# Annual Safety Review of Aviation in Ireland during 2012

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# Foreword

*Kevin Humphreys*

*Director Safety Regulation Division*

It is my privilege as Director Safety Regulation to present the IAA Annual Safety Performance Review 2012.

Overall 2012 was quite a good year for aviation safety in global terms and in Ireland as well, with the main key safety indicators trending in the right direction. According to the Flight Safety Foundation operators of large commercial jets enjoyed one of the safest years on record, if not the safest, the metrics showing about a 50% improvement in 2011.

There were no fatal accidents in 2012 involving Irish Registered Commercial Air Transport aircraft or aircraft operated by the holder of an Irish Air Operators Certificate. System failures and human error continue to contribute to incidents which, with one or two more defences breached, would have produced an accident. Sadly, there was one fatal accident involving a general aviation aircraft where two pilots lost their lives. This accident is currently under investigation by the Air Accident Investigation Unit (AAIU) of Ireland and a report will be issued in due course.

The IAA continues to encourage all agencies and operators to increase their awareness of the threat posed by bird hazard, runway incursion and ground collision. Pressure from economic, environmental and security demands continue to impinge on our efforts to ensure that aviation remains an ultra- safe transportation system. Identifying the potential cause of accidents before they occur continues to be our priority and to this end, we encourage persons engaged in aviation activities, whether part of approved or certified organisation or not, to report occurrences affecting aviation safety so that the body of data available for risk assessment continues to grow.

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# Executive Summary

Overall 2012 was a good year for aviation worldwide and in Europe. Preliminary aviation safety data shows there has been a reduction in the number of fatal accidents worldwide from 17 in 2011 to 11 in 2012 in passenger air transport operations. There was a single fatal accident involving an aircraft operated by an Air Operators Certificate (AOC) holder from an EASA Member State in 2012. It was a ground accident involving an Airbus A320 at Rome Fiumicino Airport.

Between the Irish lease fleet and the Irish AOC holders there were 739 large commercial air transport aircraft on the Irish aircraft register on the 31st December 2012, an increase of 10% since the 31st December 2011. There were 457 aircraft on the Irish aircraft register which engage in general aviation activities on the 31st December 2012. The five largest Irish AOC holders are Aer Arann, Aer Lingus, Air Contractors, CityJet and Ryanair and collectively they conducted 674,044 flights in 2012. This is an increase of over 11,000 flights on 2011 and marks over 12 years of consistent growth for this sector of the Irish aviation industry.

The Irish lease fleet aircraft and aircraft operated by Irish AOC holders have been involved in 7 accidents and 24 serious incidents during 2012. The majority of accidents occurred while the aircraft was on the ground, either taxiing or manoeuvring onto the stand, or involved passengers disembarking the aircraft. Accidents that occur under these circumstances are not catastrophic accidents but can result in injuries to passengers and crew or require significant repairs to the aircraft.

Under S.I. No. 285 of 2007 European Communities (Occurrence Reporting in Civil Aviation) Regulation 2007 the IAA received 6,674 occurrence reports during 2012, the vast majority of which described incidents where the safety barriers were effective in preventing a situation where an accident may have occurred. Ireland was one of ten EASA Member States that participated in a recent survey on occurrence reporting rates. Reporting rates for 80 airlines were available. The results of the survey indicated that the reporting culture for Irish AOC holders is mature when compared with our European counterparts.

Flight hours describe the length of time aircraft spent in Irish controlled airspace. It includes en-route (overflight) traffic as well as aircraft that land or depart from an Irish airport. The number of flight hours rose slightly in 2012. The number of arrivals and departures at aerodromes located within Ireland fell slightly in 2012.

There was 1 accident involving commercial fights at an Irish aerodrome in 2012, it did not result in any fatalities. Sadly there was 1 light aeroplane accident during 2012 which resulted in the loss of 2 lives. It is currently under investigation by the Air Accident Investigation Unit (AAIU) of the Department of Transport, Tourism and Sport and their findings will be published on completion of their investigation.


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# Global Performance Summary

The '2012 Safety Report', published by the International Civil Aviation Organization (ICAO), provides detailed aviation safety data for the World.

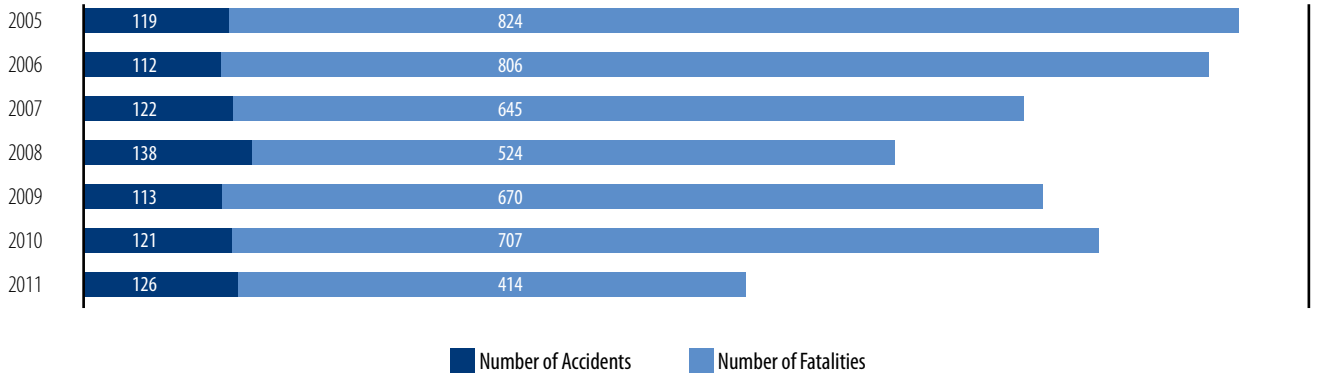
A specialized agency of the United Nations, ICAO was created in 1944 to promote the safe and orderly development of international civil aviation throughout the world.

ICAO sets the Standards and regulations necessary for aviation safety, security, efficiency and environmental protection on a global basis. It serves as the primary forum for cooperation in all fields of civil aviation among its 191 Member States.


The full report may be accessed on the ICAO website at **www.icao.int**.

The ICAO 2012 Safety Report gives an overview of the Global Safety Performance up to the end of 2011. The growth in volume of commercial scheduled flights seen in 2010 continued in 2011 at the rate of 3.5%. The number of accidents (including accidents and fatal accidents) grew by 4.1% and the global accident rate for 2011 remains stable at 4.2 accidents per million departures. Approximately 13% of the global accidents in 2011 resulted in fatalities. Notwithstanding the increase in the global accident rate, the number of fatalities has decreased by 41.4%, making 2011 the safest year with regard to fatalities since 2004.

Accident Records: 2005 - 2011 *Scheduled Commercial Flights*



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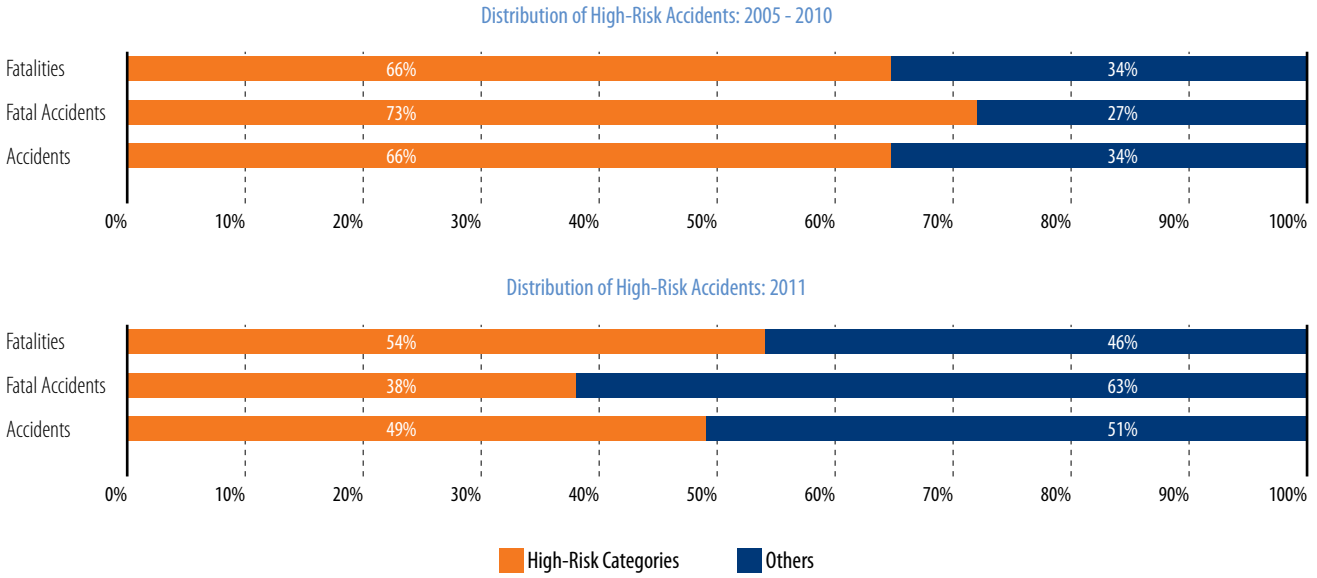
ICAO has identified High Risk Accident Occurrence categories, namely, Runway Related Safety Events, Loss of Control In-flight (LOC-I), and Controlled Flight into Terrain (CFIT). Analysis of the distribution of Fatalities, Fatal Accidents and Accidents for these High Risk Occurrences shows a positive trend in 2011. Improved runway safety was a key element for this decrease with no fatal runway accidents occurring in 2011.



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# European Safety Performance

The Annual Safety Review 2011, published by the European Aviation Safety Agency (EASA), provides detailed aviation safety data for the European region for the period 2011.

The full report may be accessed on the EASA website at **www.easa.europa.eu**.

This section provides a synopsis of data presented in the EASA Annual Safety Review 2011.

The Annual Safety Review 2011 is published by the European Aviation Safety Agency (EASA). Traffic levels in Europe continue to rise slowly following the global economic downturn in 2008, with levels in 2011 reaching the same levels as 2006.

From the EASA perspective, the drop in the number of passenger fatalities, whilst the global accident rate remains at or around the same level, can be mainly attributed to the involvement of smaller aircraft in fatal accidents as well as to a lower proportion of fatalities of persons on board when compared to the previous year.

## Commercial Air Transport

In Europe, the number of fatalities in 2011 was one of the lowest in the past decade. There was a single fatal accident in 2011 in which 6 of the 12 persons on board received fatal injuries. For the decade 2002 – 2011, the rate of accidents in scheduled operations in EASA Member States (EASA MS) is one of the lowest in the world with 1.6 fatal accidents per 10 million flights.

Overview of total number of accidents and fatal accidnets for EASA MS operators

| AEROPLANES | | | | |
|---|---|---|---|---|
| Period | Number of accidents | Fatal accidents | Fatalities on board | Ground fatalities |
| 2000 – 2009 (average) | 30 | 4 | 89 | 0 |
| 2010 (total) | 28 | 0 | 0 | 0 |
| 2011 (total) | 32 | 1 | 6 | 0 |

| HELICOPTERS | | | | |
|---|---|---|---|---|
| Period | Number of accidents | Fatal accidents | Fatalities on board | Ground fatalities |
| 2000 – 2009 (average) | 8 | 3 | 12 | 0 |
| 2010 (total) | 2 | 0 | 0 | 0 |
| 2011 (total) | 6 | 2 | 4 | 0 |

In line with the global picture, occurrence categories most commonly associated with fatal accidents for Commercial Air Transport in the decade from 2002 to 2011 in Europe were LOC-I and CFIT. Other common occurrence categories for the fatal accidents in Europe were SCF ('System or component failure '), LALT (Low Altitude Operations (ie Helicopters)) and F-POST ('Fire – post impact').

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## General Aviation

EASA also collected data for light aircraft with a certificated Maximum Take-Off Mass (MTOM) of 2 250 kg or less from EASA Member States. EASA has noted that although reporting of accidents has been comprehensive, the quality of some reports would benefit from further improvement in order to better identify the circumstances of the accidents.

The table above shows the number and trends of accidents, fatal accidents and fatalities.

The category assigned most frequently to light aircraft was LOC-I followed by LALT and F-POST, which may have been assigned together with LOC-I. The figure also shows that there are a high number of fatal accidents involving 'Unintended flight into Instrument Meteorological Conditions' (UIMC).

For helicopters and gliders EASA identified LOC-I as the most important accident and fatal accident category. They identified the second most frequent fatal and non-fatal accident type for helicopters as LALT.

Overview of Total Number of Accidents and Fatal Accidents by Aircraft Category – EASA MS Registered Aircraft with MTOM Below 2250kg

| Aircraft category | Period | Number of all accidents | Fatal Accidents | Fatalities on board | Ground fatalities |
|---|---|---|---|---|---|
| Balloon | 2006 – 2010 | 20 | 0 | 0 | 0 |
| | 2011 | 24 | 3 | 4 | 0 |
| Dirigible | 2006 – 2010 | 0 | 0 | 0 | 0 |
| | 2011 | 1 | 1 | 1 | 0 |
| Aeroplane | 2006 – 2010 | 518 | 62 | 116 | 1 |
| | 2011 | 499 | 62 | 103 | 1 |
| Glider | 2006 – 2010 | 183 | 18 | 21 | 0 |
| | 2011 | 166 | 18 | 24 | 0 |
| Gyroplane | 2006 – 2010 | 11 | 3 | 3 | 0 |
| | 2011 | 26 | 5 | 7 | 0 |
| Helicopter | 2006 – 2010 | 81 | 10 | 22 | 1 |
| | 2011 | 72 | 10 | 20 | 0 |
| Microlight | 2006 – 2010 | 211 | 34 | 49 | 0 |
| | 2011 | 204 | 43 | 61 | 0 |
| Other | 2006 – 2010 | 76 | 12 | 14 | 0 |
| | 2011 | 62 | 18 | 19 | 0 |
| Microgliders | 2006 – 2010 | 58 | 9 | 13 | 0 |
| | 2011 | 55 | 9 | 14 | 0 |
| **Average** | **2006 – 2010** | **1158** | **149** | **238** | **3** |
| **Total** | **2011** | **1109** | **169** | **253** | **1** |
| **Increase (%)** | **2011 over previous** | **-4.2%** | **13.7%** | **6.4%** | **-68.8%** |

Note: Figures for period 2006 - 2010 are average of the five years.

There is a high incidence of 'Mid-Air proximity or collisions' (MAC) for glider aircraft when compared to helicopters and aeroplanes. EASA believe this may be explained by the fact that several gliders can share the same airspace simultaneously, which may cause particular "see and avoid" or communications difficulties.

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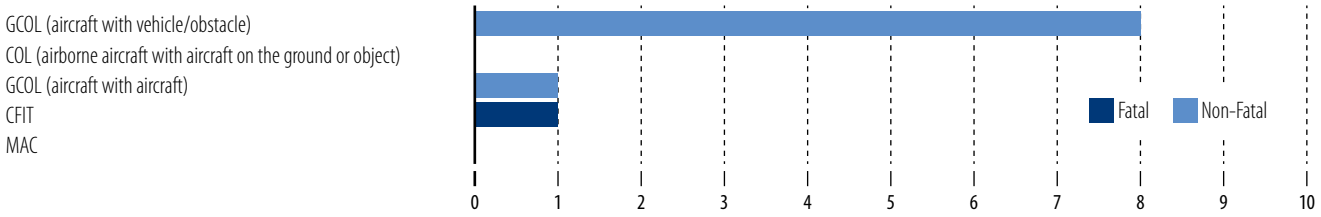
## Air Traffic Management

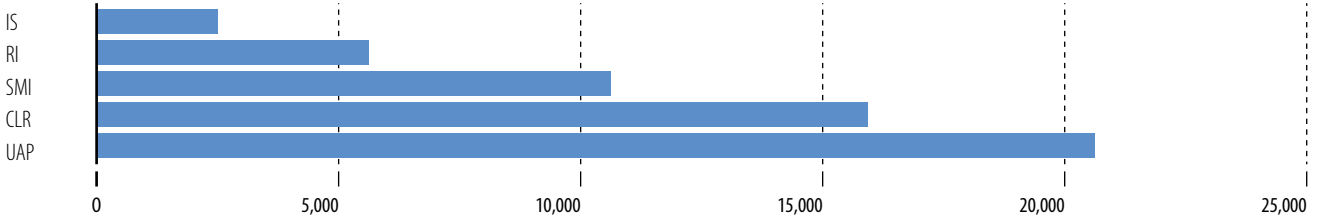
The Air Traffic Management (ATM) domain can have either direct or indirect contributions to accidents and incidents. The following table shows the accident categories for ATM related accidents in 2011.

ATM related incidents which may or may not have ATM contribution continue to be mainly due to unauthorised penetration of airspace (UAP) or airspace infringements, deviation from ATC clearance (CLR), including Level Busts, and separation minima infringements (SMI), runway incursions (RI) and inadequate aircraft separation (IS).

Accident Categories for ATM Related Accidents in EASA MS (2011)



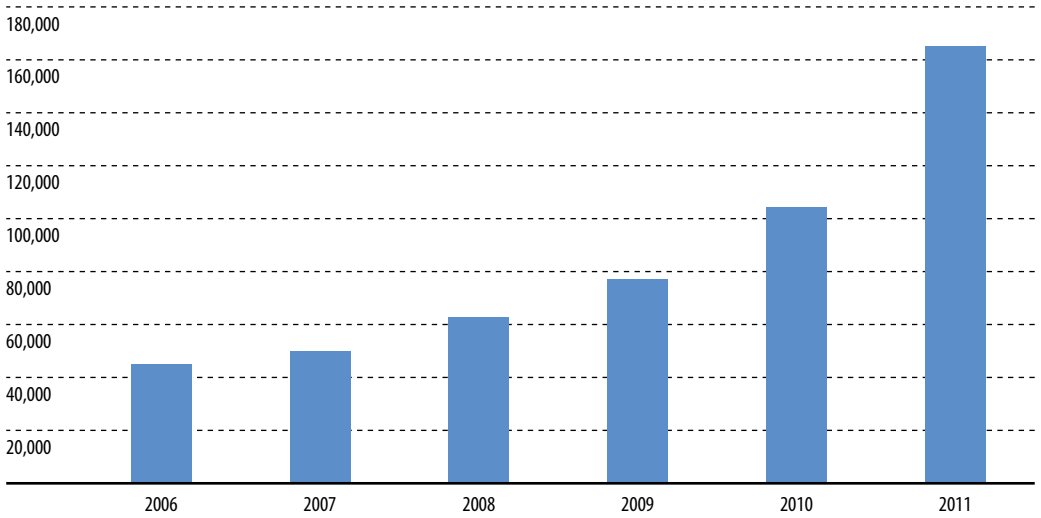

Incident Categories of ATM Related Incidents (2005 - 2011)



# European Analysis of Occurrences

An occurrence means an operational interruption, defect, fault or other irregular circumstance that has or may have influenced flight safety and that has not resulted in an accident or serious incident. Occurrences are recorded and used to identify risks within the aviation system. By 1st Jan 2012 the ECR contained 625,267 occurrences, an increase of over 200,000 reports on 2010. The increase may be due to improvements in States integrating their occurrence data into the ECR.

Distribution of Occurrences Per Year in the ECR




## European Central Repository

The European Commission has developed the concept of a centralised aviation safety data collection system, known as the European Coordination Centre for Accident and Incident Reporting Systems (ECCAIRS). Under this system, all safety occurrences from EASA Member States are collected in a centralized database for risk analysis.

The European Central Repository (ECR). EC Directive 42/2003 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 and to ensure that their databases were compatible with software developed by the European Commission (i.e. ECCAIRS software).

The EU has proposed an update to the current legislation by means of a Proposed EU Regulation to address such issues as consistency and quality of occurrence reports, access to the data for analysis by states and legislative provisions for states on how to use the data collected.

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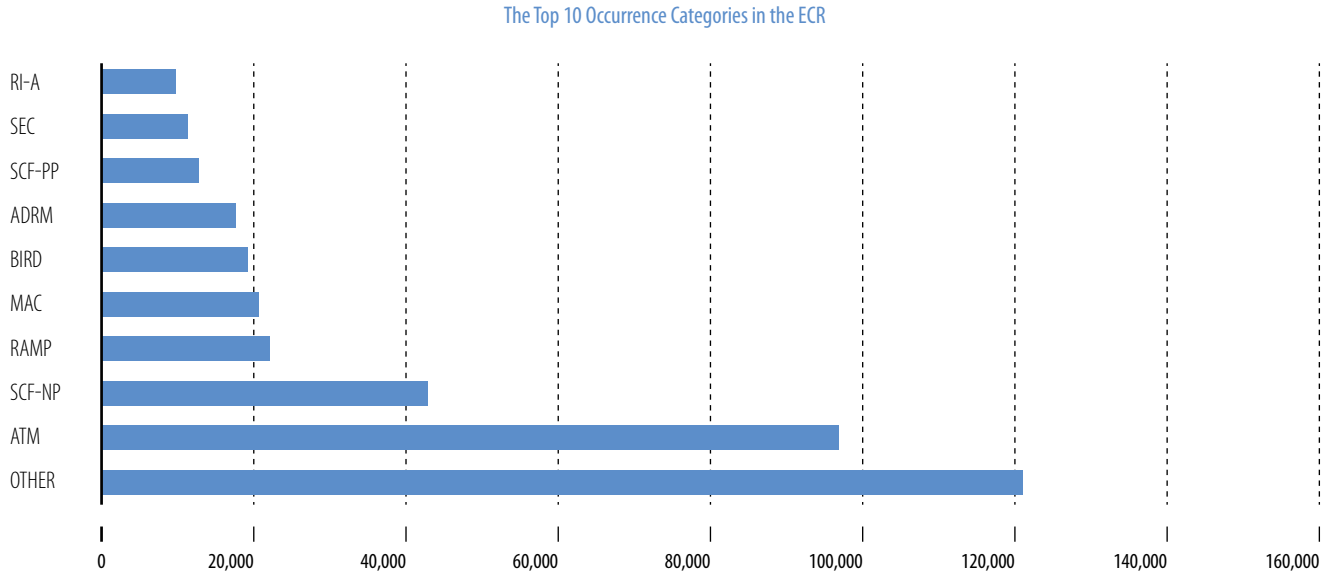
Each occurrence is categorized in accordance with the ICAO Common Taxonomy and the distribution of occurrences is shown below. The majority of occurrences were classified as 'Other', which highlights the importance of initiatives to improve the classification process.

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# Safety Regulation in Ireland

The Irish Aviation Authority, a limited liability company wholly owned by the State, is tasked with the implementation and oversight of aviation safety regulation in Ireland. Specifically the Safety Regulation Division carries out the safety regulatory functions on behalf of the IAA. The Division is headed by Mr Kevin Humphreys and divided into 4 departments – Aeronautical Services, Airworthiness, Flight Operations and Regulatory Performance and Personnel Licensing.

There are 95 people employed in the safety regulation division with expertise and experience in all aspects of aviation safety regulation and oversight.

The Safety Regulation Division (SRD) of the IAA is responsible for Ireland's regulatory and safety oversight functions within civil aviation. Among other responsibilities this entails:

- Providing oversight and surveillance for commercial air transport operations, aerial work and general aviation;
- Ensuring that aircraft accepted onto the Irish aircraft register are maintained to appropriate safety standards;
- Ensuring the provision of safe and secure aerodromes and air traffic services in Ireland.

Within its capacity as a regulator SRD analyses and monitors the safety of organisations and operations under its remit and provides safety statistics relating to the following aspects of the Irish aviation industry:

- The number of accidents and serious incidents involving Commercial Air Transport (lease fleet and Irish Air Operators Certificate (AOC) holders);
- The incident reporting rate and types of events for Irish AOC holders;
- The number of accidents and serious incidents at Irish aerodromes involving commercial air transport;
- The key performance indicators for air traffic services within Ireland;
- The number of accidents and serious incidents involving General Aviation according to the type of aircraft being flown.

# Irish Commercial Air Transport

The Irish commercial transport industry consists of two types of commercial organisations; commercial operators who hold an Air Operators Certificate (AOC) issued by the IAA and aircraft on the Irish register on lease to an Operator in another state that hold an AOC issued by that state.

An AOC grants an Operator permission to fly for commercial purposes, these Operators are required to have personnel, assets and systems in place to ensure the safety of its employees and the general public before one is issued. There are currently 11 AOC holders in Ireland, they vary from small helicopter operations to large airlines conducting transoceanic flights. The five largest AOC holders are Aer Arann, Aer Lingus, Air Contractors, CityJet and Ryanair and collectively they conducted 674,044 flights in 2012. This is an increase of over 11,000 flights on 2011 and marks over 12 years of consistent growth for this sector of the Irish aviation industry.

The Irish Lease Fleet is a substantial part of the Irish commercial aviation sector and 50% of the world's leased commercial aircraft fleet is managed by leasing companies based in Ireland. The Irish Lease Fleet are those aircraft that are registered in Ireland and are operated in another state. The IAA is responsible for specific regulatory oversight of these aircraft in accordance with an interstate agreement between Ireland, as the State of Registry, and the State of the Operator pursuant to the provisions of Article 83Bis of the ICAO Convention on International Civil Aviation. During 2012 the IAA's Airworthiness Inspectors continued to regularly audit the lease operators and inspect the aircraft on the lease fleet.

Between the Irish lease fleet and the Irish AOC holders there were 739 large commercial air transport aircraft on the Irish aircraft register on the 1st January 2013. This represents an increase of 10% since the 1st Jan. 2012 and 34% since the 1st Jan. 2009.

Table A shows the number of accidents, fatal accidents and serious incidents to Irish registered aeroplanes over 2,250 kg's involved in commercial air transport. The fatal accident that occurred at Cork airport during 2011 is not included in Table A as the Operator did not hold an AOC issued by the IAA and the aircraft was not on the Irish aircraft register.

**Table A:** No. of accidents, fatal accidents and serious incidents involving Irish registered aeroplanes over 2,250 kg's engaged in commercial air transport

| Year | Total Registered in Ireland | Accidents | | | Serious Incidents |
|---|---|---|---|---|---|
| | | Non-Fatal | Fatal | Total | |
| End of 2009 | 550 | 2 | 0 | 2 | 12 |
| End of 2010 | 617 | 3 | 0 | 3 | 13 |
| End of 2011 | 670 | 4 | 0 | 4 | 22 |
| End of 2012 | 739 | 7 | 0 | 7 | 25 |
| Total | - | 16 | 0 | 16 | 72 |

The Irish registered lease fleet aircraft and those operated by Irish AOC holders have been involved in 16 accidents over the last 4 years, 7 of which occurred in 2012. The majority of these occurred while the aircraft was on the ground, either taxiing or manoeuvring onto the stand, or involved passengers disembarking the aircraft. Accidents that occur under these circumstances are not catastrophic accidents but may still result in injuries to passengers and crew or require significant repairs to the aircraft.

The Irish registered lease fleet aircraft and those operated by Irish AOC holders have been involved in 72 serious incidents

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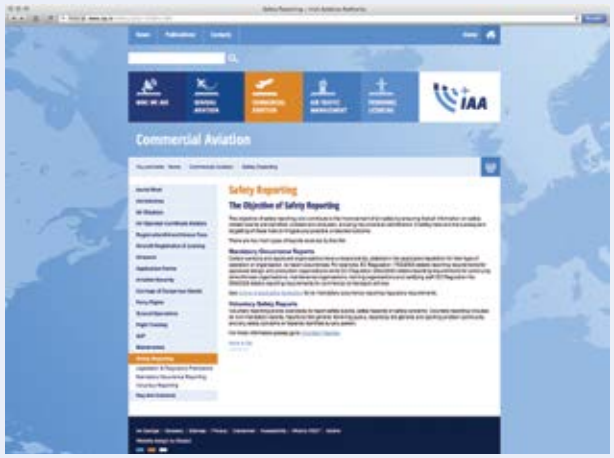
over the last 4 years, 24 of these occurred during 2012. This partially reflects the growth in the number of Irish registered aircraft in this category and the fact that worldwide traffic levels have increased. The IAA will continue to identify and address emerging safety concerns in conjunction with the relevant stakeholders as outlined in the Irish State Safety Plan.

All accidents and serious incidents involving Operators holding an Irish AOC or the Irish registered lease fleet are investigated by the Irish Air Accident Investigation Unit (AAIU) or their foreign equivalent and once the investigation is completed the Investigation Report is published and made available on the AAIU's website **www.aaiu.ie**.

# Mandatory Occurrence Reporting in Commercial Air Transport




The IAA Safety Reporting website address is
**http://www.iaa.ie/index.jsp?p=103&n=180**

Under S.I. No. 285 of 2007 European Communities (Occurrence Reporting in Civil Aviation) Regulation 2007 persons involved in Commercial Air Transport must report any occurrence which affects, or is likely to affect, the safety of the aircraft to the relevant oversight authority. The report submitted is called a Mandatory Occurrence Report (MOR) and Operators submit reports to the IAA via the Safety Occurrence Tracking System (SOTS). The MOR's provide an account of what happened as well as other relevant details such as the weather and phase of flight at the time of the occurrence. The IAA addresses high risk occurrences immediately and maintains a library of all occurrences so that emerging safety concerns are identified and addressed before they lead to a serious incident or an accident. In 2012 the IAA received 6,674 occurrence reports from all sectors of the aviation industry, over 96% of which described incidents where all the safety barriers were effective and there was no credible scenario in which an accident could occur.

The five largest Irish AOC holders are Aer Arann, Aer Lingus, Air Contractors, CityJet and Ryanair and collectively they conducted 674,044 flights in 2012. This is an increase of over 11,000 flights on 2011 and marks over 12 years of consistent growth for this sector of the Irish aviation industry.

Collectively these five AOC holders submitted 5,428 occurrence reports. This equates to 8.05 reports for every 1,000 sectors flown. Table B shows the reporting rate has increased steadily over the last three years. The increase in the reporting rate should be viewed in a positive light as it indicates a strong reporting culture, one of the main indicators that Irish Operators have a mature Safety Management System (SMS) in place.

**Table B:** Occurrence reporting rate per 1,000 sectors flown for the main Irish AOC holders

| Year | 2010 | 2011 | 2012 |
|---|---|---|---|
| Reporting rate | 5.50 | 6.60 | 8.05 |

In January 2012 Ireland was one of ten EASA Member States that participated in a survey on reporting rates. Reporting rates for 80 airlines were available. The results of the survey indicated the average reporting rates for Irish AOC holders are quite high when compared with their European counterparts. This is indicative of a mature reporting culture.

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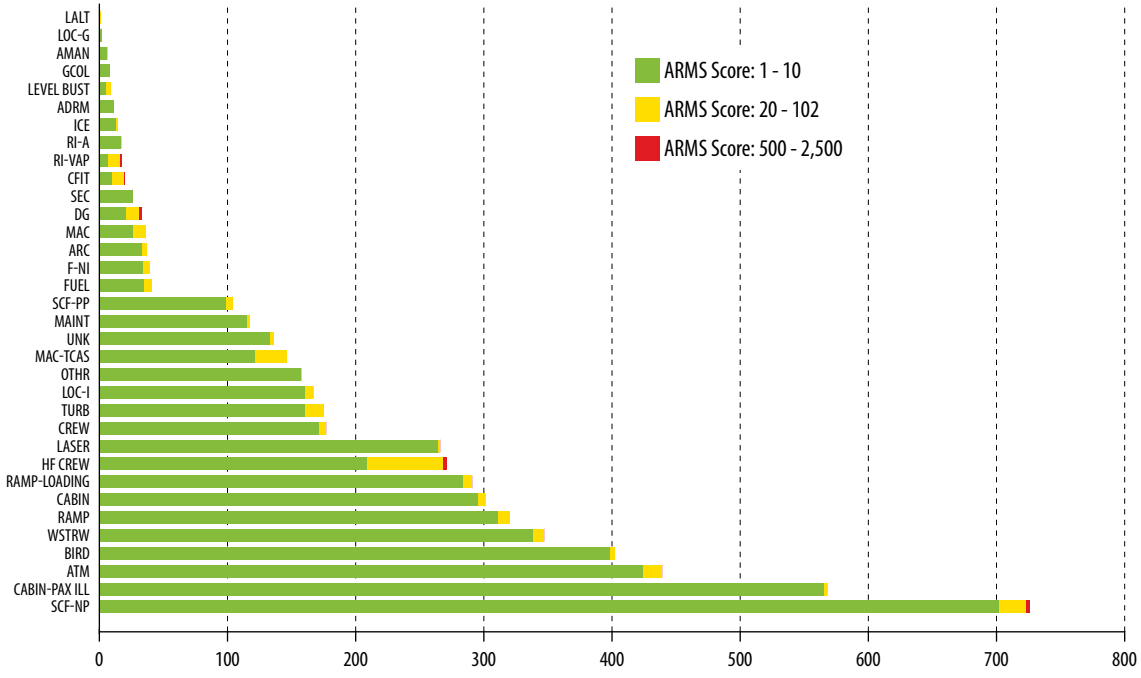
# Most Commonly Reported Occurrences

Once an MOR is submitted to the IAA an SRD Inspector classifies the occurrence and uses the ARMS methodology to assess the safety risk associated with the incident. The purpose of this is to identify emerging safety concerns. Figure 1 shows the number of each type of incident that has occurred and the ARMS score that was assigned to it. Further information on ARMS can be found here: ARMS Methodology.

Using the ARMS methodology SRD Inspectors were able to establish that of the 5,428 MOR reports the IAA received in 2012 there was no risk to the safety of the aircraft or those onboard in 96% of cases. Collectively Aer Arann, Aer Lingus, Air Contractors, CityJet and Ryanair conducted 674,044 flights in 2012.

The most common type of incident reported was the failure of components on-board the aircraft that were not associated with the engine (SCF-NP). It is rare for the failure of a single component to pose a threat to the safety of the aircraft as they are built with redundancy in the system, i.e. at least two of most components.

**Figure 1:** No. of each occurrence category and its related ARMS score during 2012
*(The 5 largest AOC holders conducted 674,044 flights in 2012)*



The second most commonly reported type of incident occurred in the cabin and involved passenger illness (Cabin – Pax ill). These types of incidents do not jeopardise the overall safety of the aircraft.

The third most common occurrence involved Irish AOC holders reporting air traffic management, communications, navigation or surveillance service issues (ATM). The occurrences are not specific to one country or time period. This category includes the failure of equipment such as radars, navigation aids, satellite systems as well as errors by Air Traffic Controllers. Procedures are in place to ensure the safety of all aircraft under the control of ATC in the event that equipment fails. Air Traffic Controllers are assessed on a regular basis to ensure their skills remain current.

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## Higher Risk-Bearing Occurrences

The ARMS risk matrix assigns a risk score by assessing the effectiveness of the remaining barriers between what transpired and the most credible accident outcome if the incident had escalated. All types of potential outcomes are considered, from those with no potential injury to those onboard or damage to the aircraft to multiple fatalities and the loss of the aircraft.

The risk matrix assigns one of 13 scores between 1 and 2,500 to the occurrence; lower scores indicate it was a low risk incident and higher scores indicate that the risk was greater. The risk matrix is used to identify areas of potential risk to the aviation industry. Figure 2 demonstrates how a score is assigned.

Figure 2: ARMS Risk Matrix for the classification of the risk associated with the occurrence

| Question 2 | | | |
|---|---|---|---|
| What was the effectiveness of the remaining barriers between this event and the most credible accident scenario? | | | |
| Effective | Limited | Minimal | Not effective |
| 50 | 102 | 502 | 2500 |
| 10 | 21 | 101 | 500 |
| 2 | 4 | 20 | 100 |
| 1 | | | |

| Question 1 | |
|---|---|
| If this event had escalated into an accident outcome, what would have been the most credible outcome? | |
| Catastrophic Accident | Loss of aircraft or multiple fatalities (3 or more) |
| Major Accident | 1 or 2 fatalities, multiple serious injuries, major damage to the aircraft |
| Minor Injuries or damage | Minor injuries, minor damage to aircraft |
| No accident outcome | No potential damage or injury could occur |

| Typical accident scenarios |
|---|
| Loss of control, mid air collision, uncontrollable fire on board, explosions, total structural failure on the aircraft, collision with terrain |
| High speed taxiway collision, major turbulence injuries |
| Pushback accident minor weather damage |
| Any event which could not escalate into an accident, even |

Figure 3 shows which incidents were allocated an ARMS score of 20 or greater. Collectively Aer Arann, Aer Lingus, Air Contractors, CityJet and Ryanair conducted 674,044 flights in 2012.

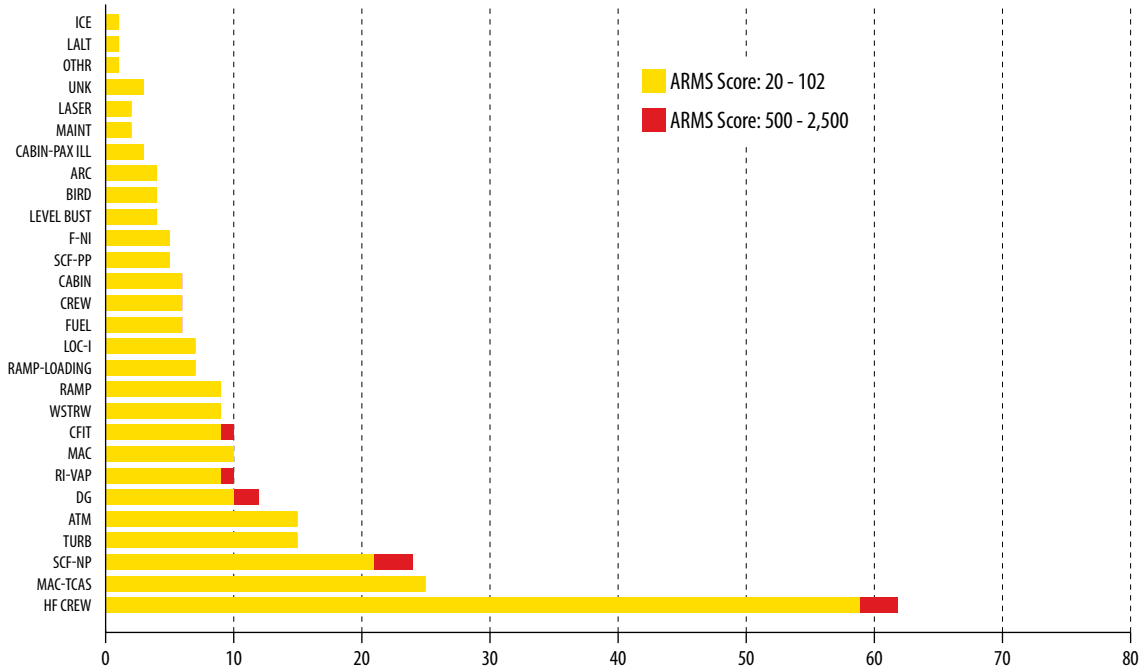
The three areas identified as being of greatest risk are HF Crew, MAC - TCAS and SCF-NP.

The Human Factors occurrence category describes incidents that were initiated through crew procedural error, for example entering information incorrectly into the Flight Management System (FMS) or using an incorrect flap setting during landing or take-off (HF Crew). Human Factors issues have been identified as one of the main safety concerns in the EU and further afield and specific measures aimed to address Human Factors in all levels of the aviation industry are currently being developed and implemented. Irish Operators have integrated Human Factors Principles into their training programmes.

A Mid Air Collision - Traffic Collision Avoidance System occurs when there is a loss of separation between two or more aircraft during which the TCAS RA alert activates and

**Figure 3:** Categorisation of MOR reports the IAA received during 2012 which had an ARMS score of 20 or greater

*(The 5 largest AOC holders conducted 674,044 flights in 2012)*



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provides the Flight Crew with instructions on how to resolve the traffic conflict (MAC - TCAS). During a TCAS RA alert pilots are trained to adhere to instructions provided by TCAS above those provided by ATC. This ensures the flight crews on both aircraft are following a complementary course of action. Occurrences resulting in a mid-air collision are very rare within Europe. Irish Operators have never been involved in a MAC - TCAS occurrence that escalated into an accident. The occurrences reported to the IAA predominantly involve the activation of TCAS due to aircraft converging to and levelling off onto proximate flight levels where the risk of a collision was minimal.

The third most common type of incident reported was the failure of components not associated with the engine (SCF-NP). The type of failures include those affecting cabin pressurisation, air data sensors, flight controls, landing gear and flight display systems. It is rare for the failure of a single component to pose a threat to the safety of the aircraft due to equipment redundancy built into the system.

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# Irish Aerodromes and Air Navigation Services

This section focuses on accidents and serious incidents at Irish aerodromes involving commercial air transport. Accidents and serious incidents to an aircraft that was on the Irish aircraft register, a foreign aircraft register, held an AOC issued by the IAA or by another Aviation Authority are included in this summary provided the incident occurred at an Irish aerodrome. In consequence some of the data included here is also included in the section on Irish Commercial Air Transport. Accidents and serious incidents involving aircraft classified as general aviation are not included in this section.

Table C summarises the number of flight hours and aircraft movements at aerodromes located within Ireland. Aircraft movements describe the number of aircraft that landed or departed at an airport within Ireland. The aerodromes located within Ireland are Cork, Donegal, Dublin, Galway, Ireland West, Kerry, Shannon, Sligo, Waterford and Weston airport. Flight hours for every aircraft that enters Irish airspace are calculated from the flight plan as the difference between the aircrafts entry and exit time in the controlled airspace of the flight trajectory. En-route traffic which passes through Irish airspace but does not land (overflight) as well as aircraft that land or depart from an Irish airport are included. From the table it is clear that the number of movements has fallen over the four years and the number of flight hours has risen.

**Table C:** No. of airport movements and flight hours as well as accidents, fatal accidents and serious incidents to commercial air transport at Irish aerodromes

| Year | Irish airport movements (arrivals & departures) | Flight hours in Irish airspace | Accidents | | | Serious Incidents |
|---|---|---|---|---|---|---|
| | | | Non-fatal | Fatal | Total | |
| 2009 | 233,641 | 255,710 | 1 | 0 | 1 | 8 |
| 2010 | 207,552 | 220,904 | 0 | 0 | 0 | 2 |
| 2011 | 207,586 | 261,671 | 1 | 1 | 2 | 4 |
| 2012 | 207,192 | 263,974 | 1 | 0 | 1 | 2 |
| Total | - | - | 3 | 1 | 4 | 16 |

There were 4 accidents over the 4 year period, tragically 1 of which resulted in fatalities. The fatal accident, involving a foreign operated aircraft, occurred at Cork airport during 2011 and resulted in the loss of 6 lives. Six people survived, 4 of whom suffered serious injuries and 2 of whom suffered minor injuries. It is the first fatal accident involving a commercial aircraft at an Irish aerodrome since 1976. Although the final report has not yet been released two preliminary reports are available; AAIU Report No's 2012-003 and 2013-002.

There were 16 serious incidents over the 4 year period, 2 of which occurred during 2012. Accidents and serious incidents that occur within Ireland are subject to investigation by the AAIU. Once the investigation is completed the AAIU publish a report on each occurrence which is available to the public on their website.

# Key Safety Indicators (KSIs)

ICAO defines a Safety Indicator as "the parameters that characterise and / or typify the level of safety of a system". EUROCONTROL has identified the following occurrences as having the potential to cause or contribute to an accident or serious incident within European Airspace; separation minima infringements, level busts, deviation from ATC clearance, runway incursions and airspace infringements. As part of the State Safety Programme the IAA has adopted these occurrences as KSIs for air traffic services at Irish Aerodromes. There are a small number of occurrence reports in which two of these classifications were appropriate, for example a deviation from ATC clearance may lead to a level bust. In these circumstances both classifications were applied to the occurrence and consequently some occurrences feature in two of the following summaries of the KSI's.

Table D: Summary of ESARR 2 Severity Classification Scheme

| Severity Class | Severity A | Severity B | Severity C | Severity D | Severity E |
|---|---|---|---|---|---|
| Definition | Serious incident | Major incident | Significant incident | Not determined | No safety effect |

The seriousness of all incidents, including the KSIs, are classified in accordance with the ESARR 2 Severity Classification Scheme described in the Table D.

This classification system was developed by EUROCONTROL and they have provided guidance material, which the Air Navigation Service Provider adheres to, on how to implement the scheme.

# 5

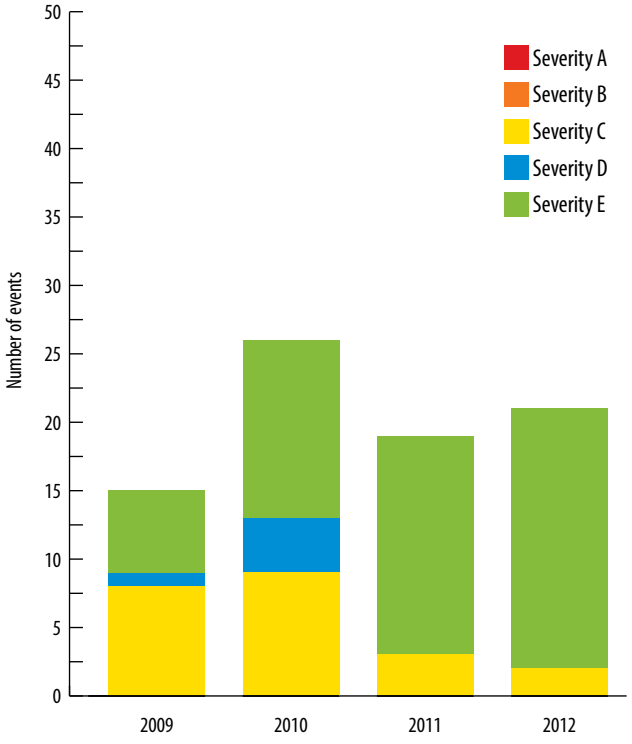
## Airspace Infringement

An airspace infringement occurs when an aircraft enters airspace without requesting and obtaining clearance from the authority controlling the airspace in advance of doing so. The majority of incidents recorded involve General Aviation (GA) aircraft, reflecting that whereas most GA VFR flights are conducted outside control areas and zones, some infringements into controlled airspace by GA aircraft do occur.

The number of airspace infringements was slightly higher in 2012 than in 2011, however the rise was not a large one. The vast majority of airspace infringements were of Severity E, the lowest rating on the ESARR 2 Severity Classification Scheme and were not associated with a safety risk.

Ireland continues to implement guidance material issued at a European level such as the European Action Plan for Airspace Infringement Risk Reduction to lessen their frequency.

**Figure 4:** No. of airspace infringements between 2009 and 2012



# Runway Incursions

ICAO defines a runway incursion as any occurrence at an aerodrome 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. The IAA uses this definition to identify runway incursions that occur at Irelands aerodromes. An average of 3 runway incursions occurs every day in the United States1, there are a minimum of 2 a day in the European Region and accidents continue to take place on runways2. Due to the number which occur worldwide and their potential consequences, runway incursions have been recognised as a key risk in aviation safety. Figure 5(a) shows the number of runway incursions at Irish aerodromes since 2009 and Figure 5(b) shows the weighted score for runway incursions over the same time period.

From Figure 5(a) it is clear the number of runway incursions increased substantially during 2011. New technology, which increased the protection around the runways at Dublin airport by alerting ATC to incursions through an alarm which sounds automatically if a red stopbar is crossed, was introduced in August 2011. Although it is not obvious from the graph the number of incursions at Dublin airport in Q3 and Q4 of 2012 is similar to the number seen

**Figure 5(a):** Number of runway incursions between 2009 and 2012

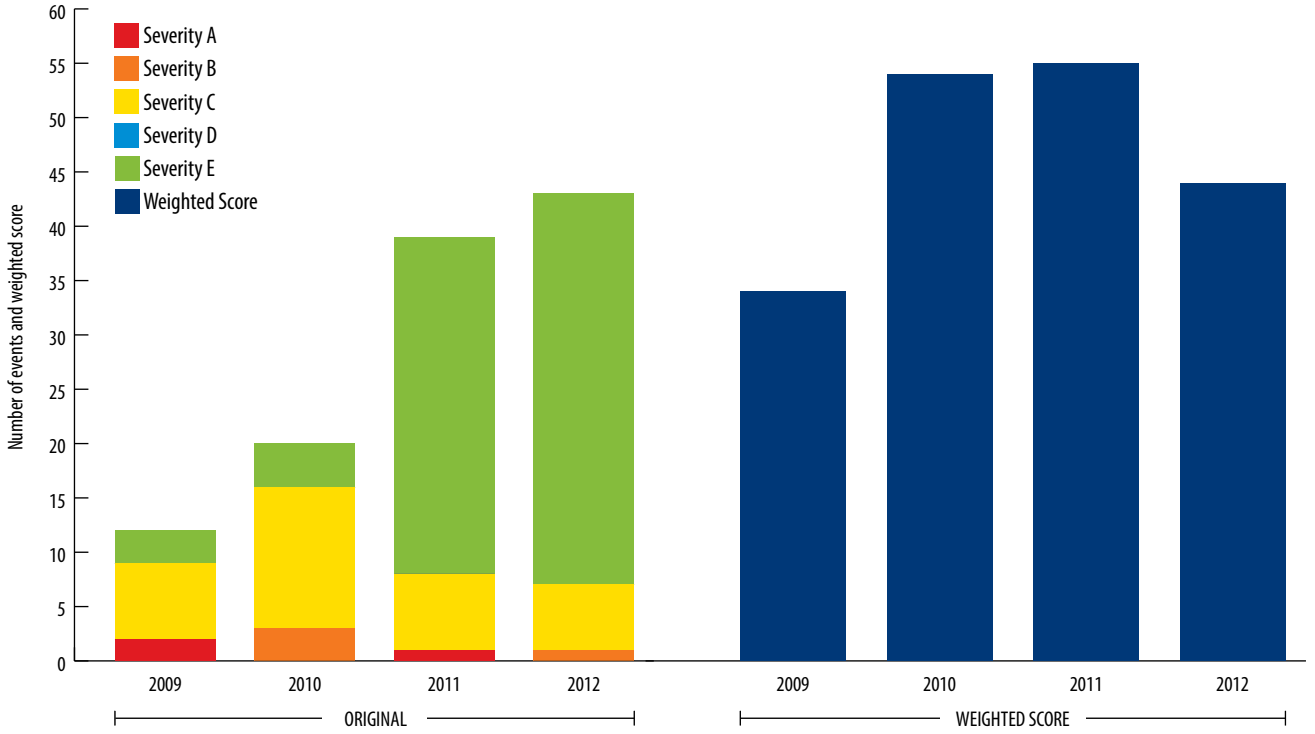



**Figure 5(b):** Weighted score for runway incursions

# 5

in 2010, however the risk associated with the incursions has decreased suggesting an improvement in safety has been successfully achieved.

During 2012 the IAA ran a publicity campaign on runway safety at many of Ireland's airports. A commonly reported phenomena is that after a particular type of incident is publicised the number of reports increases. As this may indicate an increased awareness of a safety concern the IAA views the growth in a positive light.

The graph depicted in Figure 5(a) does not take into account, numerically, that there is a greater safety risk associated with some incursions then others. The purpose of calculating a weighted score is to assess if runway safety has improved since the introduction of the new technology. To assess this numerical weights were assigned to each point on the severity scale as summarised in Table E and these were used in conjunction with the number of events that occurred each year to calculate a weighted score.

**Table E:** Summary of ESARR 2 Severity Classification Scheme

| Severity Class | Severity A | Severity B | Severity C | Severity D | Severity E |
|---|---|---|---|---|---|
| Definition | Serious incident | Major incident | Significant incident | Not determined | No safety effect |
| Weight | 5 | 4 | 3 | 2 | 1 |

These weighted score for each year was calculated as follows:

Weighted Score = (No. Severity A events*5)+(No. Severity B events*4)+
(No. Severity C events*3)+(No. Severity D events*2)+
(No. Severity E events*1)

Figure 5(b) shows the weighted score for runway incursions at Irish aerodromes since 2009. It is clear from the graph the weighted score for 2012 was lower than that calculated for 2010 and 2011. This indicates an improvement in runway safety has been successfully achieved.

A second edition of the European Action Plan for the Prevention of Runway Incursions (EAPPRI) was published in 2011 with enhanced recommendations and guidance material. As part of the State Safety Programme the IAA has committed to implementing the actions addressed to regulatory authorities. Some of the actions the IAA undertook to reduce the risk posed by runway incursions includes:

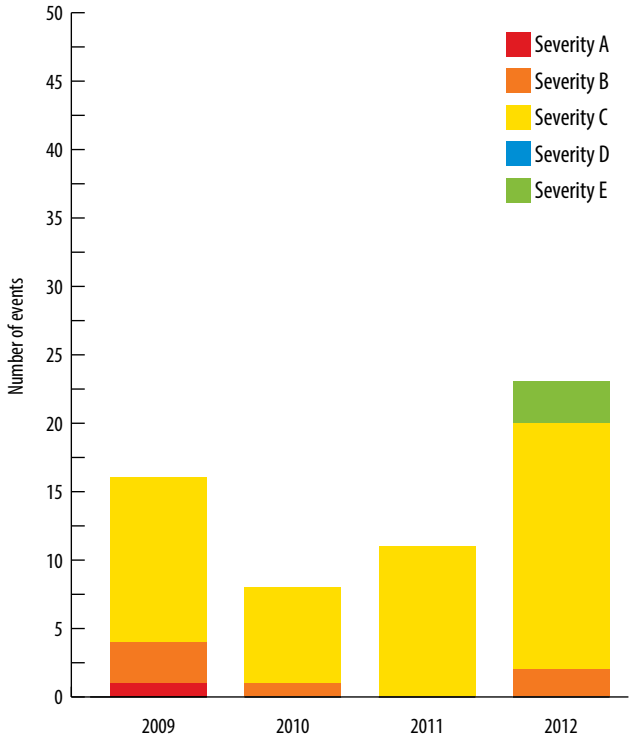
- A multi-discipline Runway Incursion Action Group (RIAG) was established to perform detailed analysis of all runway incursions in the three largest aerodromes in Ireland over the last five years. The group made a number of recommendations which are being implemented;
- The aerodromes established Local Runway Safety Teams (LRST) or an Airside Safety Committee to implement the actions addressed to airports in the EAPPRI;
- At Dublin Airport the Air Navigation Service Provider introduced Runway Incursion Monitoring and Collision Avoidance System (RIMCAS) which automatically detects incursions and alerts ATC by sounding an alarm within the Control Tower. RIMCAS reduced the threat incursions pose by detecting them at an earlier stage then was previously possible.

# Separation Minima Infringement

Separation describes the concept of keeping two or more aircraft a minimum distance apart on both the horizontal and vertical planes to reduce the risk of the aircraft colliding and prevent occurrences due to wake turbulence. Minimum separation distances are specified by regulatory authorities and are based on ICAO standards. A separation minima infringement occurs when these minimum distances are breached on either the horizontal or vertical plane, or both, while the aircraft are airborne. Although the pilot has ultimate responsibility for ensuring appropriate separations are maintained ICAO has identified that effective airspace and air traffic flow management mitigate against loss of separation events.

The IAA constantly reviews airspace design to ensure it remains safe in a changing aviation industry and reviews air traffic management systems.

**Figure 6:** No. of separation minima infringements between 2009 and 2012




The rise in separation minima infringements is mainly in the final approach and departure phases at Dublin Airport where precise application of longitudinal separation is necessary for efficiency in a busy single runway environment. In a number of events the required spacing was marginally reduced due to speed differentials between aircraft. This is being addressed through a targeted programme with particular concentration on the application of accurate speed control to maintain spacing.

Of the five key safety indicators separation minima infringements occur least frequently almost every year. Over the four years considered there was one high risk event, which occurred in 2009.

# 5

## Level Busts

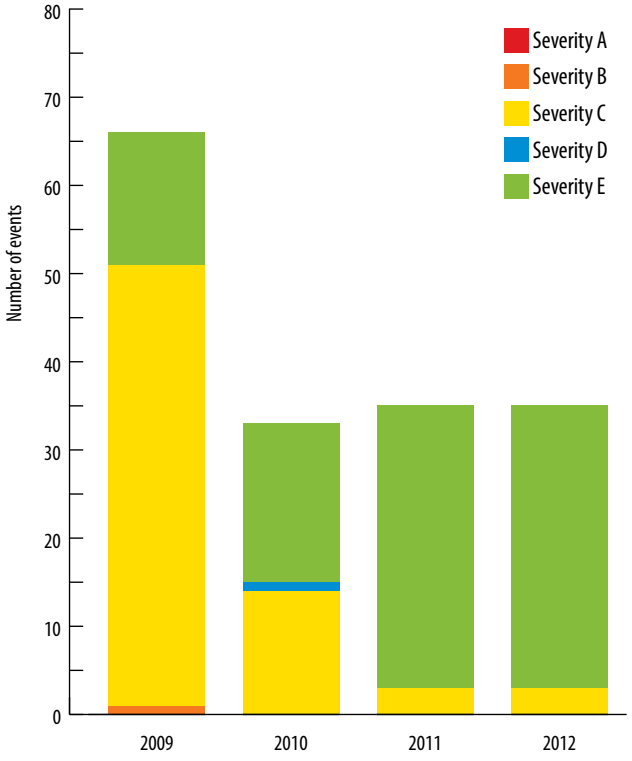
A level bust occurs when an aircraft ascends or descends more than 300 feet from an ATC flight clearance. They can only occur within controlled airspace.

EASA and ECAST identified level busts as one of five main risk factors which can lead to a loss of separation event. (The other four principal factors were ineffective air traffic control, airspace infringements, lateral navigation errors and ineffective collision avoidance).

To mitigate against level busts, standard operating procedures are used in the flight deck and by ATC when an instruction to change levels is issued or requested. Loss of minimum separation distances between aircraft can be the result of a level bust. Large commercial aircraft are fitted with equipment designed to warn of potential collision with other aircraft (ACAS/TCAS) or with the ground (GPWS or EGPWS).

The number of level busts has remained steady for the last three years. The majority of level busts reported during 2010, 2011 and 2012 were of Severity E, indicating there was no potential impact on safety.

**Figure 7:** No. of level busts between 2009 and 2012



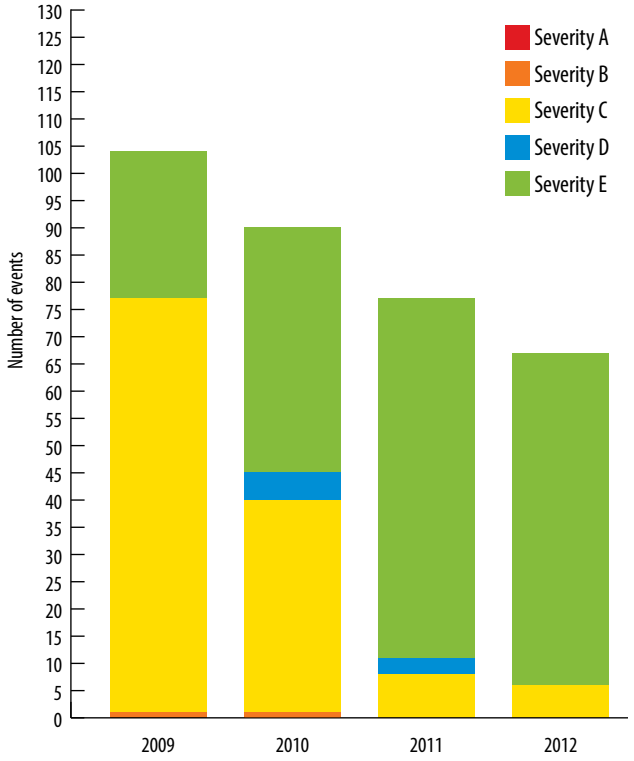
# Deviation from ATC Clearance

Deviations from ATC clearance occur when a pilot fails to follow the instructions issued by ATC with the result the aircraft deviates from its' assigned path. They can occur on the ground and if it happens near the runway there is the potential for a runway incursion. They may also occur while the aircraft is airborne and can result in the loss of minimum separation distances between aircraft or the aircraft deviating from its level.

Factors which have been shown to contribute to a deviation from ATC clearance include ATC issuing several instructions in one transmission or issuing conditional clearances. To reduce the likelihood of a deviation from ATC clearance all pilots and vehicle operators must readback all instructions relating to critical information such as ATC route clearances and runway usage. Other clearances and instructions must be read back or acknowledged in a manner that indicates they have been understood and will be complied with. Due to their potential role in other safety events they are monitored closely by most service providers and regulators.

Deviations from ATC clearance are the most commonly reported safety indicator event every year, this is because they may contribute to other events such as level busts or runway incursions. Since 2009 the number of deviations from ATC clearance has been decreasing steadily. Furthermore the majority of these occurrences have no impact on the safety of the aircraft or those aboard.

**Figure 8:** No. of separation minima infringements between 2009 and 2012




EI-DKZ

# General Aviation and Aerial Work

## The General Aviation Safety Council of Ireland

Established in 2012 the Aim of the General Aviation Safety Council of Ireland (GASCI) is to promote the safety of General Aviation in Ireland.

To achieve this GASCI seeks to identify flight safety risks and minimise them through education, training and shared experience amongst the General Aviation Community.

The Council is composed of nominees from representative bodies involved in General Aviation in Ireland, the AAIU and the IAA.

This section discusses accidents and serious incidents that involved aircraft in General Aviation (GA) or Aerial Work operations. EASA considers general aviation to be all civil aviation other than commercial air transport or aerial work. They define aerial operation as being when the aircraft is used for specialised services such as agriculture, construction, photography, surveying, observation, patrol, search and rescue or aerial advertisement.

The following sections summarise fatal accidents, accidents and serious incidents involving aircraft engaged in general aviation or aerial work according to the following aircraft types:

- Fixed-wing aircraft over 2,250 kg;
- Fixed-wing aircraft under 2,250 kg;
- Large helicopters over 2,250 kg;
- Light helicopters under 2,250 kg;
- Microlight aircraft;
- Gliders;
- Gyroplanes.

EASA uses a maximum take-off mass of 2,250 kg to determine if the aircraft is a large or light aircraft and, for consistency, the IAA has used the same definition.

The statistics for general aviation include accidents and serious incidents that occurred in Ireland but involving aircraft registered abroad.

# 5

# General Aviation – Aeroplanes over 2,250 kg

This section summarises fatal accidents, non-fatal accidents and serious incidents statistics involving aeroplanes over 2,250 kg's which were engaged in general aviation or aerial work.

**Table F:** Total no. of accidents, fatal accidents and serious incidents to aeroplanes over 2,250 kg's

| Year | Total Registered in Ireland | Accidents | | | Serious Incidents |
|---|---|---|---|---|---|
| | | Non-Fatal | Fatal | Total | |
| 2009 | 33 | 0 | 0 | 0 | 0 |
| 2010 | 30 | 0 | 0 | 0 | 0 |
| 2011 | 23 | 0 | 0 | 0 | 1 |
| 2012 | 11 | 1 | 0 | 1 | 0 |
| Total | - | 1 | 0 | 1 | 1 |

There are currently 11 aeroplanes larger then 2,250kgs registered in Ireland that are involved in general aviation or aerial work. This is a large drop since 2009, when there were 33.

There has been 1 serious incident over the last 4 years, it occurred in 2011. There were no fatal accidents over the 4 years, however 1 accident, which did not result in fatalities, occurred in 2012. The 2011 Annual Safety Performance Review stated there was a non-fatal accident in 2009. In light of further information this accident has been included in the statistics on commercial aviation. Both the accident and serious incident are currently being investigated by the AAIU.

# General Aviation – Aeroplanes under 2,250 kg

The EASA Annual Safety Review defines light aeroplanes as those with a maximum take-off mass below 2,250kgs. The data presented in this section uses the same definition for consistency. These aircraft are fixed-wing aeroplanes used for general aviation and aerial work rather than for commercial purposes.

Since 2009 the number of aeroplanes registered in Ireland with a maximum take-off mass under 2,250kg has fallen steadily from 392 in 2009 to 216 in 2012. This is a substantial drop and reflects Ireland's current economic climate. EASA commented on a similar decline in their 2011 Annual Safety Review.

Over the last 4 years a total of 29 accidents have occurred, 5 of which were in 2012. There appears to be a decline in the number of accidents over the last four years, however this may reflect the fall in the number of aeroplanes in this category flying in Ireland. Of the 29 accidents 2 resulted in fatalities. The IAA will continue to work with the GA community, through GASCI and other avenues, to address safety issues.

**Table G:** Total no. of accidents, fatal accidents and serious incidents to aeroplanes below 2,250 kg's

| Year | Total Registered in Ireland | Accidents | | | | Total No. Accidents | Serious Incidents | | Total Serious Incidents |
|---|---|---|---|---|---|---|---|---|---|
| | | Non-Fatal | Fatal | Irish | Foreign | | Irish | Foreign | |
| 2009 | 392 | 10 | 0 | 7 | 3 | 10 | 1 | 2 | 3 |
| 2010 | 298 | 7 | 1 | 5 | 3 | 8 | 1 | 1 | 2 |
| 2011 | 259 | 6 | 0 | 4 | 2 | 6 | 2 | 1 | 3 |
| 2012 | 216 | 4 | 1 | 4 | 1 | 5 | 1 | 1 | 2 |
| Total | - | 27 | 2 | 20 | 9 | 29 | 5 | 5 | 10 |

During the same period there were 10 serious incidents, 2 of which occurred during 2012 and half of which occurred to aeroplanes registered abroad.

# 5

## General Aviation – Helicopters over 2,250 kg

The EASA Annual Safety Review defines large helicopters as those with a take-off mass greater than 2,250kgs and this safety review uses the same definition for consistency.

There are currently 15 helicopters on the Irish aircraft register within this category. In 2009 there were 31, indicating the number of large helicopters on the Irish register has fallen by 48%. The EASA Annual Safety Review of 2011 highlights the EASA Member States fleet has also shrunk.

Table H summarises the number of aircraft on the Irish aircraft register over the last 4 years and the number of fatal accidents, non-fatal accidents and serious incidents.

**Table H:** Total no. of accidents, fatal accidents and serious incidents to helicopters over 2,250 kg's

| Year | Total Registered in Ireland | Accidents | | | Serious Incidents |
|---|---|---|---|---|---|
| | | Non-Fatal | Fatal | Total | |
| 2009 | 31 | 0 | 0 | 0 | 0 |
| 2010 | 25 | 0 | 0 | 0 | 1 |
| 2011 | 17 | 0 | 0 | 0 | 0 |
| 2012 | 15 | 0 | 0 | 0 | 0 |
| Total | - | 0 | 0 | 0 | 1 |

There were no accidents involving large helicopters over the period considered. There was 1 serious incident over the same period, it occurred when a helicopter struck overhead wires during take-off, the two occupants were uninjured. The safety statistics reflect the number of helicopters operating in Ireland is quite small. The EASA Annual Safety Review of 2011 notes the number of accidents and serious incidents involving helicopters is low within EASA Member States and suggests the same reason.

# General Aviation – Helicopters under 2,250 kg

The EASA Annual Safety Review defines light helicopters as those with a maximum take-off mass below 2,250kgs. For consistency this safety review uses the same definition.

As with the other types of aircraft used for general aviation and aerial work the number of light helicopters on the Irish register has fallen steadily in recent years. In 2009 there were 107 aircraft on the Irish register and in December 2012 there were 32, a drop of 70% since 2009.

Since 2009 there have been 8 accidents and 1 serious incident involving light helicopters in Ireland. None of the accidents or serious incidents occurred in 2012. The IAA welcomes this and hopes it will remain this way, however we are aware this development may reflect the reduction in helicopter numbers rather than an improvement in safety and will continue to identify and address emerging safety concerns in conjunction with the GA community.

**Table I:** Total no. of accidents, fatal accidents and serious incidents to helicopters under 2,250 kg's

| Year | Total Registered in Ireland | Accidents | | | Serious Incidents |
|---|---|---|---|---|---|
| | | Non-Fatal | Fatal | Total | |
| 2009 | 107 | 2 | 1 | 3 | 1 |
| 2010 | 69 | 2 | 0 | 2 | 0 |
| 2011 | 44 | 3 | 0 | 3 | 0 |
| 2012 | 32 | 0 | 0 | 0 | 0 |
| Total | - | 6 | 1 | 8 | 1 |

# 5

# General Aviation – Microlights

There are many types of microlight aircraft, the types on the Irish aircraft register have a maximum take-off mass of 450 kg for a two-seater land plane/helicopter or a maximum take-off mass of 472.5 kg for a two-seater land plane equipped with an airframe mounted total recovery parachute system.

In December 2012 there were a total of 133 microlights on the Irish register, just fewer than 100 of which held a Flight Permit. This is the only type of general aviation aircraft in which the number on the Irish aircraft register has remained steady over the last 4 years. The register has undergone a number of changes in the last 2 years, in 2011 a review of the register led to the removal of a number of aircraft that have not held a Flight Permit for some time or have been sold abroad but not de-registered in Ireland.

Under new regulations introduced during 2012 microlights that are resident in Ireland for longer than 28 days must be placed on the Irish aircraft register or obtain special permission from the IAA.

**Table J:** Total no. of accidents, fatal accidents and serious incidents involving microlights

| Year | Total Registered in Ireland | Accidents | | | | Total No. Accidents | Serious Incidents | | Total Serious Incidents |
|---|---|---|---|---|---|---|---|---|---|
| | | Non-Fatal | Fatal | Irish | Foreign | | Irish | Foreign | |
| 2009 | 147 | 3 | 0 | 1 | 2 | 3 | 0 | 0 | 0 |
| 2010 | 151 | 2 | 0 | 2 | 0 | 2 | 1 | 1 | 2 |
| 2011 | 147 | 3 | 0 | 2 | 1 | 3 | 0 | 1 | 1 |
| 2012 | 133 | 3 | 0 | 1 | 2 | 2 | 0 | 1 | 1 |
| Total | - | 11 | 0 | 6 | 5 | 11 | 1 | 3 | 4 |

There have been 11 accidents involving microlights since 2009, none of which have resulted in fatalities. This contrasts starkly with statistics presented by EASA, they highlighted in their Annual Safety Review that microlighting accounted for 23% of all fatalities in 2011.

Over the period considered 5 of the 11 accidents and 3 of the 4 serious incidents involved microlights that were registered abroad.

# General Aviation – Sailplanes and Powered Sailplanes

A sailplane is a type of glider aircraft with rigid wings and an undercarriage. Powered sailplanes have motors and engines that can be used for take-off or to allow the pilot to fly for an extended period. Some gliders may be launched by a tug aircraft. All sailplanes with a maximum empty mass of more than 80kg when a single-seater or 100kg when a two-seater, including those which are foot launched, are subject to the requirements of European Regulations (EASA).

Table K shows the number of accidents and serious incidents sailplanes have been involved in over the last 4 years. There have been 2 accidents, both in 2010, neither of which resulted in fatalities.

Table K: Total no. of accidents, fatal accidents and serious incidents involving sailplanes or powered sailplanes

| Year | Total Registered in Ireland | Accidents | | | Serious Incidents |
|---|---|---|---|---|---|
| | | Non-Fatal | Fatal | Total | |
| 2009 | 26 | 0 | 0 | 0 | 0 |
| 2010 | 27 | 2 | 0 | 2 | 0 |
| 2011 | 27 | 0 | 0 | 0 | 0 |
| 2012 | 27 | 0 | 0 | 0 | 0 |
| Total | - | 2 | 0 | 2 | 0 |

# 5

## General Aviation – Gyroplane

A gyroplane is a type of rotorcraft which uses an unpowered rotor in autorotation to develop lift, and an engine-powered propeller, similar to that of a fixed-wing aircraft, to provide thrust. Single and two-seater gyroplanes with a maximum take-off mass not exceeding 560kg are regulated by national legislation. Larger gyroplanes are regulated by EASA. Table L shows the number of gyroplanes on the Irish register in December of each year since 2009.

**Table L:** No. of gyroplanes on the Irish register

| Year | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|
| Registered | 12 | 12 | 12 | 13 |

There were no reports of any accidents involving gyroplanes between 2009 and 2012 in Ireland. A gyroplane was involved in a serious incident in 2012. EASA reported there were 166 gyroplane accidents in 2011, 18 of which resulted in fatalities.

## General Aviation – Balloon Aircraft

A hot air balloon consists of an envelope, which is capable of containing heated air, suspended above a gondola or wicker basket, which carries passengers and a source of heat such as an open flame. The heated air inside the envelope makes it buoyant and allows the aircraft to become airborne. The hot air balloon is the oldest successful human-carrying flight technology; the first manned flight was performed in 1782. Table M shows the number of balloons on the Irish register in December of each year since 2009.

Table M: No. of balloon aircraft on the Irish register

| Year | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|
| Registered | 9 | 10 | 10 | 10 |

There were no reports of any accidents involving balloons between 2009 and 2012 in Ireland. EASA reported a total of 24 accidents, 3 of which resulted in fatalities, in 2011.


AKE 1766 UA
AKE 9441 UA

# 6

# Voluntary Reporting

Voluntary Reporting involves the collection of any safety data on actual or potential safety deficiencies that may not be captured by the mandatory reporting requirements. The reports may relate to a specific event during a flight or can relate to a safety hazard or concerns encountered by aviation professionals or the general public.

The IAA has implemented the Voluntary Reporting System using the IAA website on http://www.iaa.ie/voluntary-safety-reporting which contains all the information required to submit a report. Confidentiality of the data is assured. Three separate templates for submitting voluntary reports are provided:

### General Public

This template is best suited for use by a member of the general public who wishes to report a safety event experienced on a commercial airline (Irish and from any other country) or on a business jet.

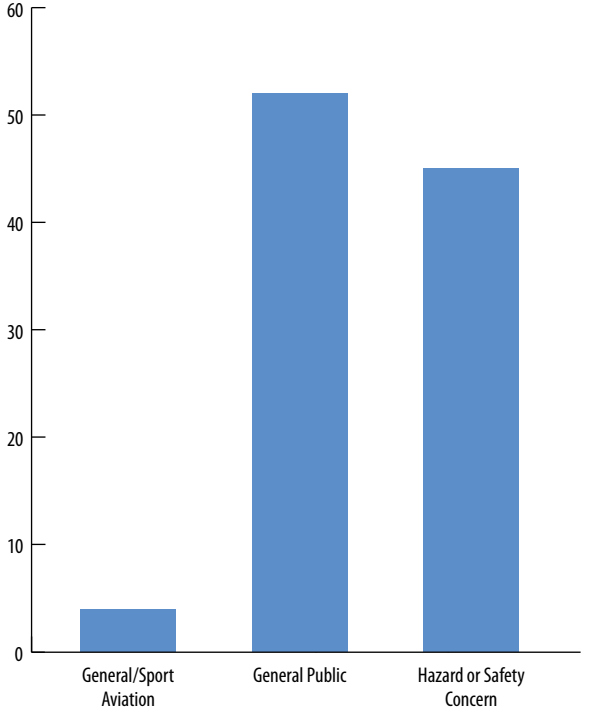
### General / Sport Aviation

This template is best suited for use by a private pilot or a passenger of a private aircraft who wishes to report a safety event experienced while flying.

### Hazard or Safety Concern

This template is best suited for reporting a hazard or safety concern that is not directly linked to a specific event. This may be used by any person, either in commercial or non-commercial aviation.

The IAA reviews all voluntary reports to identify any safety hazards or concerns that may be emerging or were previously unidentified. The IAA does not routinely respond to each individual voluntary report, only in the case where additional information is required and the reporter has agreed to be contacted. The safety hazards, concerns and trends are collated and integrated into the relevant safety oversight activities.

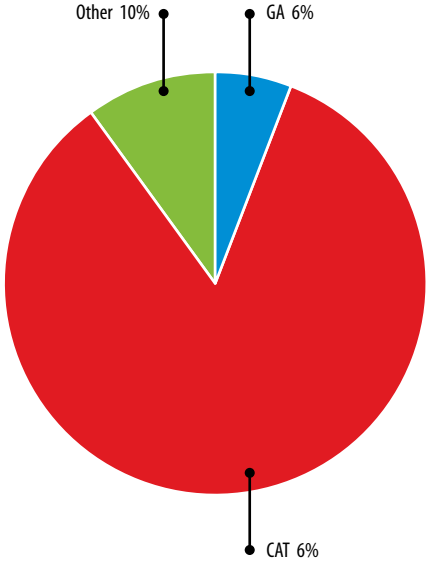


A total of 94 voluntary reports have been received since the system has been made available in mid- 2011. A breakdown of the templates used shows that the majority of the reports are received using the templates for General Public and Hazard or Safety Concern with very few reports using the General/Sports Aviation templates.

A detailed analysis of the subject matter of the reports is shown in the graph below. It is disappointing that only 6% of the reports concern General/Sports Aviation (GA). One of the prime aims of the voluntary reporting system is to allow individuals involved in this area to report safety information in order to share the lessons learned with fellow enthusiasts and to help prevent accidents. The IAA, in conjunction with the General Aviation Safety Council of Ireland, will continue to promote the voluntary reporting in this area.

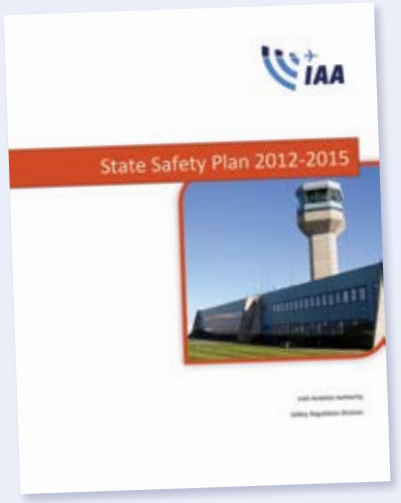
The vast majority of the reports (84%) relate to passenger experience on Commercial Flights including cabin related issues and passenger perceptions of hazardous aircraft operations (heavy landings, proximate traffic etc). 10% of the reports concern "other" issues and typically concern maintenance or aerial work related reports.

## Voluntary Reports Breakdown



# 7

# Irelands State Safety Plan

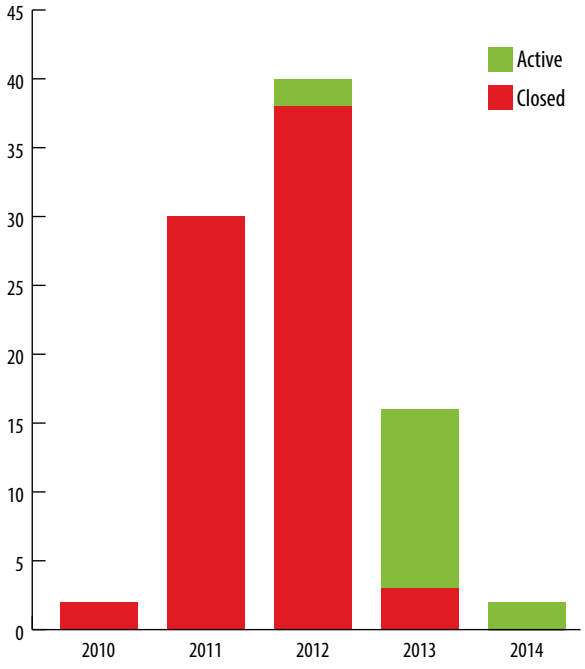



A copy of the Irelands State Safety Plan may be found on **www.iaa.ie**.

The safety performance analysis that underpins the Annual Review also helps inform the actions included in the State Safety Plan. The State Safety Plan identifies issues and actions at the state level that will help to mitigate against the risks to aviation safety.

The State Safety Plan issues are grouped under 3 headings – Systemic (SYS), commercial air transport (CAT) and general aviation (GA). The current published plan is the State Safety Plan 2012-2015 and the plan is updated annually in line with the latest safety analyses.

A detailed account of the progress of each of the safety initiatives identified in the State Safety Plan will be provided in the Plan itself as part of the annual update. The following table provides an overview of the current status (active/ closed) of the actions promulgated in the State Safety Plans published to date.



# 8

# Glossary of Terms

## A

| | |
|---|---|
| AAIU | Air Accident Investigation Unit, Ireland |
| ADREP | Accident Data Reporting system |
| ALM | aerodromes licensing manual |
| ANS | air navigation services |
| ARC | abnormal runway contact |
| ARMS | Airline Risk Management Solutions |
| ASD | Aeronautical Services Department |
| ATC | Air Traffic Control |
| ATM | Air Traffic Management |

## B

| | |
|---|---|
| BEA | Bureau d'Enquêtes et d'Analyses |
| BIRD | birdstrikes |

## C

| | |
|---|---|
| CAST | Commercial Aviation Safety Team |
| CFIT | controlled flight into terrain |

## D

| | |
|---|---|
| DG | Dangerous Goods |

## E

| | |
|---|---|
| EASA | European Aviation Safety Agency |
| (MS) | 27 EU Member States plus Iceland, Liechtenstein, Norway and Switzerland. |
| EAPPRE | European Action Plan for the Prevention of Runway Excursions |
| EASP | European Aviation Safety Plan |
| ECR | European Central Repository |
| EGAST | European General Aviation Safety Team |
| EHEST | European Helicopter Safety Team |
| ERC | Event Risk Classification |
| ESARR | European Safety and Regulatory Requirements |

## F

| | |
|---|---|
| FAA | Federal Aviation Authority (of the United States of America) |
| FOD | Flight Operations Department |
| F-NI | Fire – Non impact |
| F-POST | Fire - Post impact |

## G

| | |
|---|---|
| GA | General Aviation |

## H

| | |
|---|---|
| HF CREW | Human factors issues applicable to flight crew |

## I

| | |
|---|---|
| IAA | Irish Aviation Authority |
| IATA | International Air Transport Association |
| ICAO | International Civil Aviation Organisation |
| ISO | International Organisation for Standardization |

## L

| | |
|---|---|
| LALT | Low Altitude Operations |
| LOC | Loss of control |
| LOC-I | Loss of control in flight |
| LOC-G | Loss of control on ground |

## M

| | |
|---|---|
| MAC | Mid air collision |

## O

| | |
|---|---|
| OAM | Operations Advisory Memorandum |

## R

| | |
|---|---|
| RAMP | Events relating to the aircraft on the airport ramp |
| RI -VAP | Runway Incursion – vehicle, aircraft or person |
| RPPL | Regulatory Performance and Personnel Licensing |
| RSSO | Regional Safety Oversight Organisations |

## S

| | |
|---|---|
| SAFA | Safety Assessment of Foreign Aircraft |
| SCF-PP | System Component Failure – powerplant |
| SCF-NP | System Component Failure – non powerplant |
| SEC | Security Related |
| SES | Single European Sky |
| SID | Standard instrument departure |
| SMS | Safety Management system |
| STAR | Standard terminal arrival route |

## T

| | |
|---|---|
| TAWS | Terrain Awareness and Warning System |
| TURB | Turbulence |

## W

| | |
|---|---|
| WSTRW | Windshear or thunderstorm related events |

# 9

# References

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# Disclaimer

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# 11

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