

In Focus

A briefing from the Civil Aviation Authority



June 2013

Global risk picture

Introduction

The CAA's Global Fatal Accident Review 2002 to 2011 (CAP 1036) provides a ten-year overview of worldwide fatal accidents involving large (MTWA over 5,700kg) jet and turboprop aircraft engaged in passenger, cargo and ferry/positioning flights.

After the completion of CAP 1036, other similar documents were reviewed in order to compare the key trends and risks identified. The documents considered included¹:

- ICAO 2012 Safety Report
- ICAO State of Global Safety 2012
- IATA 2011 Aviation Safety Performance
- EASA Annual Safety Review 2012
- Boeing Statistical Summary of Commercial Jet Airplane Accidents 1959-2011

Each report used different criteria for including data, and as such, numerical comparisons cannot be made. It is possible, however, to compare trends and prevalent risks across the different papers. The ICAO State of Global Safety 2011 and the IATA 2011 Aviation Safety Performance are not included in this review as they did not cover trend and risk analysis.

¹ Please note that each document is the most recent publically available version.

CAP 1036 Global Fatal Accident Review 2002-2011

Scope of analysis

The data covered a ten-year period, 2002 to 2011. The dataset includes all worldwide fatal accidents involving large (MTWA over 5,700kg) jet and turboprop aircraft engaged in passenger, cargo and ferry/positioning flights.

Overall statistics

There was an overall decreasing trend in the number of fatal accidents, however there was much more fluctuation in the number of fatalities per year. There was a decreasing trend in both the overall rate of fatal accidents and onboard fatalities.

The approach, landing and go-around phases accounted for just under half of all fatal accidents and onboard fatalities. Take-off and climb accounted for roughly a third of the fatal accidents and onboard fatalities.

Occurrence categories

The most common outcomes in fatal accidents were:

1. Loss of Control
2. Post Crash Fire
3. CFIT
4. Runway Excursions

ICAO 2012 Safety Report

Scope of analysis

The data covered a seven-year period, 2005 to 2011. The dataset includes all worldwide fatal accidents involving CAT aeroplanes with MTWA over 2,250kg.

Overall statistics

During the period, the annual fatal accident rate stayed roughly constant, however the annual fatality rate showed much more fluctuation but presented a clear downward trend.

Occurrence categories

The most common outcomes in fatal accidents were:

1. Runway Safety related events²
2. Loss of Control
3. CFIT



² Runway incursions, runway excursions, abnormal runway contact, ground handling related events, etc.

Scope of analysis

The data covered a ten-year period, 2003 to 2012. The accident statistics used originated from the database of the EASA Safety Analysis Research Department, and the utilization data came from Ascend. The dataset includes all worldwide fatal accidents involving CAT aeroplanes with MTWA over 2,250kg. The majority of data covers just the EASA member states, however some sections of the report also include 3rd country operators.

Overall statistics

The rate of EASA MS fatal accidents is roughly the same per year although there is a very slight downward trend. This is the same for 3rd country operators however the numbers are much larger. EASA MS had between 0 and 4 fatal accidents per year from 2003 to 2012, whereas 3rd country operators had roughly 30 to 60 per year. The numbers are greater than those in CAP 1036 due to the inclusion of accidents involving aircraft with MTWA between 2,250kg and 5,700kg.

Occurrence categories

The reason for post crash fire being less of a perceived problem than in CAP 1036 is because this analysis only includes EASA member states, whereas CAP 1036 statistics cover worldwide fatal accidents. Just under a quarter of the post crash fire events in the CAP 1036 dataset involved European operators, most of which were not EASA member states.

Similarly, Runway Excursions feature much further down the EASA list of fatal accident occurrence categories than in CAP 1036 and other documents. This is because none of the Runway Excursion fatal accidents in the CAP 1036 dataset involved EASA MS operators. The EASA Annual Safety Review does however show that Runway Excursions are the 5th most common type of non-fatal accident.

The most common outcomes in fatal accidents were:

- | | |
|-----|---------------------------------------|
| 1st | Loss of Control |
| 2nd | Technical Failure (non Powerplant) |
| 2nd | Technical Failure (Powerplant) |
| 2nd | Post Crash Fire |
| 2nd | CFIT (Controlled Flight into Terrain) |



Scope of analysis

The data covered a 53 year period, 1959 to 2011, however there was a further breakdown for the ten-year period 2002 to 2011. As such, the following summary considers just the ten-year period. Accidents were excluded if the aircraft involved was less than 27,215.5kg (60,000lb), or if it was built in the CIS/USSR. Details of accidents involving Boeing aircraft are from Boeings own dataset. Details of all other aircraft accidents are from Ascend.

Overall statistics

Over the ten year period, the worldwide fatal accident rate per year has remained roughly constant, or is perhaps trending down very slightly, however the number of onboard fatalities per year has a lot more fluctuation.

The highest proportion of fatal accidents (and therefore fatalities) occurred during the approach and landing phase of flight, followed by the en-route phase of flight.

Occurrence categories

The most common outcomes in fatal accidents were:

1. Loss of Control
2. CFIT
3. Landing related events (Runway Excursion, Abnormal Runway Contact, Undershoot/Overshoot)

Summary

All four reports showed roughly constant fatal accident rates, with a slight downward trend. The key risks identified were; Loss of Control, CFIT, and Runway Excursions. Post Crash Fire also featured highly in worldwide studies, however was shown to be less common in European, and specifically EASA MS, countries. Similarly Runway Excursions rarely resulted in fatal accidents within EASA MS countries; however they have been identified as a high risk due to the number of non-fatal Runway Excursion accidents.

As the ICAO, EASA and Boeing reports are all broadly aligned with the findings in CAP 1036 we can be confident that the four risk areas identified by the previous Global Fatal Accident Reviews (Loss of Control, Post Crash Fire, Controlled Flight into Terrain and Runway Excursions) contributing to the Significant 7 are still relevant in the current aviation system. Note that the remaining three risk areas from the Significant 7 (Airborne Conflict, Runway Incursion and Ground Handling) have also been shown to still be relevant through a recent analysis of UK high-risk events (which will be the subject of a separate CAA publication).

