Civil Aviation Authority

UK Aviation Safety Review for 2016

CAP 1595 | December 2017

UK Aviation Safety Review

Why? Who? What?

Why?

We intend this report to **inform** you about the level of safety in civil aviation in a clear, engaging and objective manner. We want our report to promote aviation safety and support your decision-making. It includes:

- Detailed analysis of safety occurrences reported to the UK CAA in 2016;
- Information comparing aviation safety performance with other transportation modes;
- Insight from CAA Subject Matter Experts;
- Information about current and future actions.

Who?

This report is written mainly for members of the public whether travelling by air or being overflown.

It should be of interest to those who work in aviation or use aviation for personal, recreational or sporting activity. Organisations affected by, or involved in, aviation related activities should also find it of value.

What?

This report responds to Article 13 (11) of the EU Regulation No 376/2014 (commonly referred in this document as "EU 376/2014") on the reporting, analysis and follow-up of occurrences in civil aviation. The article states that:

In order to inform the public of the level of safety in civil aviation, each Member State shall publish a safety review at least once a year. The safety review shall:

(a) contain aggregated and anonymised information on the type of occurrences and safety-related information reported through its national mandatory and voluntary reporting systems;

(b) identify trends;

(c) identify the action it has taken.

Did you know?

Your report can make a difference

EU 376/2014 lists which occurrences in civil aviation must be reported by the aviation industry to the UK CAA. In addition, we encourage voluntary reporting of all safety relevant occurrences. This will help us with the identification of safety hazards and the support of focused and proportionate safety actions.

Safety matters – we have a just culture

The purpose of EU 376/2014 is to enhance aviation safety, not to focus on punitive actions against individuals, operators or organisations.

We encourage a **just culture** in which those whose actions, omissions or decisions are commensurate with their experience and training can expect to be supported, whilst gross negligence, wilful violations and destructive acts are not tolerated.

We will refer to 'reported occurrences' throughout the document. An occurrence means any safety-related event which endangers, or which, if not corrected or addressed, could endanger, an aircraft, its occupants or any other person.

The UK CAA will review the contents of this report annually and publish updated information throughout the year. Additional information can be found on our website.

Your feedback is important and will help us provide a better service. Please send your comments to Safety.Intelligence@caa.co.uk

Thank you!

Context

How **safe** is safe?

Statistics published by the Department for Transport (DfT) show aviation to be one of the safest modes of transport. In this section, we focus on large commercial aeroplanes, the largest public transport mode in aviation, and consider two frequently asked aviation safety questions:

How does air travel safety compare to other transport modes?

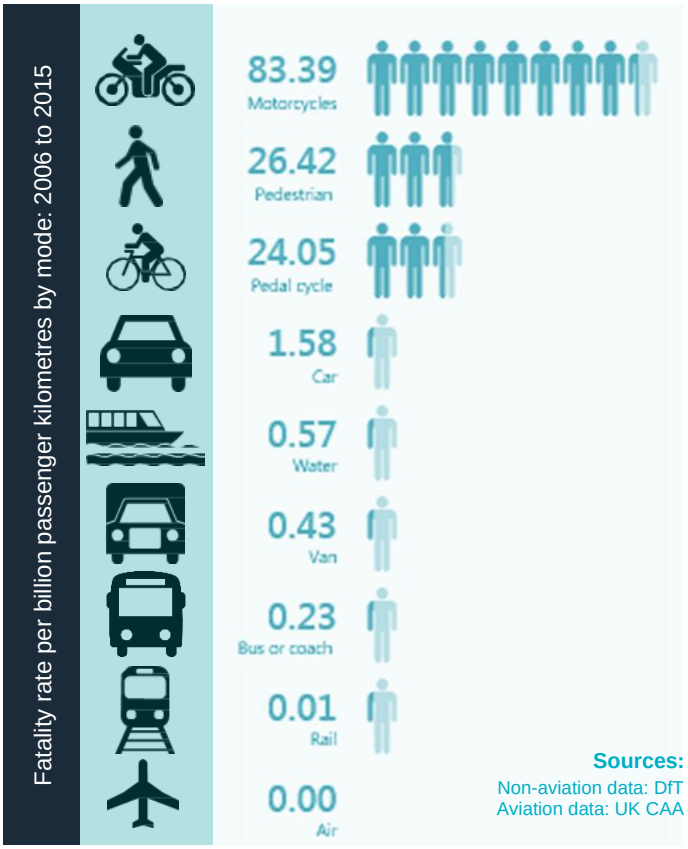
Based on the information for the ten year period to 2015 (see diagram to the right), large passenger aeroplanes are the safest mode of transport. Additional information for non-aviation transport modes is available on the Department for Transport website.

And how does it look internationally?

It is important to recognise that the safety performance of large commercial aeroplanes varies across the world. In fact, the fatal accident rate for UK airlines is one of the lowest in Europe and the rest of the world. UK airspace and UK airlines are among the safest. This is also illustrative of our commitment to protect those who choose to fly and those who do not, and our commitment to meet, maintain and improve the high safety standards in aviation. There have been no fatal accidents involving large UK passenger aeroplanes for more than 15 years: the most recent fatal accident involving a large UK passenger aeroplane in the UK was in 1989. Outside the UK, it was in 1999. Our Safety Plan is one way in which we demonstrate our commitment to protecting UK citizens from risks identified in the aviation system.

Do the different aviation sectors present a similar level of safety performance?

It is difficult to draw meaningful comparisons across the sectors because each collects information in different ways. Safety performance varies across, and within, different aviation sectors. However, the levels of safety performance offered by **commercial aviation** (including aeroplanes and helicopters) are, in general, better than those presented by **non-commercial aviation.** This is particularly true for private flying, whether for personal transport, recreation or sporting activity. In General Aviation, there were, on average, 16 fatal accidents per annum since 1999 (the date of the last fatal accident involving a large passenger aeroplane).



Key messages

Making aviation better

The UK has one of the world's largest aviation industries. In 2016 UK airlines flew over 1.2 million flights carrying nearly 154 million passengers. And our airspace system handles around 2.4 million flights a year. On top of this is the nation's extensive general aviation community that includes private flying, microlights and balloons.

At the same time we have an excellent aviation safety record. One reason for our outstanding safety history is the open reporting of incidents. Known in the aviation industry as occurrences, these cover virtually any kind of safety related incident and are reported to the CAA on a daily basis. They can range from an overheating oven in an aircraft cabin to an aircraft accident. The majority of serious incidents and accidents are reported by General Aviation or other non-commercial areas of the aviation community. Reports primarily cover the UK industry but do include UK registered aircraft operating outside the UK.

The reports are shared extensively in the aviation industry. Allowing the CAA and others to analyse for trends so that we can take action to prevent further occurrences. Everyone in the aviation community can also learn from others' occurrences. Changes in European regulation made in November 2015 (EU 376/2014) have encouraged more reporting with a 50% increase in the number of occurrence reports received by the UK CAA in 2016 compared to 2015 (99% of which were not considered high severity). This is also a strong indicator of the positive reporting culture here in the UK.

By establishing and maintaining Safety Partnerships with other States, we have contributed to the improvement of the safety performance of non-UK operators in UK airspace and maintained or improved the safety of our UK citizens and UK operators flying overseas.

If you would like to learn more about what we are doing, please visit our Safety Plan.

The year in brief

REPORTED OCCURRENCES

3 2 9 2 3

Involving UK aviation

More than 99% of these presented low or medium safety severity. We believe this illustrates a strong safety reporting culture and it is a positive result of the implementation of the safety reporting regulation.

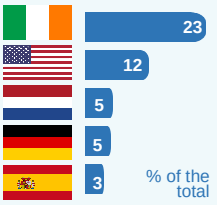
313	17	21	29
Accidents, serious incidents or high severity occurrences	Fatal accidents (General Aviation aircraft only)	Fatalities (General Aviation aircraft only)	Serious injuries (28 of which were General Aviation)

No fatalities or serious injuries involving commercial air transport

63%
Of the occurrences took place in the UK

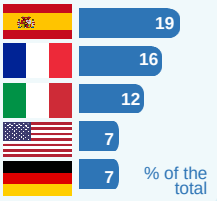
73%
of which involved G-registered aircraft

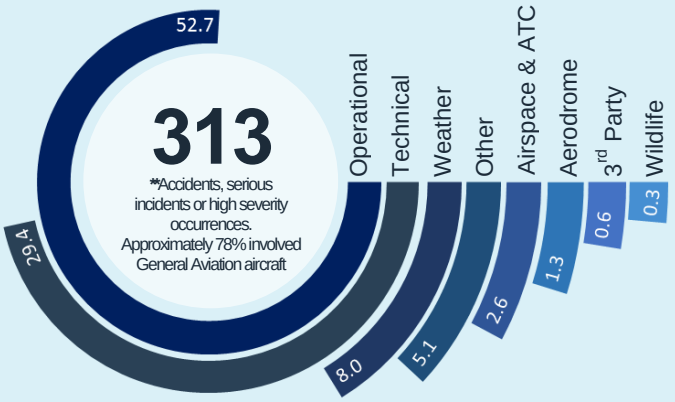
Proportion of occurrences involving non G-registered aircraft in the UK by State of Registry*



27%
Occurrences with G-registered aircraft operating overseas

G-registered aircraft overseas by location





Percentage of the total by key safety area (mutually exclusive)

*Excludes unknown or unidentified State of Registry

**Refer to the glossary page

UK aviation

How we structured this review

As the UK's aviation regulator, we seek to ensure that passengers and members of the public are protected adequately and that the aviation industry continuously meets, maintains and improves its high safety standards. The industry is diverse and safety threats present themselves in many different forms. For the purpose of this report, UK aviation represents all occurrences reported to the UK CAA in the UK or involving G-Registered or UK operated aircraft overseas. In the UK, the Air Accidents Investigation Branch (AAIB) - an independent accident investigator - classifies and investigates accidents and serious incidents. Of the total number of occurrences reported, approximately **1%** were classified as accidents, serious incidents and/or high severity occurrences. We analysed each occurrence from 2012 to 2016 and present this information on pages 6 to 12. On pages 13 to 24, we present the main safety topics for 2016 and explain our selection criteria.

You can find more information in the Glossary section.

LEGEND

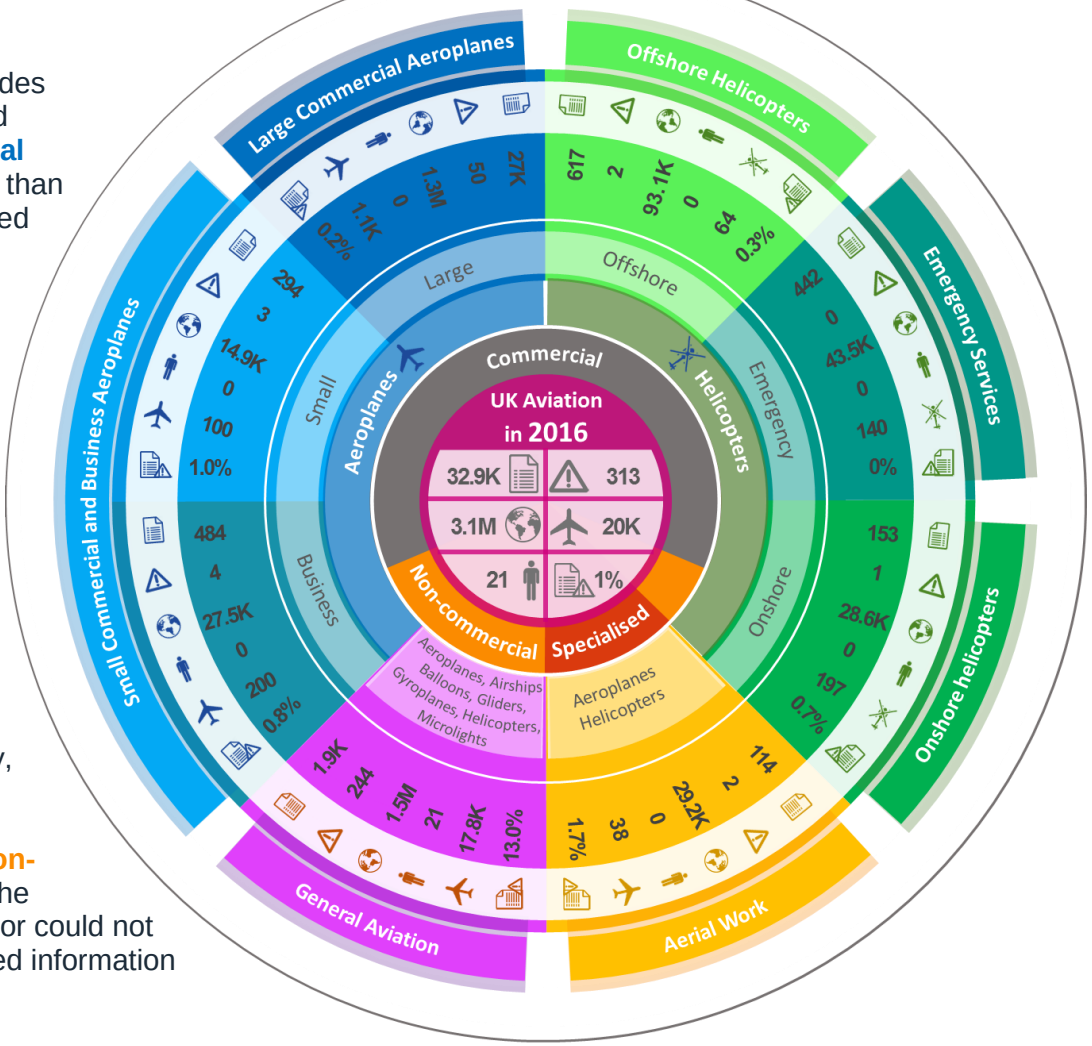
- Reported occurrences*
- Accidents, serious incidents, and/or high severity occurrences
- Flights
- Fatalities
- G-Registered aircraft**
- Accidents, serious incidents, and/or high severity occurrences (% of occurrences)

*Occurrence classification is provisional and may be subject to alterations;

** A single aircraft can be used in more than one sector. Not mutually exclusive;

This diagram is based on the sector model used in our review. It summarises the key safety performance indicators for each sector and for UK aviation in 2016. Although included in our definition of UK aviation, military operations were not analysed in this document. Drones data is presented on page 21.

Commercial operations includes operations with helicopters and aeroplanes. **Large commercial aeroplanes** represented more than 82% of the occurrences reported to the UK CAA. **Small commercial and business aeroplanes** were involved in about 2% of reported occurrences. Three main helicopter sectors were considered: **Onshore** (commercial and non-commercial), **offshore** and **emergency services**. In combination, these totalled 4% of the occurrences reported. **Aerial work** captures aircraft engaged in **specialised** operations, with 1% of the occurrences. Finally, the **General Aviation** sector represented 6% of the occurrences, predominantly **non-commercial**. In about 5% of the occurrences reported, the sector could not be determined due to the limited information available.



Large commercial aeroplanes

Sector safety performance: accidents, serious incidents or high severity occurrences

Key safety area (mutually exclusive)	2012 2016 (total)	2016	What? (analysis of occurrences) 2012 to 2016	Why? (analysis of primary cause) 2012 to 2016
TECHNICAL	82	21	• Aircraft depressurisation • Detachment of engine cowl • Engine failure and / or engine fire • Fire, smoke, or fumes (including warnings) • Landing gear malfunction • Uncommanded control inputs • Unreliable or disagreeing indications in icing conditions	• Aircraft maintenance • Technical malfunction or failure
OPERATIONAL	73	18	• Activation of stall protection system during approach • Emergency declared due to flight crew illness • Inadvertent retraction of flaps during take-off • Insufficient or inadequate performance for take-off • Loss of terrain or obstacle separation during approach • Tail strike during take-off or landing • Unstabilised approach resulting in hard landing	• Aircraft handling and monitoring of parameters • Flight crew medical fitness • Operational procedures • Situational awareness or disorientation • Weather conditions
AIRSPACE & ATC	36	8	• Close proximity with traffic in controlled airspace • Close proximity with traffic in uncontrolled airspace	• Air traffic instruction • Inadequate and/or unsafe operation of drones • Late or non-sighting of aircraft • Situational awareness or disorientation
WEATHER	19	2	• Emergency declared due to low fuel state • Ice accretion on aircraft surfaces • Injury and/or incapacitation of cabin crew • Loss of control during landing • Transient system malfunction following lightning strike	• Crosswind • Icing • Lightning strike • Turbulence • Windshear
3rd PARTY	1	1	• Aircraft return following laser interference during take-off, resulting in flight crew temporary incapacitation	• Inadvertent, unsafe and illegal use of lasers
AERODROME & GROUND SERVICES	13	0	• Damage during ground operations • Loss of ground separation and/or collision with other aircraft, vehicle or obstacle • Undetected aircraft damage during normal operations	• Aircraft loading procedures • Ground procedures
OTHER & UNDER INVESTIGATION	3	0	• Approach to land with incorrect aircraft configuration: landing gear not extended • Emergency declared due to unsafe aircraft environment	• Aircraft handling and monitoring of parameters
WILDLIFE	2	0	• In-flight commanded engine shut down and aircraft return during initial climb after take-off	• Birdstrike

Performance

Average 2012 – 2016
Actual 2016

46 50 Accidents, Serious Incidents or high severity occurrences	0 0 Fatalities	0 0 Fatal accident rate per million flights (G-Registered aircraft)
35 43 Involving G-Registered aircraft anywhere*	29 31 Involving aircraft in the UK*	10 7 Involving Non G-Registered aircraft in the UK*

Key actions and activities – what we are doing
(not necessarily exclusive to one sector only)

- **Performance based oversight (PBO)**: Our PBO programme provides well-directed CAA supervision of the industry: coupled with systematic industry risk management, this provides confidence that safety risk controls are in place and effective.
- **Pilot performance**: By understanding the conditions and behaviours that influence the actions of flight crew to manage a flight safely, we aim to optimise pilot performance so that flight crew receive the appropriate technical and non-technical training to enhance the skills necessary to operate aircraft.
- **State safety partnerships**: We work to reduce the risk to UK citizens and members of the public, improving operational safety performance of non-UK operators in UK airspace and UK operators overseas by establishing and/or maintaining partnerships with other States, collaboratively proposing and implementing solutions.

***Not mutually exclusive.**

Small commercial and business aeroplanes

Sector safety performance: accidents, serious incidents or high severity occurrences

Key safety area (mutually exclusive)	2012 2016 (total)	2016	What? (analysis of occurrences) 2012 to 2016	Why? (analysis of primary cause) 2012 to 2016
OPERATIONAL	23	3	• Activation of stall protection system during approach • Emergency declared due to flight crew illness • Loss of control and / or collision with obstacles during approach • Loss of control in-flight • Runway excursion during take-off roll in conditions of reduced visibility	• Aircraft handling and monitoring of parameters • Flight crew medical fitness • Operational procedures • Situational awareness or disorientation • Weather conditions
TECHNICAL	13	3	• Detachment of engine cowl • Emergency declared following engine failure • Landing gear malfunction • Loss of control on ground and runway excursion	• Aircraft maintenance • Technical malfunction or failure
AERODROME & GROUND SERVICES	3	1	• Aircraft collision with ground vehicle • Aircraft collision with parked vehicle • Rejected take-off following aircraft deviation from runway centreline	• Ground procedures
AIRSPACE & ATC	9	0	• Close proximity with traffic in controlled airspace • Close proximity with traffic in uncontrolled airspace	• Air traffic instruction • Inadequate and/or unsafe operation of drones • Late or non-sighting of aircraft • Situational awareness or disorientation
WEATHER	2	0	• Loss of control in-flight • Runway excursion following wing tip strike during landing	• Crosswind • Turbulence
3rd PARTY	0	0	No occurrences reported.	
OTHER & UNDER INVESTIGATION	0	0	No occurrences reported.	
WILDLIFE	0	0	No occurrences reported.	

Performance

Average 2012 – 2016
Actual 2016

Average 2012 – 2016	Actual 2016	
107 Accidents, Serious Incidents or high severity occurrences	10 Fatalities	4.70 Fatal accident rate per million flights (G-Registered aircraft)
65 Involving G-Registered aircraft anywhere*	95 Involving aircraft in the UK*	42 Involving Non G-Registered aircraft in the UK*

Key actions and activities – what we are doing
(not necessarily exclusive to one sector only)

- **Business Aviation Safety Partnership (BASP)** brings together stakeholders from across the business aviation community, chaired by UK CAA, who co-operate closely to focus on sector safety concerns and to implement and promote targeted safety actions
- **Introduction of EASA Regulation Part-NCC (non-commercial flights in complex motor-powered aircraft):** Operators of these flights are now required to make a declaration to the UK CAA including details of their aircraft and operations. This complements our regular contacts with the diverse NCC trade associations and groups; helps us to develop our national oversight programme for this sector and gives us a further opportunity to work with these operators to ensure that they are benefitting fully from the most up to date safety standards.

***Not mutually exclusive.**

Offshore helicopters

Sector safety performance: accidents, serious incidents or high severity occurrences

Key safety area (mutually exclusive)	2012 2016 (total)	2016	What? (analysis of occurrences) 2012 to 2016	Why? (analysis of primary cause) 2012 to 2016
TECHNICAL	4	1	• Damage during hard landing on platform • Emergency declared following warning indication • Emergency landing on water	• Helicopter maintenance • Technical malfunction or failure
AIRSPACE & ATC	2	1	• Close proximity with traffic in uncontrolled airspace	• Air traffic instruction • Late or non-sighting of aircraft • Situational awareness or disorientation
OPERATIONAL	5	0	• Approach to and landing on incorrect platform • Emergency declared due to flight crew illness • Loss of control during approach resulting in helicopter water impact	• Flight crew medical fitness • Helicopter handling and monitoring of parameters • Operational procedures • Situational awareness or disorientation • Weather conditions
3rd PARTY	0	0	No occurrences reported.	
AERODROME & GROUND SERVICES	0	0	No occurrences reported.	
OTHER & UNDER INVESTIGATION	0	0	No occurrences reported.	
WEATHER	0	0	No occurrences reported.	
WILDLIFE	0	0	No occurrences reported.	

Performance	Average 2012 – 2016	Actual 2016
Accidents, Serious Incidents or high severity occurrences	22	10
Fatalities	10	0
Fatal accident rate per million flights (G-Registered aircraft)	1.6	0
Involving G-Registered aircraft anywhere*	22	0
Involving aircraft in the UK (including off-shore platforms)*	22	0
Involving Non G-Registered aircraft in the UK*	0	0

***Not mutually exclusive.**

Key actions and activities – what we are doing
(not necessarily exclusive to one sector only)

- **CAP 1145: Safety review of offshore public transport helicopter operations in support of the exploitation of oil and gas**: Our comprehensive review, with CAA Norway and EASA, following the tragic accident at Sumburgh in 2013, of the safety of offshore helicopter operations which was reviewed by a panel of independent experts. We have since issued progress reports.
- **Restrictions on H225LP and AS332L2 Super Puma**: following the tragic accident of a Super Puma in Norway in April 2016, the two helicopter types were 'grounded' for 14 months. The Safety Directive SD 2017-002 issued in July 2017 presents the return to service requirements for assuring safe operations.
- **CAP 1519: Offshore Helicopter Terrain Awareness Warning System Alert Envelopes**: We have created a standard for Class A Helicopter Terrain Awareness Warning Systems (HTAWS) suitable for helicopters engaged in offshore commercial air transport. Our supporting research is available in **CAP 1538**.
- **CAP 437: Standards for offshore helicopter landing areas (Edition 8)**: sets out the criteria recommended by the UK CAA in assessing the standard of helicopter offshore landing areas for worldwide use by helicopters.

Onshore helicopters

Sector safety performance: accidents, serious incidents or high severity occurrences

Key safety area (mutually exclusive)	2012 2016 (total)	2016	What? (analysis of occurrences) 2012 to 2016	Why? (analysis of primary cause) 2012 to 2016
OPERATIONAL	6	1	• Collision, or near collision with obstacles at private or unprepared landing or departure sites • Loss of control and / or collision with obstacles in conditions of reduced visibility • Loss of control during training exercise: simulated system failure	• Flight planning and preparation • Helicopter handling and monitoring of parameters • Operational procedures • Situational awareness or disorientation • Weather conditions
AIRSPACE & ATC	7	0	• Close proximity with traffic in uncontrolled airspace • Close proximity with traffic in controlled airspace	• Air traffic instruction • Late or non-sighting of aircraft • Situational awareness or disorientation
TECHNICAL	3	0	• Loss of control following system failure • Structural defect identified before departure	• Helicopter maintenance • Technical malfunction or failure • Helicopter design and/or manufacture specific issue
3rd PARTY	0	0	No occurrences reported.	
AERODROME & GROUND SERVICES	0	0	No occurrences reported.	
OTHER & UNDER INVESTIGATION	0	0	No occurrences reported.	
WEATHER	0	0	No occurrences reported.	
WILDLIFE	0	0	No occurrences reported.	

Performance	Average 2012 – 2016	Actual 2016
Accidents, Serious Incidents or high severity occurrences	31	20
Fatalities		
Fatal accident rate per million flights (G-Registered aircraft)	28.4	0
Involving G-Registered aircraft anywhere*	31	31
Involving aircraft in the UK*		
Involving Non G-Registered aircraft in the UK*	0	0

Key actions and activities – what we are doing
(not necessarily exclusive to one sector only)

- We have launched an **Onshore Helicopter Review** to identify safety improvement opportunities to complement our continued collaboration with the British Helicopter Association (BHA) in improving onshore safety culture and safety leadership through bi-annual seminars.
- We are challenging pilot training programmes and operator practices to ensure best use is made of **Flight Crew Operating Manuals**.
- We issued **Safety Notice SN-2016/001** "Private and Aerial Work Helicopter Operations – Guidance on Aerodrome Operating Minima for Instrument Flight Rules (IFR) Departures" to provide guidance and information about best practice, highlighting the responsibilities of the pilot in command for private helicopter flights departing under IFR from aerodromes not notified for instrument departures.

***Not mutually exclusive.**

Emergency services

Sector safety performance: accidents, serious incidents or high severity occurrences

Key safety area (mutually exclusive)	2012 2016 (total)	2016	What? (analysis of occurrences) 2012 to 2016	Why? (analysis of primary cause) 2012 to 2016
AIRSPACE & ATC	8	0	• Close proximity with traffic in controlled airspace • Close proximity with traffic in uncontrolled airspace	• Air traffic instruction • Airspace infringement • Late or non-sighting of aircraft • Situational awareness or disorientation
OPERATIONAL	2	0	• Loss of control in flight and collision with obstacles • Vibration resulting in precautionary landing	• Aircraft handling and monitoring of parameters • Flight planning and preparation • Operational procedures
TECHNICAL	2	0	• Emergency declared following warning indication of system failure	• Technical malfunction or failure
3rd PARTY	0	0	No occurrences reported.	
AERODROME & GROUND SERVICES	0	0	No occurrences reported.	
OTHER & UNDER INVESTIGATION	0	0	No occurrences reported.	
WEATHER	0	0	No occurrences reported.	
WILDLIFE	0	0	No occurrences reported.	

Performance

Average 2012 – 2016
Actual 2016

2 0 Accidents, Serious Incidents or high severity occurrences	2 0 Fatalities	4.4 0 Fatal accident rate per million flights (G-Registered aircraft)
2 0 Involving G-Registered aircraft anywhere*	2 0 Involving aircraft in the UK*	0 0 Involving Non G-Registered aircraft in the UK*

Key actions and activities – what we are doing
(not necessarily exclusive to one sector only)

- We produced **CAP 1264: Standards for helicopter landing areas at hospitals**: to set out design requirements and options for new heliports at hospitals in the UK. The material addresses new build facilities and refurbishments of landing sites at new and existing hospitals, setting out detailed design requirements for hospital heliports and providing guidance on the operation and management of the refurbishment of existing helicopter landing sites.
- Responding to the findings from the AAIB's investigation into the terrible fatal helicopter accident in Glasgow 2013, CAA worked up and issued **Safety Directive 2016/006: State Helicopter Flight Recorder Requirements** This Directive sets out a clear requirement for the installation of crashworthy flight recording equipment on helicopters operating on Police and Search and Rescue missions; these operators have been proactive in their response to the Directive.

***Not mutually exclusive.**

Aerial work

Sector safety performance: accidents, serious incidents or high severity occurrences

Key safety area (mutually exclusive)	2012 2016 (total)	2016	What? (analysis of occurrences) 2012 to 2016	Why? (analysis of primary cause) 2012 to 2016
TECHNICAL	5	2	• Landing gear collapse during ground roll • Loss of engine power in-flight	• Technical malfunction or failure
AIRSPACE & ATC	3	0	• Close proximity with traffic in controlled airspace • Close proximity with traffic in uncontrolled airspace	• Late or non-sighting of aircraft • Air traffic instruction • Situational awareness or disorientation
OPERATIONAL	3	0	• Airframe vibrations due to underslung load contact with tail rotor blades • Forced landing following loss of engine power	• Aircraft handling and monitoring of parameters • Operational procedures • Situational awareness or disorientation • Weather conditions
OTHER & UNDER INVESTIGATION	1	0	• 3rd Party damage: parked aircraft overturned due to helicopter rotor wash effect	• Ground procedures
3rd PARTY	0	0	No occurrences reported.	
AERODROME & GROUND SERVICES	0	0	No occurrences reported.	
WEATHER	0	0	No occurrences reported.	
WILDLIFE	0	0	No occurrences reported.	

Performance	Average 2012 – 2016	Actual 2016
Accidents, Serious Incidents or high severity occurrences	2	2
Fatalities	0	0
Fatal accident rate per million flights (G-Registered aircraft)	0	0
Involving G-Registered aircraft anywhere*	2	2
Involving aircraft in the UK*	2	2
Involving Non G-Registered aircraft in the UK*	0	0

Key actions and activities – what we are doing
(not necessarily exclusive to one sector only)

- We implemented EASA Regulation **Part-SPO (Specialised Operations)** in the UK on 21 April 2017. This requires aircraft operators who are conducting specialised operations (e.g. agriculture, construction, photography, surveying, observation, patrol and aerial advertisement) to **make a declaration to the UK CAA** setting out the activities they are undertaking and details of their aircraft and operations. This has enabled us to develop our national oversight programme and given us a further opportunity to work with these operators to ensure that they are conducting their operations to the latest safety standards.

***Not mutually exclusive.**

General Aviation

Sector safety performance: accidents, serious incidents or high severity occurrences

Key safety area (mutually exclusive)	2012 2016 (total)	2016	What? (analysis of occurrences) 2012 to 2016	Why? (analysis of primary cause) 2012 to 2016
OPERATIONAL	724	142	• Aircraft collision with obstacles or terrain and / or loss of control in flight with reduced visibility • Collision with obstacles during go-around or initial climb after take-off • Hard landing • Landing resulting in runway excursion and / or ground collision • Loss of control during approach, go-around or initial climb after take-off • Loss of terrain or obstacle separation during approach • Runway excursion on take-off	• Aircraft handling and monitoring of parameters • Flight planning and preparation • Operational procedures • Situational awareness or disorientation • Weather conditions
TECHNICAL	381	61	• Canopy detachment in-flight • Forced landing after in-flight propeller detachment • Forced landing following loss of engine power • Hard landing • Loss of control following inadvertent or uncommanded operation of flight controls • Loss of control following loss of engine power during take-off or go-around	• Aircraft maintenance • Flight planning and preparation • Technical malfunction or failure
WEATHER	144	23	• Aircraft collision with obstacles or terrain and / or loss of control in flight with reduced visibility • Landing resulting in runway excursion and/or ground collision • Loss of control and/or collision with obstacles during initial climb after take-off or go-around	• Aircraft handling and monitoring of parameters • Crosswind • Situational awareness or disorientation • Windshear
OTHER & UNDER INVESTIGATION	39	7	• Injuries from rotating propellers • Landing resulting in runway excursion and/or ground collision • Loss of control in-flight	• Unknown, unidentified or under investigation
AIRSPACE & ATC	141	5	• Close proximity with traffic in or in the vicinity of the visual circuit, or in areas of busy general aviation activity • Close proximity with traffic in uncontrolled airspace	• Air traffic instruction • Late or non-sighting of aircraft • Inadequate and/or unsafe operation of drones • Situational awareness or disorientation
AERODROME & GROUND SERVICES	17	3	• Loss of control on ground during take-off or landing	• Runway surface condition
3rd PARTY	3	1	• Propeller wash from other aircraft • Runway incursion by 3rd party vehicle	• Ground procedures
WILDLIFE	14	1	• Damage and / or loss of control during forced landing • Damage during approach or landing • Loss of control in-flight	• Birdstrike

Performance

Average 2012 – 2016
Actual 2016

292 244 Accidents, Serious Incidents or high severity occurrences	19 21 Fatalities	7.3 10.7 Fatal accident rate per million flights (G-Registered aircraft)**
272 226 Involving G-Registered aircraft anywhere*	280 228 Involving aircraft in the UK*	14 16 Involving Non G-Registered aircraft in the UK*

Key actions and activities – what we are doing
(not necessarily exclusive to one sector only)

- We published the first edition of **The Skyway Code** in May 2017. This easy access document gives General Aviation pilots practical guidance on the key operational, safety and regulatory issues relevant to their flying. It covers a wide range of safety aspects, such as: pre-flight planning, weather information, pilot fitness, competence, attitude and decision making.
- **CAP 1400: Air Display Review final report:** Following the tragic accident at the Shoreham Air show, we published a series of reports defining the actions that we required air show organisers and others to carry out for the display season and a longer-term programme of work to reduce risks relating to the airworthiness of display aircraft.
- We recently conducted a further series of educational **GA safety roadshows** in order to raise awareness within the General Aviation community of current safety issues relevant to them and about impending regulatory changes.
- You can find out more about our **General Aviation Unit** here.

***Not mutually exclusive; **Estimated.**

2016 safety topics

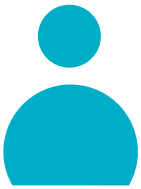
In 2016, close to 33,000 occurrences were reported to the UK CAA.

In this section, we present a selection of safety topics which are particularly relevant to 2016. We used the following criteria in selecting these safety topics:

- **Analysis of safety occurrences:** balance between the number of occurrences reported and the hazard presented.
- **Public and media enquiries:** the most common public and media information requests received in 2016.
- **Input from CAA Subject Matter Experts:** experience and expertise that provide greater insight and supporting context.

Analysis of safety occurrences

Public and Media enquiries



Input from our experts

List of topics for 2016	Airprox	Airspace Infringement	Birdstrikes
Cabin air quality	Dangerous goods	Disruptive passengers	Drones
Emergencies	Flight crew medical fitness	Lasers	Turbulence

2016 word cloud

The word cloud below summarises the most commonly reported safety-related words or phrases in 2016 that were reported at least once a day, on average, during the year. The font size represents the volume of reports containing the word or phrase received throughout the year.

The most commonly reported safety issues are captured in this report. Less frequent occurrences can, of course, represent a significant safety impact; these too we have captured.

Airprox

Avoiding mid-air collisions

The UK Airprox Board defines an Airprox as *'a situation in which, in the opinion of a pilot or air traffic services personnel, the distance between aircraft, as well as their relative positions and speed, have been such that the safety of the aircraft involved may have been compromised.'*

UK airspace saw 262 reported Airprox events involving a civil aircraft in 2016, an increase over 2015 that was mainly due to more reports of occurrences involving objects believed to be drones.

Of the 28 Airprox involving a large commercial aeroplane, 3 were rated by UK Airprox Board as risk bearing - safety was not assured or there was a risk of collision.

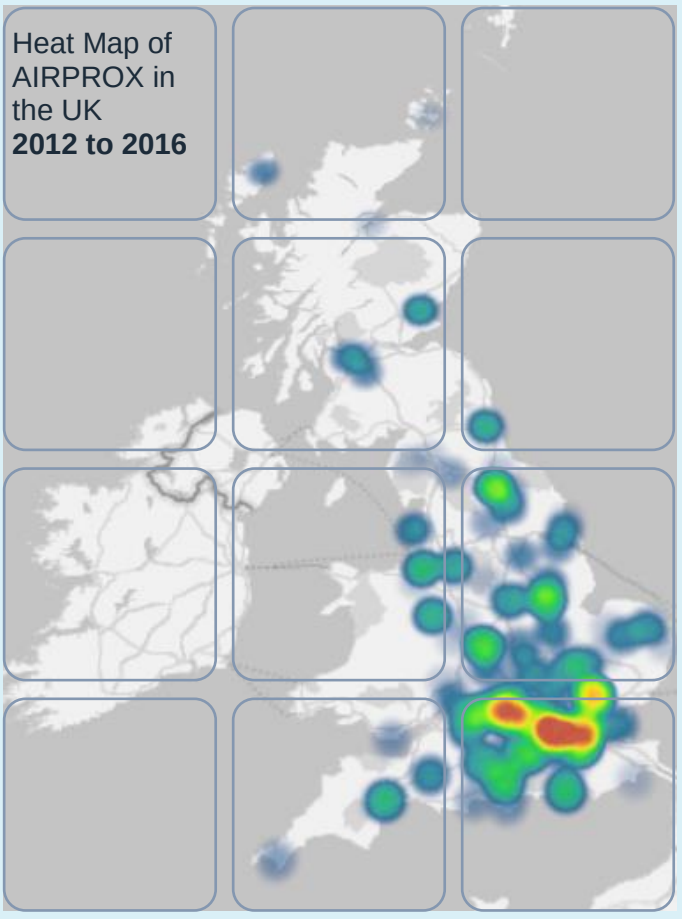
Outside UK airspace, there were 45 reports of Airprox involving large commercial aeroplanes: 5 involved drones or objects believed to be drones. This highlights the fact that drones are not just a domestic safety concern and is why we work closely with National Aviation Authorities, Governments and industry worldwide to encourage safe drone use.

The number of UK Airprox reports has increased progressively in the period 2012 to 2016, including the number of Airprox with large commercial aeroplanes. Although the vast majority of reports relate to events that are not risk bearing, they provide valuable insights into the effectiveness of the safeguards that prevent a collision.

In 2014, UK CAA created the Mid-Air Collision (MAC) Programme to tackle the risk of mid-air collision involving UK aircraft operating within UK airspace and in airspace overseas. Since then, the number of Airprox involving large commercial aeroplanes **in uncontrolled airspace** has been decreasing, with 12 reports in 2016. The greatest saturation of traffic clearly lies in the South East over London.

The team recognises that the safeguards can be less effective for aircraft operating in **uncontrolled** (less restrictive) **airspace**. This is particularly the case when aircraft are not equipped with a radio or a transponder (a device that communicates an aircraft's position and flight path information). In response, the MAC Programme team has been working to assist aircraft owners in the UK to acquire and use this technology and so help improve the safety of the environment that they are flying in.

In summary



262	28	12
Airprox in the UK 2016	Involved large commercial aeroplanes	of which in uncontrolled airspace in UK

Airspace infringements

The importance of knowing your location

The unauthorised entry of an aircraft into controlled or temporarily restricted airspace, or an active Danger Area, is known as an 'infringement'. Infringements can have both safety and commercial implications.

The level of exposure to airspace infringements in UK airspace is a known concern. There has been a slight increasing trend in infringements since 2014, which we are monitoring closely.

2016 saw 1,031 reported airspace infringements, corresponding to an average of approximately three occurrences per day. In general, the severity of these events is low. Just 0.1% of the reported infringements were classified as "high severity" occurrences; none resulted in a collision. 8% of all airspace infringements resulted in loss of separation. These occurrences are normally promptly resolved by the intervention of the ATC and flight crews involved. Approximately 50% of reported infringements in 2016 occurred in Control Areas or Control Zones - generally airspace that immediately surrounds an aerodrome.

Our data shows that at least 70% of the identified infringements were attributable to light aircraft engaged in General Aviation operations. Of particular concern are the 22% of infringements where the aircraft has not been identified due to the lack of a transponder signal (an electronic device that responds to radio-frequency interrogation, making the aircraft identifiable by ATC and other airspace users).

We have included the issue of airspace infringements in our recently published Skyway Code, a document designed to provide private pilots with quick, easy access to the key information they need, including pre-flight preparation. We also address the topic through focused efforts via dedicated working groups and liaison with industry.

We have generated technical standards for simple mapping and conspicuity devices for pilots and are actively promoting their use – see CAP 1391. We also have an active enforcement programme related to airspace infringements – see CAP 1404. Whilst our primary focus is to improve the safety of airspace users by educating and promoting actions that can prevent these occurrences, our Investigation and Enforcement Team (IET) conducts investigations that may culminate in a suspension or revocation of the pilot's licence, or even prosecution of the infringing pilot. In 2016, the IET investigated 61 occurrences, with three confirmed prosecutions and one caution.

Key points

1,031 Reported airspace infringements	**3** Airspace infringements per day in 2016	**8%** Resulted in loss of separation
70% Involved General Aviation	**61** Investigations by UK CAA's Enforcement Team	**3** Confirmed prosecutions

Plan prior to your flight.
Plan to avoid infringements.
Plan to make correct use of the airspace.
Plan to communicate.
Plan to be safe.

Birdstrikes

Sharing the air with birds

Occurrences involving birds and other wildlife are reportable and subject to analysis. 2016 saw almost 3,000 birdstrikes in the UK, indicating a steady increase in the five year period from 2012 to 2016. Approximately 60% (roughly 1,800) of these were classified as confirmed birdstrikes. In addition, there are over 500 birdstrikes per annum involving UK aircraft flying abroad.

According to the data available, about 80% of the confirmed birdstrikes in the UK occurred at, or in the vicinity of, airports. However, not all bird species present the same hazard: parameters such as the number of birds, bird weight and size have to be considered when analysing these occurrences. About 50% of the confirmed birdstrikes (when it has been possible to identify the bird species) involved gulls, swallows, martins, pigeons and doves. In contrast, confirmed birdstrikes with swans, ducks or geese represented less than 1% of the total.

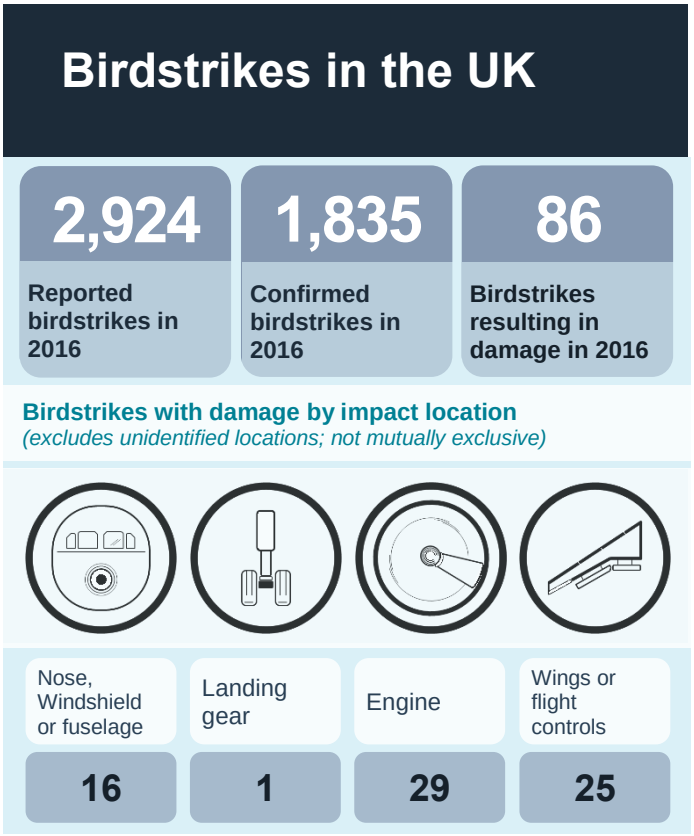
It is worth noting that:

- 5% of confirmed birdstrikes in the UK resulted in reported aircraft damage
- 8% of confirmed birdstrikes in the UK had an operational impact on the flight (i.e. the aircraft had to halt its take-off run, return to its take-off airport or divert to another airport).

Before being certificated as safe to fly, commercial aircraft, and most importantly their engines, must successfully complete a battery of tests designed to ensure that safe operation can be continued in the event of a birdstrike.

Birdstrike occurrences are generally very specific to a location or region and are highly seasonal. Understanding more about the geography and habitat of a particular site, and identifying the bird species involved and their routines are among the fundamental steps necessary to create and implement an effective wildlife hazard management action plan. We work closely with airlines, airports, National Aviation Authorities and other organisations and experts to identify, address and mitigate the potential risk of birdstrikes. The UK Birdstrike Committee is the UK national forum to present, share and discuss these safety issues.

You can find additional information in CAP 772: Wildlife Hazard Management at Aerodromes. We also publish birdstrike statistics on our website.



Cabin air quality

Fire, fumes, smoke and smells

In 2016, the UK CAA received a total of 978 reports from UK airlines relating to occurrences involving fire, fumes, smoke or smells inside the aircraft cabin. This represents 3% of all occurrence reports sent to the UK CAA for that year.

We recognise that there is strong interest in fume events, particularly those that relate to 'engine bleed air' (where fumes or odours from engine oil or hydraulic fluid enter the cabin via the bleed air system into the cabin air supply). Based on the available data, occurrences relating to contaminated engine bleed air are very rare and confirmed incidents form 5% of the total number of fume event reports we receive each year.

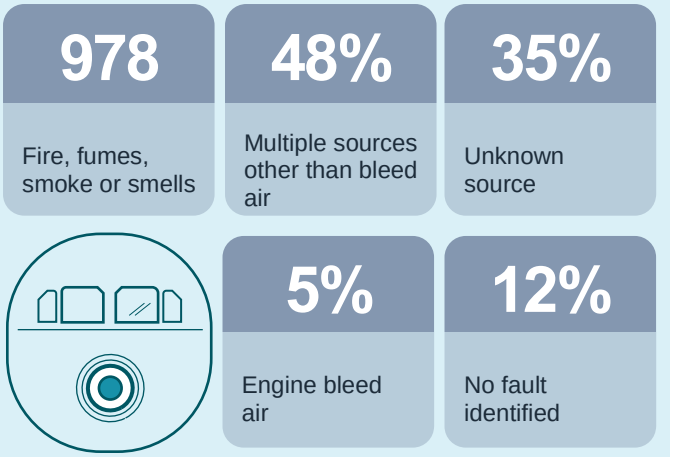
EASA has recently published two research projects that were focused on:

- Cabin air quality measurement.
- Characterisation of the toxic effects of engine oil released into the cabin or cockpit.

Our analysis also found 48% (472) of the reported occurrences did not relate to engine bleed air. There are a variety of sources for fume occurrences in the cabin including food, cleaning products and toilets. 35% (340) of the reports provided to the UK CAA did not provide a clear conclusion regarding the specific occurrence. Whilst we would like to understand the cause of all occurrences, we also recognise that such events can be transient and it may not be possible for airlines to determine the specific source. Finally, a further 12% (119) of reports included information that confirmed engineering investigations had found no fault with the aircraft.

You can find additional information on our website: www.caa.co.uk/Passengers/Before-you-fly/Am-I-fit-to-fly/Health-information-for-passengers/Cabin-air-quality/.

Key points



Did you know?

Cabin air related occurrences can be of transient nature, with localised and temporary effects. In more than 30% of the occurrences, aircraft maintenance departments have been unable to identify the causes and sources.

Dangerous goods

Why this information matters

Dangerous goods are often items that seem harmless in everyday use but can endanger the safe operation of aircraft when improperly carried as cargo, in passenger baggage or in mail.

In 2016, there were 89 occurrences citing incorrect loading or ground handling of dangerous goods in the UK. The vast majority of these occurrences were of a low severity.

There were 1,169 reported cargo consignments of dangerous goods discovered before flight that had not been identified as such to the operator by hazard labels and documentation (they were "undeclared"). In addition, there were an estimated 130,000 detections prior to carriage of prohibited dangerous goods in domestic and international air mail. Most of these discoveries were low hazard consumer products, such as flammable beauty products; however, around 60,000 were lithium batteries.

Other States are facing similar issues to those observed by the UK CAA and we are proactively engaging with international aviation organisations to protect members of the public.

The Ground Handling Operations Safety Team (GHOST) is a multi-disciplined UK CAA / Industry group set up to address and share the learning from ground handling issues including dangerous goods. Our aim is to improve safety.

We participate in the work of the International Civil Aviation Organisation (ICAO) Dangerous Good Panel (DGP) where we are currently developing standards for competency based training, assessment of personnel and revised occurrence reporting and investigation procedures. We also keep the Technical Instructions For The Safe Transport of Dangerous Goods by Air (Doc 9284) up to date.

Lithium batteries, including power banks, are generally very safe. However, because of their high energy, if they are not treated with care, are abused, or have a design/manufacturing fault, they can catch fire. Portable Electronic Devices (PEDs) containing such batteries (laptops, tablets etc.) can be hazardous if not stowed or carried carefully.

In recent years, there have been two fatal accidents caused by uncontained fires in the cargo compartment of large cargo aeroplanes. Lithium battery cargo shipments were implicated, but not proven, to be the source of the fires. Neither accident involved UK operators:

- *Uncontained Cargo Fire Leading to Loss of Control Inflight and Uncontrolled Descent Into Terrain*
- *Crash Into The Sea After An In-Flight Fire*

The UK CAA takes an active interest in the safe transport of dangerous goods, taking action where appropriate, including enforcement activity, if necessary.

You can take action!

Unsure about banned or allowed baggage items? Our website may help:

- **What items can I travel with?**
- **Items allowed in baggage**
- **Banned items**
- **Industry guidance**

Additional restrictions (temporary or permanent) may affect particular operators and/or routes, for safety and/or security reasons, and the carriage of PEDs in the aircraft cabin may be refused.

If unsure, check with the airline before the flight.

Disruptive passengers

Are you aware of the consequences?

Disruptive passenger behaviour is one of the main reasons for aircraft diversions. Disruptive behaviour in-flight or on the ground can affect your safety and the safety of fellow passengers. Besides safety implications, it can have serious consequences, including civil prosecution. Airlines have a right to refuse to carry passengers that they consider to be a potential risk to the safety of the aircraft, its crew or its passengers. The contents of this page can also be found on our website:

www.caa.co.uk/Passengers/On-board/Disruptive-passengers/.

2016 saw the highest number of disruptive passenger reports in the past 5 years. There were 418 flights in 2016 that had one or more disruptive passengers. This is more than double the number of reports seen in 2015; in part this is due to more rigorous reporting and a zero-tolerance approach to disruptive behaviour.

The punishment for disruption varies depending on the severity. Acts of drunkenness on an aircraft face a maximum **fine** of **£5,000** and two years in prison. The **prison** sentence for endangering the safety of an aircraft is up to **5 years.** Disruptive passengers may also be asked to reimburse the airline with the cost of the diversion. Diversion costs typically range from £10,000 - £80,000 depending on the size of aircraft and where it diverts to.

We are working with airlines, airports and the Department for Transport to identify and develop new strategies that can minimise the frequency of these occurrences.

Did you know?

A typical diversion can cost more than £**80,000**. You may be asked to reimburse the airline with the cost of the diversion

418	186	100%
Occurrences with disruptive passengers in 2016	Annual average 2012-2016	Increase in the number of occurrences from 2015

Potential consequences of disruptive behaviour

Examples of unacceptable behaviour

Drug/Alcohol intoxication	Refusal to allow security checks
Disobeying safety or security instructions	Threatening, abusive or insulting words
Endangering safety of aircraft or other person	Acting in disruptive manner

Drones

Are you using your drone safely?

In recent years drones have become popular, advanced and widely available. They have gained a greater industry and public profile which has been reflected in an increase in reports of encounters with drones - or with objects believed to be drones.

As such, emphasis on the safe operation of drones is fundamental. Irresponsible operation can impact upon the safety of the aviation system. Although the increase in the number of drones largely relates to recreational use, there are officially recognised channels for commercial use for which there are associated permissions and exemptions. Anyone using a drone has to follow some basic safety rules to ensure that manned aircraft and other members of the public are protected, as detailed in the Air Navigation Order 2016 (ANO) (which is also set out in CAP 393).

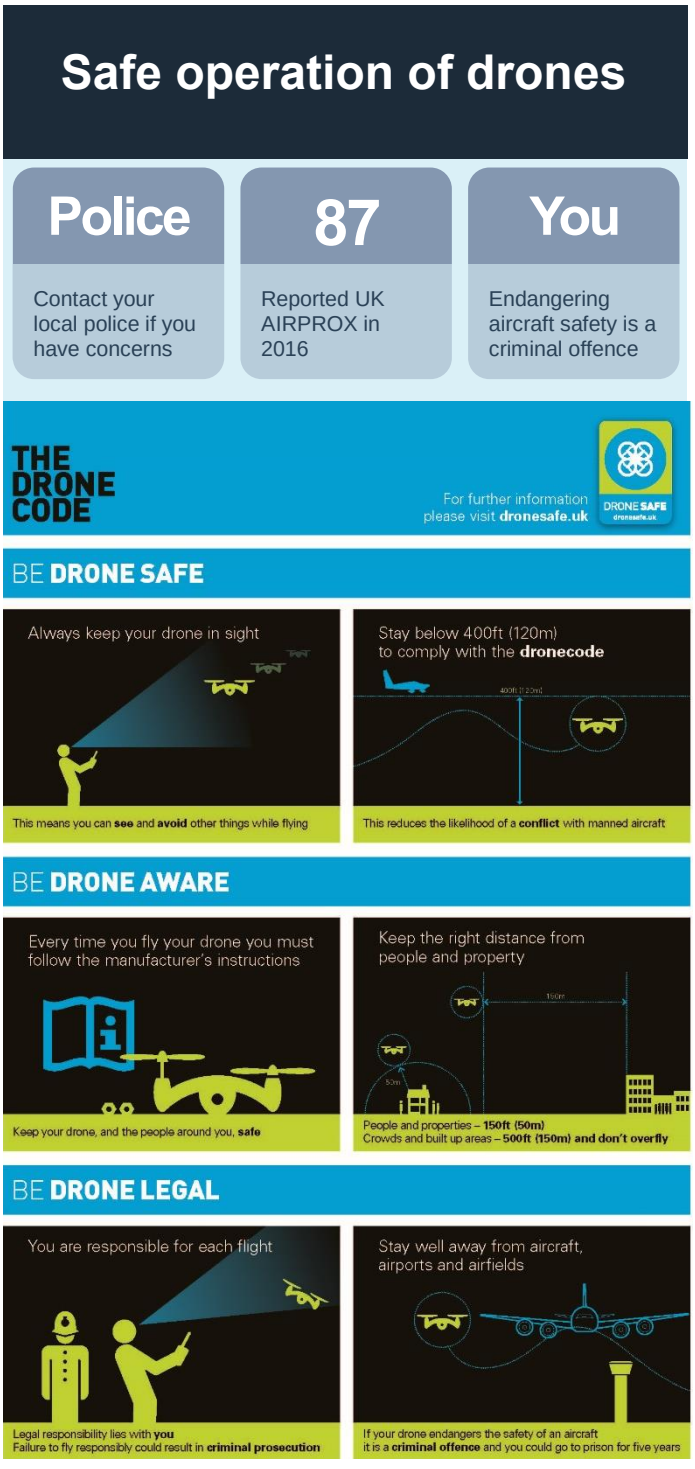
Have you heard of the **Drone Code**? Visit www.dronesafe.uk for information.

In the event of misuse of drones by members of the public, the police are responsible for criminal prosecution. **If you have any concerns** about drones being used in your area, either from a safety or privacy perspective, **contact your local police.**

By virtue of the density of aviation activity and population, there is a predominance of occurrences in the South East, notably the London area. Of approximately 300 reports of occurrences involving drones, 87 were reported as an Airprox. 187 drone occurrences were identified as involving large commercial aeroplanes. Inadequate operation of the drone, in particular flight at inappropriate heights and out of sight of the person flying the drone, is thought to be a common cause. In some reports, limited information or time to identify has prevented confirmation of whether the occurrence involved drones or other objects, vehicles or birds.

You can find additional information in the following Civil Aviation Publications (CAPs):

- CAP 658: Model Aircraft: A Guide to Safe Flying
- CAP 722: Unmanned Aircraft System Operations in UK Airspace – Guidance



Emergencies

What does it mean?

Declared emergencies are among the occurrences that must be reported to the UK CAA. In 2016, there were over 2,100 declared emergencies, representing more than 6% of the occurrences reported to the UK CAA. Statistically, this corresponds to six emergencies per day involving UK aviation. Did you know that four of these are normally passenger medical emergencies?

There are two classes of emergency messages that identify different events and levels of severity:

- **Distress**: representing serious and/or imminent danger and requiring immediate assistance. Identified with the prefix "**MAYDAY**"
- **Urgency:** conditions concerning the safety of an aircraft or other vehicle, or of some person on board or within sight, but which does not require immediate assistance. Prefixed with the word "**PAN**".

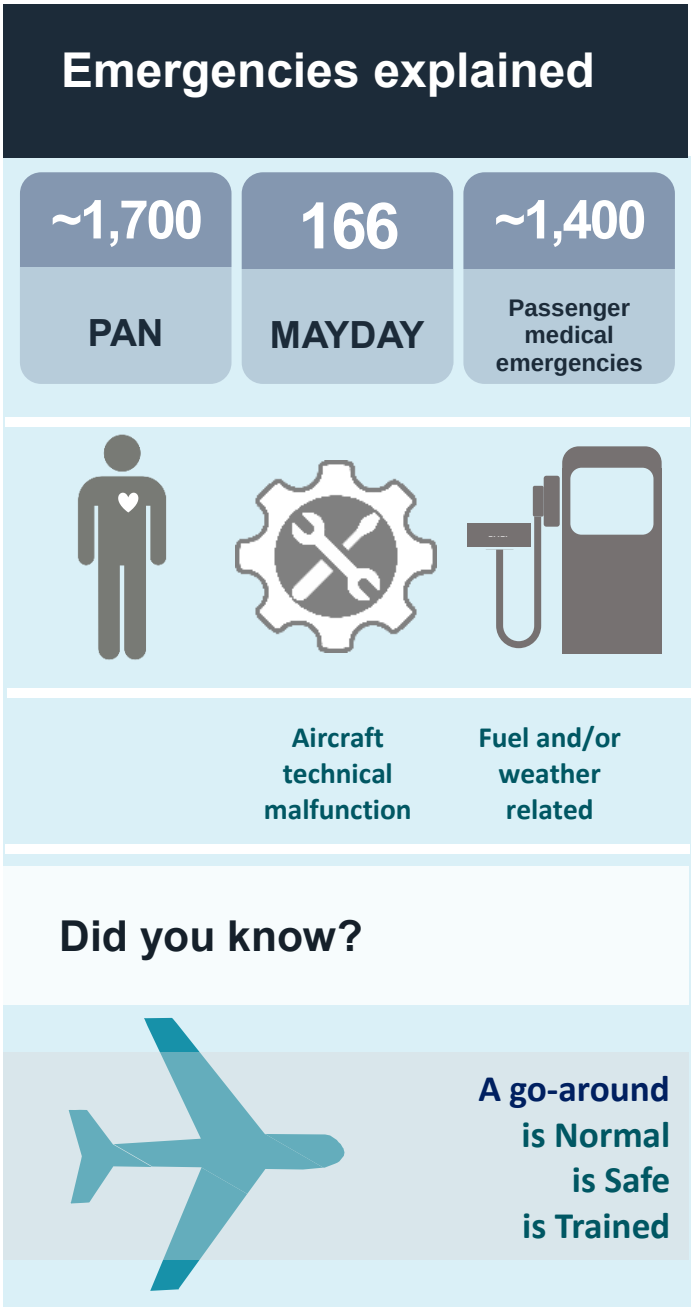
According to the data available, in 2016, these were some of the most frequently reported emergencies:

- Passenger medical condition;
- Fuel and/or weather related;
- Flight or cabin crew incapacitation;
- Technical malfunction of aircraft systems;

Flight and cabin crews are continuously trained to ensure that emergencies are handled efficiently. In the case of emergency it is important to stay calm and follow the instructions of the crew.

In some cases, normal operations can be mistakenly perceived as emergency procedures: a **go-around** manoeuvre is often a good example. A go-around is the manoeuvre initiated when the crew makes the decision not to continue an approach, or not to continue a landing.

In commercial aviation, initiating and conducting a go-around manoeuvre is frequently a standard procedure for normal operations. Although a go-around may be triggered by an emergency, it is more likely that conducting such procedure is the safest option available. If a safe landing cannot be assured, it is a normal procedure to initiate a go-around and flight crews are recurrently trained do it safely.



Flight crew medical fitness

Improving pilot performance

There are approximately 25,500 commercial pilots with UK-issued licences of whom approximately 4% will be medically unfit to fly at some point in the year. In addition to crew health monitoring by airlines, the UK has approximately 200 Aeromedical Examiners (AMEs) who undertake periodic assessments of pilot fitness, including mental health, and who are able to give advice to pilots when they experience a decrease in medical fitness.

Operations with large commercial aeroplanes require two flight crew members at any stage during the flight. In the unlikely event of a flight crew medical incapacitation, flight crews are trained to respond promptly and safely.

In 2016, there were 42 reported occurrences of flight crew illness during commercial operations, including 10 high severity occurrences. Multiple causes were listed.

Learning from the Germanwings accident of 24 March 2015, the UK CAA has initiated a number of actions to provide greater confidence in pilot fitness with particular emphasis on mental health since this accident:

- Guidance to support operators in creating pilot support programmes including improving pilots' awareness of mental health issues.
- Working with the General Medical Council, guidance on confidentiality now includes details of how doctors can contact the UK CAA with a safety concern.
- The UK CAA's website has clear signposting on how the public can report a safety concern.
- Working with UK AMEs to ensure a fair and effective aeromedical system to encourage early declaration of medical issues.

The UK CAA has a successful record of permitting pilots who have recovered from a depressive illness to fly with active and continued support, destigmatising this condition, encouraging pilot reporting of medical conditions, and ensuring that the highest safety standards are maintained or improved.

The UK CAA provides regulatory support to pilots and undertakes a programme of AME oversight including training, seminars, case advice and audits.

For private and recreational pilots, the medical requirements are simpler. Pilots are made aware of the need to assess their fitness to fly before the flight.

Prepare before flight

Pilots are encouraged to conduct self-assessments before embarking on flights. '**IM SAFE**' is a common mnemonic for self-assessing fitness before flight:

Illness – are you suffering from any?
Medication – are you taking any?
Stress – are you suffering from any?
Alcohol – when did you last drink?
Fatigue – are you well rested?
Eating – have you eaten recently?

Public safety concern?

You can take action.
If you see it, **report** it.

Lasers

A source of distraction and potential incapacitation

In 2016 there were over 1,200 laser attacks on aircraft in the UK, a figure that has remained steady over the last 5 years. 2016 also saw over 270 occurrences involving UK operators overseas. Data is available on our website: www.caa.co.uk/Data-and-analysis/Safety-and-security/Datasets/Laser-incidents/

In February 2016, a UK airliner was forced to turn back after the co-pilot was struck by a red laser following take-off. While the aircraft landed safely, the laser was an unnecessary and avoidable distraction to flight crew during a high workload phase of flight. In addition, flight crew incapacitation, due to temporary or permanent vision loss from such encounters is a significant concern.

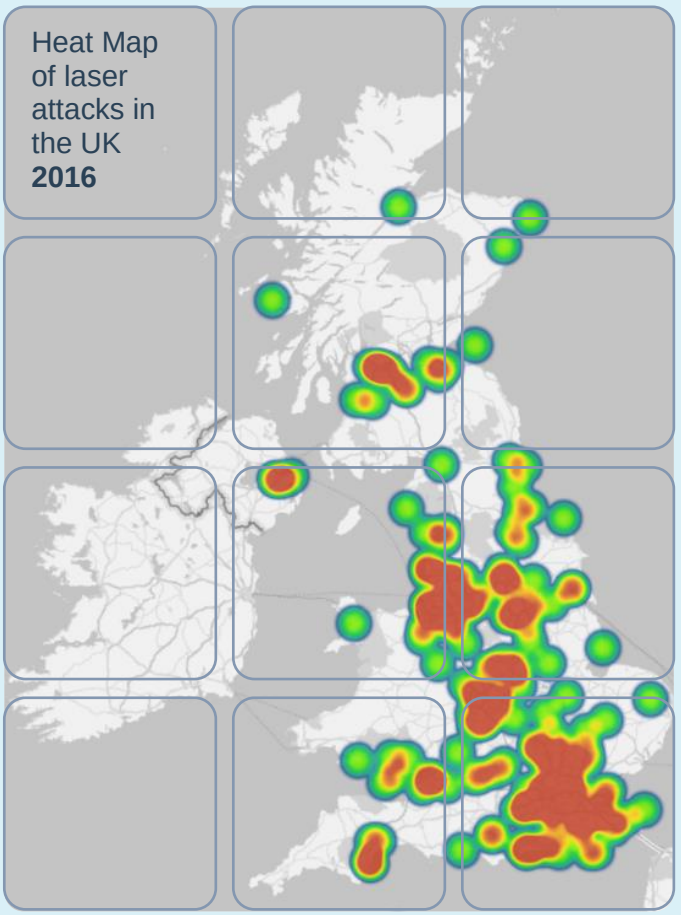
Laser attacks are most common near large city airports. They happen across the UK and are not limited to large commercial aircraft. General aviation and emergency helicopter flights are also targeted. This is of great concern to single pilot operations where there isn't the backup of another crew member to deal with the distraction or potential incapacitation of a pilot.

If you see someone shining a laser at an aircraft contact your local police. Offenders can pay fines of thousands of pounds or even face a jail sentence for endangering an aircraft.

The UK CAA coordinates the operation and work of the UK Laser Working Group (UKLWG), an Industry/UK CAA group put together to identify key risks associated with laser attacks.

You can find additional information on our website.

In summary



1,422
In the UK, annual average 2012-2016 (inclusive)

1,258
In the UK 2016

274
UK Operators overseas in 2016

Crew
Flight crew distraction and/or incapacitation on departing or landing aircraft

Laser attacks

Offender
Financial penalties and prosecution (including **prison**)

You **If you see it**

can **report it**

help **Inform the Police**

Turbulence

Why you should keep your seat belt on

Most turbulence encounters in commercial aviation are minor. The most serious cases are reported to the UK CAA, including any that lead to injuries. Serious injuries to passengers are very rare but can happen, especially if you are not wearing a seatbelt. There were 1,370 turbulence encounters reported to the UK CAA in 2016, 98% of which were classed as low or very low severities.

In 2016, 39 turbulence encounters resulted in minor injuries to passengers. The types of injury were mainly from spilled hot drinks, bumps and bruises.

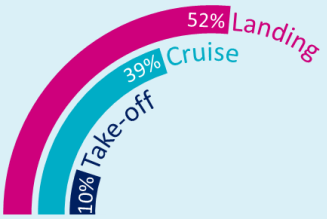
The majority of turbulence encounters happen during the approach and landing phase, when the “fasten seatbelt” light is illuminated — only 13% of injuries to passengers happened during landing.

The majority of injuries (87%) happened during the cruise, often when passengers are unbuckled from their seat or moving around the cabin. As turbulence is often unpredictable it’s always recommended to keep your seatbelt on when you’re seated, even when the seatbelt warning light is off, and be careful when drinking tea or coffee. With over 150 million passengers travelling each year, the risk of a minor injury due to turbulence is very low (around one in four million passengers).

Private and recreational pilots too should ensure that the safety equipment is not only available and serviceable, but that it is also utilised by all passengers and crew during the flight.

Did you know?

Turbulence encounters can be unpredictable and occur at any stage during flight.



Injuries are normally caused during cruise.

39
Passenger minor injuries

87%
of which during cruise

What to do?

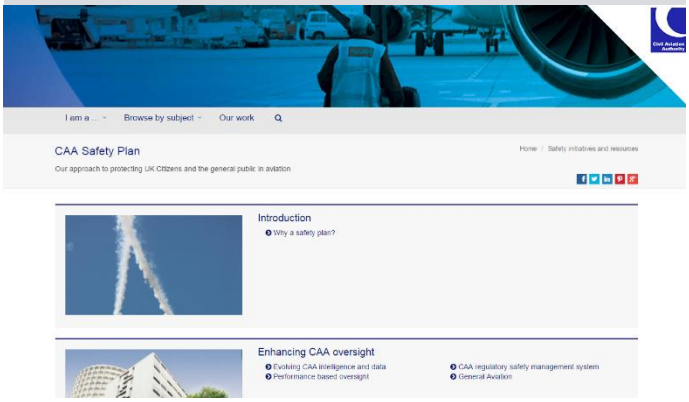
Keep your seat belt fastened during the flight

Be careful when handling hot beverages

Coming next

We will review the contents of this report annually and we will publish some updated information throughout the year. Additional safety information can be found on our website under:

www.caa.co.uk/Data-and-analysis/



Want to know more about our safety actions and activities? You can view our Safety Plan:

www.caa.co.uk/safetyplan

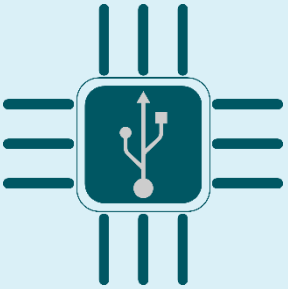
Did you know?

You can stay up-to-date with news, safety alerts, consultations, rule changes, airspace amendments and more from the CAA.

It replaces our previous information and safety notices with a more instant, tailored service.

www.caa.co.uk/Our-work/CAA-SkyWise/

2017 Safety topics



- Cyber
- Spaceplanes
- Drugs and alcohol testing for airline pilots
- Pilot peer assistance networks
- “See and avoid” in general aviation

We want to capture more and diverse safety topics in future versions of this report. The five subjects presented above represent potential candidates for future inclusion. Your feedback is important, and will help us provide a better service. Please send your comments to

Safety.intelligence@caa.co.uk

Glossary

Acronyms and explanations

Acronyms

Name	Description
AAIB	Air Accidents Investigation Branch
ACAS	Airborne Collision Avoidance System
AME	Aeromedical Examiners
ANO	Air Navigation Order
ATC	Air Traffic Control
ATM	Air Traffic Management
BASP	Business Aviation Safety Partnership
BHA	British Helicopter Association
DfT	Department for Transport
DGP	Dangerous Goods Panel
EASA	European Aviation Safety Agency
EU 376/2014	Regulation (EU) No 376/2014 of the European Parliament and of the Council of 3 April 2014 on the reporting, analysis and follow-up of occurrences in civil aviation
GHOST	Ground Handling Operations Safety Team
HTAWS	Helicopter Terrain Awareness and Warning System
ICAO	International Civil Aviation Organization
IFR	Instrument Flight Rules
MAC	Mid-Air Collision
MOR	Mandatory Occurrence Report
OHSAG	Offshore Helicopter Safety Action Group
PART-NCC	Non-commercial flights in complex motor-powered aircraft (European Regulation)
PART-SPO	Specialised Operations (European Regulation)
PBO	Performance Based Oversight
PED	Portable Electronic Device
SME	Subject Matter Expert
UK CAA	United Kingdom Civil Aviation Authority
UKLWG	UK Laser Working Group

Explanations

(please note that for some of the terms presented in the list below, there may be no formal definition, or the existing definitions may be complex. In such cases, we have used simplified explanations instead of the definitions.)

Name	Explanation
Accident	An occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, in which: a) a person is fatally or seriously injured as ahttps://www.skybrary.aero/index.php/Accident result of: being in the aircraft, or direct contact with any part of the aircraft, including parts which have become detached from the aircraft, or direct exposure to jet blast, except when the injuries are from natural causes, self-inflicted or inflicted by other persons, or when the injuries are to stowaways hiding outside the areas normally available to the passengers and crew; or b) the aircraft sustains damage or structural failure which: adversely affects the structural strength, performance or flight characteristics of the aircraft, and would normally require major repair or replacement of the affected component, would normally require major repair or replacement of the affected component, except for engine failure or damage, when the damage is limited to the engine, its cowlings or accessories; or for damage limited to propellers, wing tips, antennas, tires, brakes,

	fairings, small dents or puncture holes in the aircraft skin; or c) the aircraft is missing or is completely inaccessible
Aerial work	Aircraft used for specialised operations, such as agriculture, construction, photography, surveying, observation, patrol and aerial advertisement
Airborne collision avoidance systems	Aircraft system providing advice to pilots for the purpose of avoiding potential collisions
Commercial air transport	Aircraft operation to transport passengers, cargo or mail for remuneration or other valuable consideration
Commercial operation (aviation)	Operation of an aircraft, in return for remuneration or other valuable consideration, which is available to the public or, when not made available to the public, which is performed under a contract between an operator and a customer, where the latter has no control over the operator
Complex motor-powered aircraft	An aeroplane: with a maximum certificated take-off mass exceeding 5700 kg, or certificated for a maximum passenger seating configuration of more than nineteen, or certificated for operation with a minimum crew of at least two pilots, or equipped with (a) turbojet engine(s) or more than one turboprop engine, or a helicopter certificated: for a maximum take-off mass exceeding 3175 kg, or for a maximum passenger seating configuration of more than nine, or for a maximum passenger seating configuration of more than nine, or for operation with a minimum crew of at least two pilots, or a tilt rotor aircraft
Confirmed birdstrike	Any reported collision between a bird and an aircraft for which evidence, in the form of a carcass, or other remains is found on the ground, or damage and/or other evidence is found on the aircraft
Control area	Area normally established in the vicinity of one or more major airports, with specified lower and upper limits
Control zone	Controlled airspace extending upwards from the surface of the earth to a specified upper limit, normally around an airport
Danger area	Airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times
Emergency services	Emergency operations with helicopters, such as Search and Rescue, Police and emergency medical services
Engine cowl	Engine protective covering
General aviation	Aeroplanes, Airships, Balloons, Gliders, Gyroplanes, Helicopters and Microlights used for private flying consisting of personal transport, recreational and sporting activity. Includes commercial operations with Balloons
G-Registered aircraft	Aircraft registered in the UK, by the UK CAA (registration mark contains the prefix "G-"), including other aircraft operated in the UK that do not require a registration mark
Ground roll	The movement of an aircraft on the ground, under its own power, until it becomes airborne on take-off, or after touchdown on landing
Hazard	Any condition that can cause or contribute to an aircraft incident or accident
High severity occurrences	MORs that involve fatalities or serious injuries, the inability to continue safe flight and landing, a significant increase in flight crew workload, a serious loss of separation, a serious ATM system failure or a serious degradation of aircraft strength / integrity / handling / performance and a potential catastrophic outcome
Large cargo aeroplanes	Scheduled and unscheduled cargo commercial air transport services in aircraft with maximum allowed take-off weight of more than 5,700 kilograms
Large commercial aeroplanes	Scheduled and unscheduled passenger and cargo commercial air transport services in aircraft with maximum allowed take-off weight of more than 5,700 kilograms
Large passenger aeroplanes	Scheduled and unscheduled passenger commercial air transport services in aircraft with maximum allowed take-off weight of more than 5,700 kilograms

Loss of separation	Occurs whenever specified separation minima between airborne aircraft in controlled airspace are breached. Minimum separation standards for airspace are specified by Air Traffic Services
Mandatory occurrence reports	An occurrence means any safety-related event which endangers or which, if not corrected or addressed, could endanger an aircraft, its occupants or any other person
Member State	European Aviation Safety Agency Member States
Non-commercial operation (aviation)	Operation of aircraft for private flying consisting of business or corporate, personal transport, recreational and sporting activity
Non-G-registered aircraft	Aircraft not registered by the UK CAA or State of registry is not the UK (registration mark does not contain the prefix "G-")
Offshore helicopters	Scheduled and non-scheduled offshore commercial operation of helicopters (predominantly for the Oil & Gas industry)
Onshore helicopters	Onshore commercial and non-commercial operation of helicopters, including Business/Corporate flights and excluding General Aviation operations
Propeller (or rotor) wash	The force or wind generated behind a propeller, particularly when high/full power is set
Runway excursion	Occurs when an aircraft departs the runway in use during the take-off or landing phase
Serious incident	An incident involving circumstances indicating that there was a high probability of an accident and associated with the operation of an aircraft which, in the case of a manned aircraft, takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, or in the case of an unmanned aircraft, takes place between the time the aircraft is ready to move with the purpose of flight until such time as it comes to rest at the end of the flight and the primary propulsion system is shut down
Small commercial and business aeroplanes	Scheduled and unscheduled passenger and cargo commercial air transport services in aircraft with maximum allowed take-off weight of 5,700 kilograms or below, or commercial and non-commercial operations with aircraft engaged in Business/Corporate flights, with no maximum allowed take-off weight threshold
Tail strike	Occurs when the tail of an aircraft impacts the runway during the take-off or landing phase
UK airline	UK registered or operated scheduled and unscheduled commercial air transport services
UK aviation	UK Aviation represents all the occurrences reported to the UK CAA in the UK or involving G-Registered or UK operated aircraft overseas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