Overview of Key Facts 2013

Overview of the Number of Commercial Air Transport Accidents, Fatal Accidents and Fatalities for EASA MS Operators

<table>
<thead>
<tr>
<th>Period</th>
<th>Total number of accidents</th>
<th>Number of Fatal accidents</th>
<th>Number of Onboard Fatalities</th>
<th>Number of Ground Fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002-2011 (average)</td>
<td>24.6</td>
<td>2.3</td>
<td>59</td>
<td>0.2</td>
</tr>
<tr>
<td>2012</td>
<td>33</td>
<td>1</td>
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<td>1</td>
</tr>
<tr>
<td>2013</td>
<td>18</td>
<td>0</td>
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<table>
<thead>
<tr>
<th>Period</th>
<th>Total number of accidents</th>
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<th>Number of Onboard Fatalities</th>
<th>Number of Ground Fatalities</th>
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</thead>
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<tr>
<td>2002-2011 (average)</td>
<td>12.8</td>
<td>3.4</td>
<td>14.1</td>
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<td>2012</td>
<td>12</td>
<td>2</td>
<td>8</td>
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<tr>
<td>2013</td>
<td>7</td>
<td>3</td>
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Number of Fatal Accidents involving EASA MS and Third-country Operated CAT Aeroplanes, MTOM Above 2,250 kg, 2004-2013

Number of Fatal Accidents Involving EASA MS and Third-country Operated CAT Helicopters, MTOM Above 2,250 kg, 2004-2013
### Overview of the Number of Accidents and Fatal Accidents by Aircraft Category – All EASA MS Registered Aircraft Below 2,250 kg MTOM

<table>
<thead>
<tr>
<th>Aircraft category</th>
<th>Period</th>
<th>Total number of accidents</th>
<th>Number of fatal accidents</th>
<th>Number of fatalities on board</th>
<th>Number of ground fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balloons</td>
<td>2008-2012 (average per year)</td>
<td>11.6</td>
<td>1.0</td>
<td>2.2</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>16</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Dirigibles</td>
<td>2008-2012 (average per year)</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
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<td></td>
<td>2012</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Aeroplanes</td>
<td>2008-2012 (average per year)</td>
<td>478.2</td>
<td>62.8</td>
<td>123.8</td>
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<td></td>
<td>2013</td>
<td>378</td>
<td>42</td>
<td>82</td>
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<tr>
<td>Gliders</td>
<td>2008-2012 (average per year)</td>
<td>244.2</td>
<td>31.2</td>
<td>38.8</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>219</td>
<td>20</td>
<td>27</td>
<td>0</td>
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<tr>
<td>Gyroplanes</td>
<td>2008-2012 (average per year)</td>
<td>18.6</td>
<td>4.4</td>
<td>5.4</td>
<td>0.2</td>
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<td>2013</td>
<td>17</td>
<td>6</td>
<td>8</td>
<td>0</td>
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<tr>
<td>Helicopters</td>
<td>2008-2012 (average per year)</td>
<td>54.8</td>
<td>7.8</td>
<td>16.0</td>
<td>0.2</td>
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<td></td>
<td>2013</td>
<td>52</td>
<td>9</td>
<td>16</td>
<td>0</td>
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<tr>
<td>Microlights</td>
<td>2008-2012 (average per year)</td>
<td>234.6</td>
<td>42.6</td>
<td>64.4</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>219</td>
<td>40</td>
<td>57</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>2008-2012 (average per year)</td>
<td>10</td>
<td>3.2</td>
<td>3.8</td>
<td>0.0</td>
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<td></td>
<td>2013</td>
<td>30</td>
<td>9</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Motorgliders</td>
<td>2008-2012 (average per year)</td>
<td>2.0</td>
<td>0.2</td>
<td>0.4</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>17</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td><strong>Average Total</strong></td>
<td><strong>2008-2012</strong></td>
<td><strong>1054</strong></td>
<td><strong>153</strong></td>
<td><strong>255</strong></td>
<td><strong>2</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2013</strong></td>
<td><strong>948</strong></td>
<td><strong>128</strong></td>
<td><strong>202</strong></td>
<td><strong>0</strong></td>
</tr>
<tr>
<td><strong>Change (%)</strong></td>
<td><strong>2013 over previous</strong></td>
<td><strong>-10%</strong></td>
<td><strong>-16%</strong></td>
<td><strong>-21%</strong></td>
<td><strong>-100%</strong></td>
</tr>
</tbody>
</table>
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</tr>
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<td>Ground Collisions</td>
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Disclaimer
The accident data presented is strictly for information purposes only. It is obtained from Agency databases comprised of data from ICAO, EASA Member States, Eurocontrol and the aviation industry. It reflects knowledge at the time the report was generated. Whilst every care has been taken in preparing the content of the report to avoid errors, the Agency makes no warranty as to the accuracy, completeness or currency of the content. The Agency shall not be liable for any kind of damages or other claims or demands incurred as a result of incorrect, insufficient or invalid data, or arising out of or in connection with the use, copying or display of the content, to the extent permitted by European and national laws. The information contained in the report should not be construed as legal advice.

Acknowledgements
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Foreword by the Executive Director

This year’s Annual Safety Review shows that positive safety trends are continuing in commercial air transport. The EASA region remains one of the safest in the world.

In 2013 there was no fatal accident in commercial air transport aeroplanes in the EASA Member States. Since 2007, there has been a marked decrease in the number of accidents and in the number of persons injured. This consistent trend indicates there is firm improvement in safety. However, we should never overlook that maintaining safety requires vigilance, as a single fatal accident can stop or even reverse this positive trend.

This edition of the Annual Safety Review covers almost all civil aviation activities showing how diverse they can be; from the regular aeroplane flights from one city to another, to a helicopter medical emergency flight in a remote location. It also shows that depending on the type of operation or category of aircraft involved, the events leading to an accident may differ. Each activity has its own risk issues and safety priorities which require using appropriate and proportionate measures.

In order to generate this document, data is derived from the safety occurrences reported by aviation professionals across Europe. I would like to thank everyone who has ever completed a safety report for providing this information, which is vital in helping both organisations and regulators to make informed decisions. The importance of reporting has been recognised at a European level with the adoption of Regulation (EU) 376/2014 on the Reporting, Analysis and Follow-up of Occurrences in Civil Aviation. This regulation strengthens the protection of the reporters and fosters the establishment of ‘Just Culture’. In addition, the Review is reliant on the endeavours of the accident investigators, whose diligent work should also be recognised.

This Annual Safety Review is one of the few publications worldwide, which is so rich in safety data and is published with consistent regularity. This publication will continue to evolve and in the future it will be more closely linked to the European Aviation Safety Plan (EASp) which identifies the key safety risks and sets the safety priorities for Europe.

Patrick Ky
Executive Director
The Annual Safety Review presents statistics on European and worldwide aviation safety

Data included in the Review come from a variety of different sources, covering accident and serious incident data as well as contributions from national aviation authorities, Eurocontrol, EUROSTAT, Ascend and the ICAO Safety Indicators Study Group. The review covers the period 2004-2013, however when there is insufficient good-quality data the analysis has been limited to 2009-2013.

Between 2004 and 2013 there were 106 million IFR flights in EASA member states flight information regions

Between 2004 and 2013, there were approximately 106 million Instrument Flight Rules (IFR) flights in the EASA MS flight information regions. Figure 3 shows the number of flights per year. It can be seen that the number of flights per year has levelled off, following a decrease between 2009 and 2010. There were 10.25 million IFR flights in 2013, compared with 11.2 million in 2008.

In 2013, there were 18 accidents that involved EASA MS Operated Commercial Air Transport Aeroplanes

In 2013 there were no fatal accidents involving an EASA MS operated aeroplanes. There has only been one fatal accident in the past two years, which is an improvement on the 10 year average of 2.3 fatal accidents per year between 2002-2011. The 18 accidents involving EASA MS operated aeroplanes in 2013 represents a decrease of 46% when compared with the 33 accidents in 2012 and was 27% lower than the 10 year average over the period 2002-2011 of 24.6 accidents per year. The most common accident type is “abnormal runway contact” while the most common type of fatal accident is “loss of control in flight”.

2013 Commercial Air Transport Helicopters data shows that there were 7 accidents, of which 3 were fatal. The most common type of accident is “loss of control in flight” and it is also the most common type of fatal accident.

2013 Aerial work accident figures reflect a 12% decrease in Aeroplane accidents and a 24% reduction in Helicopter accidents when compared with average annual accidents from 2002-2011

Correspondingly, there was a 35% reduction in the number of Aerial Work aeroplane fatal accidents while Aerial Work helicopter fatal accident numbers decreased by only 2%. Fatalities on board Aerial Work aeroplanes increased by 65% while fatalities on board Aerial Work helicopters increased by 30%. For aeroplanes, the Top 3 operation types in fatal accidents involved fire-fighting, aerial survey and photography operations. Whilst for helicopters the Top 3 were construction, other and photography operations.

The number of accidents involving General Aviation light aircraft in 2013 has decreased by 10% when compared with the average annual accidents during the five-year period 2008-2012

The number of fatal accidents decreased by 16% while the number of fatalities on board decreased by 21% when comparing 2013 figures with the average annual totals during the period 2008-2012. Exposure data is not available for General Aviation flights making the reasons for these decreases difficult to determine.
Decrease in Ramp related accidents at EASA MS Aerodromes in 2013

At EASA MS Aerodromes only one accident related to Ramp operations was reported in 2013, which is a significant decrease compared to the previous four years where an average of 5.25 accidents in Ramp operations were reported. There were 3 serious incidents reported in Ramp operations in 2013, which is a similar number compared to the previous years. The number of Runway Excursions and Ground Collisions at EASA MS Aerodromes increased slightly in 2013.

Using 2013 ATM data, 49 accidents (16 fatal and 33 non-fatal) were reported. None of the reported accidents had either a Direct or Indirect ATM Contribution

During the last five years (2009-2013) there were only 6 accidents that had a direct ATM contribution. Of these accidents 3 are categorised as ‘Ground collision’ (GCOL) between an aircraft and a vehicle or obstacle and 3 in the category ‘Other’. During the same five year period a total number of 337 accidents were reported to EUROCONTROL, of which 66 were fatal.

The European Central Repository is a centralised database of safety occurrences from all EASA Member States

At the end of 2013 there was a total of 800,614 occurrences in the ECR. In the early years of the ECR, between 2006 and 2009, there was a steady increase in the number of occurrences that was made available by the Member States. Since 2009 the number of occurrences has begun to stabilise in the range of 80,000 to 95,000 occurrences per year. 2013 has seen a small reduction in the number of safety occurrences provided to the ECR. The overwhelmingly largest occurrence class is Incident, which comprises 79% of the total occurrences followed by Occurrences Without Safety Effect (11%). Accidents account for only 2% of the occurrences in the ECR.
Chapter 1
Introduction
Background

Air transport is widely considered to be one of the safest forms of travel. In Europe, air transport is also one of the fastest growing transport sectors. In order to continuously improve aviation safety in Europe, EASA and its stakeholders monitor aviation safety statistics to understand both the current situation and areas for possible improvement. This document provides a high-level overview of aviation-safety statistics in Europe and worldwide.

It is published by EASA in order to inform the public of the general safety level in the field of civil aviation. The Agency provides this review on an annual basis as required by Article 15(4) of Regulation (EC) No 216/2008 of the European Parliament and of the Council of 20 February 2008.

EASA is responsible for providing common standards of safety and environmental protection in civil aviation in Europe and worldwide. It is the centrepiece of regulations creating a single European market in the aviation industry. The agency’s responsibilities include:

- Expert advice to the EU for drafting new legislation;
- Implementing and monitoring safety rules, including inspections in the Member States;
- Type-certification of aircraft and components, as well as the approval of organisations involved in the design, manufacture and maintenance of aeronautical products;
- Authorisation of third-country (non EU) operators;
- Safety analysis and research.

The agency’s responsibilities are expanding to meet the challenges of the fast-developing aviation sector.
Scope

The Annual Safety Review presents statistics on European and worldwide aviation safety. The statistics are grouped according to the type of operation, such as commercial air transport or general aviation, together with aircraft category, such as aeroplanes, helicopters or gliders.

The data included in the Review comes from a variety of sources:

- Accident and Serious Incident data for most aircraft categories is from EASA’s ADREP database,
- Light Aircraft Accident Data was provided by EASA Member States,
- ATM data was provided by Eurocontrol,
- Air Transport Statistics were provided by Eurocontrol and by EUROSTAT,
- Exposure data for commercial air transport was provided by Ascend.

As with all sources of information, the data is subject to slight changes over time as more information is added that may cause an accident or serious incident to be re-categorised. In addition, further refinements of the taxonomy will also result in variations to the data. For this reason, the figures presented in this version of the Annual Safety Review are likely to be slightly different to those presented in previous versions.

In this review, the terms “Europe” and “EASA Member States” are considered as the 28 EU Member States plus Iceland, Liechtenstein, Norway and Switzerland. For Commercial Air Transport operations the region is based on the “state of operator” of the aircraft involved, while for all other types of operation the “state of registry” is used.

The figures presented in the Review are high level and do not use statistical tests. This is because the aim of the document is to provide a general overview of the safety of aviation in Europe and worldwide, it is not intended as a complex technical document. However, the figures presented can be used as a reference and readers are invited to make use of the figures presented to apply their own tests and draw conclusions from these.
Content of the Review

The Annual Safety Review aims to cover all aspects of aviation that fall within EASA's remit. Consequently, the document has been divided into the following chapters: Historical Aviation Safety, Air Transport Statistics in EASA MS, Commercial Air Transport, General Aviation, Aerodromes, Air Traffic Management and the European Central Repository.

As with the previous version of the Review, specific information related to safety activities of the agency is no longer provided. This information is now presented in the European Aviation Safety Plan (EASp), which can be found at: http://easa.europa.eu/sms/

Future of the Review

The general content of the Annual Safety Review has remained constant for a number of years. With the forthcoming implementation of a new European Regulation on the reporting, follow-up and analysis of occurrences in civil aviation, there will be new opportunities to expand the type of analysis presented in subsequent reviews.

A list of acronyms and definitions can be found in Appendix 1.
Introduction

This chapter provides information on the worldwide fatal accident rate for aeroplanes with a maximum take-off mass above 2,250 kg that are engaged in scheduled passenger or cargo operations. Acts of unlawful interference are not included in these figures.

Figure 1 shows the number and rate per million flights of passenger and cargo fatal accidents each year from 1994 to 2013. It can be seen that over the 20-year period there has been a significant reduction in the number and rate of fatal accidents.

Figure 1: Number and Rate per 10 Million Flights, Scheduled Passenger and Cargo Operations, Fatal Accidents Worldwide, 1994-2013
Figure 2 shows the fatal accident rate by region of the world, using the regions defined by the ECCAIRS taxonomy and provided in Appendix 1.

**Figure 2: Scheduled Commercial Air Transport Fatal Accident Rate per Million Flights by World Region, 2004-2013**
Chapter 3
Air Transport Statistics in EASA Member States
Introduction

This chapter reviews air traffic, the number of passengers carried and the amount of cargo transported in EASA Member States (MS). Air traffic data is sourced from Eurocontrol Statistics and Forecasts (STATFOR) and excludes Liechtenstein, which does not have a flight information region. Passenger and cargo data is sourced from EURO-STAT and is publicly available online. Timespans for the data presented vary due to the differing availability of the source data.

Flights in EASA MS Flight Information Regions

Between 2004 and 2013, there were approximately 106 million Instrument Flight Rules (IFR) flights in the EASA MS flight information regions. Figure 3 shows the number of flights per year. It can be seen that the number of IFR flights per year has decreased since 2011 and in 2013 there were more than 500,000 fewer flights in Europe. There were 10.25 million IFR flights in 2013, compared with 11.2 million in 2008.

Figure 3: Number of IFR Flights in EASA MS per Year, 2004 – 2013

Market Segments

The number of flights per year by market segment is shown in Figure 4 and covers the five year period of 2009-2013 inclusive and includes low-cost, scheduled and charter flights, but excludes other types of flight. Low-cost flights have experienced 16% growth between 2009 (2.3 million flights) and 2013 (2.6 million flights). In comparison, the number of scheduled flights has decreased by 5% and Charter flights have also fallen by 10% during the same time period.
Figure 4: Number of IFR Flights in EASA MS per Year by Market Segment, 2009-2013

The proportion of flights in each sector is shown in Figure 5: 66% of flights are traditional scheduled flights, 28% are low-cost scheduled flights and 6% are charter flights.

Figure 5: Proportion of Flights in Each Market Segment, 2009-2013
Flights Conducted by EASA Member States
Registered Aircraft

The types of aircraft filing a flight plan are recorded by Eurocontrol’s Central Flow Management Unit and the data has been used below to show the number and types of EASA MS registered aircraft operating in European airspace.

**Figure 6:** Number of EASA MS Registered Aircraft Filing Flight Plans, 2009-2013

**Figure 7:** Number of EASA MS Registered Aircraft Filing Flight Plans by Aircraft Category, 2009-2013
### Movement of Passengers and Cargo

This section shows the number of passengers that were carried and the amount of cargo that was transported in EASA MS from 2009 to 2013: The data was sourced from EUROSTAT. Over the five year period just over 4.4 billion passengers were transported in EASA MS and the total number of passengers carried in EASA MS per year is shown in Figure 9.

**Figure 9: Number of Passengers Carried Per Year in EASA MS, 2009-2013**
The amount of cargo that was transported per year between 2009 and 2013 is shown in Figure 10. The data reflects that approximately 68.7 million tonnes of cargo were transported in EASA MS between 2009-2013.

**Figure 10: Tonnes of Cargo Carried per Year in EASA MS, 2009-2013**

Maps showing the numbers of passengers that were carried and the amount of cargo that was transported in each EASA MS country during 2009-2013 are shown in Figure 11 and Figure 12.
Figure 11: Number of Passengers Carried per Country, 2009-2013

(million passengers)

Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat
Cartography: Eurostat — GISCO. 03/2014
Figure 12: Tonnes of Cargo Transported per Country, 2009-2013
Chapter 4
Commercial Air Transport
Introduction

The Commercial Air Transport (CAT) operations analysed in this chapter involve the transportation of passengers, cargo mail for remuneration or hire and ferry/positioning flights. Aircraft accidents are aggregated by the State in which the aircraft operator was registered. Accidents and fatal accidents are identified as such using the definitions found in ICAO Annex 13 “Aircraft accident and incident investigation”. The first section of this chapter focusses on aeroplanes above 2,250 kg maximum take-off mass (MTOM), the second on helicopters, and the third on balloons.

Aeroplanes

In 2013 there were no fatal accidents involving an EASA MS operated aeroplanes. This is compared to the previous year where there was a single accident, which occurred in November 2012 when a ground operator was tragically jammed between the baggage door of an Airbus A320 and a baggage loader during the boarding of an aircraft at Rome Fiumicino Airport. There has been only one fatal accident in the last 2 years, which is an improvement on the 10 year average of 2.3 fatal accidents per year between 2002-2011. Table 1 shows that the number of accidents and the number of fatalities in 2013 was below the average in the previous decade. The 18 accidents in 2013 represent a decrease of 45% compared to the 33 accidents in 2012 and was 27% lower than the 10 year average over the period 2002-2011 of 24.6 accidents per year.

Table 1: Overview Of Total Number Of Accidents, Fatal Accidents And Fatalities For EASA MS Operators (Aeroplanes)

<table>
<thead>
<tr>
<th>Period</th>
<th>Total number of accidents</th>
<th>Number of Fatal accidents</th>
<th>Number of Onboard Fatalities</th>
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<td>2002-2011 (Average per Year)</td>
<td>24.6</td>
<td>2.3</td>
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<td>2012</td>
<td>33</td>
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</tbody>
</table>

Figure 13 shows that the low level of fatal accidents involving EASA MS operated aeroplanes has now been sustained since 2008. There has not been a year with more than one fatal accident involving an EASA MS operated aeroplane since 2007. With respect to worldwide accidents involving operators outside the EASA MS (Third-country Operators) the significant reduction in 2012 has been sustained in 2013, with 28 fatal accidents in both years.
Figure 13: Number of Fatal Accidents in EASA MS and Third Country Operated CAT Aeroplanes, Above 2,250 kg MTOM

Figure 14 shows that the rate of fatal accidents for EASA MS Aeroplanes in scheduled passenger operations has remained at the same level for the past 4 years. With respect to Third-country Operators, 2013 has seen a reduction in the rate of fatal accidents compared with the previous 2 years. The rate for Third-country Operators in 2013 is also lower than the previously low rate in 2009.

Figure 14: Rate Of Fatal Accidents Per 10 Million Flights In EASA MS And Third Country Operated Scheduled Passenger Operations, Aeroplanes Above 2250 Kg MTOM, 2004-2013
The rates of fatal accidents are created by comparing the number of fatal accidents in Scheduled Passenger Operations with the number of flights carried out.

**Fatal Accidents by Mass Category**

Figure 15 shows the distribution of fatal accidents by aircraft mass category (weight) for operators based in the EASA MS and for Third-Country operators over the period 2004-2013. For EASA MS operated aircraft it shows that 44% of the aircraft involved in fatal accidents were of a mass between 27,001 and 272,000 kg, 31% were between 5,701 kg and 27,000 kg, whilst 25% were between 2,251 and 5,700 kg. When compared with previous Annual Safety Reviews there has been an increase in the involvement of larger aircraft with a Mass Category between 27,001 and 272,000 kg and a corresponding decrease in fatal accidents involving smaller aircraft with a Mass Category between 5,701 kg and 27,000 kg. Figure 16 shows that the situation regarding third-country operated aircraft is slightly different with the largest proportion, 38%, involving aircraft between 2,251 kg and 5,700 kg. The majority of jet-powered aircraft belong to the mass category 27,001 kg to 272,000 kg, which accounted for 27% of the fatal accidents involving third-country operated aircraft. Smaller jet aircraft and most turboprop aircraft belong to the mass category between 5,701 kg and 27,000 kg, whilst light turboprop aircraft are generally found in the 2,251 kg to 5,700 kg mass category.

➤ **Figure 15**: Proportion of Fatal Accidents by Aircraft Mass Category, EASA MS Operated CAT Aeroplanes above 2,250 kg MTOM, 2004-2013
**Figure 16:** Proportion Of Fatal Accidents By Aircraft Mass Category, Third-Country Operated Cat Aeroplanes Above 2,250 Kg Mtom, 2004-2013

**Occurrence Categories**

The assignment of an accident under a single or multiple occurrence categories assists in the identification of particular safety issues. Occurrence categories were assigned to fatal and non-fatal accidents which involved EASA MS operated aeroplanes based on the definitions of the CAST-ICAO Common Taxonomy Team (CICTT). The CICTT have developed a common taxonomy for the classification of occurrences for accident and incident reporting systems. Further information about the categories used in this report can be found in Appendix 1: Definitions and Acronyms. An accident may have more than one category, depending on the circumstances contributing to the accident.

Figure 17 provides details of the occurrence categories with the highest number of fatal accidents in the decade 2004-2013. The highest number of fatal accidents, 5 in total, have been assigned the occurrence category LOC-I (Loss of control in flight), which involves the momentary or total loss of control of the aircraft by the crew. This might be the result of reduced aircraft performance or because the aircraft was flown outside its capabilities for control. During the period 2004-2013, there were 4 fatal accidents involving F-POST (Fire/Smoke Post Impact) and 3 accidents involving SCF-PP (System/Component Failure-Powerplant). The highest number of non-fatal accidents involved the occurrence category ARC (Abnormal Runway Contact), which includes long, fast or hard landings as well as the scraping of the tail or wing of the aircraft during take-off or landing. For non-fatal accidents, GCOL (Ground Collisions) and TURB (Turbulence) also featured in the top 3 types of accidents.
## Helicopters

The following section provides an overview of accidents in helicopter CAT operations. Unless otherwise noted, the presented data covers all mass categories. This is a change compared with the Annual Safety Reviews until 2011, which only included aircraft above 2,250 kg MTOM.

Table 2 shows that in 2013 there were 7 accidents involving CAT helicopter operators from EASA MS, of which 3 were fatal, giving a total of 10 fatalities. While the 2013 numbers are below the 10 year average, the number of fatal accidents and fatalities is higher than in 2012.
Table 2: Overview of Total Number of Accidents, Fatal Accidents and Fatalities for EASA MS Operated Helicopters, All Mass Categories

<table>
<thead>
<tr>
<th>Period</th>
<th>Total number of accidents</th>
<th>Number of Fatal accidents</th>
<th>Number of Non-Fatal accidents</th>
<th>Number of Onboard Fatalities</th>
<th>Number of Ground Fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002-2011 (average)</td>
<td>12.8</td>
<td>3.4</td>
<td>9.4</td>
<td>14.1</td>
<td>0.1</td>
</tr>
<tr>
<td>2012</td>
<td>12</td>
<td>2</td>
<td>10</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>2013</td>
<td>7</td>
<td>3</td>
<td>4</td>
<td>10</td>
<td>1</td>
</tr>
</tbody>
</table>

Figure 18 compares the number of fatal accidents involving helicopters with a maximum take-off mass above 2,250 kg involving operators in EASA MS with accidents in other regions (third-country operators). All three fatal accidents in 2013 involving EASA MS operators concerned helicopters above 2,250 kg, thus increasing the 3-year average from 0.67 to 1.67 fatal accidents. The third-country operators experienced a reduction with only 6 fatal accidents in 2013, thus reducing their 3-year average to 8.33 – the lowest number in the past 10 years.

Figure 19 shows the distribution of injuries sustained in CAT helicopter operations. In 43% of accidents no injuries were sustained. Minor or serious injuries occurred in 30% of the accidents while 27% of the accidents had one or more fatalities.
Figure 19 Proportion of Injury Levels for Accidents in— EASA MS Operated CAT Helicopters, All Mass Categories, 2004-2013

Accidents by Operation Type

Figure 20 shows the number of accidents by operation type in the period 2004-2013. The category “Passenger” has been further broken down to include HEMS, Air Taxi and Sightseeing. Conventional Passenger operations has the highest number of accidents in the 10 year period, closely followed by Helicopter Emergency Medical Services (HEMS) operations.
Figure 20: Number of Accidents by Operation Type, EASA MS Operated CAT Helicopters, All Mass Categories, 2004-2013

Figure 21 shows the number of fatal accidents and the number of fatalities in off-shore operations and non-off-shore operations during the period 2004-2013. 13% of fatal accidents and 23% of the total number of fatalities occurred in off-shore operations. In general, off-shore operations are carried out with large helicopters, which when an accident occurs could result in a larger number of casualties. Although off-shore helicopter operations have experienced fewer fatal accidents and fatalities, the ratio of fatalities to fatal accidents is higher for this type of helicopter operation (7.5 fatalities per fatal accident) than for non-offshore operations (3.8 fatalities per fatal accident).

Figure 21: Proportion of Fatal Accidents and Fatalities in Off-Shore and Non Off-Shore Operations, EASA MS Operated CAT Helicopters, All Mass Categories, 2004-2013
Occurrence Categories

In order to assist in the identification of particular safety issues, one or multiple occurrence categories were assigned to helicopter accidents involving EASA MS operators. This was done using the CICTT occurrence categories, which are listed in Appendix 1.

Figure 22 shows that the category with the highest number of accidents is Loss of Control - In Flight (LOC-I) followed by System/Component Failure or Malfunction – Non-Powerplant (SCF-NP) and System/Component Failure or Malfunction – Powerplant (SCF-PP). The category of SCF-NP includes accidents related to a malfunction of the gearbox. Accidents in the category “Collision with Obstacles during Take-off and Landing” (CTOL) include all accidents during take-off and landing where the main or tail rotor collided with objects on the ground. This category tends to apply to helicopters when aircraft operate in confined areas close to obstacles. The highest number of fatal accidents involved the occurrence categories LOC-I, CFIT, LALT and F-POST.

Figure 22 Occurrence Categories for Fatal and Non-Fatal Accidents EASA MS Operated CAT Helicopters, All Mass Categories, 2004-2013
Concerning the 5 occurrence categories with the highest total number of accidents, Figure 23 shows the number of accidents for light (MTOM 0-2,250 kg) and heavy (MTOM above 2,250 kg) helicopters. It is only with respect to LOC-I that the number of accidents is higher for the light helicopters, in the other 4 categories there is a higher number of accidents with heavy helicopters.

**Figure 23: Top 5 Occurrence Categories of Fatal and Non-Fatal Accidents in Helicopters Above and Below 2,250 kg MTOM, 2004-2013**

The total number of accidents per mass group differs, and in Figure 24 the percentages are derived by dividing the number of accidents per category per mass group by the total number of accidents for each mass group. Figure 24 also shows that 37% of the light helicopter accidents are LOC-I accidents, while only 15% of the heavy helicopter accidents are LOC-I. Concerning CFIT and CTOL the percentages for heavy helicopters are significantly higher than that for light helicopters, while for SCF-NP and SCF-PP the percentages are quite similar.
**Figure 24:** Top 5 Occurrence Categories Fatal/Non-Fatal Accidents percentages Light/Heavy Helicopters 2004-2013

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**Balloons**

This section reviews CAT accidents involving balloons. Between 2009 and 2013, there were 54 balloon accidents. 4 accidents were fatal, of which 1 occurred in 2013. Figure 25 shows the number of accidents per year for balloon CAT.

**Figure 25:** Number of Accidents Involving EASA MS Registered Balloon CAT, 2009-2013
Introduction

This chapter covers accidents that involved aircraft of all mass categories in Aerial Work operations. Aerial Work is an operation in which the aircraft is used for specialised services such as agriculture, construction, photography, surveying, observation and patrol, search and rescue, and aerial advertisement. The aircraft are identified using the state of registry of the aircraft and categorised as either an EASA Member State (MS) registered aircraft or third-country registered aircraft.

Aeroplane and Helicopter Accidents in Aerial Work

In Table 3 the time period presented extends from 2002–2013, showing the number of accidents in 2012 and 2013 as well as the average for the decade preceding these years.

➤ Table 3: Overview of Number of Accidents, Fatal Accidents and Fatalities by Aircraft Category and Operation Type, All Mass Categories, all EASA MS Registered Aerial Work Aircraft

<table>
<thead>
<tr>
<th>Aircraft category</th>
<th>Period</th>
<th>Number of all accidents</th>
<th>Fatal accidents</th>
<th>Fatalities on board</th>
<th>Ground fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aeroplanes</td>
<td>2002-2011 (average per year)</td>
<td>23.9</td>
<td>4.6</td>
<td>7.9</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>2012</td>
<td>35</td>
<td>5</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>21</td>
<td>3</td>
<td>13</td>
<td>0</td>
</tr>
<tr>
<td>Helicopters</td>
<td>2002-2011 (average per year)</td>
<td>28.9</td>
<td>5.1</td>
<td>9.2</td>
<td>1.4</td>
</tr>
<tr>
<td></td>
<td>2012</td>
<td>32</td>
<td>8</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>22</td>
<td>5</td>
<td>12</td>
<td>0</td>
</tr>
</tbody>
</table>

Figure 26 shows the distribution of fatal accidents by operation type between aeroplanes and helicopters for the decade 2004 to 2013. For aeroplanes, the Top 3 operation types in fatal accidents involved fire-fighting, aerial survey and photography operations. Whilst for helicopters the Top 3 were construction, other and photography operations.
Occurrence Categories

In order to assist in the identification of particular safety issues, one or multiple occurrence categories were assigned to accidents involving aeroplanes and helicopters conducting Aerial Work. This was done using the CICTT occurrence categories, which are listed in Appendix 1.

Figure 27 describes aeroplane accidents in Aerial Work per occurrence category. It must be noted that more than one occurrence category can be assigned to each accident therefore each accident can be reflected more than once in the figure. ‘Loss of Control – In-Flight’ (LOC-I) is the category with the highest number of fatal accidents. This is followed by accidents involving aeroplanes flying intentionally low or close to the ground (LALT) and ‘Fire – Post impact’ (F-POST) resulted in the third highest number of fatal accidents. F-POST is assigned when a fire starts at or after impact. It is also worth noting the 7 fatal accidents in the MAC category as aircraft performing some types of aerial work (e.g. fire-fighting) often fly in close proximity to each other.
Figure 27: Occurrence Categories for Fatal and Non-Fatal Accidents in EASA MS Registered Aerial Work Aeroplanes, 2004-2013
Figure 28 shows that LOC-I and LALT are the most common causes both for fatal and non-fatal helicopter accidents in EASA MS Registered Aerial Work Helicopters, during the period 2004-2013.

**Figure 28: Occurrence Categories for Fatal and Non-Fatal Accidents in EASA MS Registered Aerial Work Helicopters, 2004-2013**
Other Aircraft Types

During the past 10 years, accidents have also occurred in Aerial Work operations with aircraft other than Aeroplanes or Helicopters. As shown in Figure 29, a total of 20 such accidents have occurred, of which Balloons (6) and Gliders (5) are the most affected aircraft categories.

*Figure 29: Aerial Work Accidents by Aircraft Category and Injury Level, Involving Aircraft other than Aeroplanes or Helicopters, EASA MS State Registered, 2004-2013*
Introduction

This chapter covers accidents that involved aircraft of all mass categories in General Aviation operations. General Aviation is defined here as being all civil aviation operations other than Commercial Air Transport or a specific type of Aerial Work operation. The aircraft are identified using the state of registry of the aircraft and categorised as either an EASA MS registered aircraft or third-country registered aircraft.

Business Aviation Accidents

Business Aviation is considered a subset of General Aviation operations. The data on Business Aviation are presented in this document in light of the increasing importance of this sector. Figure 30 shows that the number of accidents per year involving EASA MS registered business flights has ranged between 0 and 5, an average of 1.8 per year.

Figure 30: Number of Fatal Accidents in EASA MS and Third-country Registered Business Aviation Aeroplanes, 2004-2013
General Aviation Accidents Above 2,250 kg MTOM

This section reviews accidents involving General Aviation aircraft with a MTOM above 2,250 kg. The data set refers to aeroplanes and helicopters only. Therefore no figures are presented for other aircraft categories.

In Table 4 the time period presented extends from 2002–2013, showing the number of accidents in 2012 and 2013 as well as the average for the decade preceding these years.

**Table 4: Overview of Number of Accidents, Fatal Accidents and Fatalities by Aircraft Category and Operation Type, all EASA MS Registered General Aviation Aircraft Above 2,250 kg MTOM**

<table>
<thead>
<tr>
<th>Aircraft category</th>
<th>Period</th>
<th>Number of all accidents</th>
<th>Fatal accidents</th>
<th>Fatalities on board</th>
<th>Ground fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aeroplanes</td>
<td>2002-2011 (average per year)</td>
<td>9.6</td>
<td>3.3</td>
<td>8.3</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>2012</td>
<td>9</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>11</td>
<td>3</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Helicopters</td>
<td>2002-2011 (average per year)</td>
<td>2.0</td>
<td>1.0</td>
<td>3.7</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>2012</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Figure 31 shows the distribution of fatal accidents by aircraft category and operation type for the period 2009-2013.
Figure 31: Proportion of Fatal Accidents by Aircraft Category and Operation Type, in General Aviation Aircraft Above 2,250 kg MTOM 2009 – 2013

Occurrence Categories

In order to assist in the identification of particular safety issues, one or multiple occurrence categories were assigned to aeroplane and helicopter accidents involving EASA MS General Aviation operations. This was done using the CICTT occurrence categories, which are listed in Appendix 1.

Figure 32 shows that “Loss of Control – In-Flight” (LOC-I) is the category with the highest number of fatal accidents. Investigations conducted in several of these accidents were unable to determine all the causes that led to the loss of control. F-POST or ‘post impact fire’ is often associated with LOC-I or “Controlled Flight into Terrain” (CFIT). There are several fatal accidents with the occurrence category “Unknown” (UNK), indicating that there were insufficient data to permit classification of these accidents. “Abnormal Runway Contact” (ARC) often precedes a “Runway Excursion” (RE); both accident categories have high numbers of non-fatal accidents.
Figure 32: Occurrence Categories for Fatal and Non-Fatal Accidents in EASA MS Registered General Aviation Aeroplanes above 2,250 kg MTOM, 2009-2013

Figure 33 highlights that fewer accidents have occurred involving helicopters in General Aviation in comparison to aeroplanes. This is also a reflection of the smaller fleet size of helicopters registered in EASA MS. However, as with aeroplanes, “Loss of Control – In-Flight” (LOC-I) is the most numerous category for all types of accident.
Figure 33: Occurrence Categories for Fatal and Non-Fatal Accidents in EASA MS Registered General Aviation Helicopters above 2,250 kg MTOM, 2009-2013

General Aviation Accidents Below 2,250 kg MTOM

Data for accidents involving aircraft not exceeding 2,250 kg MTOM were provided to EASA by the EASA MS. As in previous years, the level of reporting and the quality of the reports differs by EASA MS. Some States showed an improvement in the quality and completeness of the data provided and all but one of the EASA MS provided the data in an ECCAIRS format. For the year 2013, two States; Liechtenstein and Cyprus, reported zero accidents in their territory. Together, France, Germany and the UK reported 61% of all the accidents in 2013. It should be noted that the actual number of accidents may differ, as some recent accidents are possibly missing from the database while associated formal investigation continues. Moreover, completed investigations have been added to previous years causing historical data to differ slightly from previous Annual Safety Reviews.

Table 5 presents the number of accidents, fatal accidents and fatalities in 2013 and compares them with the average for the previous period (2008 – 2012). The decrease in fatal accidents and fatalities in 2013 compared with the five-year average can mainly be seen in fewer aeroplane and glider accidents. It is worth noting that more accidents under the Other category are being reported. That category includes aircraft such as hang-gliders, powered hang-gliders, paragliders and powered paragliders etc.
Table 5: Overview of Number of Accidents, Fatal Accidents and Fatalities by Aircraft Category And Operation Type all EASA MS Registered General Aviation Aircraft Below 2,250 kg MTOM

<table>
<thead>
<tr>
<th>Aircraft category</th>
<th>Period</th>
<th>Total number of accidents</th>
<th>Number of fatal accidents</th>
<th>Number of fatalities on board</th>
<th>Number of ground fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balloons</td>
<td>2008-2012 (average per year)</td>
<td>11.6</td>
<td>1.0</td>
<td>2.2</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>16</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Dirigibles</td>
<td>2008-2012 (average per year)</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>2012</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Aeroplanes</td>
<td>2008-2012 (average per year)</td>
<td>478.2</td>
<td>62.8</td>
<td>123.8</td>
<td>1.4</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>378</td>
<td>42</td>
<td>82</td>
<td>0</td>
</tr>
<tr>
<td>Gliders</td>
<td>2008-2012 (average per year)</td>
<td>244.2</td>
<td>31.2</td>
<td>38.8</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>219</td>
<td>20</td>
<td>27</td>
<td>0</td>
</tr>
<tr>
<td>Gyroplanes</td>
<td>2008-2012 (average per year)</td>
<td>18.6</td>
<td>4.4</td>
<td>5.4</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>17</td>
<td>6</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Helicopters</td>
<td>2008-2012 (average per year)</td>
<td>54.8</td>
<td>7.8</td>
<td>16.0</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>52</td>
<td>9</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>Microlights</td>
<td>2008-2012 (average per year)</td>
<td>234.6</td>
<td>42.6</td>
<td>64.4</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>219</td>
<td>40</td>
<td>57</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>2008-2012 (average per year)</td>
<td>10</td>
<td>3.2</td>
<td>3.8</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>30</td>
<td>9</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Motorgliders</td>
<td>2008-2012 (average per year)</td>
<td>2.0</td>
<td>0.2</td>
<td>0.4</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>17</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Average Total</td>
<td>2008-2012</td>
<td>1054</td>
<td>153</td>
<td>255</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>2013</td>
<td>948</td>
<td>128</td>
<td>202</td>
<td>0</td>
</tr>
<tr>
<td>Change (%)</td>
<td>2013 over previous</td>
<td>-10%</td>
<td>-16%</td>
<td>-21%</td>
<td>-100%</td>
</tr>
</tbody>
</table>

Figure 34 shows that the number of fatal accidents involving EASA MS aircraft with a MTOM below 2,250 kg has fallen slightly across the most common aircraft categories i.e. Aeroplanes, Helicopters and Gliders.
**Figure 34:** Number of Accidents per year, by Aircraft Category involving General Aviation Aircraft Below 2,250 kg MTOM 2009-2013

![Graph showing number of accidents per year by aircraft category](image)

**Fatal Accidents**

Figure 35 shows the distribution of fatal accidents by aircraft category. 38% of all light aircraft involved in fatal accidents between 2009 and 2013 were aeroplanes. Microlight aircraft were involved in 28%, followed by gliders with 20%.

**Figure 35:** Proportion of Fatal Accidents by Aircraft Category, Involving EASA MS General Aviation Aircraft Below 2,250 kg, 2009 – 2013

![Proportion of fatal accidents by aircraft category](image)
**Occurrence Categories**

In order to assist in the identification of particular safety issues, one or multiple occurrence categories were assigned to accidents involving light aircraft. This was done using the CICTT occurrence categories, which are listed in Appendix 1.

Historically, the occurrence categories have been developed to permit the tractability of safety efforts aimed at fixed wing air transport operations. Additional categories, more appropriate to General Aviation operation and adequate for light aircraft, rotary wing and gliders, were recently introduced and are used in this review.

These are Collision during Take-off or Landing (CTOL), Glider Towing Related Events (GTOW), Loss of Lifting Conditions En Route (LOLI) and Unintended Flight in Instrument Meteorological Conditions (UIMC). In most cases the new categories were not applied to records before 2010. As a result, the analysis may suffer from the non-uniform coding of occurrences, although an effort was made to amend records where the codes were clearly missing. In previous editions of the Annual Safety Review (ASR) a general figure for all aircraft categories was presented.

This figure is retained for comparison purposes and is shown in Figure 36, however it is recognised that the accident categories are more correctly represented when defined by the aircraft category (e.g. aeroplanes, helicopters and gliders). It should be noted that the following graphs show the total number of accidents whereas in the ASRs of 2011 and earlier these graphs were represented as an average number of accidents per year.

**Figure 36:** Occurrence Categories for Fatal and Non-Fatal Accidents - EASA MS Registered General Aviation Aircraft Below 2,250 kg MTOM, 2009-2013
Figure 37 shows that the category assigned most frequently to fatal accidents involving aeroplanes was Loss of Control - In Flight (LOC-I). This is followed by Fire/Smoke - Post-Impact (F-POST), Controlled Flight Into Terrain (CFIT) and Low Altitude Operations (LALT). Due to the possible assignment of one or multiple occurrence categories to accidents involving light aircraft the aforementioned categories may have been assigned together with LOC-I. The figure also shows that there is a high number of fatal accidents involving Unintended Flight in IMC (UIMC). As this is one of the newer categories and not used before 2010, the value in the graph understates its importance.

**Figure 37:** Occurrence Categories for Fatal and Non-Fatal Accidents - EASA MS Registered General Aviation Aeroplanes Below 2,250 kg MTOM, 2009-2013
Figure 38 shows that for helicopters LOC-I is the most important category, in terms of fatal accidents but also as the most frequent cause of non-fatal accidents. The second most important is SCF-PP and the third is LALT. Note that F-POST is assigned when fire occurs at or after impact.

Figure 38: Occurrence Categories for Fatal and Non-Fatal Accidents - EASA MS Registered General Aviation Helicopters Below 2,250 kg MTOM, 2009-2013

Figure 39 shows the occurrence categories for the aircraft category Glider. LOC-I is the most important category for gliders, having the highest number of fatal accidents assigned. Special note should be taken of the high incidence of Mid-air Collisions (MAC) involving gliders when compared to helicopters.
As in previous years, exposure data for light aircraft continues to be unavailable. The number of hours flown by light aeroplanes and helicopters is not recorded by the National Aviation Authorities in the majority of the EASA MS. Operating hours regarding gliders, balloons and aircraft such as home-built are also not recorded or are, as is the case in several EASA MS, entrusted to associative organisations and not retrieved by the Authorities. Exposure Data for microlight (including microlight aeroplanes, helicopters, gyroplanes and gliders) and for “Others” are usually entrusted to the aircraft owner, who very seldom records or provides it. An accurate estimate of flight hours or movements is needed to permit a meaningful analysis of data and provide a measure of the safety status. This is true for all operation types except Commercial Air Transport (CAT).
Chapter 7
Aerodromes
Introduction

This chapter examines accidents and serious incidents at aerodromes in EASA Member States (MS). The nature of the aviation system means that many events occur at or near an aerodrome without the aerodrome being involved. This chapter examines accidents and serious incidents that relate to the aerodrome itself or are related to a service supplied at an aerodrome. Please note that data relating to Runway Incursions are presented in Chapter 8 – Air Traffic Management. The time period covered in this chapter is 2009-2013.

The aerodromes included in this chapter are those that meet all of the following criteria:

- Open to public use;
- Serve commercial air transport;
- Provide instrument approach or departure procedures;
- Have a paved runway of 800 metres or above or exclusively serve helicopters.

Aerodrome Accidents and Serious Incidents

Aerodrome accidents and serious incidents are defined as those involving aerodrome design or functionality issues associated with runways, taxiways, ramp areas, parking areas, buildings and structures, fire and rescue services, obstacles on the aerodrome, lighting, markings, signage, procedures, policies, and standards. These accidents are assigned the occurrence category ADRM; examples include aerodrome lighting failures, ambiguous or incorrect signage and the effects of aerodrome design.

In the period 2009–2013 there were 14 accidents and serious incidents within the occurrence category ADRM. Figure 40 shows the number of accidents and serious incidents per year involving aerodromes. On-going investigations into other accidents and serious incidents, as well as those shown in the graph below, may cause the data to be updated in the future. Consequently this data should be considered as preliminary only.
Occurrence Categories

In order to assist in the identification of particular safety issues, one or multiple occurrence categories were assigned to accidents and serious incidents involving Aerodromes. The occurrence categories (in addition to ADRM) assigned to aerodrome accidents and serious incidents are shown in Figure 41. It can be seen that Runway Excursion (RE) is the most common occurrence category to be assigned. The positioning of System Component Failure – Power Plant (SCF-PP) in aerodromes occurrences is due to one bird strike and one case of FOD ingestion, both causing engine failure. Whether or not the engine was designed to withstand the magnitude of the bird strike or FOD ingestion is not always clear from initial occurrence reports. As a result all engine failures have had the SCF-PP code applied.
Runway Excursions

Runway Excursions are defined as an aircraft veering off the side or overrunning the end of the runway surface during take-off or landing. The European Aviation Safety Plan (EASp) identifies runway excursions as one of the key operational safety risks for Commercial Air Transport (CAT) aircraft. The issue relates to aircraft operations, air traffic control and aerodromes. Please note that figures for runway excursions involving CAT aeroplanes are shown in Chapter 4, while figures for runway excursions at EASA MS aerodromes are shown here.

In total, there were 132 runway excursion accidents and serious incidents at EASA aerodromes between 2009 and 2013 with 32 of these occurring in 2013. Figure 42 shows the total number of runway excursions per year, broken down by occurrence class. Please note that unlike Figure 41, Figure 42 includes Runway Excursions where the Aerodrome occurrence category has not been assigned. It can be assumed then that the Runway Excursion did not relate to the aerodrome but more probably to factors involving aircraft operation or air traffic control.

Figure 42: Number of Runway Excursion Accidents and Serious Incidents per Year at EASA Aerodromes, 2009-2013

Figure 43 shows the number of accidents and serious incidents that occurred during take-off or landing. It can be seen that 86% of runway excursion accidents and serious incidents occurred during landing and 14% during take-off.
Ground Collisions

Ground Collisions (GCOL) are defined as collisions between an aircraft and another aircraft, vehicle, person or object during taxi. The EASp identifies ground collisions as another of the key operational safety risks for commercial air transport aircraft. The number of ground collisions per year at EASA MS aerodromes is shown in Figure 44. Figures for ground collisions involving CAT aeroplanes are shown in Chapter 4, while figures for ground collisions at EASA MS aerodromes are shown here.

In total, there were 34 ground collision accidents and serious incidents at EASA MS aerodromes between 2009 and 2013. 8 of these occurred in 2013.
Ramp Accidents and Serious Incidents

The ramp environment can be considered as to be distinct from the rest of the aerodrome environment. Ramp events are those that occur during or as a result of ground handling operations. Examples in this category include but are not limited to loading, pushback, refuelling or de-icing errors. The number of ramp accidents and serious incidents is shown in Figure 45. The most common types of ramp accident and serious incident involved collisions with another aircraft, with ground objects, and with vehicle/equipment operations. Two of the ramp accidents included in this chapter were fatal. One resulted in a baggage handler being killed while loading the aircraft, the other fatality occurred when a portable water truck collided with the wingtip of an aeroplane, killing the truck driver. Both of these accidents occurred in 2012.

Figure 45: Number of Ramp Accidents and Serious Incidents per Year at EASA Aerodromes, 2009-2013

![Graph showing the number of ramp accidents and serious incidents per year at EASA aerodromes from 2009 to 2013.](image)

Bird Strikes

Although bird strikes do not always involve the aerodrome as they cannot be wholly prevented through bird management schemes, they typically occur in the aerodrome environment. The number of accidents and serious incidents involving bird strikes at or near EASA MS aerodromes is shown in Figure 46.

Figure 46: Number of Bird Strikes per Year by Occurrence Class, 2009-2013

![Graph showing the number of bird strikes per year by occurrence class from 2009 to 2013.](image)
Chapter 8
Air Traffic Management (ATM)
Introduction

The Air Traffic Management (ATM) system comprises of airborne and ground-based functions (air traffic services, airspace management and air traffic flow control management) to ensure the safe and efficient movement of aircraft during all phases of flight operations. The provision of safe Air Traffic Services, as part of the ATM system in a pan-European environment, taking into account future aviation developments such as SESAR deployments, continues to be one of the main objectives of Member States and Air Navigation Service Providers. For the fourth year, a specific Chapter on ATM has been incorporated in the EASA Annual Safety Review, based on safety data provided by EASA Member States through the EUROCONTROL Annual Summary Template (AST) reporting mechanism.

This chapter contains information on accidents and incidents in relation to ATM. The sources of the data, as well as the occurrence category definitions, differ from those of other chapters in this Review. Instead of CICTT categories, as found in similar figures of this report, this chapter uses occurrence categories developed specifically for ATM since 2000. The analysis in the ATM chapter includes accidents which occurred within an EASA MS and involved at least one aircraft with MTOM of 2250kg and above; and incidents that occurred within an EASA MS with no MTOM restrictions.

The data used in this chapter are obtained from the mandatory safety data reported to EUROCONTROL by its 40 Member States. For the purpose of this report, the analysis is limited to EASA Member States only.

The Safety Analysis Function EUROCONTROL and associated Repository – SAFER - system is EUROCONTROL’s principal tool in its safety data analysis work, and consists of a European ATM Safety Data Repository based on mandatory and voluntary safety data reports. SAFER is designed to provide the ATM component of the European Commission’s (EC) aviation-wide reporting system, based on ECCAIRS.

Accidents

Figure 47 shows the 2013 distribution of the reported accidents by ATM related accident categories. Of these accidents 16 have been fatal. The most significant accident category in terms of the number of events remains the ‘Controlled Flight into Terrain (CFIT)’ with 10 events reported, 8 of which were fatal. Another 2 reported accidents involved ‘aircraft airborne (near the ground) and aircraft or objects on the ground’. In 2013 there were no ‘mid-air collisions’ or ‘ground collisions between aircraft and vehicles/obstacles’.

1 Definition

1. The aggregation of the airborne and ground-based functions (air traffic services, airspace management and air traffic flow management) required to ensure the safe and efficient movement of aircraft during all phases of operations. 2. The dynamic, integrated management of air traffic and airspace (including air traffic services, airspace management and air traffic flow management) — safely, economically and efficiently — through the provision of facilities and seamless services in collaboration with all parties and involving airborne and ground-based functions

Definition Source

In the course of the investigation process two levels of ATM involvement are allocated:

Direct contribution – where the ATM event or item was judged to be directly in the causal chain of events, and;

Indirect contribution – where the ATM event potentially increased the level of severity.

Using 2013 preliminary data, 49 accidents (16 fatal and 33 non-fatal) were reported. None of the reported accidents had either a Direct or Indirect ATM Contribution.

Figure 48 presents the number of accidents and also shows the number of accidents where there was at least one ATM contributory factor in the chain of events. During the last five years (2009-2013) there were only 6 accidents that had a direct ATM contribution. Of these accidents 3 are categorised as ‘Ground collision’ (GCOL) between an aircraft and a vehicle or obstacle and 3 in the category ‘Other’. During the same five year period a total number of 337 accidents were reported to EUROCONTROL, of which 66 were fatal (preliminary data - MTOM 2250 kg and above).
Figure 48: 2009 -2013 ATM Relevant Accidents

ATM related incidents – Incident categories

An ATM related incident means that it is relevant to ATM, however it does not necessarily need to have an ATM contribution. A short overview of the number of incidents reported in each category since 2008 is presented in Figure 49. An incident can be classified in more than one category (e.g. an incident classified as a Runway Incursion can also be categorised as a deviation from an Air Traffic Control clearance).

Figure 49: ATM Related Incidents by Category
Incident categories that are reported in large numbers are: ‘Unauthorised Penetration of Airspace’ (UAP), (also known as Airspace Infringements), ‘Aircraft deviation from ATC clearance’ (CLR), (which includes the incidents categorised as Level Busts), ‘Separation Minima Infringement’ (SMI) and ‘Runway Incursions’ (RI). Incidents involving 'Inadequate aircraft Separation' are categorised under ‘IS’. Figure 50 shows that only a fraction of the ATM related incidents are having an ATM contribution (either direct or indirect) in the chain of events.

Figure 50: ATM Contribution to the ATM-related Incidents

For each ATM related incident it is required that the associated risk be assessed and classified. Risk is defined as the combination between the severity posed by the incident and its likelihood to re-occur.\(^2\)

The risk bearing incidents are considered as those with the highest severity classes: ‘Serious incidents’ (severity A) and ‘Major incidents’ (severity B). The other severity classes are: ‘Significant’ (severity C), ‘No safety effect’ (E), ‘Not determined’ (D). Figure 51 shows the number of incidents by severity and incident category.

The category that has the largest proportion of risk bearing incidents (severity A and B) is the ‘Separation Minima Infringements’ (SMI). This category refers to occurrences in which prescribed separation minima were not maintained between aircraft. It is to be noted that this category is different from the category of ‘Inadequate Separation’ (IS) where, in the absence of prescribed separation minima, a situation occurred in which aircraft were perceived to pass too close to each other for pilots to ensure safe separation. Many of the incidents that have resulted in a loss of separation (SMI) and categorised as risk bearing are also categorised as ‘Deviation from ATC Clearance’ or ‘Unauthorised Penetration of Airspace’, also known as ‘Airspace Infringements’. The incident category of ‘Runway Incursions’ (RI) has the second largest proportion of risk bearing incidents (severity A+B).

\(^2\) methodology: http://www.eurocontrol.int/src/gallery/content/public/documents/deliverables/esarr2_awareness_package/eam2guiS_e10_ri_web.pdf (Risk Assessment Tool methodology as per EC Reg. 691/2010-amended)
Incident rates and trends

Overall, the reporting of ATM related incidents continues to improve. In addition, the main incident categories have shown a stable trend of similar or decreasing severity in past years. Comparing the number of incidents with the level of traffic can provide meaningful results on the safety trends. The information in this section shows various rates of A and B severity-classified incidents.

Figure 52 shows that there has been a continuous increase in the total number of occurrences per million flight hours reported over the past 5 years (2009-2013). It further shows that while a greater number of occurrences are being reported there has been a slight decrease in the rate of A and B severity-classified incidents. This increase in the rate of all incidents reported is a positive step forward, in the context of a “Just Culture” environment, which includes a good reporting culture, which could enable a better view of the underlying safety issues affecting ATM.

Based upon the preliminary data reported for 2013, a decrease is observed. However, taking into account the backlog in the processing of safety occurrence data in a number of States, the data may be amended in the final reports for 2013 following the reception of completed data.

3 “Just Culture” means a culture in which front line operators or others are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts are not tolerated.
During the period 2009-2013 there have been modest annual increases in the rate of serious incidents (severity A). An equally modest decrease was detected in 2012 and preliminary data for 2013 also demonstrates a decrease in the rate of severity A-classified incidents. The trend for major incidents (severity B) following a notable increase between 2009 and 2010 is seen to be modestly decreasing for the remainder of the reporting period from 2010-2013. The final data for 2012 show a small percentage decrease compared to the previous year and preliminary data for 2013 now show a considerable decrease. However, this needs again to be seen in the context of the described data processing backlog in some Member States.

Figure 53 shows the rate of ATM-related A and B severity-classified incidents relative to the overall number of ATM-related occurrences reported. 2013 numbers are based on preliminary data reported.
Separation Minima Infringements

Figure 54 shows the rate of ‘Separation Minima Infringements’ (SMI) per million flight hours. For SMIs it is useful to calculate the rate using the number of flight hours as this best represents the timeframe during which the airspace is actually ‘used’ by an aircraft. SMIs refer to occurrences in which prescribed minimum separation between aircraft has been lost.

Except for 2009 and 2010, the total number of incidents reported in this category has increased every year. Amongst all types of incidents, SMIs typically take the longest time to be investigated, and consequently their number may change in the future.

The SMIs classified as severity A decreased by approximately 42 % between 2009 and 2010. Thereafter this was followed by a considerable increase in 2011. The rate has remained somewhat stable with small annual decreases since. Preliminary 2013 data show a similar trend. The severity B classified SMIs indicated a rising trend in the data reported for the 2009-2012 timeframe. Based on the preliminary 2013 data, a small decrease is observed, the total number reaches a level just in between the totals for 2011 and 2012.

Figure 54: Separation Minima Infringements 2009-2013 (Occurrence per million flight hours)
Runway Incursions

The rate of runway incursion incidents reported over time has shown an overall increasing trend as shown in Figure 55. For runway incursions it is useful to calculate the rate using the number of movements, (arrivals/departures) as this represents the frequency with which a runway is being used.

The total number of runway incursions reported in Europe has increased over the years 2004-2013, with the exception of 2011 and 2012. This can be attributed to improved awareness following the publication of the European Action Plan for the Prevention of Runway Incursions in 2003 coupled with actions taken by States and other involved stakeholders. In addition, the change of the ICAO definition of runway incursion effectively enlarged the scope of occurrences included in this definition.

During the same 10 year period the rate of risk bearing runway incursions has shown quite an amount of movement. The rate of serious incidents (severity A) following a decrease in 2005 steadily increased since then peaking in 2011. Since then, small decreases have been noted and it is hoped the decrease shown in 2013 preliminary data will be continued once final figures are known.

The rate of major incidents (severity B) decreased until 2009 after which 2010 showed a considerable increase and 2011/2012 data indicated a reverse trend, the preliminary 2013 data indicates an increase to almost the same level as for 2010.

Figure 55: Rate of Runway Incursions 2004-2013 (Incidents per million aircraft movements)
Unauthorised Penetration of Airspace (UAP)/Airspace Infringements

Another incident category that has been closely monitored in ATM for many years is the Unauthorised Penetration of Airspace (UAP) occurrences, otherwise known as Airspace Infringements.

Figure 56 shows the evolution of airspace infringements reported during the period 2004-2013 and indicates that the overall number of this type of incident has risen considerably since 2004 with aggregated increase of over 300% until 2012. In addition, the rate of severity A classified incidents is decreasing and the rate of severity B incidents has also decreased. It must be noted however that the figures for both A and B severity classified incidents when examined both on an annually and over the entire period 2004-2013 have shown modest fluctuations when compared to the growth in the number of total occurrences. That means that the major growth has been in C, D or E severity classified occurrences. Based on the preliminary data reported for 2013, there appears to be a considerable decrease in the total number of UAP incidents reported.

In addition the observed decreasing trend could have been influenced by the start of the implementation period of the European Action Plan for Airspace Infringement Risk Reduction in 2010 and the actions and efforts taken by the Member States together with many involved stakeholders such as Air Navigation Service Providers (ANSPs), Civil Aviation Authorities (CAAs), Military Authorities, Pilot Associations and the General Aviation (GA) community.

Figure 56: Unauthorised Penetration of Airspace 2004-2013 (Occurrences per million flight hours)
Chapter 9
European Central Repository
Introduction

The European Aviation Community is in a unique position. Over 20 years ago, the European Commission conceptualised a centralised aviation safety data collection supported by a common information technology system. This system is called the European Coordination Centre for Accident and Incident Reporting System (ECCAIRS). In 2012, Version 5 of ECCAIRS was released by the Joint Research Centre of the European Commission. The ECCAIRS system provides a standard format for the sharing and storage of safety occurrences sourced from the entire European Aviation Community. Not only is ECCAIRS used by Regulatory organisations and accident investigation authorities across Europe, but owing to the support of ICAO, it is also used by many organisations around the world. The existence of ECCAIRS and its use at a global level enables occurrence reports from the diverse aviation community to be shared more easily.

Most importantly, ECCAIRS enables aviation safety occurrences originating from EASA Member States to be collected in a centralised database – the European Central Repository (ECR). European Directive 2003/42/EC on Occurrence Reporting in Civil Aviation placed an obligation on Member States to make “all relevant safety-related information” stored in their databases available to the competent authorities of other Member States and the European Commission. The Member States were also required to ensure that their databases were compatible with the ECCAIRS software. Furthermore, according to Commission Regulation (EC) No 1321/2007, Member States were obliged to integrated their occurrence data into the ECR. By the end of 2011, all of the Member States were integrating their data into the ECR.

One of the current difficulties of the ECR is that the narratives from occurrences are only available to the country who submitted the data in the first instance. However, the adoption of Regulation (EU) 376/2014 on the Reporting, Analysis and Follow-up of Occurrences in Civil Aviation will enable both EASA and the competent authorities of the Member States to have full access to the ECR. This will be a significant step forward and will have a positive effect on the use of the ECR for safety analysis purposes.

Using the ECR to Improve Safety

The data in the ECR is vital to the aviation safety management activity that is carried out as part of both the European Aviation Safety Plan (EASp) and the State Safety Plans (SSp) of the EASA Member States. Due to the high level of aviation safety in Europe, accidents and serious incidents are rare events and the data in the ECR provides the widest possible source of Pan-European safety data. The data in the ECR is used by EASA and the Member States in their analysis of safety issues to support the work of improving aviation safety in Europe. Through the European Network of Aviation Safety Analysts (NoA), the data in the ECR is used to monitor the operational safety issues in the EASp. Moreover, the data is used by EASA to identify safety trends and to support other Agency activities such as Rulemaking.

The more information that is available in the ECR and the better the quality of that information is, the more knowledge and information can be used by decision makers in developing sustainable solutions that are required by both the aviation industry and the travelling public. Because the data in the ECR mainly consists of incidents, it cannot exist without the support and hard work of aviation professionals across Europe. The safety reports they submit, either as individuals or through their organisations to the competent authorities is a vital part of building up the best possible safety picture. At this point, EASA would like to personally thank each and every individual who has ever submitted a safety occurrence report. Without this information, decision makers would not be able to make the right decisions. Thanks to the efforts of the Member States the amount of information in the ECR
is increasing every year and the data quality has improved significantly over the past few years. This means that the vision of the ECR being a vital resource for safety analysis at the European Level is becoming a more realistic prospect. This Chapter provides some key statistics concerning the safety information available in the ECR and it also provides information on how the ECR is helping to support the work of improving aviation safety in Europe.

The ECR at a Glance

At the end of 2013 there was a total of 800,614 occurrences in the ECR. Figure 57 provides details of the occurrences in the ECR by the date of occurrence. In the early years of the ECR, between 2006 and 2009, there was a steady increase in the number of occurrences that were made available by the Member States. Since 2009 the number of occurrences has begun to stabilise in the range of 80,000 to 95,000 occurrences per year. 2013 has seen a small reduction in the number of safety occurrences provided to the ECR. The pooling of such a large number of occurrences in a single database highlights the importance of the ECR as a usable resource that is available to EASA and the Member States in their analysis. The ECR provides a far greater amount of information than would available to any single Member State alone. The challenge is to continually improve the quality of the data provided by the Member States so that the ECR is able to provide enough detailed information to support the decision making process in its own right without the need to refer to other data or information sources. The task of continually improving data quality is part of a major effort across the European Aviation Community as part of the work of the European Commission through Directorate General for Mobility and Transport and the Joint Research Centre (JRC), EASA, Eurocontrol and the responsible entities of the Member States via the Network of European Aviation Safety Analysts (NoA).

Figure 57: Occurrences in the ECR by Date

Figure 58 provides details of the distribution of occurrences in the ECR by Type of Operation. In 47% of cases, this information was not reported to the ECR; meaning almost 1 in 2. On a positive note, the percentage of occurrences where this information is not reported has reduced compared to the situation in the 2012 Annual Safety Review. From discussion with the Member States it is considered that the majority of the occurrences that are
insufficiently coded are likely to involve Commercial Air Transport, which already account for 46% of the occurrences reported to the ECR. General Aviation accounted for 5% of the occurrences and State Flights were 1% of the occurrences, both of which are unchanged from the previous year. A smaller number of occurrences, less than 1%, involved Aerial Work.

**Figure 58:** Distribution of occurrences in the ECR by Type of operation

![Chart](image)

Figure 59 provides a breakdown of occurrences held in the ECR by occurrence class. The overwhelmingly largest class is Incident, which comprises 79% of the total occurrences followed by Occurrences Without Safety Effect (11%). It must be noted that Accident class occurrences comprise only 2% of the repository.

**Figure 59:** Distribution of occurrences in the ECR by Occurrence Class

![Chart](image)
European Network of Analysts

Analysis of the ECR at a European Level is carried out by the European Network of Safety Analysts (NoA), which brings together the safety analysis departments of the competent authorities with EASA, Eurocontrol and the European Commission, in order to support safety planning activities. The NoA uses the information in the ECR with a range of other data sources to help identify the safety risks. These risks are then reported via the European Aviation Safety Plan (EASp). The NoA also provides a mechanism for the EASA MS to work together to improve the quality of data in the ECR.

Occurrence Categories and Events in the ECR

Within the ECR, there is some useful information concerning the types of occurrences and events that are reported by the EASA MS.

Figure 60 provides details of the Top 10 Occurrence Categories within the ECR. The largest number of occurrences was classified as “Other”, which is the same situation as last year. Work has recently been carried out to analyse occurrences classified as “Other”. This work has identified that a large number of these pertain to Medical situations involving either crew members or passengers. As a consequence, a new Occurrence Category covering this type of occurrence will be introduced during 2014. The subsequent most numerous Occurrence Categories in decreasing ranked order were ATM/ CNS, System/ Component Failure Non-Powerplant (SCF-NP), Ramp and Birdstrikes. It is interesting to note that Runway Incursion has dropped from the Top 10 and has been replaced by Cabin Safety Events.

Figure 60: Top 10 Occurrence Categories in the ECR.

Figure 61 provides a more detailed analysis of the occurrences in the ECR using information on the Level 1 Event Types. Critical events during an occurrence are coded using standard Event Types from the ADREP Taxonomy and these are captured in the chronological order in which they took place. The most numerous Event Type, Level 1, was Aircraft Operation General, followed by Aircraft/ System/ Component and Air Navigation Services.
A more detailed analysis of the Event Types is shown in Figure 62, which has information on the Top 10 Level 2 Event Types. The most numerous Level 2 Event Type is Flight Crew/ ANS, which involves interaction between the Flight Crew of an aircraft and the Air Navigation Services. This is followed by Aircraft – Collision with Obstacle/ Terrain/ Aircraft, which is often used to classify occurrences where there has been a near collision event. Therefore the recorded incidence of this occurrence type is not necessarily indicative of the number of actual collisions. Compared to last year’s analysis, it is interesting to note that Landing Gear and Flight Crew related events have dropped out of the Top 10 and have been replaced with Incursions and the Triggering of Warning Systems. The latter is considered to be due to the increasing amount of warning systems on more modern aircraft.
Information on the Consequential Events of occurrences in the ECR is shown in Figure 63. Consequential Events are used to describe the effects of the occurrence on the operation of the aircraft. The most frequent consequence of occurrences in the ECR was a Missed Approach, which has displaced Aircraft Return as the Number 1 consequential event, and involves the aircraft returning to its original departure point following the occurrence. There were also occurrences involving Rejected Take-Offs and Diversions where the aircraft was forced to divert from its planned destination to another airport. In addition, just over 5,400 occurrences involved a flight crew having declared an emergency.

- **Figure 63: Top 10 Consequential Events in the ECR**

The number of occurrences in the ECR is continuing to grow every year and, most importantly, the quality of data has improved significantly over the past few years. The information that the ECR provides, in addition to other sources of data from aircraft accidents, is vital in providing the best possible knowledge of the key risks to aviation in Europe.
Appendices
### Appendix 1 Acronyms and Definitions

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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| **Accident**                              | An occurrence associated with the operation of an aircraft, which takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, in which:  
  a) a person suffers a fatal or serious injury as a result of:  
  being in or upon the aircraft;  
  direct contact with any part of the aircraft, including parts which have become detached from the aircraft; or  
  direct exposure to jet blast;  
  except when the injuries are from natural causes, self-inflicted or inflicted by other persons, or when the injuries are to stowaways hiding outside the areas normally available to the passengers and crew; or  
  b) the aircraft sustains damage or structural failure which:  
  adversely affects the structural strength, performance or flight characteristics of the aircraft; and  
  would normally require major repair or replacement of the affected component;  
  except for engine failure or damage, when the damage is limited to the engine, its cowlings or accessories; or for damage limited to propellers, wing tips, antennas, tyres, brakes, fairings, small dents or puncture holes in the aircraft skin; or  
  c) the aircraft is missing or is completely inaccessible.  
  Source: ICAO Annex 13 |
### Fatal Injury
An injury which is sustained by a person in an accident and which results in his death within 30 days of the date of the accident.

*Source: ICAO Annex 13*

### FIR
Flight Information Region

### General aviation (GA)
An aircraft operation other than a commercial air transport operation or an aerial work operation.

### HEMS
Helicopter Emergency Medical Service

### ICAO
International Civil Aviation Organisation

### IFR
Instrument Flight Rules

### Light Aircraft
Aircraft with a maximum certificated take-off mass below 2251 kg.

### MTOM
Maximum certificated take-off mass

### NAA
National Aviation Authorities

### Occurrence
An accident, serious incident or incident

### Scheduled air service
An air service open to use by the general public and operated according to a published timetable or with such a regular frequency that it constitutes an easily recognisable systematic series of flights which are open to direct booking by members of the public.

### Serious Incident
An incident involving circumstances indicating that an accident nearly occurred.

*Source: ICAO Annex 13*

### Serious Injury
An injury which is sustained by a person in an accident and which:

- a) requires hospitalisation for more than 48 hours, commencing within seven days from the date the injury was received;
- b) results in a fracture of any bone (except simple fractures of fingers, toes or nose);
- c) involves lacerations which cause severe haemorrhage, nerve, muscle or tendon damage;
- d) involves injury to any internal organ;
- e) involves second or third degree burns, or any burns affecting more than 5 per cent of the body surface; or
- f) involves verified exposure to infectious substances or harmful radiation.

### SMS
Safety Management System

### Third-country operated aircraft
An aircraft which is not used or operated under control of a competent authority of an EASA Member State.

## Occurrence Categories

Occurrence categories can be used to classify occurrences at a high-level to permit analysis of the data. The CICTT has developed the occurrence categories used in this Annual Safety Review. For further details on this team and the occurrence categories see the website (http://intlaviationstandards.org/index.html)

<table>
<thead>
<tr>
<th>Occurrence</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>ARC</td>
<td>Abnormal runway contact</td>
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<tr>
<td>AMAN</td>
<td>Abrupt manoeuvre</td>
</tr>
<tr>
<td>ADRM</td>
<td>Aerodrome</td>
</tr>
<tr>
<td>ATM/CNS</td>
<td>Air Traffic Management/Communication Navigation Surveillance</td>
</tr>
<tr>
<td>BIRD</td>
<td>Collision / near Collision with bird(s)</td>
</tr>
<tr>
<td>CABIN</td>
<td>Cabin safety event</td>
</tr>
<tr>
<td>CFIT</td>
<td>Controlled flight into or toward terrain</td>
</tr>
<tr>
<td>CTOL</td>
<td>Collision with obstacle(s) during take-off and landing</td>
</tr>
<tr>
<td>EVAC</td>
<td>Evacuation</td>
</tr>
</tbody>
</table>
### ATM Accident Categories Acronyms

Accident categories can be used to classify occurrences at a high level to permit analysis of the data. The CICTT has developed the accident categories used in this Annual Safety Review. For further details on this team and the accident categories please see the website (http://intlaviationstandards.org/index.html).

<table>
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<tr>
<th>Acronym</th>
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<tbody>
<tr>
<td>CLR</td>
<td>Deviation of ATC Clearance</td>
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<tr>
<td>IS</td>
<td>Inadequate Separation</td>
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<tr>
<td>MAC</td>
<td>Mid-Air Collision</td>
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<tr>
<td>SMI</td>
<td>Separation Minima Infringement</td>
</tr>
<tr>
<td>UAP</td>
<td>Unauthorised Penetration of Airspace</td>
</tr>
<tr>
<td>RI</td>
<td>Runway Incursion is an occurrence involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and take-off of aircraft.</td>
</tr>
<tr>
<td>COL</td>
<td>Collision with a vehicle, person or aircraft, while an aircraft is on the ground</td>
</tr>
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### Appendix 3 List of Fatal Accidents in 2013

This list only includes fatal accidents involving commercial air transport aeroplanes with a maximum take-off mass above 2,250 kg.

<table>
<thead>
<tr>
<th>Local Date</th>
<th>State of Occurrence</th>
<th>Aircraft Type</th>
<th>Operation Type</th>
<th>Fatalities on Board</th>
<th>Ground Fatalities</th>
<th>Occurrence Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>04/01/2013</td>
<td>Venezuela</td>
<td>BRITEN NORMAN BN2A-26</td>
<td>Passenger</td>
<td>6</td>
<td>0</td>
<td>UNK: Unknown or undetermined</td>
</tr>
<tr>
<td>15/01/2013</td>
<td>United States</td>
<td>CESSNA 208</td>
<td>Cargo</td>
<td>1</td>
<td>0</td>
<td>UNK: Unknown or undetermined</td>
</tr>
<tr>
<td>23/01/2013</td>
<td>Antarctica</td>
<td>DE HAVILLAND DHC6</td>
<td>Ferry/positioning</td>
<td>3</td>
<td>0</td>
<td>CFIT: Controlled flight into or toward terrain</td>
</tr>
<tr>
<td>29/01/2013</td>
<td>Kazakhstan</td>
<td>CANADAIR CL600</td>
<td>Passenger</td>
<td>21</td>
<td>0</td>
<td>CFIT: Controlled flight into or toward terrain</td>
</tr>
<tr>
<td>13/02/2013</td>
<td>Ukraine</td>
<td>ANTONOV AN24</td>
<td>Passenger</td>
<td>5</td>
<td>0</td>
<td>ARC: Abnormal runway contact F-POST: Fire/smoke (post-impact)</td>
</tr>
<tr>
<td>04/03/2013</td>
<td>Congo, the Democratic Republic of</td>
<td>FOKKER F27</td>
<td>Cargo</td>
<td>7</td>
<td>0</td>
<td>UNK: Unknown or undetermined</td>
</tr>
<tr>
<td>06/03/2013</td>
<td>Peru</td>
<td>BEECH 200</td>
<td>Passenger</td>
<td>9</td>
<td>0</td>
<td>UNK: Unknown or undetermined</td>
</tr>
<tr>
<td>08/03/2013</td>
<td>United States</td>
<td>BEECH 1900</td>
<td>Cargo</td>
<td>2</td>
<td>0</td>
<td>CFIT: Controlled flight into or toward terrain</td>
</tr>
<tr>
<td>12/03/2013</td>
<td>Brazil</td>
<td>PIPER PA31</td>
<td>Passenger</td>
<td>10</td>
<td>0</td>
<td>UNK: Unknown or undetermined</td>
</tr>
<tr>
<td>29/04/2013</td>
<td>Afghanistan</td>
<td>BOEING 747-400</td>
<td>Cargo</td>
<td>7</td>
<td>0</td>
<td>LOC-I: Loss of control - inflight SCF-NP: System/ component failure or malfunction non-powerplant</td>
</tr>
<tr>
<td>29/06/2013</td>
<td>Botswana</td>
<td>EMBRAER EMB110</td>
<td>Cargo</td>
<td>2</td>
<td>0</td>
<td>CFIT: Controlled flight into or toward terrain</td>
</tr>
<tr>
<td>06/07/2013</td>
<td>United States</td>
<td>BOEING 777-200</td>
<td>Passenger</td>
<td>3</td>
<td>0</td>
<td>USOS: Undershoot/overshoot F-POST: Fire/ smoke (post-impact)</td>
</tr>
<tr>
<td>14/08/2013</td>
<td>United States</td>
<td>AIRBUS A300-600</td>
<td>Cargo</td>
<td>2</td>
<td>0</td>
<td>CFIT: Controlled flight into or toward terrain</td>
</tr>
<tr>
<td>09/09/2013</td>
<td>Chile</td>
<td>DORNIER 228</td>
<td>Ferry/positioning</td>
<td>2</td>
<td>0</td>
<td>CFIT: Controlled flight into or toward terrain</td>
</tr>
<tr>
<td>03/10/2013</td>
<td>Nigeria</td>
<td>EMBRAER EMB120</td>
<td>Passenger</td>
<td>15</td>
<td>0</td>
<td>LOC-I: Loss of control - inflight F-POST: Fire/smoke (post-impact)</td>
</tr>
<tr>
<td>Local Date</td>
<td>State of Occurrence</td>
<td>Aircraft Type</td>
<td>Operation Type</td>
<td>Fatalities on Board</td>
<td>Ground Fatalities</td>
<td>Occurrence Categories</td>
</tr>
<tr>
<td>------------</td>
<td>---------------------------</td>
<td>-----------------------</td>
<td>----------------</td>
<td>---------------------</td>
<td>------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>06/10/2013</td>
<td>Puerto Rico</td>
<td>BRITTEN NORMAN BN2A</td>
<td>Cargo</td>
<td>1</td>
<td>0</td>
<td>UNK: Unknown or undetermined</td>
</tr>
<tr>
<td>10/10/2013</td>
<td>Malaysia</td>
<td>DE HAVILLAND DHC6</td>
<td>Passenger</td>
<td>2</td>
<td>0</td>
<td>USOS: Undershoot/overshoot</td>
</tr>
<tr>
<td>14/10/2013</td>
<td>Mexico</td>
<td>CESSNA 208</td>
<td>Passenger</td>
<td>14</td>
<td>0</td>
<td>UNK: Unknown or undetermined</td>
</tr>
<tr>
<td>16/10/2013</td>
<td>Lao Peoples Democratic Republic</td>
<td>ATR72</td>
<td>Passenger</td>
<td>49</td>
<td>0</td>
<td>LOC-I: Loss of control - inflight</td>
</tr>
<tr>
<td>03/11/2013</td>
<td>Bolivia</td>
<td>SWEARINGEN SA-227</td>
<td>Passenger</td>
<td>8</td>
<td>0</td>
<td>RE: Runway excursion</td>
</tr>
<tr>
<td>10/11/2013</td>
<td>Ontario</td>
<td>SWEARINGEN SA-227</td>
<td>Passenger</td>
<td>5</td>
<td>0</td>
<td>CTOL: Collision with obstacle(s) during take-off and landing</td>
</tr>
<tr>
<td>17/11/2013</td>
<td>Russian Federation</td>
<td>BOEING 737-500</td>
<td>Passenger</td>
<td>50</td>
<td>0</td>
<td>AMAN: Abrupt manoeuvre</td>
</tr>
<tr>
<td>19/11/2013</td>
<td>United States</td>
<td>LEARJET 35</td>
<td>Ferry/positioning</td>
<td>4</td>
<td>0</td>
<td>SCF-PP: powerplant failure or malfunction</td>
</tr>
<tr>
<td>25/11/2013</td>
<td>Papua New Guinea</td>
<td>CESSNA 208</td>
<td>Passenger</td>
<td>3</td>
<td>0</td>
<td>SCF-PP: powerplant failure or malfunction</td>
</tr>
<tr>
<td>29/11/2013</td>
<td>Namibia</td>
<td>EMBRAER ERJ190</td>
<td>Passenger</td>
<td>33</td>
<td>0</td>
<td>UNK: Unknown or undetermined</td>
</tr>
<tr>
<td>29/11/2013</td>
<td>United States</td>
<td>CESSNA 208</td>
<td>Passenger</td>
<td>4</td>
<td>0</td>
<td>LOC-I: Loss of control - inflight</td>
</tr>
<tr>
<td>02/12/2013</td>
<td>Puerto Rico</td>
<td>SWEARINGEN SA-226</td>
<td>Cargo</td>
<td>2</td>
<td>0</td>
<td>SCF-NP: System/component failure or malfunction</td>
</tr>
<tr>
<td>26/12/2013</td>
<td>Russian Federation</td>
<td>ANTONOV AN12</td>
<td>Cargo</td>
<td>9</td>
<td>0</td>
<td>UNK: Unknown or undetermined</td>
</tr>
</tbody>
</table>