Annual Safety Performance Review 2011

Foreword

It is my privilege as Director Safety Regulation to present the IAA Annual Safety Performance Review 2011.

While 2011 was a good year for aviation safety worldwide Ireland sadly experienced the only fatal accident in Europe, with the loss of 6 lives, when a Spanish registered Metroliner crashed on landing at Cork airport. The IAA extends its condolences to the families and friends of the crew and passengers who lost their lives.

While it may be of little immediate comfort to those affected, the important task of completing a detailed accident investigation may identify possible deficiencies in the aviation system and may lead to recommendations to prevent similar events occurring in the future. This task is ongoing and the IAA will assist in ensuring any recommendations issued by the AAIU are implemented for the future safety of aviation.

Aviation safety continues to face many new challenges. The future growth of aviation will require new navigation systems, increased airspace capacity and greater operational efficiency. All these need to be delivered with an overall continuous improvement in safety performance.

The IAA will continue to ensure Ireland's aviation system is ready for the future and that safety is always the primary concern of our industry, continuously learning safety lessons and implementing ever safer practices as new aircraft and systems are introduced.

Kevin Humphreys, Director Safety Regulation Division

Executive Summary

Overall 2011 has been a good year for aviation worldwide and in Europe. The Spanish aircraft accident at Cork Airport was the only fatal commercial air transport accident in Europe and on the 1st January 2012 commercial aviation worldwide had its longest period in recent decades without a fatal aviation accident – over 90 days.

There were no fatal accidents involving Irish registered aircraft in 2011, however, Ireland experienced its first fatal commercial air transport accident in over four decades. The accident at Cork airport in February led to the loss of 6 lives, including the two flight crew. The detailed accident investigation by the Air Accident Investigation Unit (AAIU) is ongoing and, when complete, will identify all the contributing factors to this accident. An interim report has been issued and is available on the AAIU website.

Analysis of fatal accidents across Europe in the last 10 years highlight loss of control in-flight, fire post impact, controlled flight into terrain and system component failure related to an engine as the most commonly cited contributory causes in fatal accidents.

There were 6 safety recommendations addressed to the IAA in 2011, 5 from the AAIU and one from the Polish accident investigation authorities. 4 of the 5 safety recommendations from the AAIU relate to a single event; a runway incursion at Dublin airport.

The IAA continues to implement the tasks outlined in the IAA State Safety Plan 2011-2013. Of the 16 action items scheduled for completion in 2011, 13 were successfully implemented and work continues on the 3 outstanding.

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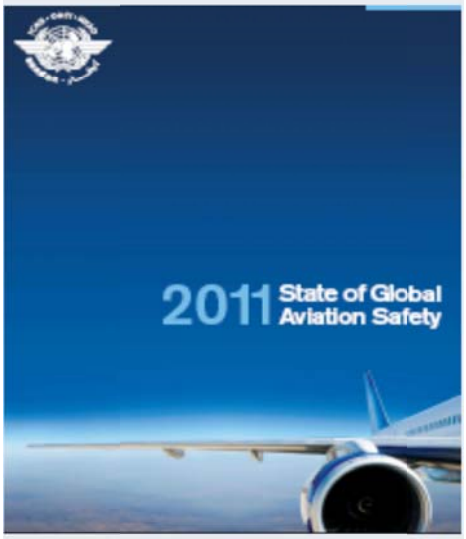
Global Safety Performance

The global fatal accident rate per 10 million flights on scheduled commercial air transport operations, excluding acts of unlawful interference, has remained at a consistent level of 4 to 5 fatal accidents per 10 million flights over the last few years up to 2010. It is expected, when complete data is available, that 2011 will show a similar rate.

In 2011, the worst accidents included an Iran Air Boeing B727 in Iran with 77 fatalities, a Hewa Bora Airlines B727 in Democratic Republic of Congo also with 77 fatalities, a Yak Service Yakovlev 42D in Russia with 45 fatalities and a Georgian Airways Canadair CL-600-2B19 Regional also in the Democratic Republic of Congo with 32 fatalities.

The worst accident in Europe occurred in Ireland. On the 10th February 2011, a Swearingen SA-227BC Metro III operated by a Spanish airline Flightline on a flight from Belfast to Cork crashed at Cork Airport with the loss of 6 lives.

Accident rates worldwide continue to exhibit regional variations. While North America, Europe, East Asia, Australia and New Zealand have rates below the world average some regions have rates that are a multiple of the average. The world map below shows the rate of fatal accidents per 10 million flights per world region (2001 – 2010, scheduled passenger and cargo operations).



The '2011 State of Global Aviation Safety', 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.

These variations represent a continuing challenge for the aviation industry. For example, ICAO report that commercial transport departures in Latin America and the Caribbean accounted for 10% of the world departures and, more importantly, grew by 13% versus 2009 figures. Similarly traffic in Africa, while representing just 3% of the world traffic in 2010, grew by 9.7% from 2009. Traffic growth in North America and Europe is relatively stagnant. The number of global fatal accidents will increase if the accident rates in the fastest growing regions do not improve.

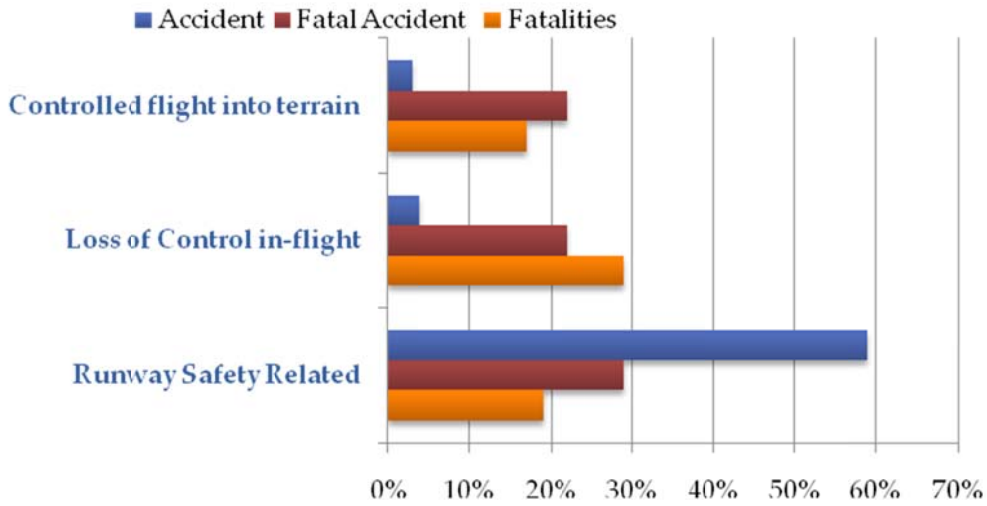
UN Region	No. of departures 2010	2010 v's 2009 Growth	% of world departures 2010
North America	10,624,134	-0.6%	35%
Asia	7,629,403	10.6%	25%
Europe	7,263,218	2.6%	24%
Latin America and the Caribbean	2,976,575	13.0%	10%
Oceania	1,050,120	2.4%	3%
Africa	1,013,063	9.7%	3%
World	30,556,513	4.5%	100%

Source: 2011 State of Global Aviation Safety', published by ICAO

Based on an analysis of accident data covering the 2005–2010 time period, ICAO has identified 3 high-risk accident occurrence categories:

- runway safety related events
- loss of control in-flight
- controlled flight into terrain

These 3 categories account for 66% of the total number of accidents, 73% of fatal accidents and 66% of the number of fatalities.



Source: 2011 State of Global Aviation Safety', published by ICAO

Runway safety accidents represent 59% of all accidents, accounting for 29% of all fatal accidents and 19% of all related fatalities reported between 2006 and 2010.

While the loss of control in-flight occurrence category represents only 4% of all accidents, this category is of significant concern as it accounts for 22% of all fatal accidents and 29% of all fatalities.

Similarly, accidents related to controlled flight into terrain account for only 3% of all accidents but represent 22% of all fatal accidents and 17% of fatalities.

Future challenges for Global Safety Management

ICAO recognises the importance of a global framework to support the strategic objectives of a safe and sustainable air transportation system and ICAO's global safety initiatives in areas such as runway safety, fatique risk management and next generation of aviation professionals seek to continuously improve aviation safety in a co-ordinated global framework.

ICAO see State Safety Programmes (SSP) and Safety Management Systems (SMS) as essential to the successful evolution of a proactive safety strategy including a comprehensive risk-based approach to further reduce the global accident rate.

ICAO is working in close collaboration with Member States and international organizations, including EASA, to develop a new Annex dedicated to safety management responsibilities and processes. The new Safety Management Annex will include provisions on SSP, SMS, State safety oversight responsibilities as well as the collection, analysis, protection and exchange of safety data.

The Safety Management Annex will be based on safety management provisions initially adopted in Annexes 1, 6, 8, 11, 13 and 14, and on the recommendations of the Safety Management Panel (SMP), established by the ICAO Air Navigation Commission (ANC) in June 2011.

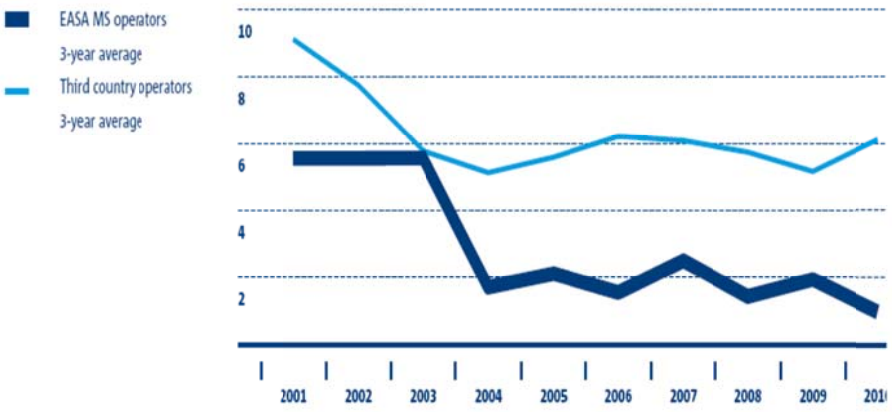
Updates to the ICAO *Safety Management Manual* (Doc 9859) will provide detailed guidance to facilitate SSP and SMS implementation by States and service providers.

European Safety Performance

In publishing its White Paper on Transport, the EU Commission stated the clear aim that the European Union should be the safest region in the world for aviation. In addition, the Report of the High Level Group on Aviation Research stated a goal for 2050 of reducing the accident rate of commercial aircraft flights to less than one per ten million flights.

As the following figure shows the European 3 year average fatal accident rate for scheduled passenger operations has fallen below 2 per 10 million flights compared to the non-EASA States average of 6 fatal accidents per 10 million flights.

Europe is on the right road to reaching its safety goal.



The Annual Safety Review 2010, published by the European Aviation Safety Agency (EASA), provides detailed aviation safety data for the European region for the period 2010.

It also provides a synopsis of the safety actions undertaken by EASA to further improve aviation safety in Europe.

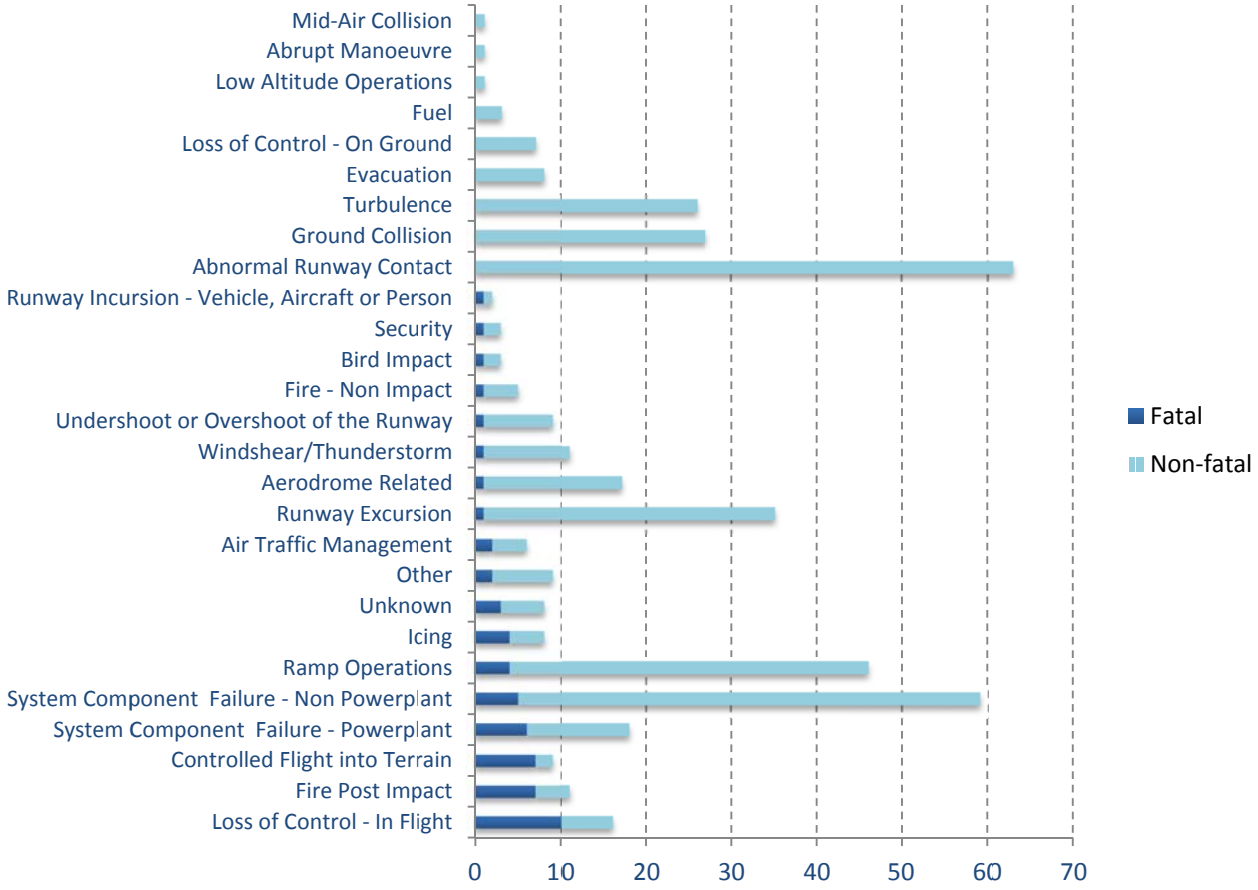
The full report may be accessed on the EASA website at www.easa.europa.eu.

This section provides a synopsis of data presented in the EASA Annual Safety Review 2010.

Understanding Accident Causes

To assist the analysis accidents are categorized in accordance with an international agreed standard. Their purpose is to understand the root causes and prevent future re-occurrence and is a fundamental part of the aviation system.

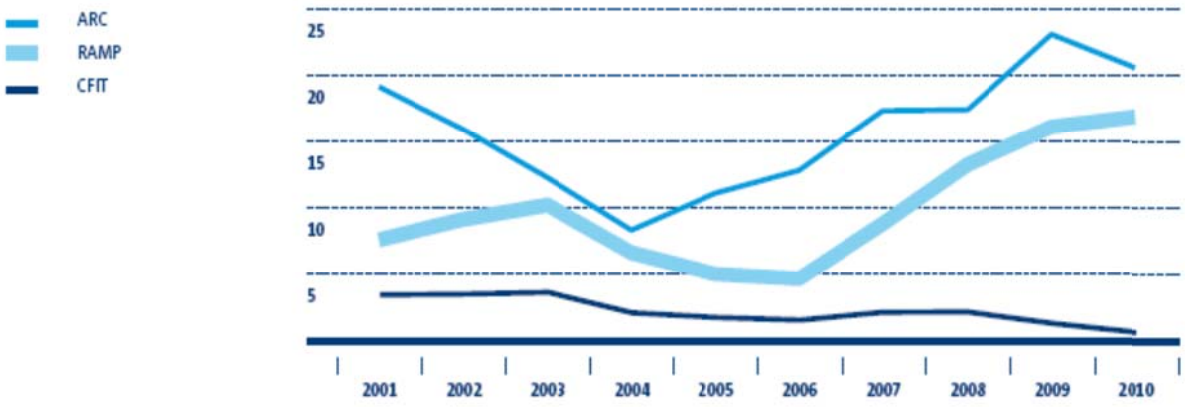
The following figure produced by EASA shows the number of accidents per category for all accidents involving aeroplanes operated by EASA Member State (EASA MS) airlines in the decade 2001 – 2010. The categories which included a high number of fatal accidents were, amongst others, LOC-I ('Loss of control in-flight'), F-POST ('Fire – post impact'), CFIT ('Controlled flight into Terrain') and SCF-PP ('System or component failure or malfunction related to the engine').



LOC-I accidents involved the momentary or total loss of control of the aircraft by the crew. This loss of control might be the result of reduced aircraft performance or because the aircraft was flown outside its capabilities for control. The LOC-I accident

category has the highest number of fatal accidents for the past decade.

EASA was able to make more interesting observations when they analysed the trends of some accident categories in the past decade. The following figure presents the share in percentages of some accident categories in the total number of accidents.



In recent years the proportion of accidents which included the categorisation of ARC ('Abnormal runway contact') has increased to over 20% of all accidents. Such accidents usually involve long, fast or hard landings. Often during such accidents the landing gear or other parts of the aircraft are damaged.

Also increasing is the percentage of accidents involving RAMP ('Ground handling') events. These accidents involve damage to the aircraft by vehicles or ground equipment or the incorrect loading of an aeroplane.

CFIT ('Controlled flight into terrain') is still a major issue in some world regions although it is decreasing as an overall percentage in the EASA member state region. These accidents involve the collision or near collision of an aircraft with terrain or an obstacle, most often under circumstances of limited or significantly reduced visibility.

Accidents involving Aircraft under 2,250kg Maximum Take-Off Mass

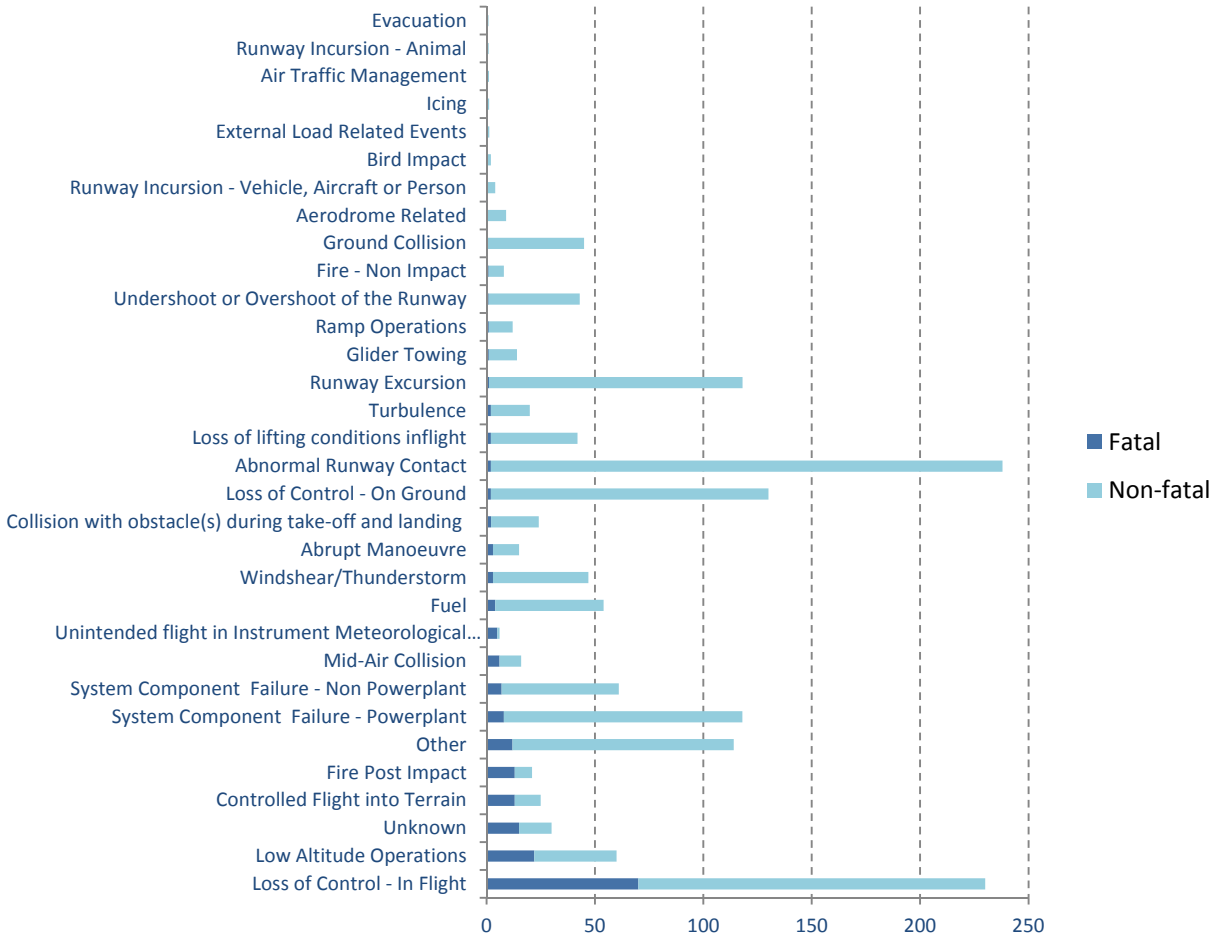
While EASA have reported an overall improvement, they still continue to have difficulty obtaining all the necessary data from EASA member states and the data presented in their report is considered incomplete for some States. Overall EASA reported 1,081 accidents in 2010, 133 of these were fatal accidents and resulted in 216 fatalities.

Aircraft Category	Period	Number of all Accidents	Fatal Accidents	Fatalities on board	Ground Fatalities
Balloon	2006 – 2009 (average)	22	0	0	0
	2010 (total)	14	0	0	0
Aeroplane	2006 – 2009 (average)	533	65	122	1
	2010 (total)	449	53	95	1
Glider	2006 – 2009 (average)	188	18	21	0
	2010 (total)	165	17	21	0
Gyroplane	2006 – 2009 (average)	10	3	3	0
	2010 (total)	9	0	0	0
Helicopter	2006 – 2009 (average)	84	10	21	2
	2010 (total)	70	10	28	0
Microlight	2006 – 2009 (average)	209	33	48	0
	2010 (total)	207	34	49	0
Other	2006 – 2009 (average)	73	13	15	1
	2010 (total)	85	10	11	0
Motorgliders	2006 – 2009 (average)	61	11	15	0
	2010 (total)	82	9	11	0
Average	2006 – 2009	1180	153	244	4
Total	2010	1081	133	215	1
Difference (%)		**-8.4%**	**-13.1%**	**-11.9%**	**-75.0%**

Overall EASA MS have experienced a reduction in the number of accidents in 2010 compared to the average for previous years. Only one category of aircraft, namely microlights, have experienced an increase in the number of fatal accidents against the 2006-2009 average. The microlight aircraft category, to which the EU/EASA regulation does not apply, is regulated at an individual State level and accounted for 25% of all fatal accidents (34 of 133) and 22% of all fatalities (49 of 215) in **all** aviation activities in Europe in 2010.

Analysis of the accidents from 2006-2010 indicate that LOC-I ('loss of control inflight') is cited most frequently in fatal accidents while ARC ('abnormal runway contact') is the most frequently reported non-fatal accident category. Definitions for all acronyms listed are provided in the Glossary of Terms.

The European Strategic Safety Initiative (ESSI) is working to understand why these events occur and provide actions that will reduce future accidents. For example the helicopter safety team (EHEST) have developed excellent educational material to address LOC-I events while the General Aviation Safety Team (EGAST) has produced guidance on improved communication skills and methods to reduce the risk of mid-air collision.



The second largest category of fatal accident is LALT ('Low Altitude Operations'). This involves accidents where aircraft were deliberately operating at low altitudes. A typical example is helicopters providing lifting capability or surveying at low altitudes.

The UNK 'Unknown' category is the third most frequent category and represents about 8% of all fatal accidents. These are accidents for which the category could not be determined due to insufficient or incomplete data.

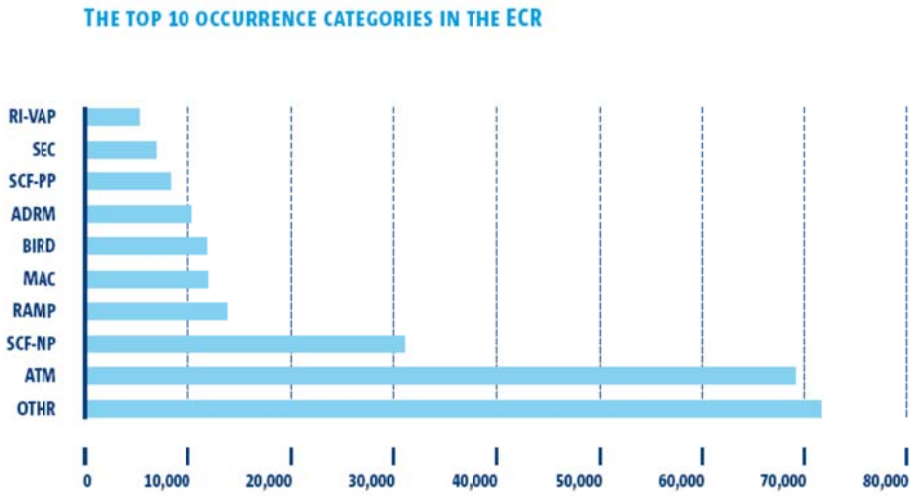
As in previous years, data on the utilisation of light aircraft was unavailable. The number of hours flown by light aeroplanes and helicopters is not collected by most national aviation authorities. An accurate estimate of flight hours or flights is needed to allow a meaningful analysis of data. Without this data it is not possible to determine if a reduction in fatal accidents is due to safety initiatives or simply corresponds to a reduction in the utilisation of the aircraft.

European Analysis of Occurrences

An aviation 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 reported nationally to assist the identification of risks in the aviation system. Data collected in Ireland is also submitted to the European Central Repository, using the ECCAIRS system .

The amount of data available in the European Central Repository continues to grow with 29 States now contributing data. An additional 110,000 occurrences were added in 2011. Some of this figure is attributable to countries integrating with the ECR and providing data for previous years.

Of the 2010 data, 50.2% was missing information on the operation type (compared to 57 % in 2009). Where information was available, 42.7 %, related to commercial air transport whilst 5.3 % related to General Aviation and the remainder was split between Aerial Work and State Flights.



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 – 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 integration of occurrences is vital in providing the widest possible source of pan-European safety data, which enables EASA and its Member States to better understand the safety issues of the European Aviation Community.

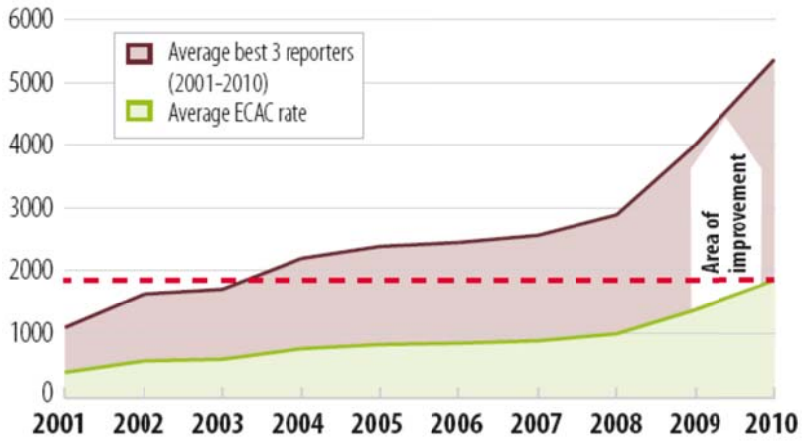
Air Traffic Management

For the first time EASA have reported on accidents and incidents in the Air Traffic Management (ATM) domain. The sources of the data, as well as the occurrence category definitions are unique to the ATM domain and differ from those used earlier in this report.

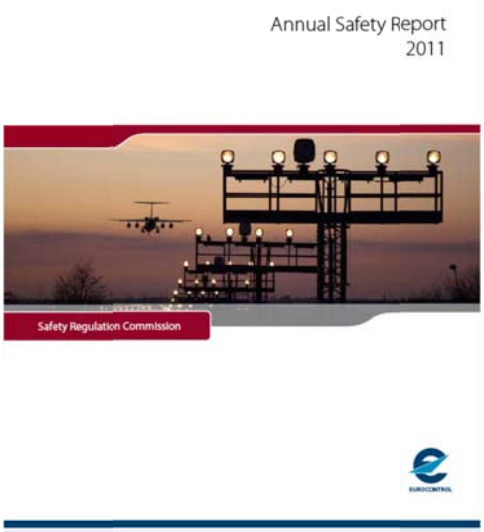
The data for ATM was obtained from the mandatory safety data reported to EUROCONTROL by its 39 Member States, however, the data presented by EASA in its annual report is limited to the Member States of EASA only. The most recent data available is to the end of 2010 and is contained in the Eurocontrol report titled 'Annual Safety Report 2011'. This section provides a synopsis of the report.

EUROCONTROL's data repository 'SAFER' is the 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 discussed earlier.

The reporting rates among European States vary widely. The graph up to 2010 below shows that the average rate of the best 3 reporters is significantly higher than the ECAC average. Eurocontrol estimate that another 50,000 reports could be received each year from the ECAC region.



Source: Eurocontrol – Number of incidents per million flight hours



EUROCONTROL, the European Organisation for the Safety of Air Navigation, is an inter-governmental organisation made up of 39 Member States and the European Community.

EUROCONTROL is the lead organisation in building a single European Sky that will deliver the ATM performance required for the future growth of aviation in Europe.

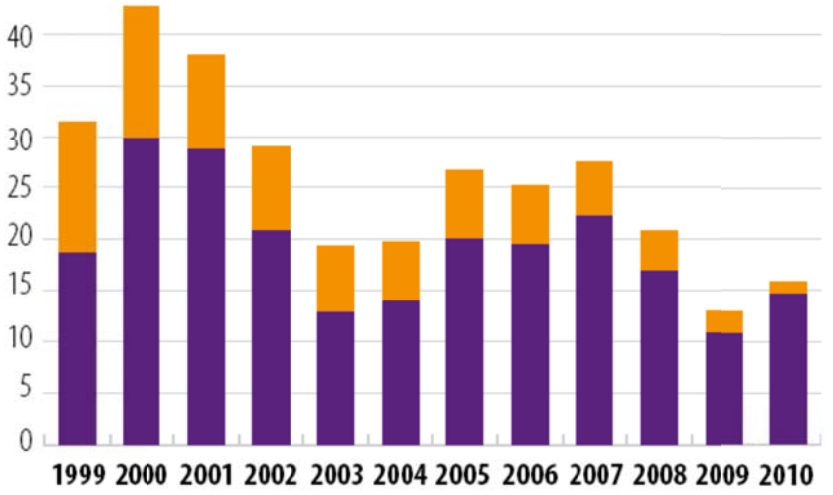
Founded in 1960, it is a civil-military organisation that has developed into a vital European repository of air traffic management (ATM) excellence, both leading and supporting ATM improvements across Europe.

Eurocontrol uses occurrence categories developed specifically for ATM and classify the severity of events using the classifications on the right hand side; from Serious incident to no significant safety effect. 'Not determined' involves events that lacked adequate data to make a determination while 'Not classified' applies to events where the analysis has not yet being completed. There are a number of key risk bearing occurrence categories defined by Eurocontrol.

Separation Minima Infringements

Separation minima infringements involve aircraft entering the minimum separation distance between aircraft specified for the specific controlled airspace.

The trend for separation minima infringements of serious (severity A) incidents has continued to decrease across Europe, however the trend for major incidents (severity B) has shown an increase in 2010.



Separation Minima Infringements
Occurrence per million flight hours and severity

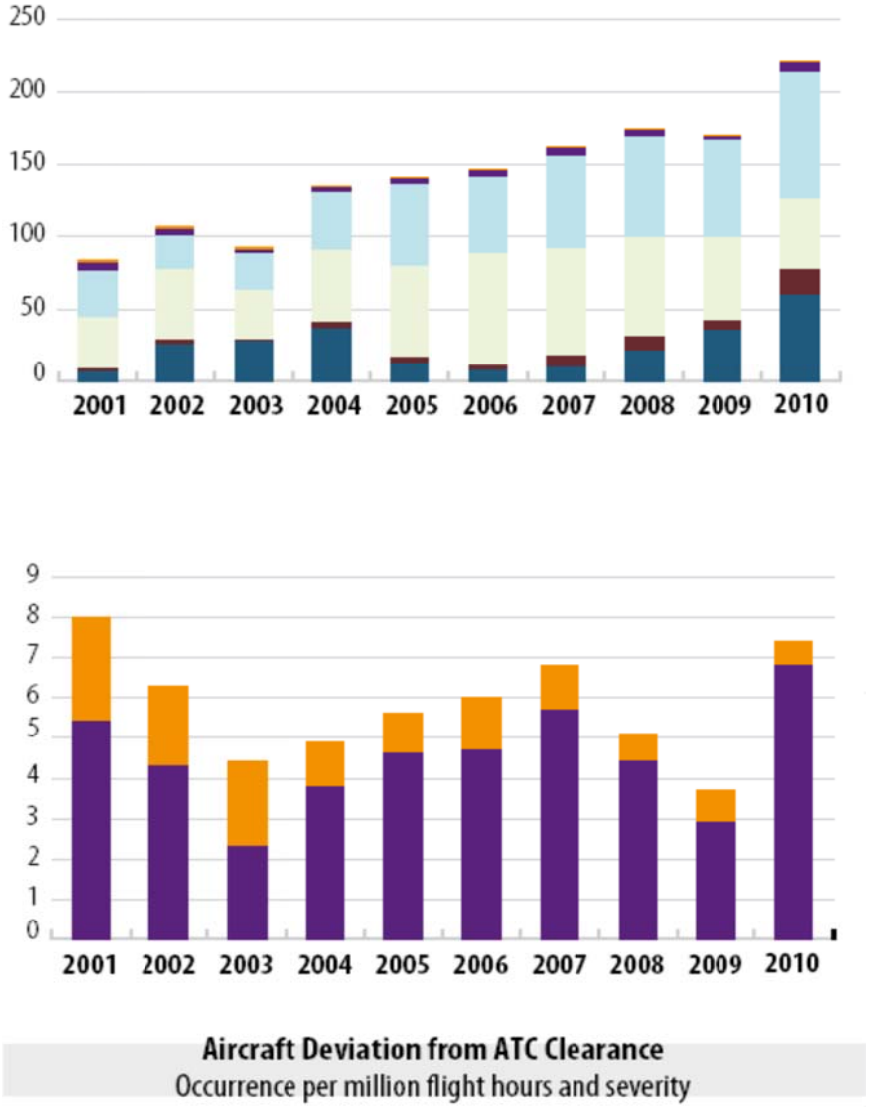
Source of all graphics this section: Eurocontrol Annual Safety Report 2011

Aircraft Deviation from ATC Clearance

For this general occurrence category, the data for 2010 indicates an overall increase and continues an overall upward trend since 2004.

Eurocontrol reported that the level of reported incidents remained at almost the same level in a number of States, however, in some Member States, the numbers have risen considerably compared to the previous year. Ireland has experienced a continuing downward trend .

For the risk bearing incidents (severity A and B), a decrease in the rate per million flights hours is noted for serious incidents (severity A), however, for major incidents (severity B), there is a considerable increase.

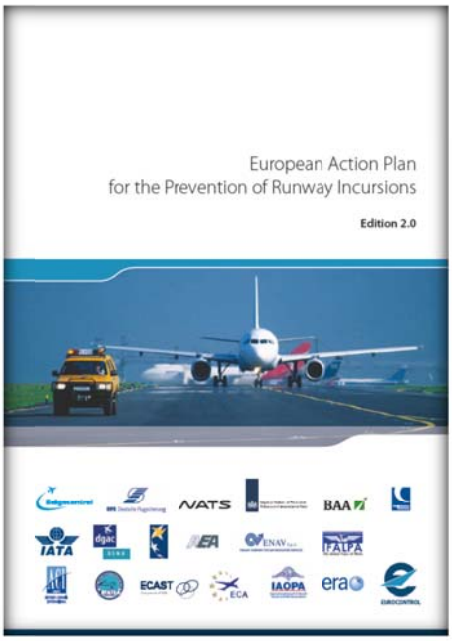


Aircraft Deviation from ATC Clearance
Occurrence per million flight hours and severity

Source of all graphics this section: Eurocontrol Annual Safety Report 2011

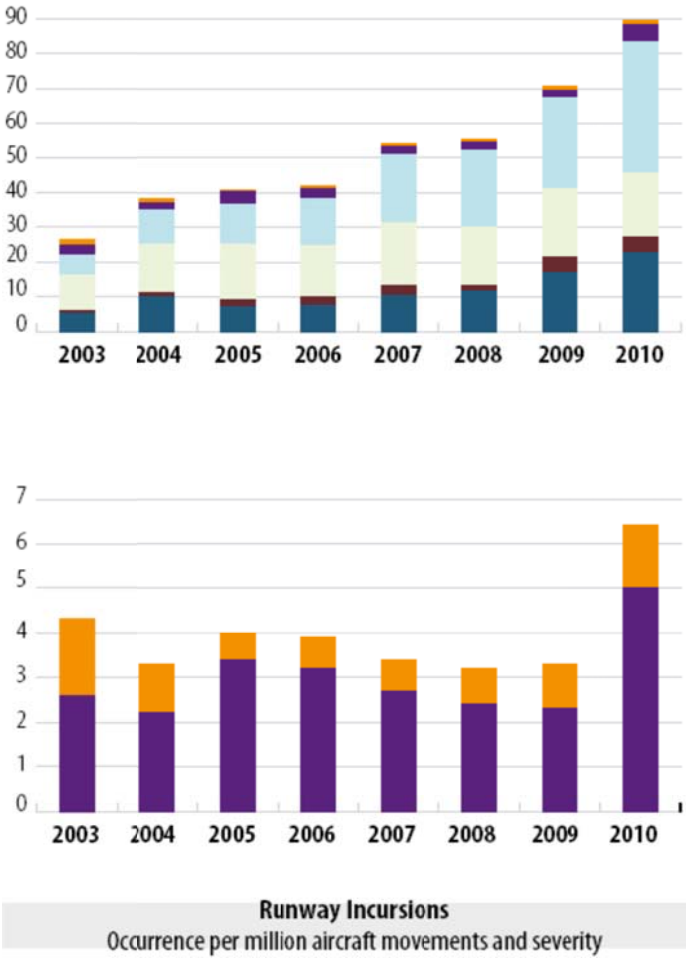
Runway Incursions

A runway incursion is defined 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.



Eurocontrol reported a continuing increase in the rate per 1 million aircraft movements in 2010. EASA believe the increase is primarily attributable to an increased awareness of runway incursions, a broadening of the definition to include additional events and an improved reporting culture across Europe.

It should be noted, however, that the data published by Eurocontrol also indicates an increase in the rate of both serious (severity A) and major (severity B) incidents in 2010.



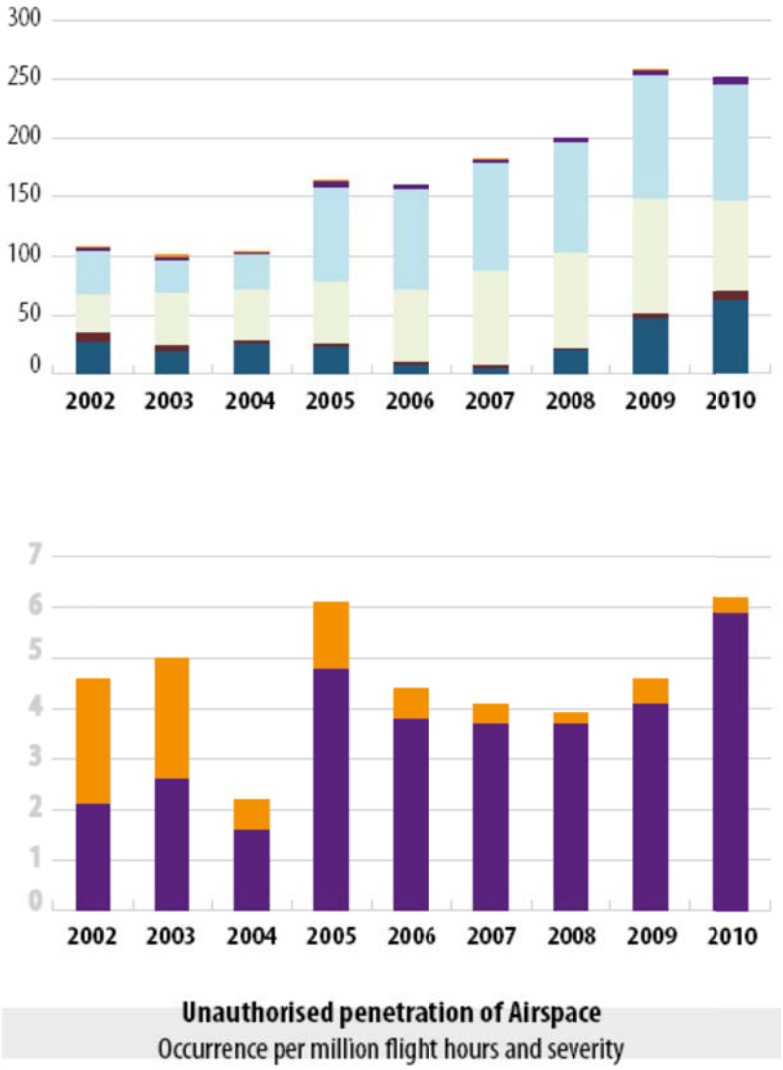
Runway Incursions
Occurrence per million aircraft movements and severity

Unauthorised Penetration of Airspace

The Eurocontrol data for 2010 shows a small overall decrease in reports, compared to an increase of 20% in 2009.

There was an increase in the risk bearing severity B (major) occurrences, which are at the highest level since Eurocontrol began tracking this category. The number of occurrences not being severity classified in this category has also risen to almost 25% of all reports.

The implementation of the European Action Plan for the Reduction of Airspace Infringements has started in 2010 and future Eurocontrol analysis will entail the possible impact of the implementation efforts on the recommended and proposed actions by all stakeholders involved.

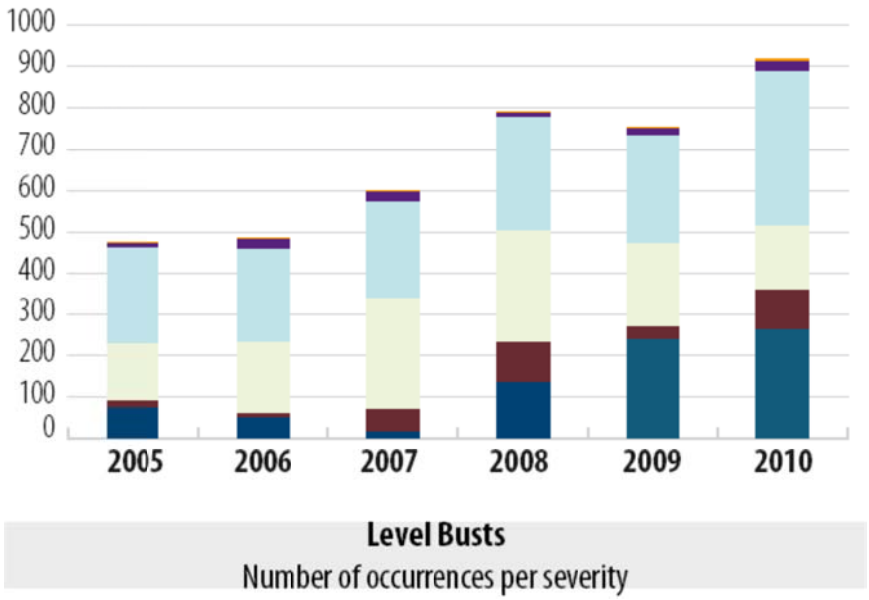


Unauthorised penetration of Airspace
Occurrence per million flight hours and severity

Level Busts

The Eurocontrol data for 2010 shows an increase of almost 22% compared to the total number of incidents reported in this category in the previous year.

For risk bearing incidents (severity A and B), there is one more serious incident compared to 2009 (5 instead of 4). However, in the major incidents (severity B), a noted increase is indicated compared to 2009 (24 in 2010 as opposed to 15 in 2009).



Source of all graphics this section: Eurocontrol Annual Safety Report 2011

Single European Sky (SES)

The year 2010 saw the start of the implementation of the Single European Sky (SES) performance scheme, the designation of EUROCONTROL as the SES performance Review body (PRB) and the setting of EU-wide performance targets for the first reference period (RP1) covering 2012 to 2014. All of these aim at driving further improvements in the performance of Air Navigation in Europe. The EU-wide targets apply to the 27 EU States, Norway and Switzerland.

RP1 required National Supervisory Authorities (the IAA Safety Regulation Division in Ireland) to develop national/FAB performance plans that are consistent with the EU-wide targets by the end of June 2011. The UK CAA and IAA conducted a joint consultation programme earlier in 2011 and have formulated their plan for the IRL-UK FAB.

During RP1 each State has to monitor and publish the following Safety performance indicators:

1) Effectiveness of safety management;

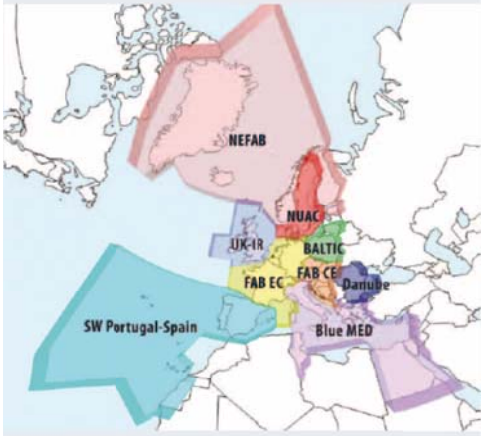
2) Application of the harmonised severity classification in reporting of:

- ***Separation minima infringements;***
- ***Runway incursions;***
- ***ATM special technical events;***

3) Reporting of Just Culture.

While Ireland already publishes some of these performance indicators, work is continuing at an EU level on defining how some of these safety performance indicators will be measured.

Future IAA Annual Safety Performance Reviews will contain additional information on these safety performance indicators.



Single European Sky

Launched by the European Commission in 1999, its primary aim is to meet future capacity and safety needs through legislation.

The European air traffic management (ATM) system currently handles around 26,000 flights daily. Forecasts indicate air traffic levels are likely to double by 2020.

A key element of the Single European Sky regulations is to reduce the number of the portions of airspace already in place in Europe (67) and to replace them by ***9 functional airspace blocks*** *(FABs) by 2012. Ireland and the UK have already formed a functional FAB.*

Safety Performance in Ireland

The crash at Cork airport of a Spanish aircraft was the worst fatal airline accident in Ireland in more than four decades.

There were no fatal accidents involving Irish registered aircraft in 2011. There were a total of 13 events categorised as non-fatal accidents, involving Irish registered aircraft.

Irish airlines completed over 1 million flying hours and over 600,000 flights in 2011. There were 4 events categorised as accidents involving Irish registered aircraft used for commercial air transport.

Analysis of occurrences reported to IAA indicate that the events bearing the greatest safety risks to commercial operations are mid-air collisions and human factors involving Flight Crew.

Analysis of accidents in the general aviation sector indicate controlled flight into terrain and loss of control in flight have been the most common contributory factors in fatal accidents in Ireland over the last 6 years.

This section of the report provides more detailed analysis of the key points in the synopsis above. The report does not include some accidents and incidents investigated by the AAIU. For example military aircraft and hang gliding accidents and incidents are not included because the IAA do not register or license these aircraft and activities.

Safety Regulation in Ireland

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

Currently there are 91 people employed in the safety regulation division with detailed expertise and experience in all aspects of aviation safety regulation and oversight.

Commercial Air Transport (CAT)

Currently there are 15 air operator certificate holders in Ireland. These vary from small helicopter operations to larger airlines operating across Europe. The five largest commercial air transport operators completed over 660,000 commercial flights in 2011, compared to just over 460,000 in 2007. In December 2011, there were 670 (617 in 2010) large commercial air transport aircraft on the Irish aircraft register. This represents a continuing growth despite the current economic conditions in Ireland and Europe.

The following table shows the total number of accidents, fatal accidents and serious incidents to Irish registered aeroplanes over 2,250 kg's involved in commercial air transport. A majority of these accidents and incidents occur outside Ireland and, while the primary investigation is not conducted by the AAIU, they must commit increasing resources to supporting the investigations conducted by other State's aviation investigators.

The fatal accident in Cork is not included in this dataset as it did not involve an Irish commercial air transport operator. The 2011 non-fatal accidents involved an ATR 72 nose landing gear collapse on landing at Shannon, an injury to a child after falling from an aircraft stairs, damage to an aircraft landing gear, while commencing taxiing, due to a towbar and an overheated landing gear brake unit which required the precautionary evacuation of the aircraft.

Year	Non-Fatal Accidents	Fatal Accidents	Serious Incidents
2007	0	0	6
2008	5	1	3
2009	2	0	10
2010	3	0	10
2011	4	0	14
Total	14	1	43

Mandatory Occurrence Reporting in Commercial Air Transport

In 2011 the IAA received over 7,300 occurrence reports from Irish organisations. A good reporting culture is a vital element of any safety culture and demonstrates a commitment to continuously improve safety in aviation by proactively reviewing events and ensuring any safety hazards are addressed.

The IAA are satisfied that there is a good reporting culture among Irish aviation professionals. It is not possible at this time to accurately benchmark reporting rates with other EU countries; however, with just over 110,000 new reports received by the European Central Repository for 2011 (including those from Ireland and for non-commercial air transport aviation) the reporting rate by Irish aviation commercial air transport operators is proportionally greater than the EU average.

The five most commonly reported occurrence categories are cabin events, system component failures - non powerplant (SCF-NP), bird strikes (BIRD), events during aircraft handling on ground (RAMP), and the targeting of aircraft by common hand-held lasers (LASER).

Every occurrence does not bear the same potential or risk of becoming a part of the chain of events leading to an accident. For example, there is no credible scenario where a passenger scalding themselves with a cup of tea will lead to the aircraft being involved in an accident. By focussing on the higher risk-bearing occurrences the IAA is better able to identify strategies to mitigate the overall risk of accidents.

Currently EU regulation does not outline a common standard for performing risk analysis. While we await the EU regulation and guidance material, the IAA has adopted a standard methodology developed by the European aviation industry – ARMS ERC[1].

Mandatory Occurrence Reporting

The definition of an occurrence is contained in SI 285 of 2007. It defines an occurrence as 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.

The value of reporting occurrences is not in the individual reports but in the aggregated data. Each occurrence reported rarely contains an immediate safety concern that represents an immediate or pending danger to the aircraft and its passengers. It does, however, allow for the identification of possible areas of safety concern and help identify scenarios where a particular sequence of events could lead to a serious incident or accident.

The Irish aviation industry, including airlines, air traffic service providers, airports, maintenance organisations and many other organisations involved in aviation, report occurrences and provide details of minor events that pose no immediate safety threat.

For more information on Occurrence reporting go to the IAA website at:

http://www.iaa.ie/index.jsp?p=139&n=148

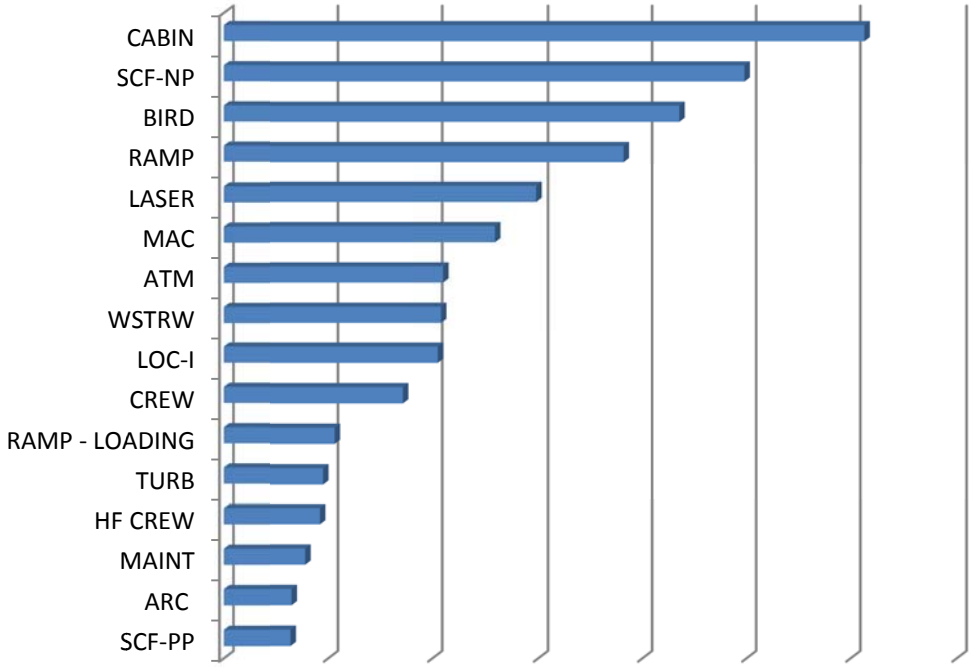
[1] For more information on ARMS ERC please go to Skybrary at: http://www.skybrary.aero/index.php/ARMS_Methodology_for_Risk_Assessment

Most Commonly Reported Occurrences

The most commonly reported occurrences are events in the aircraft cabin. These events rarely lead to fatalities or pose a risk to the overall safety of the aircraft. Cabin occurrences reported are predominantly minor safety events and will include reports such as a passenger feeling ill, scalding from hot drinks and failure of specific cabin equipment such as an emergency light.

The failure of components (SCF-NP) in various aircraft systems is a common and expected outcome and aircraft design allows for multiple component redundancies. By design the potential failure of any single component will not put the aircraft at risk of an accident or serious incident.

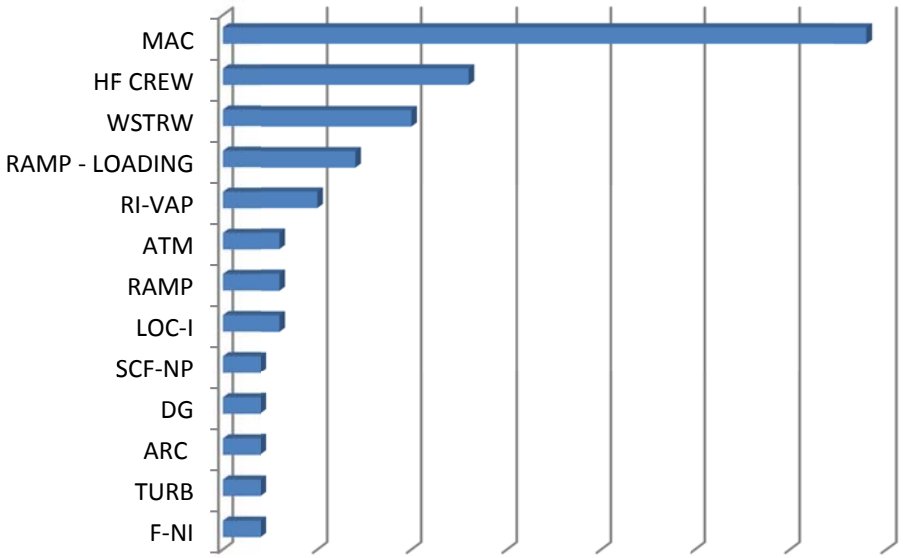
The BIRD category captures the possible or actual collision of an aircraft with a bird or multiple birds. Birdstrikes usually occur either on approach to, or takeoff from, an airport and can occasionally cause a great deal of damage and lead to serious incidents and accidents. The management of birds and other wildlife is a key safety task of each airport.



Higher Risk-Bearing Occurrences

To identify the areas where the greatest risk to safety lies the IAA perform an event risk classification on each occurrence received. Filtering out the lower risk-bearing events, Mid-Air collision (MAC) goes from being the 6th most commonly reported category to being the most important in terms of risk-bearing.

The MAC category is considered a higher-risk bearing event because often the most credible accident outcome is the catastrophic collision of two aircraft. The risk is mitigated in Europe in a number of ways. For example air traffic flow across Europe is continuously modelled in advance to ensure potential congestion in any airspace sector is avoided, air traffic controllers are continuously monitoring each and every commercial flight and are automatically alerted to potential conflicts, all commercial air transport aircraft in Europe are fitted with an aircraft collision and avoidance system (ACAS) so that the flight crew will be automatically notified of any conflict and are provided with clear manoeuvring instructions to ensure the potential collision is resolved. The occurrences reported to the IAA predominantly involve the normal activation of ACAS warnings that advise the crew other aircraft are in the vicinity of the reporting aircraft.



Large Helicopters

The EASA Annual Safety Review defines large helicopters as those greater than 2,250kgs maximum take-off weight and the data presented in this section will use the same definition for consistency and comparison.

The aircraft register has seen a steady decline in this category of aircraft since 2007. There are now 17 helicopters in this category compared to 45 in 2007.

There were no accidents of this aircraft type in 2011. Over the last five years there have been two accidents, both in 2008. One of the helicopters was registered abroad and none of the accidents resulted in a fatality. Three serious incidents were reported, 2 to helicopters registered abroad.

Year	No. A/C	Total No. Accidents	Non-Fatal Accidents		Fatal Accidents		Serious Incidents	
	Registered		Irish	Foreign	Irish	Foreign	Irish	Foreign
2007	45	0	0	0	0	0	0	2
2008	40	2	1	1	0	0	0	0
2009	31	0	0	0	0	0	0	0
2010	25	0	0	0	0	0	1	0
2011	17	0	0	0	0	0	0	0
Total		**2**	**1**	**1**	**0**	**0**	**1**	**2**

General Aviation – Aeroplanes over 2,250 kg

The number of fatal accidents, accidents and serious incidents to aeroplanes over 2,250 kg's involved in general aviation from 2007 to 2011 is shown below.

Since the beginning of 2007 there have been 5 accidents involving three Irish and two foreign registered airplanes. One accident involving a foreign registered aircraft during 2007 resulted in fatalities.

There was one serious incident, involving a foreign registered aircraft, reported in 2011. There were 23 aeroplanes registered in this category in Ireland at the end of 2011.

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Year	Total Registered in Ireland	Total No. Accidents	Non-Fatal Accidents		Fatal Accidents		Serious Incidents	
			Irish	Foreign	Irish	Foreign	Irish	Foreign
2007	23	2	0	1	0	1	0	0
2008	28	2	2	0	0	0	0	0
2009	33	1	1	0	0	0	1	0
2010	30	0	0	0	0	0	0	0
2011	23	0	0	0	0	0	0	1

Light Aeroplanes

The EASA Annual Safety Review defines light aeroplanes as those below 2,250kgs maximum take-off weight and the data presented in this section will use the same definition for consistency and comparison.

A total of 35 accidents to light aeroplanes have occurred over the last five years, 4 involving fatalities. There was 6 accidents reported to the AAIU in 2011, 4 involving Irish registered aircraft and 2 foreign registered. Two serious incidents involving Irish registered aircraft were reported in 2011.

Year	Total Registered in Ireland	Total No. Accidents	Non Fatal Accidents		Fatal accidents		Serious Incidents	
			Irish	Foreign	Irish	Foreign	Irish	Foreign
Light Aeroplanes								
2007	423	3	0	2	1	0	1	1
2008	447	9	6	1	1	1	0	0
2009	392	9	5	4	0	0	1	2
2010	298	8	4	3	1	0	1	1
2011	259	6	4	2	0	0	2	0

Light Helicopters

The EASA Annual Safety Review defines light helicopters as those below 2,250kgs maximum take-off weight and the data presented in this section will use the same definition for consistency and comparison.

The fleet of light helicopters in Ireland continues to decrease. In December 2011 the fleet of light helicopters on the register decreased to 39. Nonetheless, there were 3 accidents involving Irish registered helicopters. 1 of the 3 accidents occurred in France and will be investigated by the Bureau d'Enquêtes et d'Analyses (BEA), the French Investigation Authority.

The total number of accidents since 2007 is 14 with no fatal accidents since 2009.

Year	Total Registered in Ireland	Total No. Accidents	Non-Fatal Accidents		Fatal accidents		Serious Incidents	
			Irish	Foreign	Irish	Foreign	Irish	Foreign
Light Helicopter								
2007	161	6	0	5	1	0	0	0
2008	160	0	0	0	0	0	0	0
2009	107	3	2	0	1	0	1	0
2010	69	2	2	0	0	0	0	0
2011	39	3	3	0	0	0	0	0

Microlights

There have been 16 accidents involving microlights since 2007 with no fatalities. In fact microlight aircraft account for none of the 19 civil aviation fatalities in Ireland in the last 5 years and this contrasts starkly with the European statistics presented earlier where microlighting accounted for 22% of all fatalities in 2010.

Once again foreign registered microlight aircraft featured in the 2011 statistics and account for the majority of accidents and serious incidents over the last 5 years, however, there is a downward trend in the last 2 years.

The microlight fleet registered in Ireland has decreased slightly in 2011. A review of the Irish aircraft register led to the removal of a number of aircraft that have not held a valid permit to fly for some time or have been sold abroad but not de-registered in Ireland. Just under 100 of the microlights currently registered in Ireland hold a valid permit to fly, similar to previous years.

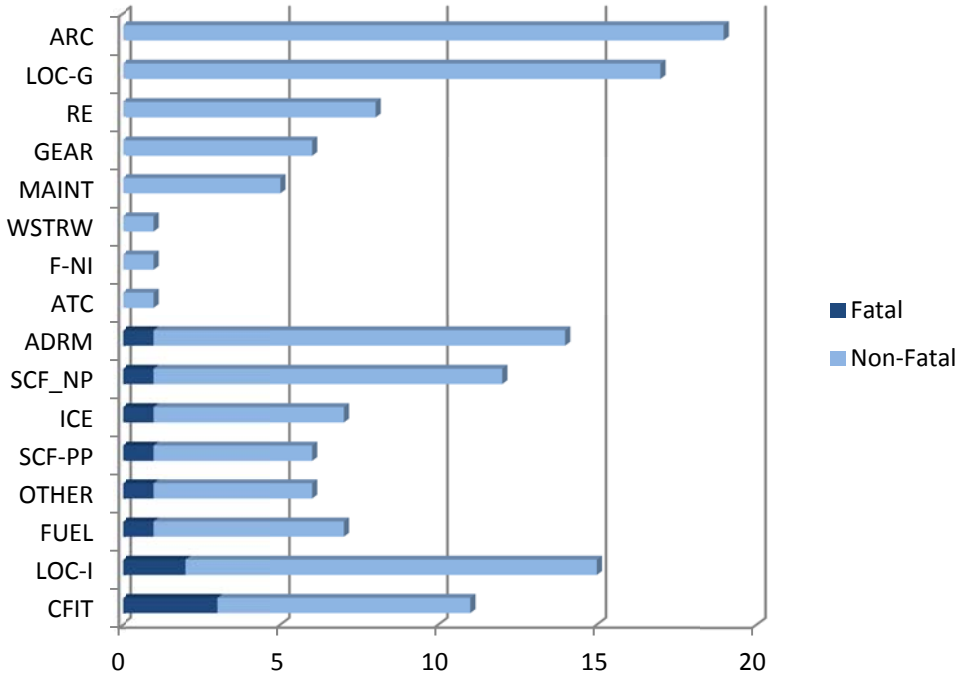
New licensing regulations introduced in 2010 assisted the transfer of 19 microlights, predominantly from the UK register, to the Irish register. This is a welcome addition and will assist further growth in this category in the future.

Year	Total Registered in Ireland	Total No. Accidents	Non-Fatal Accidents		Fatal accidents		Serious Incidents	
			Irish	Foreign	Irish	Foreign	Irish	Foreign
Microlights								
2007	118	5	1	4	0	0	0	0
2008	122	2	0	2	0	0	0	0
2009	147	4	2	2	0	0	0	0
2010	151	2	2	0	0	0	1	2
2011	147	3	2	1	0	0	0	1

Categorisation of Accidents and Incidents

The categorisation of Irish light aircraft accident and serious incidents from 2006-2011[2], a dataset of 81 events, shows similarities to the wider European accident categories for light aircraft.

Controlled flight into terrain or obstacles (CFIT) and loss of control in flight (LOC-I) are the two major categories involving fatalities in Ireland and in Europe. Likewise abnormal runway contacts (ARC) are the most common category in non-fatal accidents and incidents.



The focus for the IAA over the coming year will be to further promote safe flying, specifically highlighting the risks of controlled flight into terrain (CFIT) and loss of control in flight (LOC-I), and advising on appropriate mitigating actions.

The IAA will continue to develop more safety leaflets, utilising the excellent material being produced at a European level by the European General Aviation Safety Team (EGAST) and the European Helicopter Safety Team (EHEST).

[2] The analysis was limited to AAIU published accidents and incidents reports from 2006-2011.

Aerodromes and Air Navigation Services

Accident and serious incident are normally presented with reference to the particular aircraft involved and to the location of the event. The location referenced is often an aerodrome and aerodrome design and operation can be a causal or contributory factor to the accident or serious incident. Likewise air traffic management can be a factor in accidents and serious incidents.

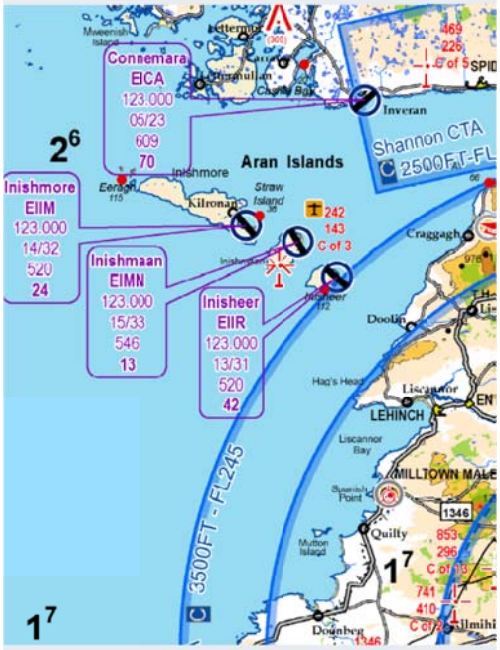
Ireland's safety performance in the area of Aerodromes and air traffic management faces the same challenges as all aerodromes and airspace in Europe. Aligned with the European strategy Ireland tracks a number of key safety performance indicators that are linked to these incident categories - separation minimum deviations, deviation from ATC clearance, level busts, airspace infringement and runway incursions.

The IAA uses the same categories and classification of severity for Aerodromes and Air navigation services used by Eurocontrol as discussed earlier. The severity classifications are:

- A - Serious Incident
- B - Major Incident
- C - Significant Incident
- E - No significant safety effect
- D - Not determined
- Not classified

2011 has shown an increase in the rate of runway incursion events while all other categories are showing a continuing decline in their respective rates.

In the periods 2007 to 2011 there was a marked increase in the rate of deviations from clearances and level busts. Focussed analysis in these areas and the implementation of mitigation actions has seen these rates decrease dramatically in 2010.



There are 29 licensed aerodromes and 8 licensed air navigation service providers in Ireland.

The licensed aerodromes range in size from small grass strips to large international airports such as Dublin, Cork and Shannon Airport. Not all aerodromes need to be licensed and many more private strips exist across Ireland.

Air traffic services in Irish airspace and at the three main airports Dublin, Cork and Shannon are provided by the IAA Operations Division. This division is functionally separate from the Safety Regulation Division. The Safety Regulation Division is also responsible for the regulation and oversight of seven other Air Navigation Service providers within the State.

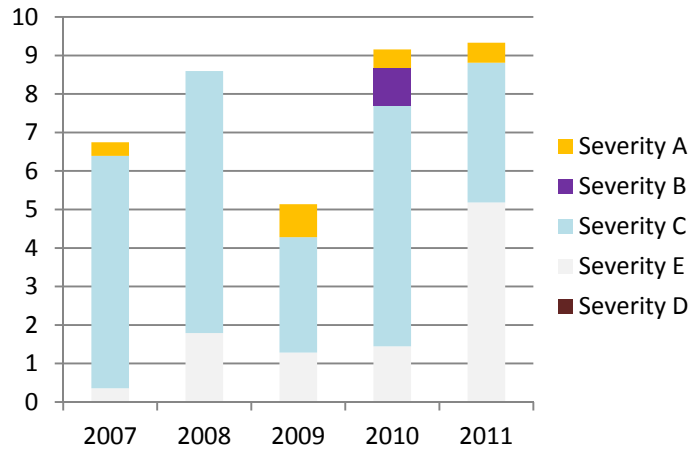
Runway Incursions

A runway incursion is defined 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.

Runway incursions were targeted as a European priority by EASA. As stated earlier Eurocontrol data for 2009 shows a 14% increase in the runway incursion reporting rate on the previous year while EASA data indicates a sharp increase in reported runway incursion incidents in 2010 over 2009.

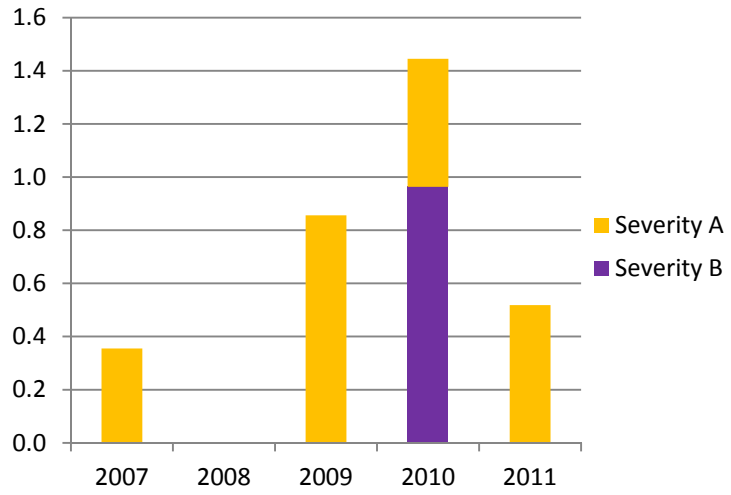
The IAA also targeted runway incursions as a priority in 2011. For Ireland the rate of events reported in 2011 has increased marginally.

Rate of Runway Incursions per 100,000 aircraft movements



The marginal increase is not surprising as promotion of the issue has led to a higher profile and increased awareness in the industy. The rate of Severity A and B events show an overall decrease with a large increase in the Severity E reports.

Rate of Runway Incursions per 100,000 aircraft movements



It is unreliable to compare Irish reporting rates against those reported by Eurocontrol due to the issue of under-reporting identified by Eurocontrol discussed earlier.

A number of key actions have being completed to mitigate the risk of a runway incursion. The IAA air navigation service provider has introduced a runway incursion monitoring and collision avoidance system (RIMCAS) which detects and alerts any potential runway incursion at Dublin Airport.

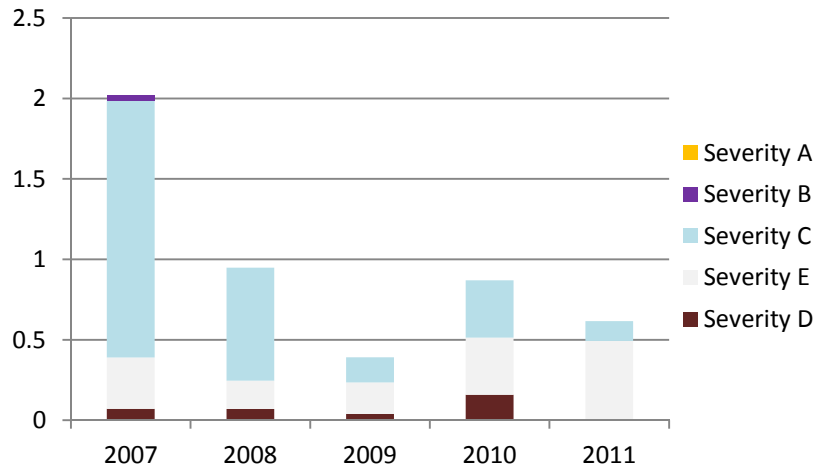
A multi-discipline Runway Incursion Action Group (RIAG) was established to perform detailed analysis of all runway incursion events in the 3 largest airports in Ireland over the last five years. The group have made a number of recommendations which are being implemented.

Local runway safety teams, composed of the aerodrome operator, air traffic control providers and the airlines, are active in each of the three main airports. The team members share knowledge, from their unique perspective, to identify specific issues and mitigating actions.

Airspace Infringement

Airspace infringements are events where aircraft, unauthorised to do so, enter controlled airspace, typically near an airport. After a small increase in 2010 the rate has decreased in 2011 with no high severity events identified.

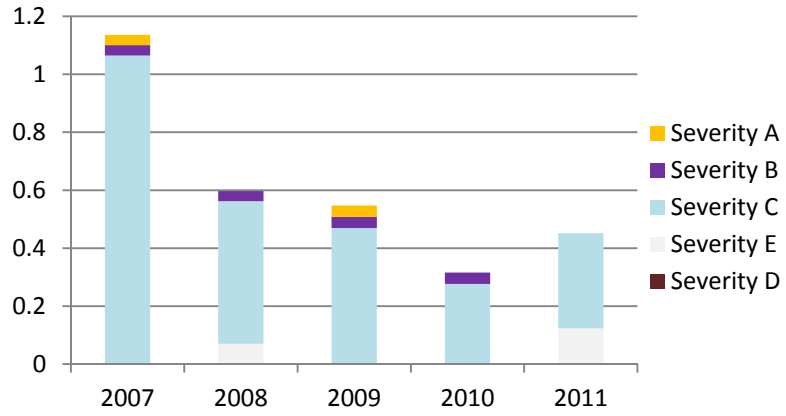
Rate of Airspace infringements per 10,000 flight hours



Separation Minima Infringement

Separation minimum infringements occur when aircraft infringe on the minimum separation distance designated for the airspace. The rate for events reported as possible infringement of separation minima rose marginally in 2011, while there was no severity A or B events.

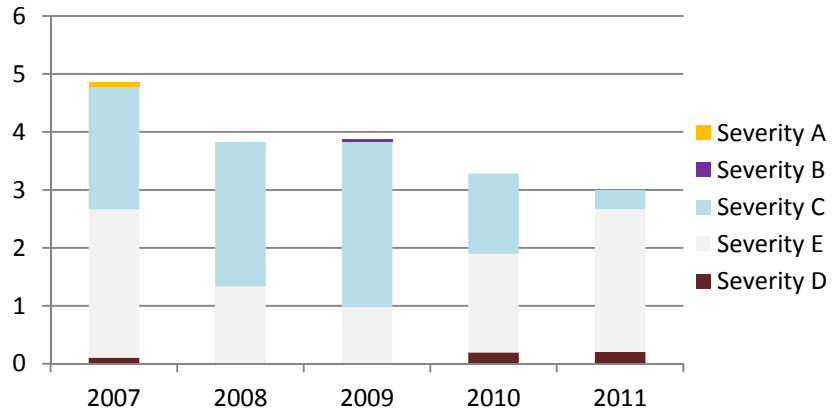
Rate of Separation minima infringements per 10,000 flight hours



Deviation from ATC Clearence

Deviation from ATC clearance events occur when an aircraft deviates from the path assigned by air traffic control. The trend in events involving the deviation from ATC clearance also showed a decline in 2011, with no severity A and B events in 2011.

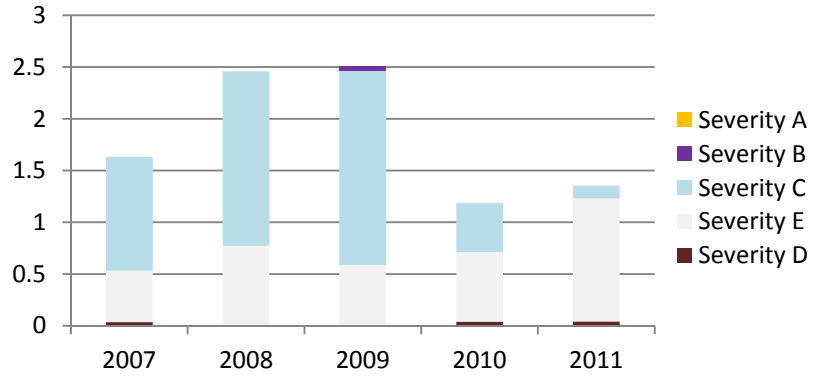
Rate of deviation from ATC Clearance per 10,000 flight hours



Level Busts

Level busts events occur when an aircraft ascends or descends though its assigned altitude. The rate of level busts rose marginally in 2011, however, remains well below the 2009 rate. There was no severity A or B events.

Rate of Level Busts per 10,000 flight hours



Safety Recommendations

The IAA received 5 safety recommendations from the Air Accident Investigation Unit (AAIU) in 2011, compared to eight in 2010. 4 of these safety recommendations relate to a single event, a runway incursion at Dublin Airport in October 2010. The IAA have accepted and implemented the safety recommendations from this event.

The safety recommendation relating to how aircraft defects and their rectification are recorded in aircraft logbooks is not accepted by the IAA.

The IAA received one safety recommendation from the State Commission on Aircraft Accident Investigation, the accident investigation body in Poland. The recommendation related to an incident involving a fuel discrepancy between the Flight Plan and the onboard Flight management system. The IAA accepted and implemented, as applicable, the safety recommendation.

The Air Accident Investigation Unit (AAIU) is the responsible body for the investigation of accidents, serious incidents and incidents in Ireland and regularly issue reports and makes safety recommendations based on their investigation findings.

In accordance with ICAO Annex 13 standards the AAIU are functionally independent of the IAA or any other body entrusted with the oversight or operation of aviation in Ireland.

The sole purpose of an AAIU investigation is to prevent aviation accidents. It is not the purpose of any such accident investigation and the associated investigation report to apportion blame or liability.

More information on the AAIU and access to specific reports mentioned in this section can be obtained on the AAIU website at:

www.aaiu.ie

Runway Incursion at Dublin Airport – 16th October 2010

A serious incident occurred at Dublin Airport on 16 October 2010 when a Boeing 737-800 aircraft taxied onto the active Runway (RWY) 28 while an Airbus A319 aircraft was on short final approach to land on the same runway. The full report published by the AAIU is available on their website.

The AAIU investigation of the event made 5 safety recommendations, 3 addressed to the DAA and IAA, 1 directly to the IAA and 1 to an airline involved in the incident.

AAIU Reference	Text of Safety Recommendation	Addressed to:
IRLD2011020	The Dublin Airport Authority, in conjunction with the Irish Aviation Authority, should consider originating an amendment of AIP Ireland, Section EIDW AD 2.20, paragraph 8.4, to clarify the statement "A further holding position is established on RWY 16/34".	DAA & IAA
	IAA Action: The IAA accepted this safety recommendation. The revision of AIP EIDW AD2.20 has been completed with an effective date of 17 November 2011.	
IRLD2011021	The Dublin Airport Authority, in conjunction with the Irish Aviation Authority, should consider originating an amendment of AIP Ireland, Section EIDW AD 2.20, to include a statement that the holding position for RWY 34 on TWY E1 is combined or co-located with the Cat I holding position for RWY 28 on TWY E1.	DAA & IAA
	IAA Action: The IAA accepted this safety recommendation. The revision of AIP EIDW AD2.20 has been completed with an effective date of 17 November 2011.	
IRLD2011022	The Dublin Airport Authority, in conjunction with the Irish Aviation Authority, should consider the provision of stopbar lights on TWY E1 at the combined holding position for RWY 34 and RWY 28 Cat I.	DAA & IAA
	IAA Action: The IAA accepted this safety recommendation. Stopbar Lights on Taxiway E1 were introduced into service in October 2011.	

AAIU Reference	Text of Safety Recommendation	Addressed to:
IRLD2011023	The Irish Aviation Authority should consider the inclusion of a reference to both RWYs 28 and 34 in ATC instructions to aircraft taxiing in the area of the combined runway holding position. (IRLD2011023)	IAA
	IAA Action: The IAA accepted this safety recommendation. The IAA ANSP has revised its procedures so that reference is made to both Runways 28 and 34 in instructions to aircraft taxiing in that area.	

Declaration of emergency due to a predicted low quantity of fuel, 21 December 2007 Warszawa - Okpcie (EPWA) TMA

On 2l December 2007 the flight crew of a Boeing 737 was performing a flight from Bergamo (LIME) to Krakow - Balice (EPKK). Due to adverse weather conditions the aircraft was diverted to Lódz - Lublinek aerodrome (EPLL). During ILS Cat 1 approach at the decision altitude the crew had no visual contact with the runway and therefore abandoned approach and flew to Warszawa - Okecie (EPWA). The Flight Management System (FMS) on the aircraft calculated that upon reaching EPWA aerodrome the remaining fuel quantity would be 900 kg, which was below the minimum allowed by the Operator's Operational Instructions (1200 kg). The crew informed EPWA airport approach control (APP) and declared an emergency due to an expected low quantity of fuel. The APP controller at EPWA acknowledged the emergency situation, and provided a priority landing. After termination of taxiing the fuel reserve was 1400 kg.

The Polish State Commission on Aircraft Accident Investigation (SCAAI) made one safety recommendation. The full report is available from the SCAAI.

SCAAI Reference	Text of Safety Recommendation	Addressed to:
518/07	Civil Aviation Authorities of Ireland, "Ryanair" operator - to verify fuel calculating process.	Ryanair & IAA
	IAA Action: The IAA accepted this safety recommendation and changes were made to the processes in place at that time. Since this event in 2007 the IAA have audited the operator's fuel calculating processes on a number of occasions as part of the normal oversight functions and have no further issues.	

Fatal Accident: EI-BHT Beechcraft 77 Skipper Kilmovee, Co. Mayo, Ireland 2008

The aircraft took-off from Ireland West Airport Knock (EIKN) with two persons on board. Shortly afterwards the Pilot reported engine problems to Air Traffic Control (ATC) and attempted to return to EIKN. Following power loss the engine subsequently failed. A forced landing was attempted in difficult terrain and resulted in the aircraft impacting the ground in a steep nose down attitude. The Pilot was fatally injured and the passenger was seriously injured.

The engine failure was caused by a fatigue fracture of cylinder No. 2 inlet valve head, a segment of which transferred to and contaminated cylinder No. 4. This, combined with a resulting disturbed inlet manifold airflow, caused the engine to fail.

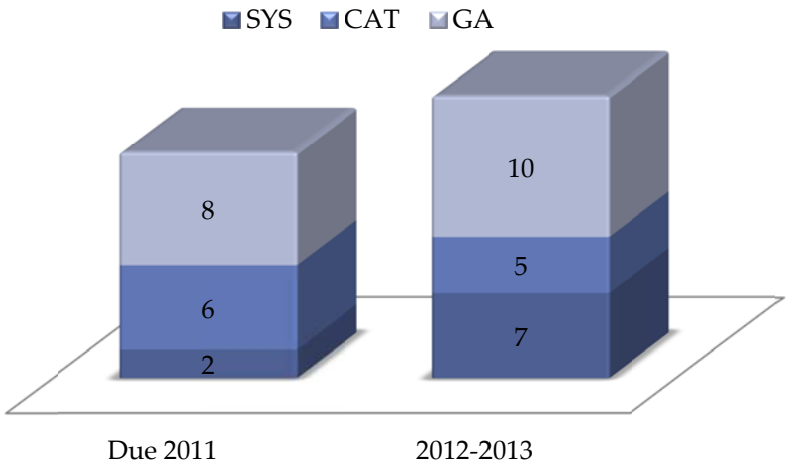
AAIU Reference	Text of Safety Recommendation	Addressed to:
IRLD2011002	The Irish Aviation Authority reviews how aircraft defects and their rectification are recorded in aircraft logbooks.	IAA
	IAA Action: The IAA cannot accept this Safety Recommendation. The continued airworthiness requirements for type certified aircraft, including how aircraft defects and their rectification are recorded, are detailed in EU regulation. The IAA has advised EASA of this safety recommendation as they are the body responsible for the regulation of this subject. EASA currently has a rulemaking task RMT.0276 on 'Technical Records' which will address issues related to continuing airworthiness and maintenance records. It is also EASA's intent to address a similar safety recommendation from the UK AAIB in this task. EASA have recently established a rulemaking group to perform the review and the IAA have nominated an expert to be an active participant in the group.	

IAA State Safety Plan 2011-2013

This section outlines the IAA's progress in achieving the goals of the IAA Safety Plan 2011-2013.

In total there are 22 issues highlighted in the plan, with 38 related action items. The issues are grouped under 3 headings – Systemic (SYS), commercial air transport (CAT) and general aviation (GA).

There were 16 action items scheduled for completion in 2011; 2 systemic, 6 commercial air transport and 8 general aviation.



There are 3 action items that were not completed by the 2011 deadline. Controlled Flight into Terrain involved 2 action items not yet complete and are dependent on progress at an EU level. The publication of an enforcement policy is completing legal review and will be completed in 2012.

More detailed information for each action item is provided on the following pages.

In 2011 the IAA published a detailed three year safety plan. The plan highlights the areas the IAA will prioritise over the next three years.

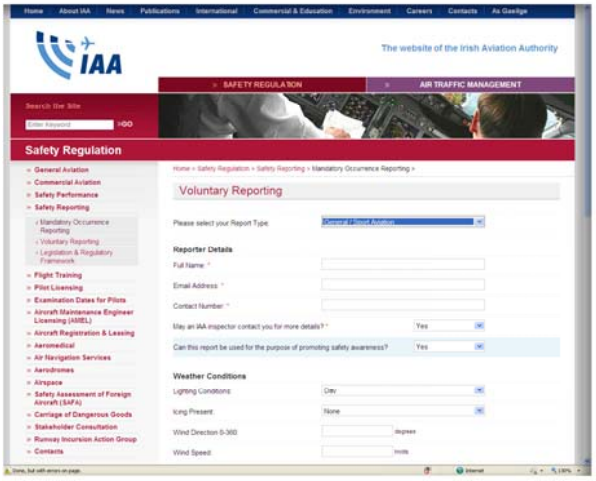
The plan is aligned with European efforts to improve overall aviation safety and adopts a number of tasks from the European Aviation Safety Plan published by EASA.

The plan shall be revised annually to reflect new issues identified at either national or EU level.

Systemic Issues

Issue Statement	*IAA Action*	*Target Date*
M.005 **Safety and Hazard Reporting** The voluntary reporting of occurrences, hazards and safety concerns in Europe and Ireland, particularly in the general aviation sector, is relatively low. Likewise, the IAA does not have a simple system for the capture of hazards and safety concerns identified by stakeholders.	*SSP: Safety Risk Management, External Promotion* 1. The IAA shall implement a voluntary system for the confidential reporting of occurrences, hazards and safety concerns. 2. Introduce a revised internet portal on the IAA website to allow the online completion of voluntary safety reports. 3. Establish a working group with representative bodies with the aim of improving safety reporting in the general aviation community.	 Q2 2011 Q2 2011 Q1 2012

The IAA has implemented a voluntary system for the confidential reporting of occurrences, hazards and safety concerns. Details of the system are available on the current IAA website at www.iaa.ie/safety reporting .



The system allows for the online completion of voluntary safety reports. It includes three versions: one for reporting by the general public, one for commercial aviation employees and one for general aviation flyers.

While the general public and commercial aviation employees have utilized the site the general aviation community has not. The IAA will continue to work with the GA representative bodies and encourage voluntary reporting.

A key step in improving reporting may be the completion of item 3. , that is, the establishment of a working group with the aim of improving safety reporting in the general aviation community. This task has been proposed for the General Aviation Safety Council of Ireland (GASCI) currently under consideration by the representative organisations in Ireland.

FOD.002 **Runway Excursions** EASA has identified runway excursions (RE) as the fourth most frequent category of commercial air transport accident in Europe from 2001-2010. There are a number of initiatives already launched worldwide starting in 2001, however, greater coordination among groups and States is required. The EU States wish to reduce the level of runway excursion events in Europe through greater coordination of existing efforts.	*SSP: Safety Oversight, External Promotion* ***1.*** As part of the annual auditing programme, the IAA shall perform focussed targeting of Runway excursion mitigating actions in each airline and aerodrome to ensure they are effectively addressing runway excursion risks. — Q4 2012 2. Share any lessons learned with other EU states and participate in EASA initiatives to coordinate actions — Q3 2011 EASA Reference: AER1.5, AER1.6

Significant progress has been made to develop a European Action Plan for the Prevention of Runway Excursions (EAPPRE). Eurocontrol is leading the development and publication is expected in 2012. The IAA has participated in the process and will adopt all action items from the EAPPRE into the national safety plan.

In May 2011 ICAO hosted a Global Runway Safety Symposium. The IAA participated and European proposals to mitigate the risk of runway excursions were jointly developed by the European Commission, Member States of the EU, ECAC and Eurocontrol. These proposals will be reflected in the EAPPRE.

Issue Statement	IAA Action	Target Date
FOD.003 **Controlled Flight into Terrain** Controlled Flight into Terrain (an event where an airworthy aircraft under the complete control of the flight crew is inadvertently flown into terrain, water or an obstacle) is the fourth largest category of fatalities among EASA member State airlines in the period 2000-2009. The EU states wish to reduce the level of controlled flight into terrain (CFIT) events in Europe.	*SSP: External Promotion* 1. Perform an assessment, in conjunction with EASA and other EU States to define the key risk factors for CFIT in various commercial air operations. 2. Provide promotional material outlining the risk of CFIT and appropriate mitigation action. EASA Reference: AER3.4, AER3.5	Q3 2011 Q4 2011

Work is still continuing on this task and the initial targets have not been reached. At the EU level, the focus has been on revision of existing EU regulation. One contributory factor to CFIT events is fatigue and EASA have issued a Notice of Proposed Amendment to update Flight and duty time limitations and rest requirements. EASA have received a large amount of comments that are being reviewed and an opinion is expected in 2012.

European aircraft certification specifications for large transport aircraft now require the aircraft to be equipped with aircraft technology to warn of potential CFIT scenarios.

CFIT continues to play a bigger part in general aviation accidents in Ireland and is addressed separately - see ASD.002.

Issue Statement	*IAA Action*	*Target Date*
M.007 **Runway Incursions** Runway Incursions have been recognised for some time as a key risk in aviation safety and lead to publication of the European Action Plan for the Prevention of Runway Incursions[3] The EU states wish to reduce the level of runway incursion events in Europe. The IAA have highlighted a national rise in runway incursion events in the IAA Annual Safety Performance Review 2010.	*SSP: Safety Assurance, Safety Oversight* 1. Establish a Runway Incursion Action Group (RIAG) to perform detailed analysis of recent runway incursion events at Irish aerodromes. 2. RIAG shall define mitigation actions and implement at industry level. EASA Reference: AER5.1, AER5.2, AER5.4, AER5.5	Q1 2011 Q4 2011

In 2011 the IAA established a runway incursion action group (RIAG) to specifically address runway incursion risks at Irish aerodromes. The group analysed all runway incursion incidents and occurrences reported over the last five years and identified a number of mitigating actions which are now being implemented by the applicable aerodromes operators and air navigation service providers.

Some of the actions implemented in 2011 which reduce the future risk of a runway incursion include introduction of new runway incursion detection technology, restrictions on the use of particular taxiways, increased educational awareness of runway incursion risks and changes to standard operating procedures to ensure they do not allow an aircraft, vehicle or person to cross illuminated stop-bars in any scenario and that any instruction to do so is challenged. The work of the RIAG is disseminated to the industry stakeholders through the local runway safety teams.

[3] European Action Plan for the Prevention of Runway Incursions may be downloaded from Eurocontrol at: http://www.eurocontrol.int/runwaysafety/gallery/content/public/docs/European%20AP%20PRI_final%20web.pdf

Issue Statement	*IAA Action*	*Target Date*
FOD.004 **Safety of Ground Operations** EASA analysis of accidents has shown a steady rise in the number of Ground Operations (RAMP) category accidents since 2006. The EU states wish to improve the safety of ground operations in Europe.	*SSP: Safety Oversight* 1. Implement a detailed audit schedule as part of the audit programme with focus on the key risk areas. 2. Participate in EU initiatives to improve ramp safety EASA Reference: AER5.9, AER5.10	Q4 2011 Q4 2012

The IAA have identified the key safety performance indicators for safety of ground operations. These include the measurement of occurrences related to load-sheet errors, aircraft fuelling issues, ground damage, dangerous goods transportation and passenger / baggage discrepancies.

Audit programmes now include an increased focus on these key risk areas.

General Aviation

Issue Statement	*IAA Action*	*Target Date*
RPPL.001 **Just Culture and Occurrence Reporting** The current level of voluntary safety reporting does not allow the identification of key safety risks for leisure flying in Ireland. The IAA have been advised by general aviation representative bodies and in a recent IAA survey that people are unwilling to report safety occurrences to the IAA for fear they will not be treated in a fair and just manner.	*SSP: External Promotion* 1. Publish an enforcement policy which clearly outlines how the IAA will process safety events in a fair and just manner. 2. Establish a General Aviation Safety Council for Ireland as a conduit for open communication and inclusion of the community in trying to promote safe and compliant operations in all sectors of General Aviation.	Q4 2011 Q1 2012

The publication of an enforcement policy is a key element of the state safety programme. The IAA has prepared an enforcement policy and it is currently completing legal review.

The policy distinguishes between enforcement in approved organisations which operate in an SMS environment and the non-SMS environment. The policy will be issued as a general advisory memorandum and will be made available in the publications section of the IAA website.

Issue Statement	*IAA Action*	*Target Date*
M.008 **Lack of safety oversight of foreign 'permit aircraft' based in Ireland.** Foreign NAAs have limited safety oversight of their 'permit aircraft' based in Ireland. As a result there is a concern that there is no effective safety oversight. Foreign registered aircraft accounted for 60% of all microlight accidents and serious incidents in Ireland over the last five years.	*SSP: Legislative Framework, Safety Oversight, Safety Promotion* 1. The IAA shall explore the implementation of bilateral agreements with key states to allow IAA perform oversight on their aircraft while based in Ireland 2. The IAA will continue to implement (initiated in 2010) a programme of safety visits to fly-ins and general gatherings to ensure foreign registered aircraft are meeting the basic Irish law requirements.	Q4 2012 Q4 2011

The IAA have attended the majority of fly-ins and other events in Ireland in 2011. With changes to the requirements for visiting permit microlight aircraft and pilots introduced in 2010 (see IAA website http://www.iaa.ie/index.jsp?p=178&n=512 for details), and with the assistance of event organisers and representative associations, the level of compliance of foreign registered permit aircraft and pilots has been excellent.

There still exists a number of foreign registered permit microlight aircraft resident in Ireland and which have not applied for the necessary permissions and/or validations to fly in Ireland. In 2012 the IAA will contact the registered owners and provide guidance on how they can register in Ireland.

Issue Statement	*IAA Action*	*Target Date*
AWSD.001 **EU fuel quality directives mandating the introduction of ethanol into MOGAS** Owner/operators may be unaware of ethanol constituent in fuel. Use of this fuel can lead to early wear in aircraft engines and ultimately lead to engine failure.	*SSP: External Promotion* 1. The IAA shall provide guidance material on the introduction of ethanol into MOGAS.	Q1 2011

The IAA Airworthiness department provided updated guidance on the use of MOGAS and on the increased levels of ethanol used in motor gasoline. The guidance is contained in Airworthiness Advisory Memorandum 02-11 and is available on the IAA website at:
http://www.iaa.ie/index.jsp?p=93&n=97&a=225&pp=470&nn=120&lID=502

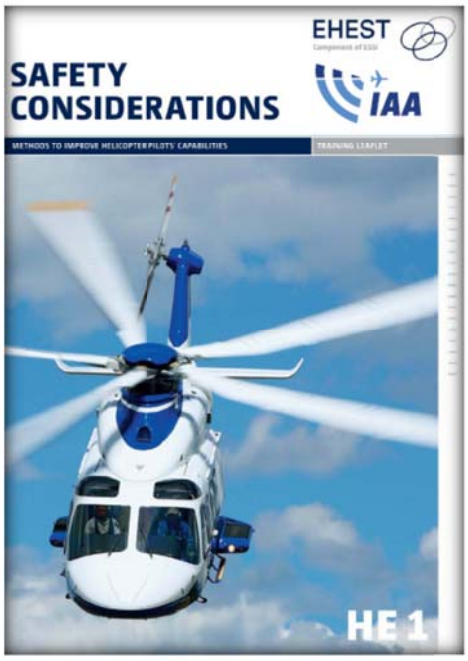
Issue Statement	*IAA Action*	*Target Date*
AWSD.002 **Aircraft returning to service after a period of inactivity**. Aircraft that have been on the ground for long periods may not have had a correct storage programme applied. This leads to possibilities of engine & control problems such as contaminated fuel, water ingress and even nesting birds.	*SSP: External Promotion* 1. The IAA shall develop a safety leaflet outlining the various risks and how they can be avoided. 2. The IAA shall promote awareness of this safety concern at stakeholder meetings.	 Q4 2011 Ongoing

The IAA airworthiness department have recently issued a Safety Leaflet IGA3 outlining some of the risks involved with long-term storage of aircraft. The leaflet highlights the need for a storage programme when aircraft are inactive for an extended period of time.

The leaflet is available on the IAA website at: http://www.iaa.ie/index.jsp?p=97&n=510

Issue Statement	*IAA Action*	*Target Date*
FOD.007 **Flight in Degraded Visual Environment (DVE)** There has been an increase in the number of accidents and serious incidents involving pilots continuing to press on with a flight in a degrading visual environment. In the worst cases this can result in loss of control in flight (LOC-I) or controlled flight into terrain (CFIT).	*SSP: External Promotion* **1.** The IAA, in co-operation with the European General Aviation Safety Team (EGAST) and the European Helicopter Safety Team (EHEST), shall develop a safety leaflet and DVD highlighting the potential risks of DVE and how they can be avoided. 2. The IAA shall promote awareness of this safety concern at stakeholder meetings.	Q4 2011 Q4 2011

The IAA have published Safety Leaflet HE 1 titled 'Methods to Improve Helicopter Pilot Capabilities'. The leaflet, developed by the European Helicopter Safety Team (EHEST), outlines a number of key risks for helicopter operations including flight in a degraded visual environment.



The related safety video has not been made available on DVD but instead is available on the internet at :

https://easa.europa.eu/essi/ehest/2011/07/video/ .

Links to the video have been included on the IAA website.

The leaflet is available on the IAA website at: http://www.iaa.ie/index.jsp?p=97&n=510

Issue Statement	*IAA Action*	*Target Date*
FOD.008 **Use of GPS as a Primary Navigation Aid** The number and quality of GPS devices, including portable handheld devices has increased. This has resulted in an increase in the use of these devices by pilots certified for VFR operations only. A number of these devices are not aviation specific and do not automatically receive database updates. Indeed, quite a number of fixed aviation approved GPS devices installed on the Irish fleet are no longer supported by the original manufacturers. There are a number of concerns: **1)** gives false confidence to fly in marginal weather conditions. **2)** Out of date database may not include the most up to date navigational information which can result in inadvertent penetration of controlled airspace or in the worst case scenario collision with unmarked hazards.	*SSP: External Promotion* 1. The IAA shall develop safety awareness training and material to highlight the dangers of over reliance on GPS devices and also the requirement to ensure that such devices have their database updated at regular intervals. 2. The IAA has embarked on a project to make the most up to date navigation and mapping information available digitally to approved providers to ensure that current information is available.	Q4 2011 Ongoing

The IAA have issued a safety leaflet outlining the advantages and limitations of using GNSS/GPS equipment in visual flight rule (VFR) operations.

The safety leaflet includes best practice 'do' and 'don't' items when using GPS.

Issue Statement	*IAA Action*	*Target Date*
ASD.002 *Obstacle Management at Aerodromes* ***A review of GA accidents in Ireland showed that a number of accidents and serious incidents involved collisions with obstacles in the vicinity of the aerodrome.***	*SSP: External Promotion* ***1. The IAA shall develop a safety leaflet outlining the various obstacle risks, how they can change with time and how they can be avoided.*** 2. The IAA shall promote awareness of this safety concern at stakeholder meetings.	***Q4 2011*** Ongoing

The IAA Aerodromes section issued safety leaflet AED 1 titled 'Risk from Obstacles at Aerodromes'. The leaflet highlights some of the hazards that may exist at small aerodromes including fast-growing trees, overhead wires, solid boundary fence posts and stone walls.

The document gives guidance on how to reduce the risk of collision including the checking of a suitable obstacle free area.

The safety leaflet is available on the IAA website at: http://www.iaa.ie/index.jsp?p=93&n=97&a=225&pp=97&nn=510&lID=914

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

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
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
SES Single European Sky
SID Standard instrument departure
SMS Safety Management system
SSP State safety programme
STAR Standard terminal arrival route

T
TAWS Terrain Awareness and Warning System
TURB Turbulence

W
WSTRW Windshear or thunderstorm related events

Disclaimer

The data presented in this document is strictly for information purposes only. It is obtained from a number of different sources and, whilst every care has been taken to ensure the accuracy of the data and to avoid errors in the content, the IAA makes no warranty as to the accuracy, completeness or currency of the content.

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