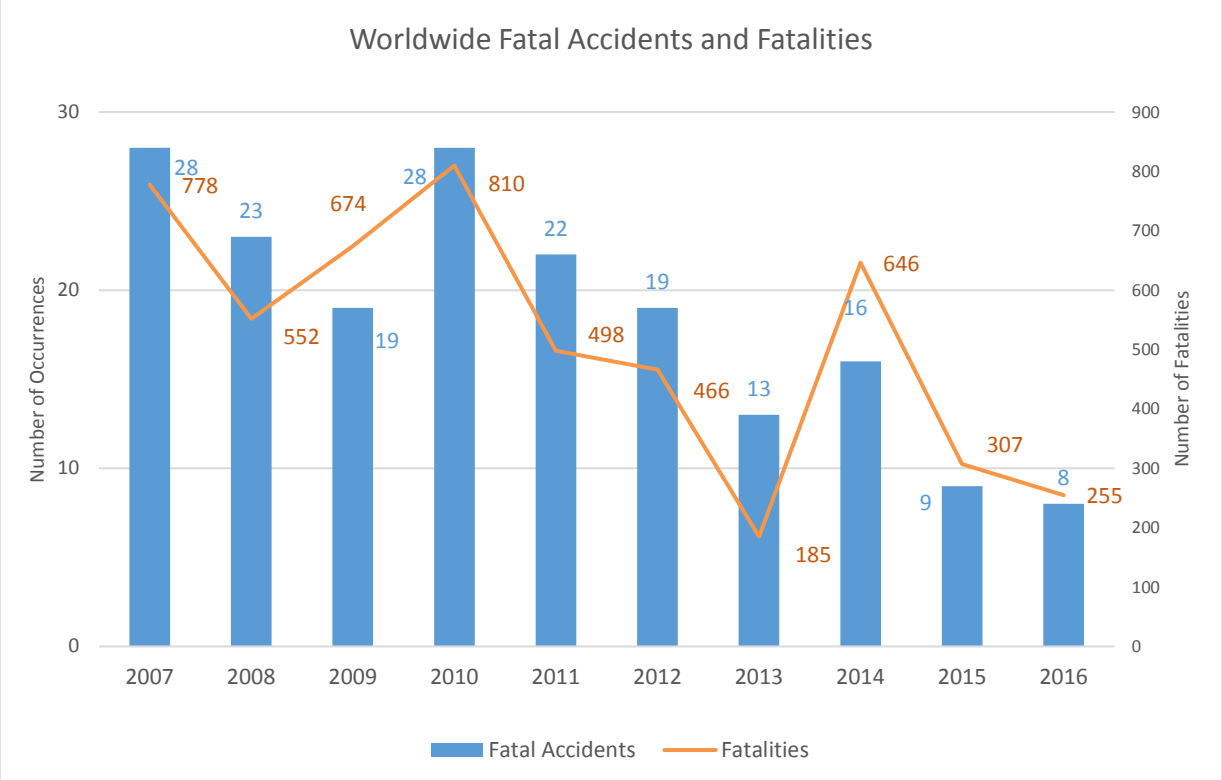



Figure 1 – Worldwide Fatal Accidents and Fatalities - 2007 to 2016.

[1] Security-related occurrences, such as the Russian A320 of Metrojet that exploded over the Sinai Peninsula (Egypt), the A321 Daala Airlines in Mogadishu and the MH17 was shot down over Ukraine, are not included within this review. The Germanwings accident, the A320 Egypt Air over the Mediterranean Sea (terrorist action not yet confirmed) and the missing MH370 aircraft are still included.

**Fatal Accidents**. Worldwide in 2016, the lowest ever number of fatal accidents involving CAT Aeroplane accidents was recorded, with a total of 8 fatal accidents reported.

**Fatalities**. The second lowest number of fatalities in CAT Aeroplane operations was recorded in 2016. The only year with fewer fatalities was 2013, with 185 deaths. However, this number was the result of 13 fatal accidents.

In 2016, an Avro 146 operated by LaMia Airlines crashed near Medellin, Colombia and was the most lethal accident, with 71 fatalities, followed in descending number of fatalities by the crash of an Egypt air A320[2] with 66 deaths, a Fly Dubai B738 crash in Rostov with 61 deaths, and a Pakistan International Airlines ATR72 with 47 deaths.

**Type of Operation**. Of the 8 fatal accidents in 2016, 2 were cargo flights and 6 were passenger flights.

**Phase of Flight**. 3 accidents occurred during the en-route flight phase (CRJ-200 operated by West Atlantic, A320 of Egypt Air in the Mediterranean Sea and ATR42 of PIA in Pakistan), 3 during approach or landing (B737-800 of Fly Dubai in Rostov, B777-300 of Emirates in Dubai and the Avro146 in Colombia), 1 during push-back phase (A321 in Brazil) and 1 during take-off (B727 in Colombia).

## 2.2 Accidents and Serious Incidents Involving Operators of the EASA Member States

**Fatal Accidents**. In 2016, the Bombardier CRJ-200 accident in Sweden on 8 January, was the only fatal accident in Commercial Air Transport involving aeroplanes above 5,700 kg. The 2 flight crew, the only people on board, were killed in the crash. The accident occurred during a cargo flight.

**Accidents and Serious Incidents**. The number of accidents and serious incidents for the period 2007-2016 is shown in figure 2. The graph shows an overall decreasing trend over the period 2012-2015, which continues in 2016 for accidents. However, in 2016 there were 100 serious incidents, representing an increase of 38 % compared with 2015.

The number of CAT Aeroplane operations accidents in 2016 (18) is the lowest number reported in the last 10 years. In contrast, the number of serious incidents reported in 2016 is the highest reported over the same 10 year period (101). This increase was mainly attributable to occurrences relating to technical failures of aircraft systems, medical, runway excursion and loss of separation.

**Accident and Serious Incident Rate**. In terms of the accident rate of EASA MS operated CAT aeroplanes, it has decreased over the 2012-2015 period to approximately 3 accidents per 1 million flights. In contrast, the rate of serious incidents increased from 9 per million flights in 2015 to almost 16 in 2016.

[2] Official source from Egypt has recently stated that traces of explosives were found in some of the human remains recovered. This has not yet been confirmed by the BEA or by the French Gendarmerie. However, should this be supported with additional evidence, it may result in a reclassification of this event as security-related.

The counting of accidents and serious incidents is not a good risk measure. The introduction of the European Risk Classification Scheme in 2017, as part of the implementation of Regulation (EU) 376/2014, will help to provide a better picture of the existing safety risks. The Scheme will help to shift the focus to the probable potential harm of identified hazards to the European aviation system (risk level associated to hazards) instead of directly measuring the severity of a realised outcome (fatalities, injuries, damage).

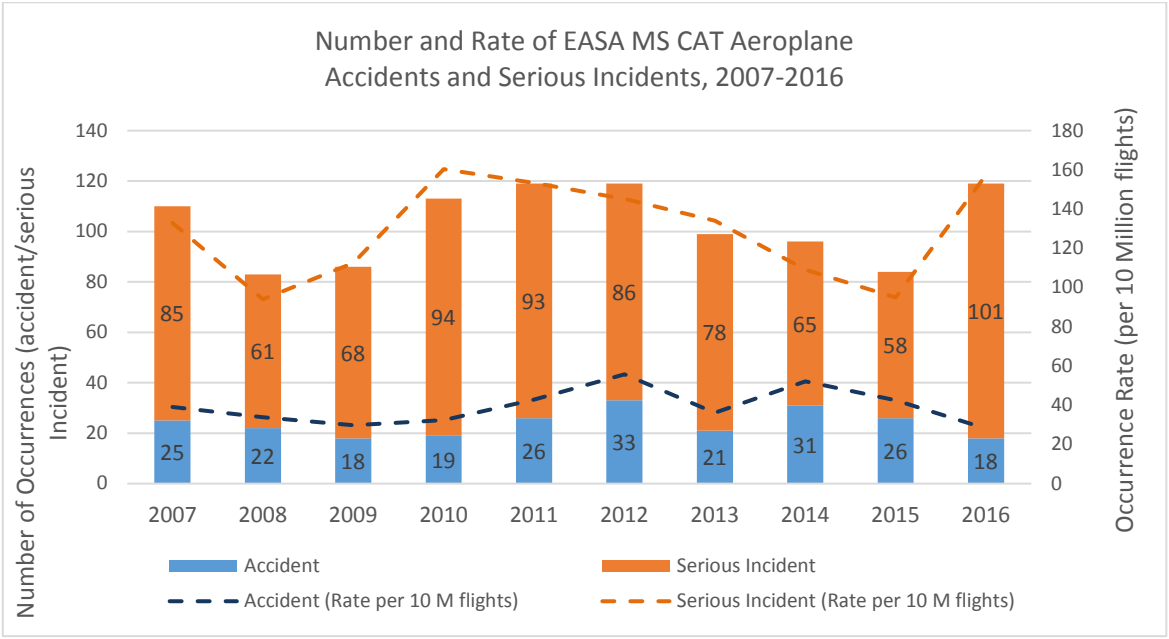



Figure 2 – Number and Rate of EASA MS CAT Aeroplane Accidents and Serious Incidents – 2007 to 2016.

**Trends of Key Risk Areas (Outcomes) for EASA Member State Operators.** Figure 3 compares the average number of CAT EASA MS accidents and serious incidents for the period 2007-2015 with that for 2016. The number of occurrences (accidents and serious incidents) for all Key Risk Areas, except for System Failure and Runway Excursion, remains very similar to the average for the period 2007-2015; thus showing a stable pattern. Considering the positive trend in the period 2007-2015, followed by that in the period 2015-2016, the Key Risk Areas of System Failure, Airborne Conflict and Runway Excursion show a negative change in 2016 (from stable to increasing or from decreasing to increasing).

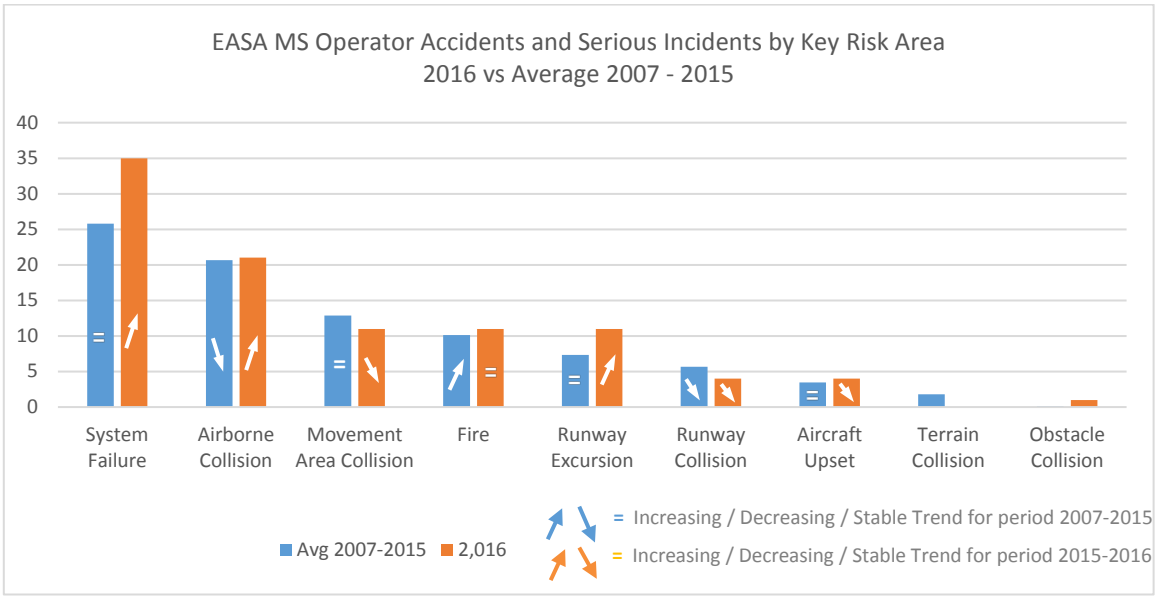
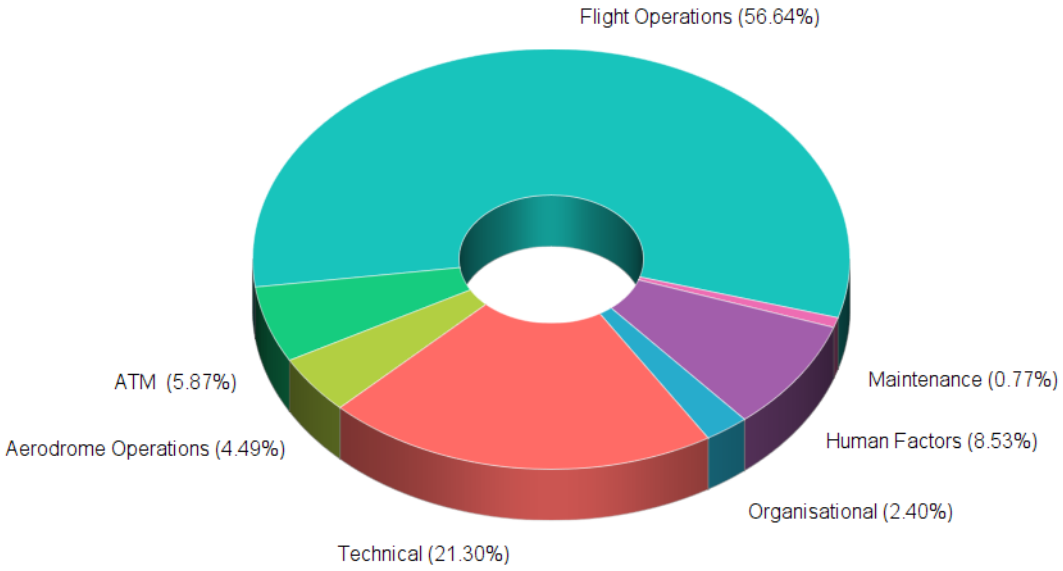



Figure 3 –EASA MS Operator Accidents and Serious Incidents by Key Risk Area –average 2007 to 2015 compared with 2016.

Aircraft Upset represents only 3% of the accidents and serious incidents involving an EASA MS operator in 2016. However, it continues to be the most fatal risk area for EASA MS Operators. In 2016, the Preliminary Impact Assessment on "Loss of Control In-Flight" indicated the need for specific actions in this area within the European Plan for Aviation Safety (EPAS). The EPAS is the key strategic document for improving aviation safety at European Level.

**Origins of the Accidents and Serious Incidents for EASA MS Operators.** Accidents and Serious Incidents mostly involve complex situations involve multiple causes and contributors. The graph below highlights the origins of the causal and contributory factors behind the Accidents and Serious Incidents involving EASA Member State Operators between 2007 and 2016.



## Acronyms

| | |
|---|---|
| **AOC** | **Air Operator Certificate** |

OCCURRENCE CATEGORIES

| | |
|---|---|
| **ARC** | **Abnormal runway contact** |
| CFIT | Controlled flight into or toward terrain |
| CTOL | Collision with obstacle(s) during take-off and landing |
| F-NI | Fire/smoke (non-impact) |
| FUEL | Fuel related |
| GCOL/ RAMP | Ground collision/ Ground handling |
| GTOW | Glider towing related event |
| LALT | Low altitude operations |
| LOC-G | Loss of control — Ground |
| LOC-I | Loss of control — In-flight |
| LOLI | Loss of lifting conditions en-route |
| MAC | Airprox/TCAS alert/loss of separation/near midair collisions/midair collision |
| RE | Runway excursion |
| RI | Runway incursion — Vehicle, aircraft or person |
| SCF | System/component failure or malfunction (powerplant and non-powerplant) |

Domains

| | |
|---|---|
| **CAT Aeroplane** | **Commercial Air Transport operations involving fixed-wing aircraft** |
| CAT RW | Commercial Air Transport operations involving helicopter |
| SPO FW | Specialised operations involving fixed-wing aircraft |
| SPO RW | Specialised operations involving helicopter |
| NCO FW | Non-Commercial Operations involving fixed-wing aircraft |
| NCO RW | Non-Commercial Operations involving helicopters |