Analysis of Airprox in UK Airspace

Report Number 29
January 2013 – December 2013

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Twenty-Ninth Report by the UK Airprox Board

Analysis of Airprox in UK Airspace
(January 2013 to December 2013)

Compiled by Director UK Airprox Board for

The Chairman
UK Civil Aviation Authority

and

The Director General
UK Military Aviation Authority

CONTENTS

OVERVIEW

Executive Summary

The UK Airprox Board (UKAB) assessed 172 Airprox in 2013, of which 65 (38%) were assessed as risk-bearing events (Risk Categories A & B).[1] Table 1 and Figures 1 & 2 show Airprox notification statistics and associated risk trends over the last 10 years wherein it can be seen that 2013 continues the elevated trend of reporting following the 2006 to 2009 UK recession years, with notable increases in both Category B and Category E assessments in 2013. The Category B increase is probably associated with an overall spike in GA Airprox in the summer months (on average 30-60% of GA Airprox are risk-bearing). As for the Category E assessments, a significant number were due to increased reporting of TCAS events by commercial aircraft reacting to TCAS RAs caused by other aircraft penetrating their TCAS warning envelopes in mixed IFR/VFR environments; although cause for concern in that TCAS RAs should not be accepted as routine events, in Airprox terms, many of these occurrences were well within the bounds of normal safety standards and procedures.

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	10-year Average
Category A	15	19	15	9	13	11	12	23	18	22	**16**
Category B	53	51	40	39	38	36	33	36	27	43	**40**
Category C	131	116	103	106	100	97	116	88	97	72	**103**
Category D	8	2	1	0	4	3	6	2	5	9	**4**
Category E	0	0	0	0	0	0	0	12	14	26	**17**
Annual Totals	207	188	159	154	155	147	167	161	161	172	**167**
Risk Bearing	33%	37%	35%	31%	33%	32%	27%	37%	28%	38%	**33%**

Table 1. Total Airprox Notifications and Risk Assessment Statistics
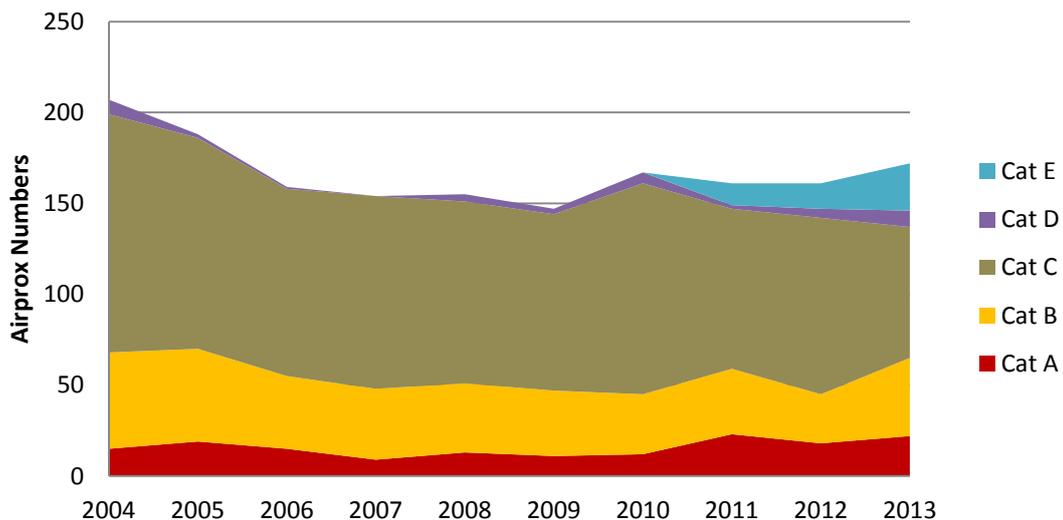
### Figure 1. Total Airprox Numbers - 10-year Trend

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[1] Risk categories are defined within the Glossary of definitions and abbreviations at the end of this annual report. Note that Category E was only introduced in 2011, and similar events would probably have previously been classified as Category C: the seeming reduction in Category C occurrences since then should be viewed in this light.
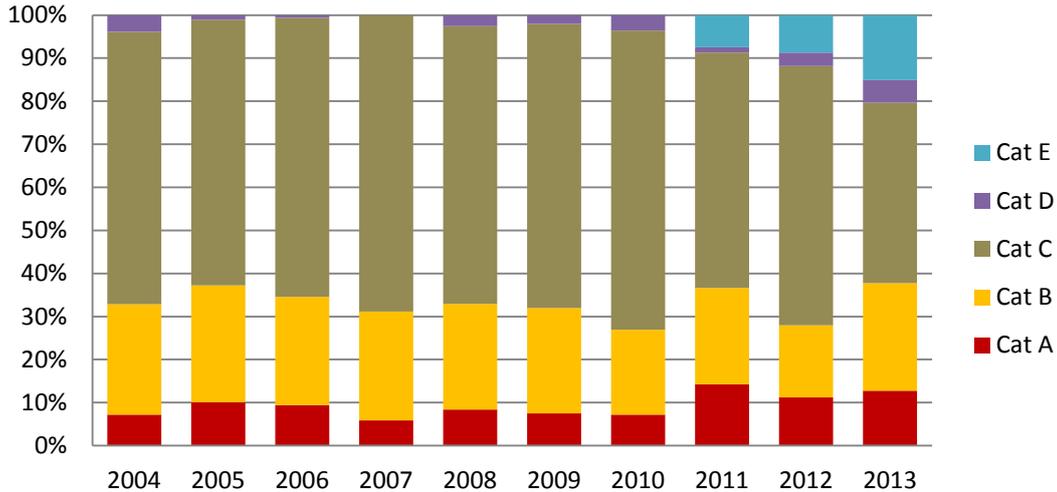
Figure 2. Total Airprox Risk Distribution - 10-year Trend

Although 172 Airprox represents, on average, an event occurring almost every other day, caution is required in trying to identify trends and lessons from what is a statistically small sample size compared to the many thousands of flights which are conducted without incident within the UK's airspace every year. In particular, although reflecting more Airprox than usual in the summer months, there appear to be no hard facts or obvious explanations for why risk-bearing events (and specifically Category B) have risen compared to 2012. Anecdotal evidence suggests that 2012 may in itself have been an untypically low year, especially when the effect of the 2012 Olympics is factored in (when much more control and surveillance was placed on GA over the summer months, which may have suppressed both the overall summertime GA Airprox numbers and, therefore, their associated risk-bearing outcomes). Notwithstanding, the overall risk-bearing percentage of all Airprox occurrences remains broadly within an historical 30-40% band (10-year average 33%) although, as Figure 3 reflects, there does appear to be an increasing trend in the last 3 years.
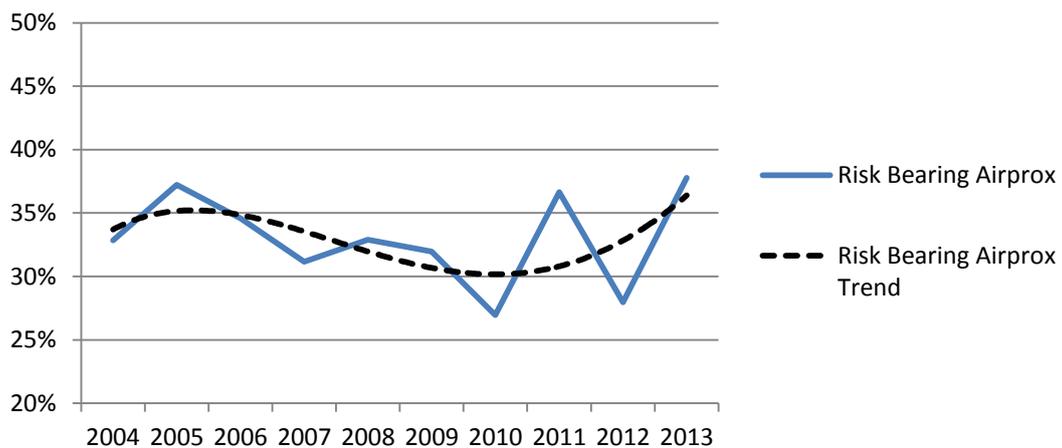

Figure 3. Overall Risk-Bearing Airprox - 10-year Trend

Some vagaries in the classification of risk must be expected because of the subjective nature of both the ICAO Airprox definition and the Board assessment process; both of which being qualitative in nature rather than quantitative.

Notwithstanding, as Table 2 and Figure 4 show, sub-dividing the apparent increasing overall risk-bearing trend by respective sectors shows an increasing trend for General Aviation (GA), a broadly decreasing but levelling trend for Military (Mil) Airprox, and an increasing trend for Commercial Air Transport (CAT) (albeit CAT percentages are probably skewed by the disproportionate impact of a small number of risk-bearing events within a relatively small number of overall occurrences (2013: 4 risk-bearing out of 30 events; 2012: 1 risk-bearing out of 35 events; 2011: 1 risk-bearing out of 22 events)).

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
GA Risk-Bearing	50%	45%	46%	38%	44%	30%	29%	38%	38%	43%
Mil Risk-Bearing	33%	44%	40%	33%	39%	44%	26%	36%	30%	34%
CAT Risk-Bearing	9%	9%	8%	8%	3%	3%	0%	5%	3%	13%

Table 2. Risk-Bearing Airprox Percentages Within Each Sector
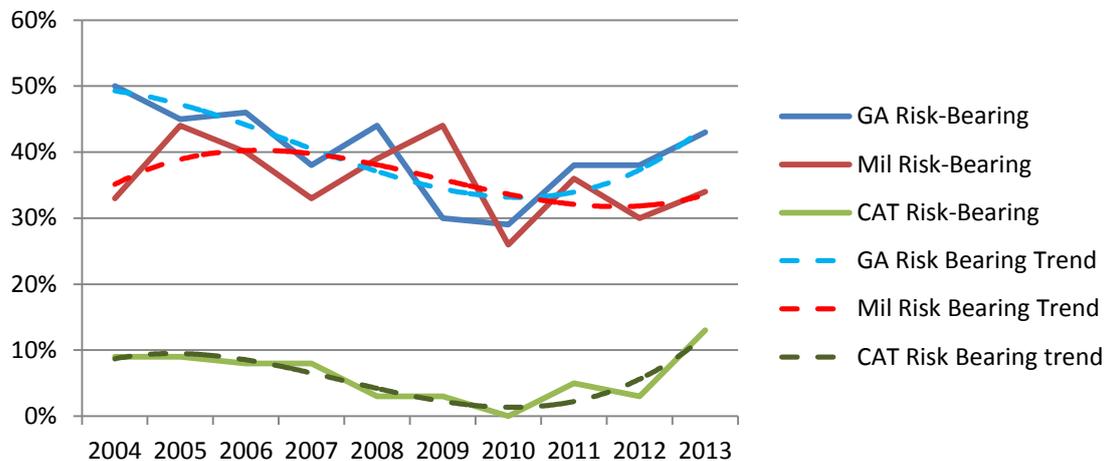

Figure 4. Risk-Bearing Trends Within Each Sector

Statistics and trends can sometimes mask the overall meaning of the analysis. In stark terms, risk-bearing Airprox reflect incidents where aircraft very nearly collided or safety was, at least, not assured. Drawing from the main body of the report and the associated sector analyses, headline statements for 2013 are:

- 172 Airprox represents about an Airprox every other day.
  - 65 risk-bearing Airprox means that, on average, there was a risk of collision, or safety was not assured, at least once a week.
- 30 CAT Airprox represents about one a fortnight.
  - 4 risk-bearing CAT Airprox means that, on average, there was a risk of CAT aircraft collision, or safety was not assured, once every 3 months.
- 110 GA Airprox represents about two per week.
  - 47 risk-bearing GA Airprox means that, on average, there was a risk of GA aircraft collision, or safety was not assured, about once a week.
- 82 Mil Airprox represents about 3 Airprox per fortnight.
  - 28 risk-bearing Mil Airprox means that, on average, there was a risk of Mil aircraft collision, or safety was not assured, about once a fortnight.

Figure 5 graphically illustrates the 2013 Airprox breakdown. The large central pie chart shows the division of all Airprox by sector involvement, whilst the smaller satellite pie charts show the sub-division of involvements within each of the sectors (i.e. of the 110 GA Airprox, 35% were GA-GA, 36% were GA-Mil, 22% were GA-Commercial, and 7% were GA-Other). Note that for the purposes of Figure 5, 'Commercial' represents all commercial involvement including commercial flying schools, air taxis etc (as opposed to the formal term CAT as used elsewhere which refers solely to scheduled passenger carrying aircraft which excludes the other commercial users); 'Other' refers to all remaining aircraft such as Air Ambulances, Police Helicopters, unknown aircraft, model aircraft, UAV/RPAS etc.
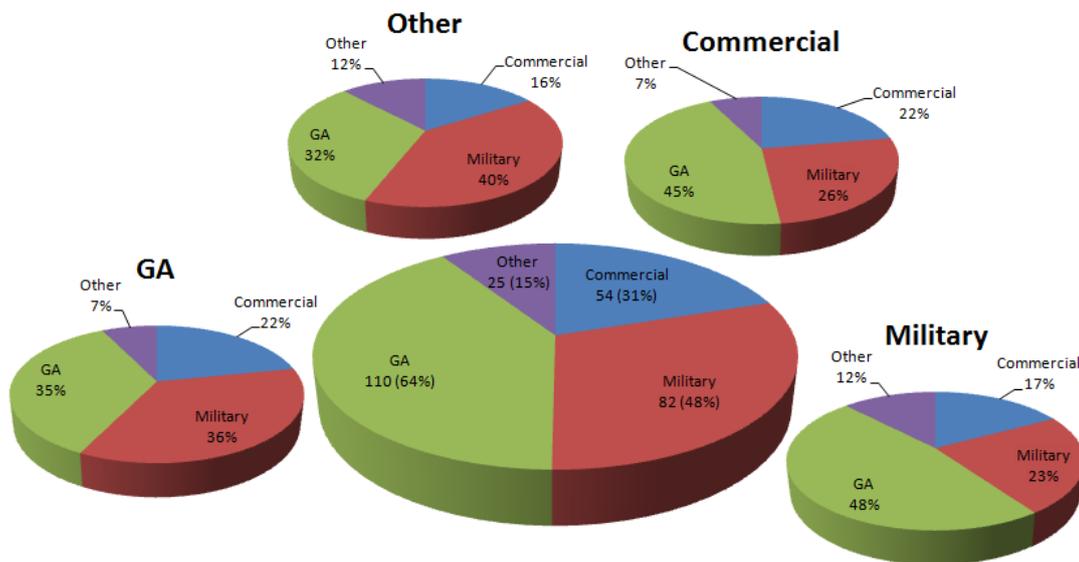
Figure 5. 2013 Airprox by Sector Involvement

Finally, due to distribution costs this report is no longer published in hard-copy format as was the 'Blue Book' of the past; the report and associated individual Airprox reports are now only available online at www.airproxboard.org.uk or by email on request. Instead, the first edition of the new annual Airprox magazine was published in August 2013 as a more digestible and relevant product for the wider aviation communities. Airprox magazine is distributed to all GA pilots with current UK licences in addition to the previous UKAB 'Blue Book' address list: electronic versions of the magazine are also available on the UKAB website and at http://edition.pagesuite-professional.co.uk/launch.aspx?eid=42907c66-fb80-4f97-9a08-7a171d543fd1.

Steve Forward
Director UK Airprox Board

Airprox Reporting Statistics

The UKAB assessed 172 Airprox in 2013, 11 more than in 2012 and 5 above the 10-year average; this rise continues an overall gradual increasing trend in reporting since 2009 (when 147 Airprox were assessed). Figure 6 shows the breakdown of the year's occurrences overlain on the 5-year rolling average for each of the months. Two spikes in above-average levels of occurrence are evident; July & August, and November. By way of counterbalance, February, March and October saw well below average numbers of events.
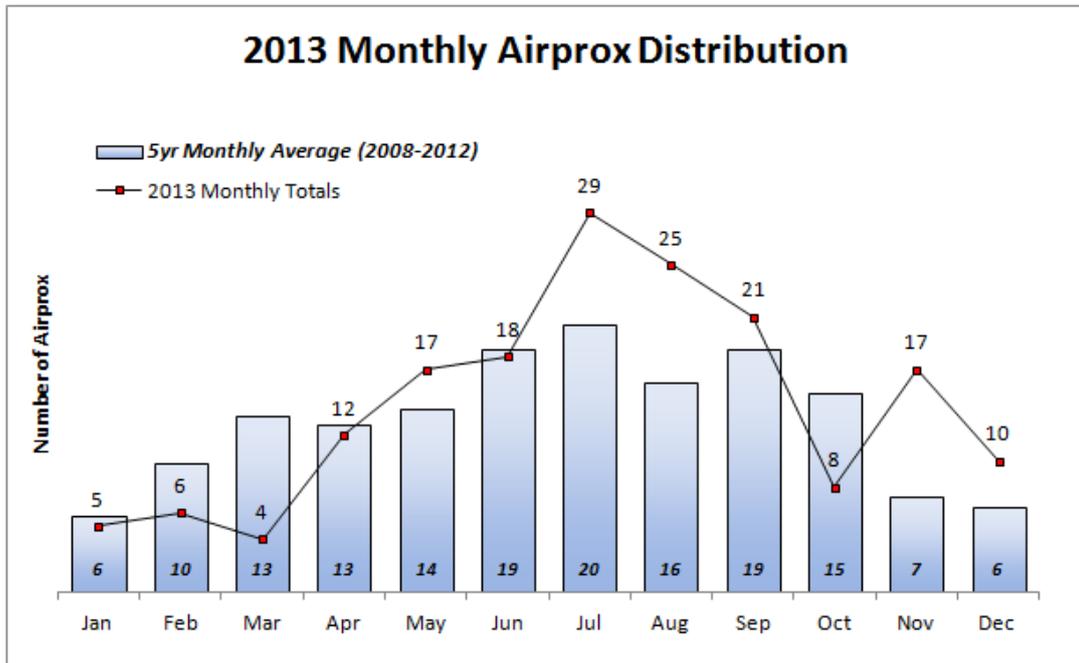
Figure 6. 2013 Airprox Monthly Distribution

Airprox Analysis and Trends

Overview

Although the reasons for the peaks and troughs above will be many and various, Figure 7 shows that they correspond well with the number of GA Airprox occurrences: the favourable weather in the summer months naturally brings an increase in GA flying rates, and a correlation between overall Airprox notifications and GA activity (both unpowered and powered aircraft) is evident. Figure 8 shows the same GA data but with Risk Categories displayed as percentages of occurrences. Fluctuating throughout the year, 30-60% of GA Airprox were risk-bearing (Category A & B), but there are noticeable peaks of risk-bearing Airprox in the holiday periods which could reflect either increased exposure (there are more aircraft airborne and therefore more chance of an encounter) or the fact that those who do not fly so regularly (and hence may be less practiced in lookout and with 'rusty' flying skills) may not see other aircraft until the latter stages of the occurrence. February and March minima followed a period of intense storms across the UK which probably translated into less GA flying (and hence Airprox notifications) during those months.
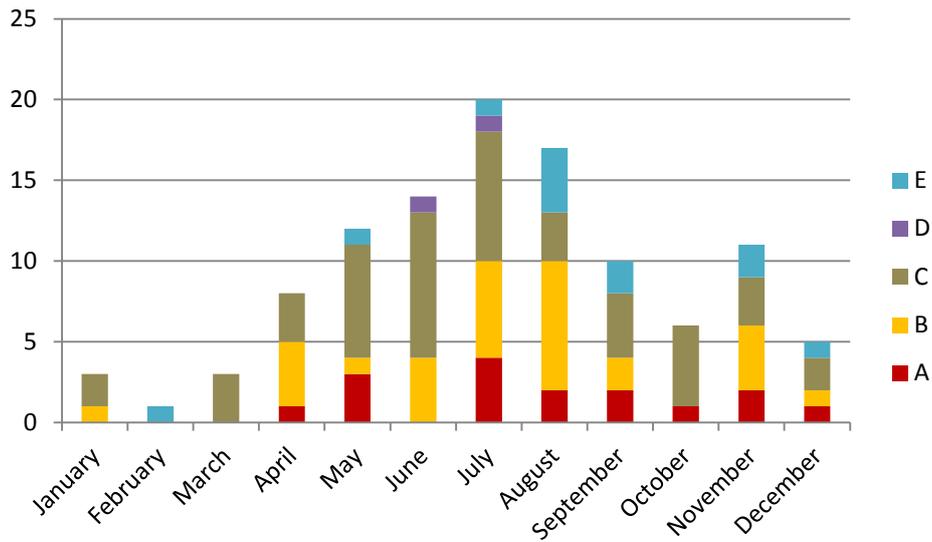
Figure 7. 2013 GA Airprox Occurrences.
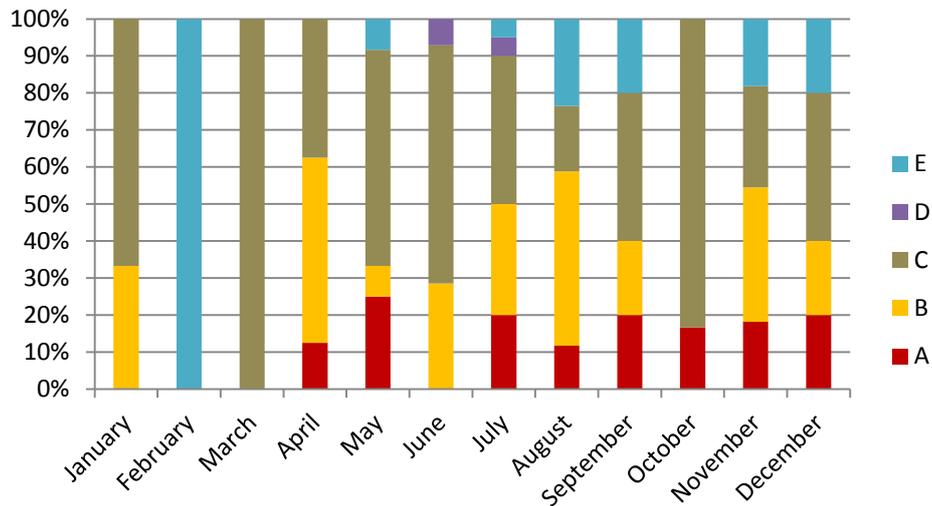
Figure 8. 2013 GA Airprox Occurrences by Risk Category Percentage

Analysis by User Groups

Table 3 and Figure 9 show the overall total Airprox trends by user groups over the last 10 years: as can be seen, Military~Military have noticeably reduced; Civil~Civil have decreased slightly; but Civil~Military have increased, as have 'Other' (Police helicopters, Air Ambulances, UAVs, model aircraft etc).

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Civil~Civil	109	99	95	93	93	74	63	73	84	78
Civil~Mil	69	74	46	38	38	36	54	50	39	53
Mil~Mil	22	8	12	12	17	30	34	26	28	19
Other	7	7	6	11	7	7	16	12	10	22
Totals:	207	188	159	154	155	147	167	161	161	172

Table 3. 10-year Total Airprox Statistics by User Group
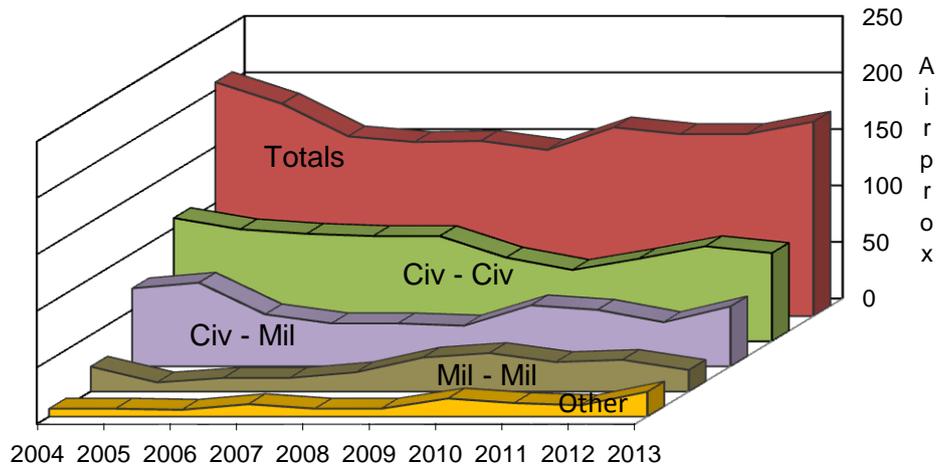
Figure 9. 10-year Total Airprox Trends by User Groups

Analysis by Flight Classification

Breaking down the civil user group statistics above to distinguish CAT from GA, it is worthy of note that, overall, GA~GA Airprox numbers appear to have stabilised (but at 10-year record levels), Military~Military numbers show a heartening continued decline and, following a marked reduction in 2012, GA~Military Airprox numbers have returned to their 2011 levels (see Table 4 and Figure 10). However, caution needs to be exercised in reflecting further on these trends; they may simply reflect greater willingness to report rather than increasing trends in Airprox themselves (there is anecdotal evidence that military crews are much more comfortable in reporting Airprox now as the military 'Just Culture' beds in, and this may have skewed the number of GA~Military reports for example). Of more concern, the military Tutor and glider fleets were temporarily suspended from flying for engineering reasons for much of 2013, and these aircraft historically account for a large portion of military incidents. With that in mind, for the remaining fleets, Military~Military Airprox might well have been at normal levels and, had the Tutors been flying, GA~Military levels might well have been higher than was the actual case.

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
GA~Mil	47	43	25	25	24	29	40	46	33	47
GA~GA	55	46	44	46	47	46	44	55	59	58
CAT~CAT	28	10	19	19	24	11	5	4	11	7
CAT~GA	26	43	32	28	22	17	14	14	14	13
CAT~Mil	22	31	21	13	14	7	14	4	6	6
Mil~Mil	22	8	12	12	17	30	34	26	28	19
Other	7	7	6	11	7	7	16	12	10	22
Total	207	188	159	154	155	147	167	161	161	172

Table 4. 10-year Total Airprox Statistics by Flight Classification
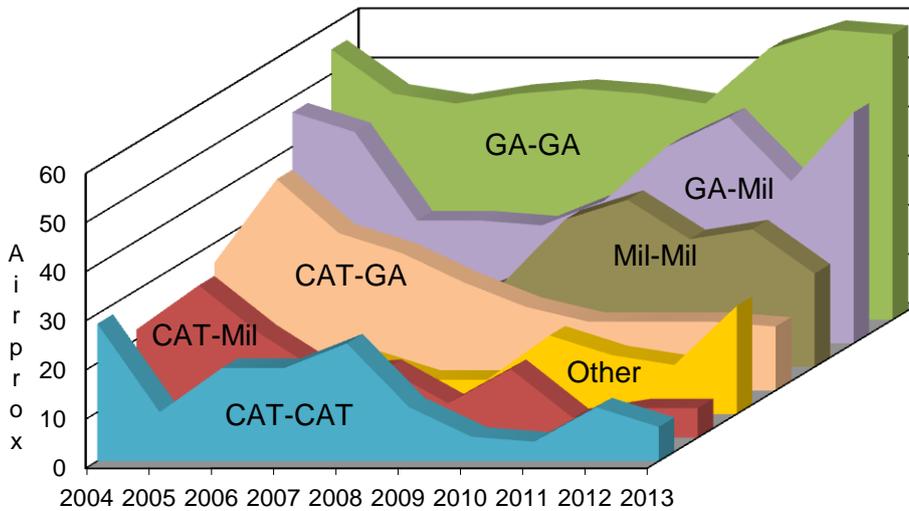
Figure 10. 10-year Total Airprox Trends by Flight Classification

Analysis by Airspace

Finally, Figure 11 shows the spread of 2013 Airprox occurrences by Airspace involvement. Reflecting the fact that the majority of Airprox involve GA and Mil aircraft, it is no surprise that most Airprox occur in Class G airspace where see-and-avoid provides the main mitigation (118 incidents, almost 69%, when low-flying areas are included). It is worthy of note however that, when combined, the second largest group (25 incidents, almost 15%) occurred within ATZ/MATZ where one might hope that aircraft would be at their most predictable given that there are well-defined rules and procedures within these zones thereby reducing the risk: that this is evidently not the case bears further thought.
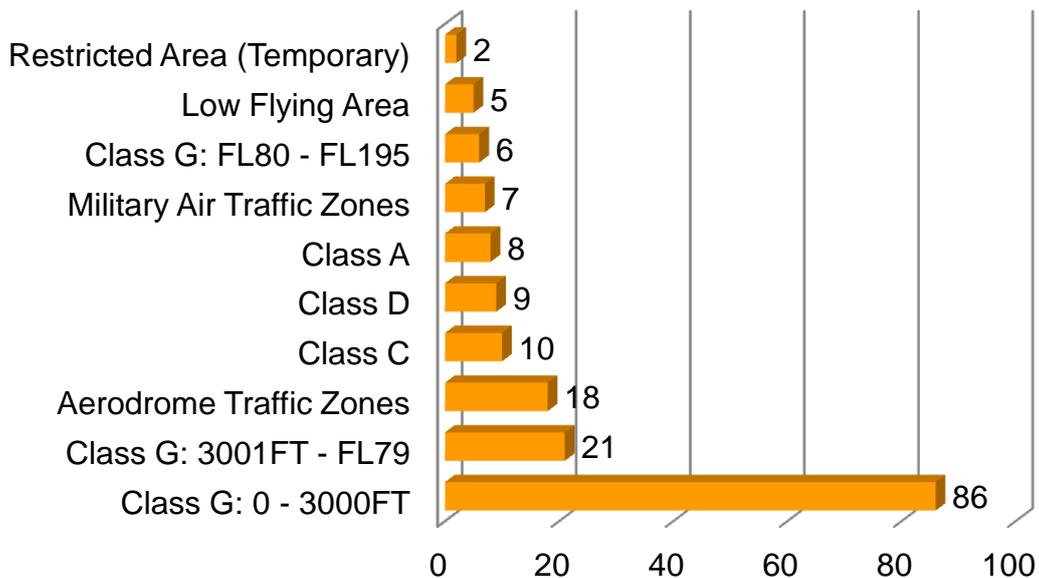
Figure 11. 2013 Airprox by Airspace Involvement

Airprox Themes

There were a number of recurring underlying causal themes during Board discussions as detailed below. Many seasoned aviators would place most of these under the intangible heading 'Airmanship', although this remains a somewhat controversial and vague expression intended to convey a measure of understanding; experience; or, more succinctly, aviation 'common-sense'. What can be said is that 'Airmanship' is something gained from exposure to the experiences and sage advice of other aviators; properly thinking about and understanding the application of rules, procedures and airspace; and a healthy dose of self-preservation. In that vein, identification, communication and healthy debate around Airprox causal themes is one way of adding to an aviator's store of 'Airmanship'; the newly introduced Airprox Magazine is intended to foster such feedback and debate (the 2014 electronic version is at http://edition.pagesuite-professional.co.uk/launch.aspx?eid=42907c66-fb80-4f97-9a08-7a171d543fd1).

Top Ten Airprox Causal Themes

The themes below represent a distillation of the Board's discussions (with supporting examples) and are based on a qualitative, subjective appreciation of the underlying causes. Recognising the need for a more rigorous approach to Airprox analysis, the CAA and UKAB have commissioned a study of Class G airspace risks which is intended to report in late 2014 having conducted a scientific analysis of the UKAB Airprox database since 2000 in order to identify any specific precursor, cause and risk category themes. In the meantime, the key recurring 2013 Airprox themes were identified as:

- **Air Traffic Service**: poor understanding of ATS (especially amongst foreign pilots); selecting an inappropriate ATS for the flight conditions or activity; assumed protection from other aircraft whilst in receipt of an ATS; insufficient or incomplete Traffic Information; conduct of airtests without ATS; IFR training outside ATS coverage but in intermittent IMC; and pilots' lack of understanding of continued collision avoidance responsibilities when in receipt of an ATS.

- **Flight Planning**: inadequate (or lack of) flight planning; poor airspace understanding; poor NOTAM awareness/understanding; poor choice of operating area, routing and waypoints; routing too close to, or through, ATZs, minor strips and glider/microlight/parachuting sites; thoroughness of pre-flight self-briefing; and contingency planning for actions on becoming lost or experiencing other eventualities.

- **Courtesy**: overtaking too close; indecision, uncertainty, poor anticipation or inaction during airborne conflict situations; presumption of 'right of way' protection; poor cooperation or information flow; *laissez faire*, self-interest and pressing-on without knowing (or seemingly caring) where other aircraft might be flying; poor adherence to procedures and Rules of the Air; and unthinking or casual operations (especially within or around ATZ).

- **Visual Circuit**: poor situational awareness (SA) when joining, operating within, or departing the visual circuit; failing to follow standard joining procedures; failing to clearly pass intentions; poor integration, sequencing or separation; becoming task-focussed to the detriment of lookout; assumption of 'protection' when within an ATZ; and incurious pilots not questioning unclear instructions or seeking further clarification.

- **Operations Appreciation**: knowledge of others' aviation requirements and operating modes (specifically, gliders, parachuting, microlights, hang-gliders etc); awareness and consideration for glider/microlight sites, winch-launching and glider towing; soaring in areas of intensive air activity and airfield approach lanes; encouraging pilots in gliders fitted with radios to use them to provide situational awareness to others (notwithstanding R/T licensing issues); and poor awareness of IFR procedures and associated routing that might be affected by their own VFR operations.

- **Glider Competitions**: sub-optimal selection and promulgation of daily task routes; poor appreciation of glider competition NOTAMs; poor awareness of glider tug operations; poor understanding of glider range & altitude capabilities; gliders not informing ATC of intentions; and need for recognition of the tendency for gliders to 'flock' during competitions.

- **TCAS**: poor understanding of TCAS mechanisation; lack of awareness of own flight vector on other TCAS equipped aircraft; use of TCAS in mixed VFR/IFR traffic conditions; inappropriately responding to TCAS TAs; and understanding of TCAS azimuth unreliability.

- **Electronic Conspicuity**: False expectations or over-reliance on TAS and TCAS; the value of FLARM/P-FLARM; the value of SSR Mode S; not selecting SSR transponder Mode C; small glider and canopy-suspended air-vehicle radar cross-section; radar speed-gates vs low-speed aircraft; awareness of areas of poor local radar coverage; and actions after radio or systems failures.

- **Supervision and Coordination**: sub-optimal information flow and coordination within and between ATC units; lack of effective supervision (both within ATC and by flying instructors of solo students); reduced capacity whilst mentoring trainees; and delays in stepping in when a student becomes swamped or fails to recognise a developing conflict situation.

- **R/T**: poor or casual R/T discipline and failure to use pro-words; undetected incorrect read-backs, or failure to read back instructions; imprecise routing or reporting instructions; interpretation of unclear transmissions based on assumptions or standard routines rather than request a retransmission; clipped, garbled, blocked or simultaneous 'double' transmissions; and failure to clearly and simply articulate intentions or instructions.

COMMERCIAL AIR TRANSPORT

CAT Airprox by Airspace

Figure 12 shows the breakdown of CAT Airprox by airspace type. Of the 30 CAT Airprox: 8 occurred in Class A, IFR-only, controlled airspace; 12 occurred in Class C/D, mixed IFR/VFR, controlled airspace; and 7 occurred in Class G uncontrolled airspace.
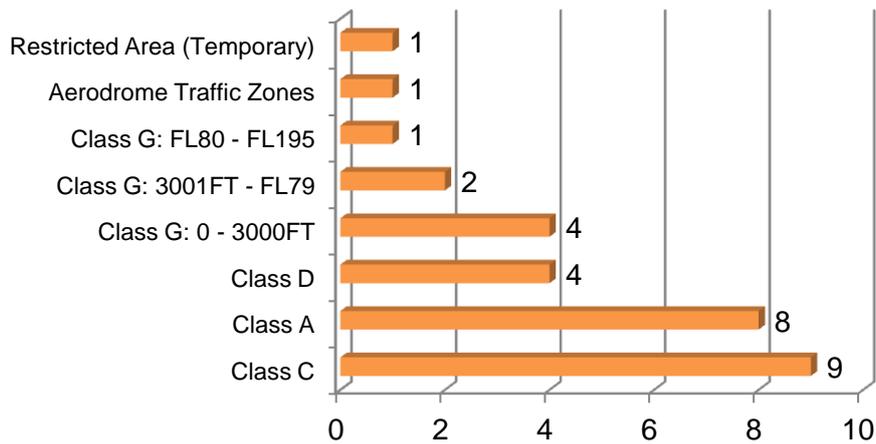
Figure 12. 2013 CAT Airprox by Airspace Involvement

CAT Risk Distribution

Table 5 and Figure 13 show the 10-year CAT Airprox totals and associated risk distributions. The overall trend appears to be flat in the last 5 years with circa 30-35 CAT Airprox per year; this is about half the rate in the 5-years before (2004 to 2008). The risk-bearing events this year were:

* 2013082 – Category A: A319 vs untraced paramotor in Class G.
* 2013037 – Category B: Jetstream JS41 vs F15 Eagle in Class G.
* 2013052 – Category B: RJ1H vs B206 Helicopter in Class D.
* 2013096 – Category B: Embraer E145 vs Typhoon in Class C/TRA.

Details of these Airprox can be found in the 2013 Airprox catalogue at the end of this report and on the UKAB website at www.airproxboard.org.uk. Of note, 3 of the 4 risk-bearing CAT Airprox (including the Category A event) occurred in Class G / TRA airspace.

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
CAT Risk A	1	1	0	0	0	0	0	0	1	1
CAT Risk B	6	7	6	5	2	1	0	1	0	3
CAT Risk C	67	78	68	60	58	33	33	18	23	12
CAT Risk D	4	1	0	0	1	1	2	0	4	3
CAT Risk E	0	0	0	0	0	0	0	3	7	11
CAT Total	**78**	**87**	**74**	**65**	**61**	**35**	**35**	**22**	**35**	**30**

Table 5. 10-year CAT Airprox Statistics by Risk Classification
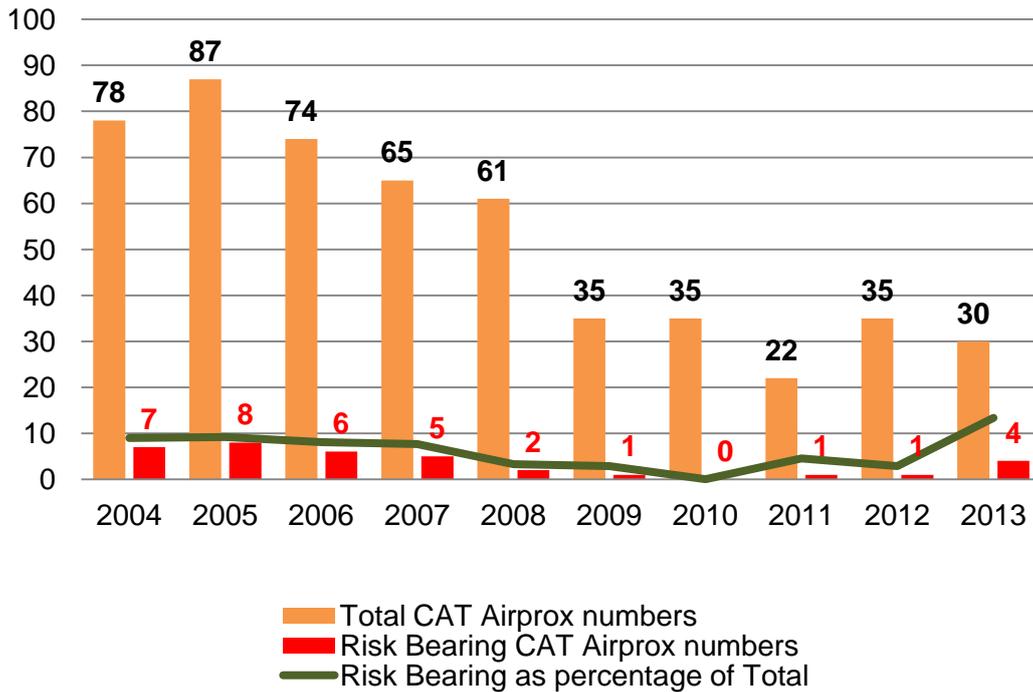
Figure 13. 2013 CAT Airprox Risk Bearing Distribution

CAT Airprox Rates

Table 6, along with Figures 14 and 15, illustrate the CAT Airprox rates over the last 10 years. The trend for overall numbers of CAT Airprox per million flying hours (mfh) appears to have stabilised in the region of 20/mfh over the last 5-years. In contrast, the number of risk-bearing Airprox per mfh increased markedly this year to 3/mfh from a steady 1/mfh in recent years; however, it should be noted that, statistically, numbers are small and so care must be taken in attempting to identify associated trends. Bearing this in mind, it is noted that 2013's risk-bearing rate of 3/mfh sees a return to pre-2008 levels; there was no obvious causal link or thread to explain this.

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
CAT Total Airprox	78	87	74	65	61	35	35	22	35	30
Risk Bearing CAT Airprox	7	8	6	5	2	1	0	1	1	4
CAT Hours x 10K	148.5	154.6	160.3	162.0	163.5	149.4	141.6	147.1	145.4	149.0
CAT Total per Million hrs	53	56	46	40	37	23	25	15	24	20
Risk Bearing per Million hrs	5	5	4	3	1	1	0	1	1	3

Table 6. 10-year CAT Airprox Statistics versus CAT hours flown
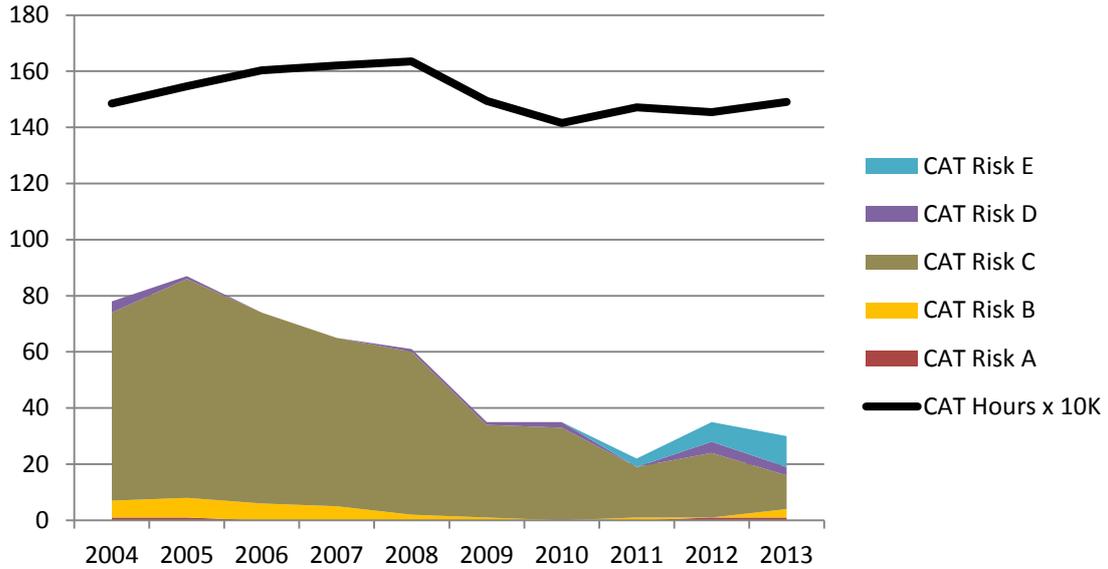
Figure 14. 10-year CAT Airprox Risk Distribution vs CAT hours
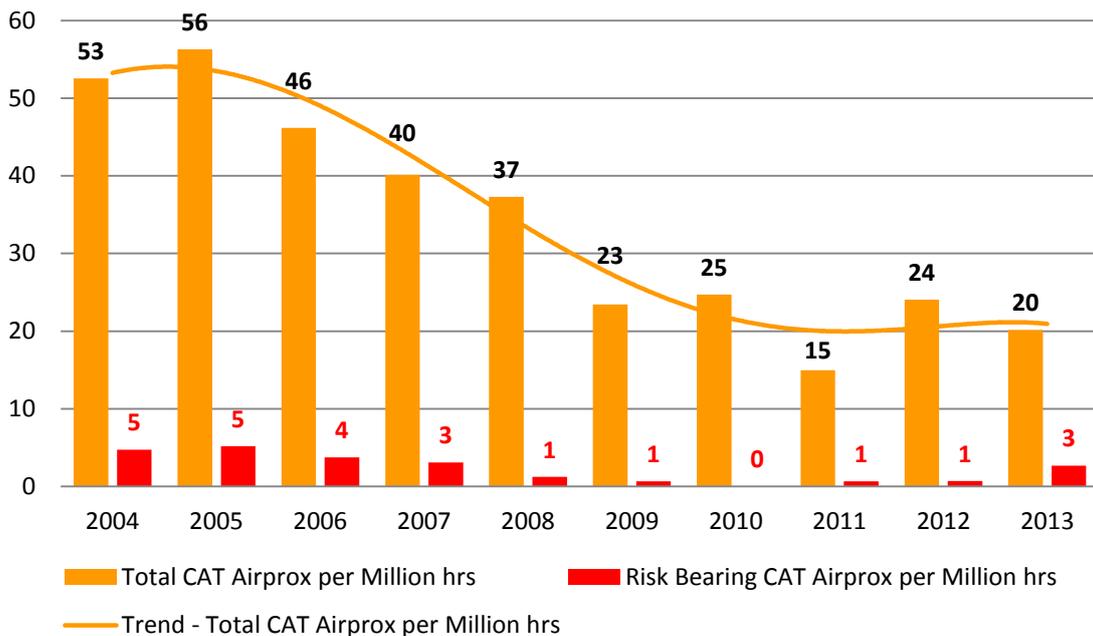
Figure 15. 10-year CAT Airprox Rates per Million Flying Hours

CAT Causal Factors

Airprox rarely occur because of a single reason; there are often several contributory causal factors relevant to each. Nevertheless, within the Airprox assessment process, a single 'cause' statement can often be useful in focusing attention on what was the top-level reason that the Airprox occurred. The list at Table 7 represents the 10 most commonly assigned causes for CAT in 2013.

Serial	Cause	Totals
1	ATC did not adequately separate traffic, or late / no TI	14
2	Ambiguous / misunderstood ATC instructions or undetected readback error	7
3	Lack of / breach of ATC coordination	7
4	Sighting report / TCAS	7
5	Failure to see conflicting traffic	4
6	Level bust	3
7	Distraction / inadequate supervision	3
8	Not obeying ATC / poor airmanship	3
9	Conflict with traffic in another airspace type	2
10	Other cause / mistaken impression of loss of separation	4

Table 7. 2013 CAT Top-10 Airprox Causal Factors
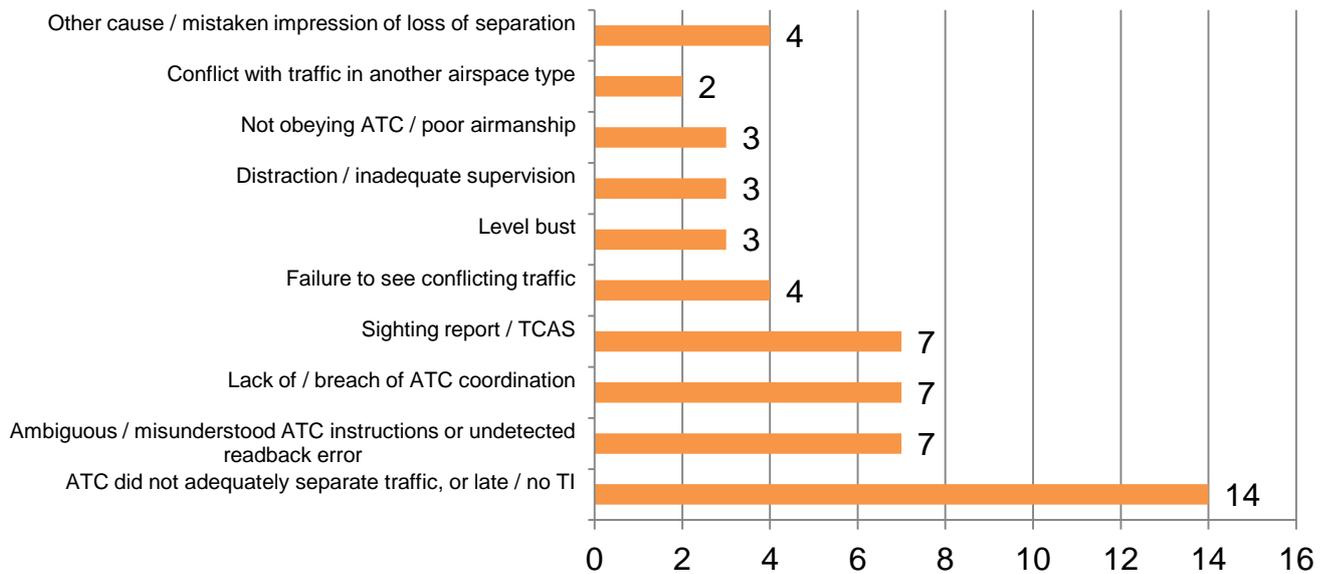
Figure 17. 2013 CAT Top-10 Airprox Causal Factors

This year saw increased numbers of 'Sighting Report / TCAS' categorizations that were largely benign in terms of actual collision risk but represented an important issue regarding mandatory avoiding actions by CAT crews on receipt of some TCAS Resolution Alerts (RA). These Airprox were often encounters in Class G or D airspace where CAT crews were concerned by the TCAS-reported Traffic Alert (TA) proximity of other aircraft, or responded to a TCAS RA. There were lessons for both CAT crews and other aviators: CAT crews need to be aware that the TCAS is mechanised for IFR separation criteria and so will offer alerts and avoidance information based on this despite the fact that there are no set separation criteria against VFR traffic in Class G and D airspace (where pilots are at liberty to fly much closer); as for other aviators, they need to be aware that CAT crews have specific <u>mandatory</u> actions that require them to manoeuvre on receipt of certain TCAS RAs, and should therefore try to give CAT aircraft as wide a berth as possible to avoid triggering 'emergency' manoeuvres caused by them flying close to or pointing their flight vector at CAT aircraft. Figure 16 shows two illustrative representations of the TCAS TA/RA co-altitude trigger envelopes for an airliner at the origin: the first being at 240kts TAS (pattern speed) with an intruder at 100kts TAS (representative GA speed) in the altitude band 1000-2350ft; the second being at 420kts TAS for both aircraft (representative military fast-jet intruder) above FL200.
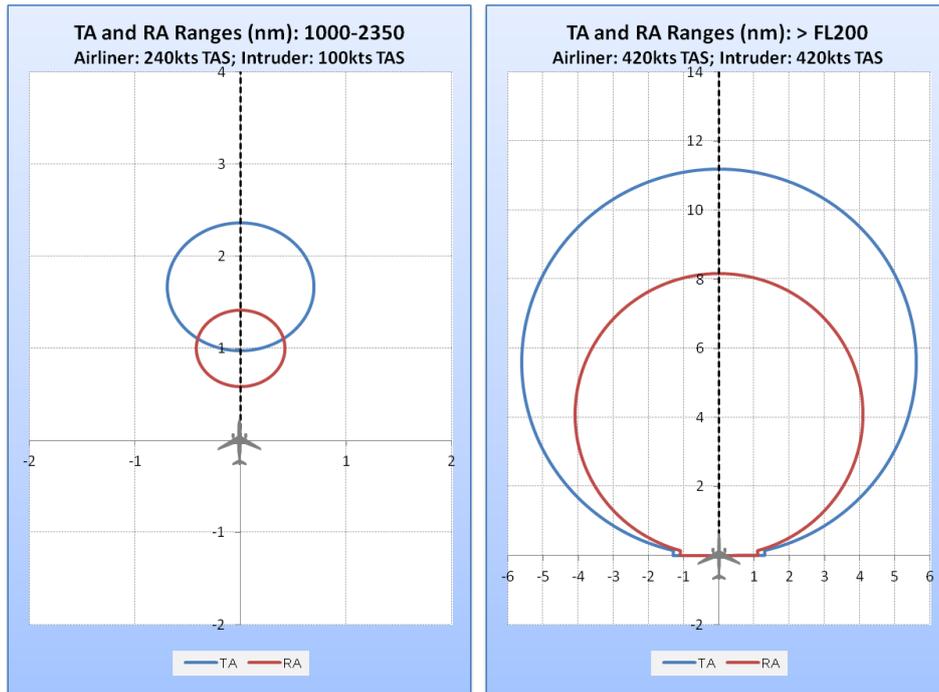
**Figure 16. Representative TCAS TA/RA envelopes
(note the different scales for each diagram)**

CAT Airprox Themes

Many (but not all) of the themes below are a subset of the previous top-ten themes that have specific relevance to CAT operations; the same caveats apply regarding the small statistical sample size and veracity of analysis compared to the many thousands of CAT flight hours conducted without incident within the UK's airspace every year.

- **Air Traffic Service**: poor understanding of ATS (especially amongst foreign pilots); assumed protection from other aircraft whilst in receipt of an ATS when outside CAS; insufficient or incomplete Traffic Information; and pilots' lack of understanding of continued collision avoidance responsibilities when in receipt of an ATS.

- **Operations**: variable shallow or high rates of climb and descent without coordinating with ATC; inconsistent pattern speeds without coordinating with ATC; leaving the protection of CAS without due risk assessment/thought; poor cooperation, information flow or failing to clearly pass intentions; poor adherence to procedures and Rules of the Air; becoming task-focussed to the detriment of lookout; questioning ATC avoiding-action calls rather than actioning them immediately; lack of urgency on receiving avoiding-action calls versus ATC expectations; and incurious pilots not questioning or seeking further clarification of unclear instructions.

- **Electronic Conspicuity/TCAS**: understanding of TCAS in mixed VFR/IFR traffic; inappropriately responding to TCAS TAs; understanding of TCAS azimuth unreliability; false expectations or over-reliance on TCAS; TCAS limitations regarding vertically manoeuvring intruder aircraft with rates of climb/descent in excess of 10,000 fpm; noting a TA and waiting for the RA rather than query ATC; and the value of SSR Mode S.

- **Supervision and Coordination**: sub-optimal information flow and coordination within and between ATC units; lack of effective supervision/monitoring (both within ATC and crews); reduced capacity whilst mentoring trainees; and delays in stepping in when a student becomes swamped or fails to recognise a developing conflict situation.

- **R/T**: poor or casual R/T discipline and failure to use pro-words; undetected incorrect read-backs, or failure to read back instructions; imprecise routing or reporting instructions; self-interpretation of unclear transmissions based on assumptions or standard routines rather than request a retransmission; clipped, garbled, blocked or simultaneous 'double' transmissions; and failure to clearly and simply articulate intentions or instructions.

GENERAL AVIATION

GA Airprox by Airspace

There were 110 Airprox in 2013 in which at least one aircraft was GA (64% of the total 172). This relative percentage has remained fairly consistent in the last 10 years and reflects the fact that GA represents the majority of flying activity in Class G airspace. Of these incidents, the clear majority occur below 3000ft as shown in Figure 17. Of concern, the second most common airspace for Airprox is within Aerodrome Traffic Zones which should provide a highly structured and known environment, but still accounts for a significant number of events largely resulting from poor airmanship, situational awareness or lack of consideration for other airspace users.
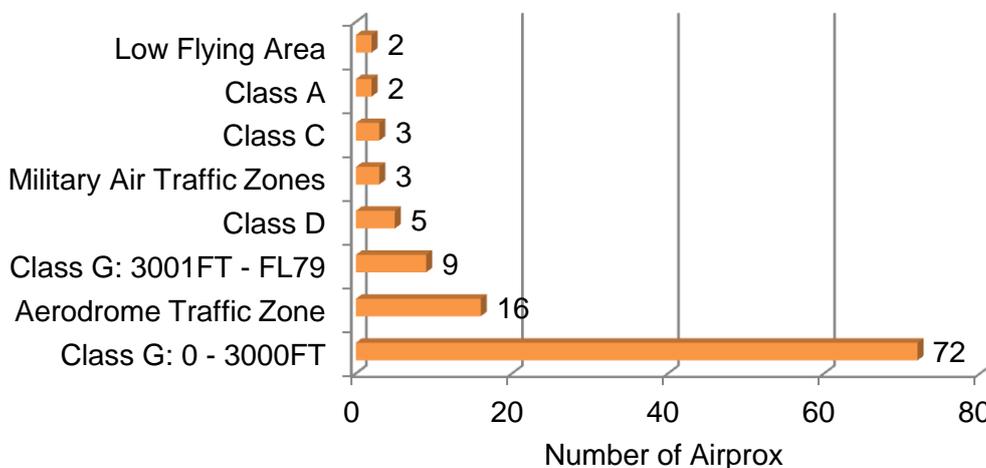
Figure 17. 2013 GA Airprox by Airspace Involvement

GA Risk Distribution

The GA Airprox risk distribution figures at Table 8 show that in the majority of incidents there was no risk of collision (63, or 56%, were Category C, D or E), but that still left a significant number that were risk-bearing (47, or 44%, were Category A or B). Compared to previous years, this represents an increase in the number of risk-bearing Airprox as can be seen in Figures 18 and 19. Given the fairly constant overall number of GA Airprox over recent years, the gradually increasing number of risk-bearing incidents seems to indicate an underlying trend towards more serious encounters. The 2013 percentage of risk-bearing events (44%) is similar to that experienced before 2007/2008 so it may be that the unusual years were 2007-2010, which saw lower percentages. There are no hard facts to explain these changes, although one could speculate that, during these recession years, the majority of flying may have been conducted by a hard-core of experienced pilots (the number of trainees and novices may have reduced due to financial constraints); these experienced pilots may have more robust lookout and situational awareness capacity which allowed them to see and avoid other aircraft at greater distance thereby avoiding the risk-bearing regime.

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
GA Risk A	13	16	10	8	8	8	5	19	13	16
GA Risk B	42	41	36	30	31	20	25	27	21	31
GA Risk C	71	75	57	65	55	66	70	63	62	49
GA Risk D	4	1	0	0	4	1	2	2	1	2
GA Risk E	0	0	0	0	0	0	0	8	11	12
GA Totals	**130**	**133**	**103**	**103**	**98**	**95**	**102**	**119**	**108**	**110**

Table 8. 10-year GA Airprox Statistics by Risk Classification
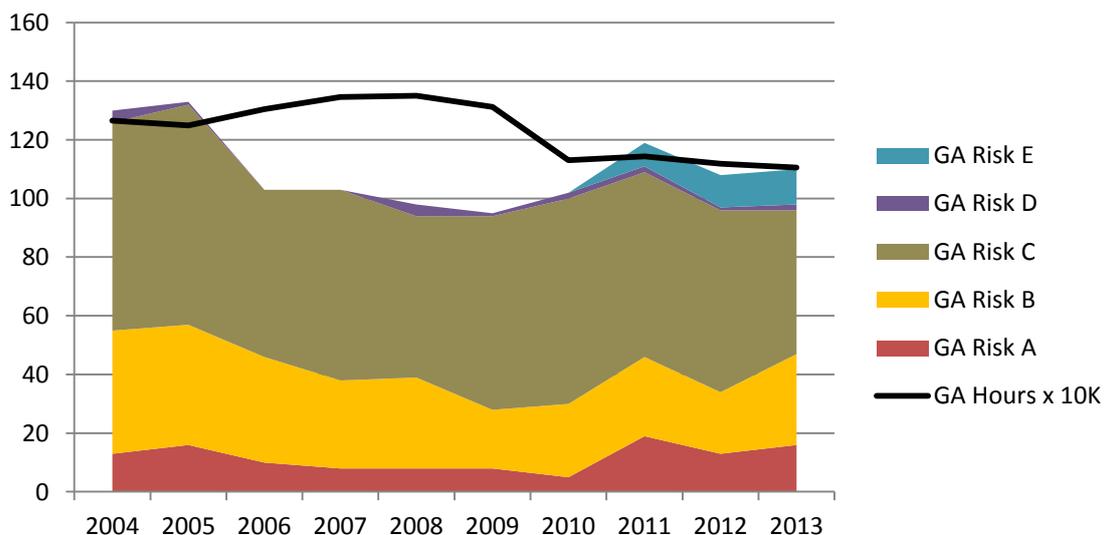
Figure 18. 10-year GA Airprox Risk Distribution and GA hours
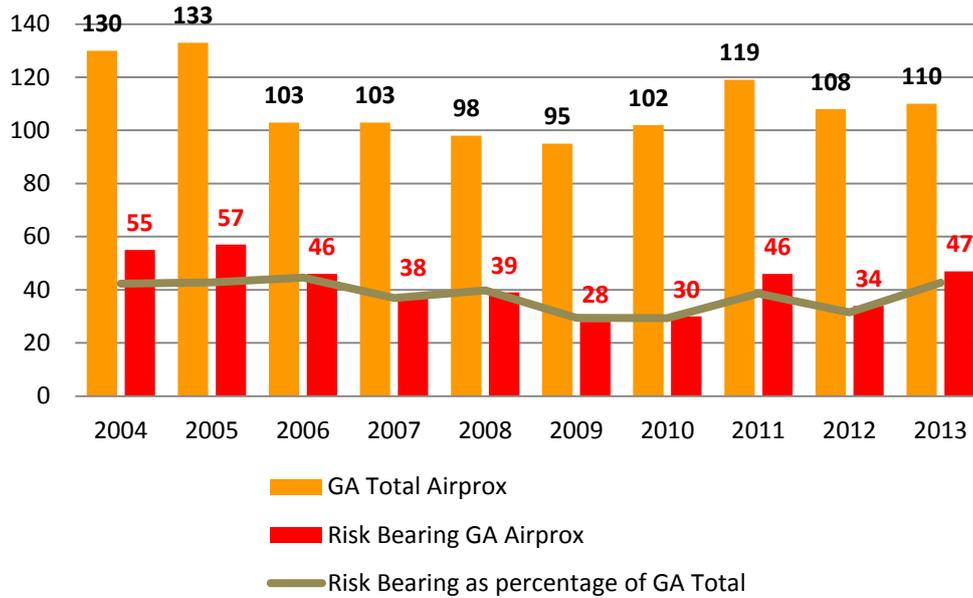
Figure 19. 2013 GA Airprox Risk Bearing Distribution

GA Airprox Rates

In an effort to normalise GA Airprox statistics, Table 9 and Figure 20 show Airprox numbers in relation to hours flown. It is stressed that the statistics for GA hours flown are notoriously hard to estimate given that a significant portion of sports aviation hours are not formally recorded (especially hang-glider, paraglider, para-motor hours etc). There has been rapidly growing popularity in these sectors of the GA community that is somewhat masked in the apparent trends displayed. Notwithstanding, light-aircraft and glider hours are reported fairly consistently over the years and so headline rates can be used as an indicator. The normalised statistics (per Million flying hours) show a steady overall rate of about 100 Airprox per Million flying hours in recent years. However, as also reflected in the pure numbers, the risk-bearing rate per Million flying hours indicates a steadily increasing trend since 2008, and has returned to 2004/2005 levels.

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
GA Total Airprox	130	133	103	103	98	95	102	119	108	110
Risk Bearing GA Airprox	55	57	46	38	39	28	30	46	34	47
GA Hours x 10K	126.6	124.9	130.5	134.6	135.1	131.2	113.0	114.4	111.8	110.5
GA Total per Million hrs	103	106	79	77	73	72	90	104	97	100
Risk Bearing per Million hrs	43	46	35	28	29	21	27	40	30	43

Table 9. 10-year GA Airprox Statistics versus GA hours flown
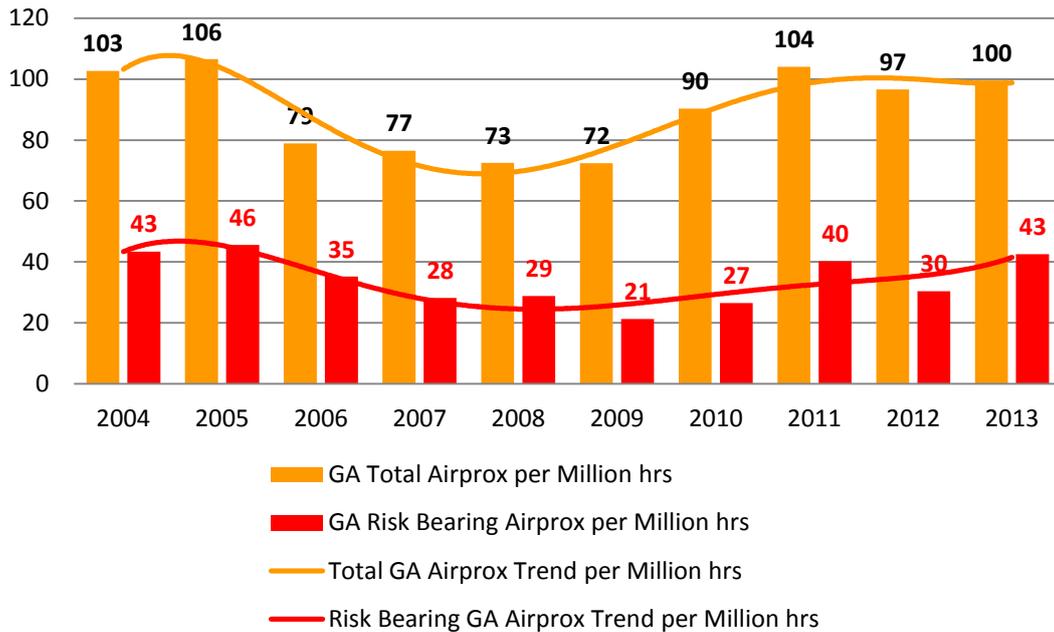
Figure 20. 10-year GA Airprox Rates per Million Flying Hours

GA Causal Factors

Of the 238 causal factors assigned to GA Airprox incidents in 2013 (an Airprox often has more than one causal factor), Table 10 and Figure 21 show the frequency as top-ten rankings. Two of these stand out head-and-shoulders above the rest; 'Did not see traffic/late sighting' featured in 94 of incidents, whilst 'Flew too close/failure to separate' was cited in 40. The former is perhaps to be expected in an environment where see-and-avoid is the primary barrier to Airprox incidents – if the other aircraft is not seen then it cannot be avoided. However, 'Flew too close/failure to separate' reflects a more general concern about poor airmanship, situational awareness or lack of consideration for other airspace users who have been sighted or detected but not properly avoided.

Serial	Cause	Totals
1	Did not see traffic / late sighting	94
2	Flew too close / failure to separate	40
3	Conflict in FIR	20
4	Misunderstood ATS / poor coordination / confusion	16
5	Late, ambiguous or no traffic info	15
6	Poor airmanship	15
7	Flew over glider, microlight or paradropping site	12
8	Did not obey instructions / procedures	10
9	Sighting report / TCAS interaction	9
10	Misunderstood ATC / uncorrected readback error	7

Table 10. 2013 GA Top-10 Airprox Causal Factors
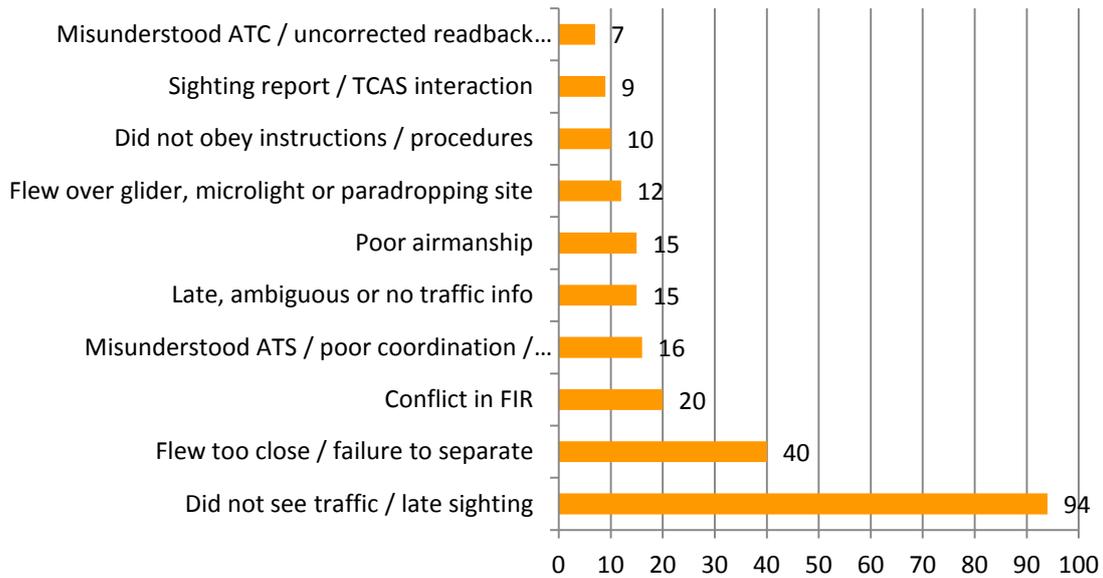
Figure 21. 2013 GA Top-10 Airprox Causal Factors

GA Airprox Themes

Given that GA Airprox represent the majority of reported incidents, the themes below are a close subset of the overall top-ten themes. The same caveats apply regarding the small statistical sample size and veracity of analysis of Airprox themes compared to the many thousands of GA flight hours conducted without incident within the UK's airspace every year.

- **Air Traffic Service**: poor understanding of ATS and UK FIS; selecting an inappropriate ATS for the flight conditions or activity; assumed protection from other aircraft whilst in receipt of an ATS; insufficient or incomplete Traffic Information; IFR training outside ATS coverage but in intermittent IMC; and pilots' lack of understanding of continued collision avoidance responsibilities when in receipt of an ATS.

- **Flight Planning**: inadequate (or lack of) flight planning; poor airspace understanding; poor NOTAM awareness/understanding; poor choice of operating area, routing and waypoints; routing too close to, or through, ATZs, minor strips and glider/microlight/parachuting sites; thoroughness of pre-flight self-briefing; and contingency planning for actions on becoming lost or experiencing other eventualities.

- **Courtesy**: overtaking too close; indecision, uncertainty, poor anticipation or inaction during airborne conflict situations; presumption of 'right of way' protection; poor cooperation or information flow; *laissez faire*, self-interest and pressing-on without knowing (or seemingly caring) where other aircraft might be flying; poor adherence to procedures and Rules of the Air; and unthinking or casual operations (especially within or around ATZ).

- **Visual Circuit**: poor situational awareness (SA) when joining, operating within, or departing the visual circuit; failing to follow standard joining procedures; failing to clearly pass intentions; poor integration, sequencing or separation; becoming task-focussed to the detriment of lookout; assumption of 'protection' when within an ATZ; and incurious pilots not questioning unclear instructions or seeking further clarification.

- **Operations Appreciation**: knowledge of others' aviation requirements and operating modes (specifically, gliders, parachuting, microlights, hang-gliders etc); awareness and consideration for glider/microlight sites, winch-launching and glider towing; soaring in areas of intensive air activity and airfield approach lanes; encouraging pilots in gliders fitted with radios to use them to provide situational awareness to others (notwithstanding R/T licensing issues); and poor awareness of IFR procedures and associated routing that might be affected by their own VFR operations.

- **Glider Competitions**: sub-optimal selection and promulgation of daily task routes; poor appreciation of glider competition NOTAMs; poor awareness of glider tug operations; poor understanding of glider range & altitude capabilities; gliders not informing ATC of intentions; and need for recognition of the tendency for gliders to 'flock' during competitions.

- **TCAS**: poor understanding of TCAS mechanisation; lack of awareness of own flight vector on other TCAS equipped aircraft; and use of TCAS in mixed VFR/IFR traffic conditions.

- **Electronic Conspicuity**: False expectations or over-reliance on TAS and TCAS; the value of FLARM/P-FLARM; the value of SSR Mode S; not selecting SSR transponder Mode C; small glider and canopy-suspended air-vehicle radar cross-section; radar speed-gates vs low-speed aircraft; awareness of areas of poor local radar coverage; and actions after radio or systems failures.

- **Supervision and Coordination**: sub-optimal information flow and coordination within and between ATC units; lack of effective supervision (both within ATC and by flying instructors of solo students); reduced capacity whilst mentoring trainees; and delays in stepping in when a student becomes swamped or fails to recognise a developing conflict situation.

- **R/T**: poor or casual R/T discipline and failure to use pro-words; undetected incorrect read-backs, or failure to read back instructions; imprecise routing or reporting instructions; self-interpretation of unclear transmissions based on assumptions or standard routines rather than request a retransmission; clipped, garbled, blocked or simultaneous 'double' transmissions; and failure to clearly and simply articulate intentions or instructions.

MILITARY AVIATION

Military Airprox by Airspace

Military Airprox numbers are second only to GA overall; however, care needs to be exercised when making direct comparisons of Airprox rates given that military crews have a mandatory requirement to report incidents, whereas the GA community reports on a voluntary basis so there are likely to be a significant number of unreported GA events as a result. Similar though to GA, the majority of military Airprox occur below 3000ft or in low-flying areas, and most of these are in fact interactions with GA (referring to Figure 5 on Page 5, 48% of military Airprox involve GA aircraft). Figure 22 shows the distribution of military Airprox in 2013 by airspace type.
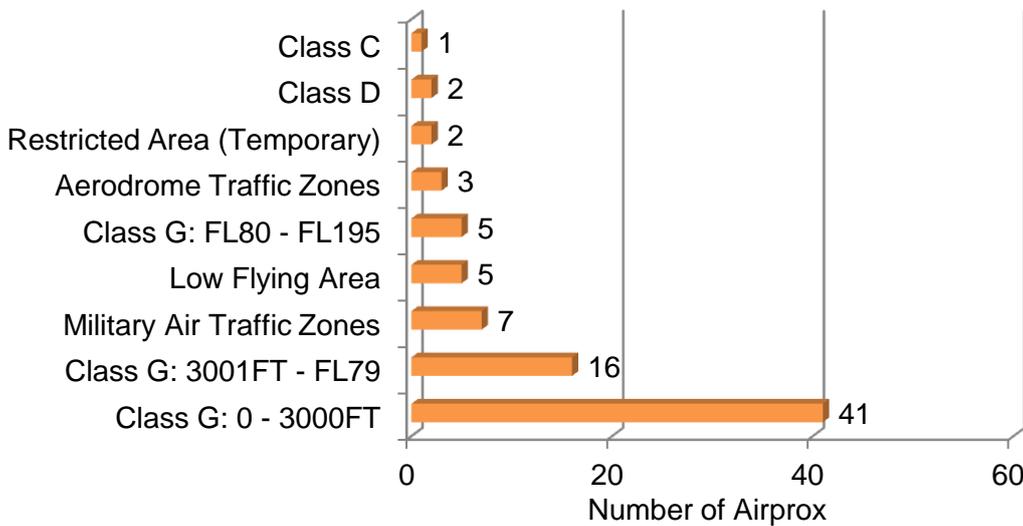
Figure 22. 2013 Military Airprox by Airspace Involvement

Military Risk Distribution

Military Airprox incidents appear to show an encouraging overall reduction in numbers since 2010 but these pure numbers may be deceptive. For much of 2012-2013 the military Tutor training fleet was temporarily suspended from flying due to technical issues, and these aircraft routinely account for a significant number of military Airprox incidents. Similarly, the military gliding fleet was also temporarily suspended from flying in 2013-2014, and, at time of writing, has still to resume operations. As a result, military exposure to Airprox incidents has been much reduced, and we need to be cautious about assuming that any trends reflect fundamental improvements in Airprox matters as opposed simply to the effects of less flying by the training fleet. The gradually increasing trend of 2013, even without these aircraft flying, is in itself cause for thought. Table 11, Figure 23 and Figure 24 illustrate the military Airprox statistics for the last 10 years. Overall, the percentage of military Airprox that are risk-bearing remains fairly steady (albeit slightly increasing) at about 30-35% over the last few years.

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Mil Risk A	5	10	7	2	7	8	7	9	8	8
Mil Risk B	26	27	17	15	15	23	18	21	13	20
Mil Risk C	58	48	35	35	34	38	70	45	43	38
Mil Risk D	4	0	1	0	0	1	3	1	0	4
Mil Risk E	0	0	0	0	0	0	0	8	7	12
Total	**93**	**85**	**60**	**52**	**56**	**70**	**98**	**84**	**71**	**82**

Table 11. 10-year Military Airprox Statistics by Risk Classification
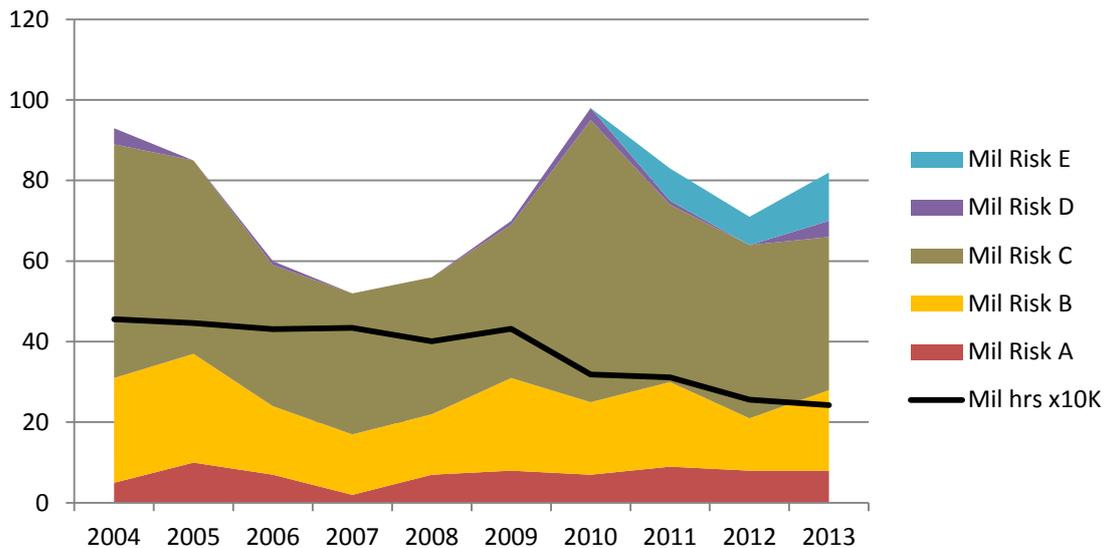
Figure 23. 10-year Military Airprox Risk Distribution and Military hours
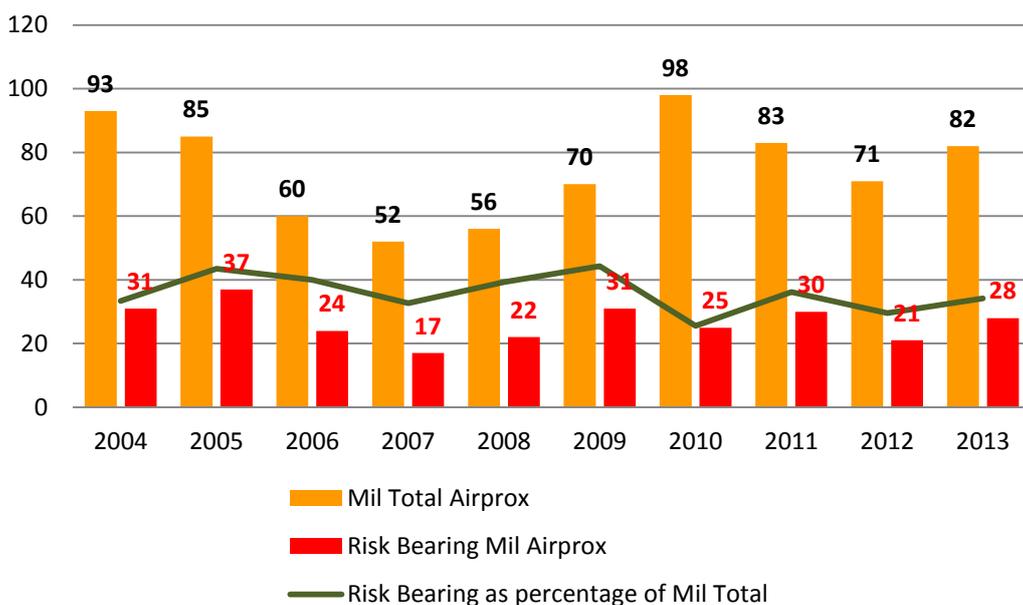
Figure 24. 2013 Military Airprox Risk Bearing Distribution

Military Airprox Rates

Normalising these figures for flying hours flown indicates that 2013 displayed slightly higher than normal trends as shown in Table 12 and Figure 25: overall, in 2013, there were 339 Airprox per Million flying hours (the average is about 300 in the last 4 years) and risk-bearing incidents showed a similar increase to 116 per Million flying hours (the average is about 95 in the last 4 years). That being said, within the bounds of statistical sampling, these rates appear to be fairly consistent with recent years. The rapid increase in Airprox rates indicated from 2010 onwards is likely to be accounted for by the coincident introduction of mandatory Airprox reporting through the adoption of formalised Air Safety Management processes as the MAA became established. That the military appears to suffer three times the GA Airprox rate per Million flying hours (mfh) is cause for thought (overall, 300 military Airprox/mfh vs 100 GA Airprox/mfh and, for risk-bearing, 100 military Airprox/mfh vs 35 GA Airprox/mfh). There is no hard evidence to suggest why this might be, but it is reasonable to conclude that the fact that the military have a mandatory reporting system compared to voluntary GA reporting is a factor; equally, the routinely higher speeds at which some elements of the military fly may well pre-dispose them to encounters brought on by reduced time to react in a see-and-avoid environment, as may the effects of terrain screening at low-level.

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Mil Total Airprox	93	85	60	52	56	70	98	83	71	82
Risk Bearing Mil Airprox	31	37	24	17	22	31	25	30	21	28
Mil Hours x 10K	45.6	44.6	43.1	43.4	40.1	43.2	31.8	31.1	25.6	24.2
Mil Total per Million hrs	204	190	139	120	140	162	308	266	278	339
Risk Bearing per Million hrs	68	83	56	39	55	72	78	96	82	116

Table 12. 10-year Military Airprox Statistics versus Military hours flown
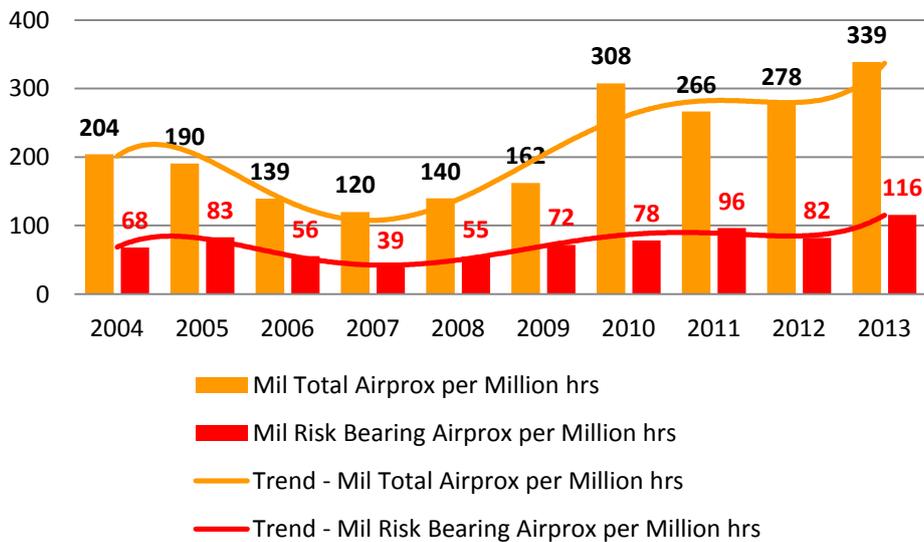
Figure 25. 10-year Military Airprox Rates per Million Flying Hours

Military Causal Factors

Of the 82 reported Airprox that had military involvement in 2013, 171 cause factors were assigned (as for GA, an individual Airprox often has more than one causal factor), Table 13 and Figure 26 show their frequency as top-ten rankings. Similar to GA, and unsurprising in what is primarily a see-and-avoid operating environment for Class G/Low-level operations, 'Did not see traffic/late sighting/poor lookout' was the most frequent cause. As discussed previously, the routinely higher speeds at which some elements of the military fly may well pre-dispose them to encounters brought on by reduced time to react in a see-and-avoid environment, as may the effects of terrain screening at low-level. In this respect, whilst not a panacea, electronic conspicuity might significantly improve situational awareness of other emitting aircraft, especially in poorer weather conditions or when outside visual range. The second most frequent cause is cited as 'Conflict in FIR', which often describes situations where both parties were operating appropriately but conflicting assessments of risk were made. For example, on avoiding another aircraft, a fast-jet military crew may ensure that sufficient VFR separation has been achieved, but a commercial crew or GA pilot operating in Class G airspace may be used to greater separation, or more leisurely closure rates, and may file an Airprox as a result of being startled by the unexpected rate of closure or proximity of the fast-jet. In these circumstances, the distinction between 'Conflict in FIR' and 'Flew too close/failure to separate' is often a fine judgement; hence the fact that they are consecutive in the causal factor list.

Serial	Cause	Totals
1	Did not see traffic / late sighting / poor lookout	46
2	Conflict in FIR	19
3	Flew too close / failure to separate	17
4	Misunderstood ATC / uncorrected readback error	10
5	Poor airmanship	9
6	Late, ambiguous or no traffic info	8
7	Sighting report / TCAS interaction	7
8	Inadequate supervision / error by trainee controller / Lack of positive control	7
9	Misunderstood ATS / poor coordination / confusion	7
10	Flew over glider, microlight or paradropping site	6

Table 13. 2013 Military Top-10 Airprox Causal Factors
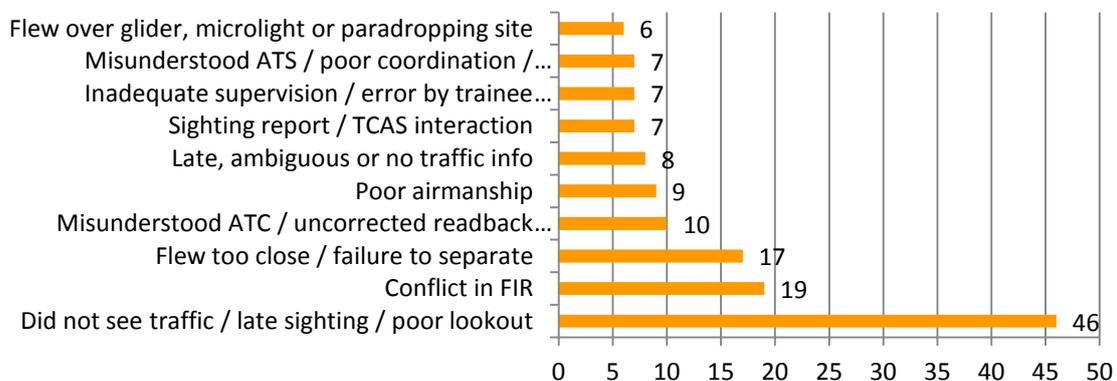
Figure 26. 2013 Military Top-10 Airprox Causal Factors

Military Airprox Themes

As for CAT and GA, Military Airprox themes are a close subset of the overall list previously described; however, there are a number of unique themes that apply. Specifically: problems with non-specific or incorrect NOTAMs were noted; there were concerns in some Airprox about effective supervision within ATC; mixing types with greatly differing speeds in the visual circuit showed the need for particular attention to situational awareness; night tactical formation contingency plans needed to be robust; and knowledge of, and selection of, appropriate ATS featured in a number of incidents. The list below should be tempered by the knowledge that the small statistical sample size and veracity of analysis of Airprox themes can overly emphasise some issues compared to the many thousands of Military flight hours conducted without incident within the UK's airspace every year.

- **Air Traffic Service**: poor understanding of ATS; selecting an inappropriate ATS for the flight conditions or activity; insufficient or incomplete Traffic Information; conduct of air-tests without ATS; not avoiding controlled airspace until fully identified whilst rapidly climbing or changing track; and pilots' lack of understanding of continued collision avoidance responsibilities even when in receipt of an ATS.

- **Non-Standard Operations**: rate of descent or climb exceeding 10,000fpm (which invalidates TCAS solutions in other aircraft); NOTAM accuracy; contingency plans for formation operations (especially night); assumption of priority within the NLFS; poor choice of operating area, routing and waypoints; and routing too close to, or through, minor strips and glider/microlight/parachuting sites.

- **Courtesy**: overtaking too close; indecision, uncertainty, poor anticipation or inaction during airborne conflict situations; presumption of 'right of way' or protection within 'military' defined airspace; poor cooperation or information flow; *laissez faire*, self-interest and pressing-on without knowing or thinking about where other aircraft might be flying; poor adherence to procedures and Rules of the Air; and unthinking or casual operations.

- **Visual Circuit**: poor situational awareness (SA) when joining, operating within, or departing the visual circuit; failing to follow standard joining procedures; failing to clearly pass intentions; poor integration, sequencing or separation; becoming task-focussed to the detriment of lookout; assumption of 'protection' when within an ATZ; and incurious pilots not questioning unclear instructions or seeking further clarification.

- **Operations Appreciation**: knowledge of others' aviation requirements and operating modes (specifically, gliders, parachuting, microlights, hang-gliders etc); awareness and consideration for glider/microlight sites, winch-launching and glider towing; SIDs extending above FL195 within TRAs; and poor awareness of IFR or non-Military procedures and

associated routing that might be affected by their own VFR operations (especially when in tactical formations).

- **TCAS**: poor understanding of TCAS mechanisation; lack of awareness of own flight vector on other TCAS equipped aircraft; use of TCAS in mixed VFR/IFR traffic conditions; inappropriately responding to TCAS TAs; and understanding of TCAS/TAS azimuth unreliability.

- **Electronic Conspicuity**: False expectations or over-reliance on TAS and TCAS; the value of FLARM/P-FLARM; the value of SSR Mode S; not selecting SSR transponder Mode C; small glider and canopy-suspended air-vehicle radar cross-section; awareness of areas of poor local radar coverage; and actions after radio or systems failures.

- **Supervision and Coordination**: sub-optimal information flow and coordination within and between ATC units; lack of effective supervision (both within ATC and by flying instructors); reduced capacity whilst mentoring trainees; and delays in stepping in when a student becomes swamped or fails to recognise a developing conflict situation.

- **R/T**: poor or casual R/T discipline and failure to use pro-words; undetected incorrect read-backs, or failure to read back instructions; imprecise routing or reporting instructions; interpretation of unclear transmissions based on assumptions or standard routines rather than request a retransmission; clipped, garbled, blocked or simultaneous 'double' transmissions; and failure to clearly and simply articulate intentions or instructions.

UKAB SAFETY RECOMMENDATIONS

Accepted

Airprox	Recommendation	Comments
2013030	HQ Air Cmd is recommenced to ensure that NOTAMs accurately describe the planned activity and the cooperation required from other airspace users	All Shawbury pilots have been re-briefed on the construct of the airspace around Chetwynd and the fact that there is no ATZ around the site. Additionally, civil series aeronautical charts are displayed in flight planning sections alongside the military series in order to highlight differences between the two aeronautical publications. Though not directly associated with this recommendation, the civil series low flying charts have now been updated to depict an area of intense military helicopter activity around Chetwynd.
2013055	Dunkeswell review their helicopter entry/exit procedures.	AIP entry exit amended to (d) Helicopter Arrival from north not below 500 ft and (e) Helicopter Departure to south not below 500 ft. AD 2.EGTU-5 dated 3 Apr 14
2013056	Newquay ATC review their coordination procedures and responsibilities for integrating VFR traffic.	Newquay MATS Part 2 amended
2013059	The BGA Instructors' Panel reviews gliding activity at Booker.	The recommendation was accepted and addressed in liaison with the club. We understand that the club CFI made some changes among his instructor team and subsequently worked with the other airfield operators to ensure satisfactory co-ordination of activity.
	Wycombe reviews procedures for powered and glider traffic integration in the ATZ.	As result of the incident in question a Temporary Operating Instruction was issued to Wycombe ATC on 4th September 2013 stating that "With immediate effect, when gliding is in progress, ATC must refuse all ATZ transit requests. Pilots must instead be instructed to remain outside the Wycombe Aerodrome Traffic Zone". Following consultation with our CAA inspectors this has now been made a permanent addition to our MATS Part 2.
	The CAA reviews the education of GA pilots regarding overall awareness of gliding operations with specific emphasis on flight in the vicinity of glider sites.	To be dealt with in the ongoing work on airborne conflict, to include emphasis during initial pilot training, awareness articles in Clued Up, via the GA press and will be added to the messages the CAA asks GASCo to deliver during its Safety Evening Programme for the remainder of the 2013/14 season and for next winter's programme.
2013062	Leuchars review the coordination procedure and responsibilities for MATZ crossers.	RAF Leuchars Controller Order Book has been updated
	Leuchars review altimeter setting procedures for MATZ-crossing aircraft.	RAF Leuchars Controller Order Book has been updated

Airprox	Recommendation	Comments
2013065	CAA to review education of GA pilots to improve understanding of implications of military low-flying 'flow arrows'.	The CAA accepts this Recommendation in as far as an article will be written in Clued Up magazine, to increase the general awareness of where and how both microlights and military fast jets operate to help avoid conflict. The Recommendation seeks to improve the understanding of 'military low-flying arrows' but these are only depicted on military low-flying charts and are therefore not available to the general public. Where possible the matter will also be explained at safety events supported by the CAA.
2013067	The MAA consider giving additional guidance on the benefits of DS in IMC.	MAA have engaged with the FLCs on ATS selection.
2013071	The CAA reviews the education of ATSOCAS and specifically the benefits of DS in IMC, and that the MAA address this same issue through each Front Line Command.	The consultation on CAP774 change proposals has concluded and the CAA is in the process of considering the responses. The analysis of one particular issue requires additional work by the CAA: this is currently under way and will be completed as soon as possible. Once all responses have been duly considered and the resultant amendments finalised, supporting awareness material will be developed. Both the CAP774 changes and the supporting awareness activity will capture recommendation 1 to the CAA and the CAA reviews the education of ATSOCAS and specifically the benefits of DS in IMC, and that the MAA address this same issue through each Front Line Command as part of the CAP774 amendment implementation activity. Confirmation as to when this activity will be completed will follow in due course. MAA D Ops has written to the Front Line Commands regarding benefits of DS in IMC
	The CAA and MAA review the adequacy of guidance for provision of level allocation to pilots under a TS.	Version 2.1 of CAP774 (UK Flight Information Services) will come into force on 26 June 14. Level allocation under TS has been addressed.
	The MAA reviews harmonisation of MMATM and CAP413 phraseology.	The MAA had previously scheduled to undertake a full review of our Air Traffic Management Regulations during 2014. The MAA team responsible for the review of the 3000 Series Regulatory Articles, including the Manual of Military Air Traffic Management (MMATM) considered this proposal as part of their process. The 3000 Series regulations were published on 18 Aug 14 and will become effective on 12 Jan 15.
2013072	The CAA reviews annotation of gliding RTF on VFR charts and the AIP ENR5.5.	Glider site RTFs will be annotated in the chart frequency reference card (FRC)
	The CAA reviews the education of GA pilots regarding overall awareness of gliding operations with specific emphasis on flight in the vicinity of glider sites.	CAA will include further education on glider ops as part of their Airborne Conflict programme, to included emphasis during initial pilot training, awareness articles in Clued Up and the GA press, and inclusion in GASCo Safety Evening Programmes.
2013073	Lakenheath review their RT nomenclature and ATS provision.	48th Ops Gp have reviewed procedures and training and have instituted a number of changes to include: VGS callsign identification; additional RAPCON mandatory training requirements; more appropriate VGS ATS selection; and reinforcement of standard RT phraseology.

Airprox	Recommendation	Comments
2013079	The BGA Competitions Committee reviews content of glider competition NOTAMs and promulgation of daily task notification.	The BGA has also developed a daily task notification tool. However, it is clear that this issue would be best served through a development within the UK's most popular GA NOTAM/flight planning software, ie Skydemon. The BGA will support but not lead that approach.
2013080	National Police Air Service reviews the equipping and employment of TCAS (and P-FLARM) in Police Helicopters.	All police Helicopters are being TCAS equipped
2013082	The CAA reviews the regulation and licensing of para-motor glider pilots.	CM has notified industry stakeholders of its intention to review the regulation and licensing of paramotor pilots and will be seeking their input to develop proportionate risk-based policy in this area. CM would anticipate being in a position to report the results of this review, and any recommendations, by mid-2014.
2013089	Wellesbourne Mountford review and update their Aerodrome Manual and AIP entries wrt grass runway operations.	We can inform you that we have discussed at length an update to the Wellesbourne Airfield AIP entry to include the use of grass strip and have finalised the information we intend to include in the publication. The information will be published in due course in line with the AIP update process and timescales.
2013096	1. HQ Air Command reviews Leuchars' SIDs with respect to Class C airspace in the vicinity.	The Standard Instrument Departures (SID) at RAF Leuchars have been reviewed by the SATCO, RAF Leuchars. The outcome of the review was that to revise the SIDs to stop the climb below the level of the TRA would, in fact, place traffic departing Leuchars into a busier section of airspace than if the climb continued into the TRA. Therefore, the Leuchars SIDs will remain unchanged.
2013100	The CAA reviews TCAS interaction between local traffic and CAT inbound and outbound LCY.	CAA and NATS are reviewing Thames Radar operations around LCY in order to reduce the likelihood of TCAS interactions.
2013115	1. Marham and Mildenhall review the coordination and SOPs for operations at Sculthorpe.	Close coordination between multiple users of the airspace around Sculthorpe is conducted through the Regional Airspace Users' Working Group (RAUWG). More specifically, we now have formal and agreed processes between RAF Marham and RAF Mildenhall firmly in place to mitigate against a future repeat of this incident. Moreover, we have also established much better and more regular personal communications between Marham and Mildenhall SOG.
	2. The CAA review the applicability of conspicuity squawk '0033'.	The CAA has developed and agreed an appropriate amendment to the definition of Special Purpose code 0033 - This will now read: 'Unless a discrete Mode A code has already been assigned, pilots of transponder equipped aircraft should select Mode A code 0033, together with Mode C pressure altitude reporting mode of the transponder, five minutes before the drop commences until the drop is complete and parachutists or loads are known or estimated by the pilot to be on the ground'

Airprox	Recommendation	Comments
2013126	Shoreham review their IFR approach procedure tracks with consideration for intensive gliding operations in the area.	Shoreham have reviewed their IFR approach tracks and, whilst sympathetic to the needs of other airspace users, the constraints of surrounding airspace have meant that they have not at present been able to identify any changes that would markedly affect the routing of IFR aircraft. However, they will be reviewing and redesigning their RNAV GNSS procedures in the coming months and, in so doing, will make all efforts to take account of local glider sites.
2013130	1. HQ Air Command ensures Shawbury pilots are aware of the nature of the airspace at Chetwynd.	All Shawbury pilots have been re-briefed on the construct of the airspace around Chetwynd and the fact that there is no ATZ around the site. Additionally, civil series aeronautical charts are displayed in flight planning sections alongside the military series in order to highlight differences between the two aeronautical publications. Though not directly associated with this recommendation, the civil series low flying charts have now been updated to depict an area of intense military helicopter activity around Chetwynd.
	2. HQ Air Command considers the provision of Hi-Brite at Ternhill	In this particular incident the provision of Hi-Brite would have had no bearing on the outcome as neither of the aircraft involved were within Shawbury radar cover. However, it is evident that a Hi-Brite at Ternhill would prove useful towards the management of the local airspace; therefore, a business case for the provision of Hi-Brite to Ternhill, using the Shawbury radar feed, was re-submitted to HQ 22(Trg) Gp and has been approved. A timeline for installation has yet to be established.
2013141	Aberdeen airport considers the fitment of stop-bar 'auto-timeout' functionality.	AIAL are very proactive in this area but after consideration they feel that 'Auto-Timeout' facility for the Runway Guard Bars would not be a suitable mitigation for the operation. However, AIAL are currently participating with NATS and the CAA in a trial of a new Runway Incursion Alerting System (RIAS).
2013147	The CAA ensure that future considerations of unusual air activity requests employ a risk-based approach, are practical, are effectively promulgated and co-ordinated, and appropriately balance the needs of other operators.	The CAA considered that a risk-based approach had been used for this event but accepted that an intermediate or periodic inspection would have been appropriate in the case of such specialized operations.
2013159	As a part of the LARS review, the CAA considers further subdividing the Farnborough LARS airspace.	The CAA will consider further sub-dividing the Farnborough LARS airspace during the next stage of the LARS review.
2013162	1. JHC, HQAC, NCHQ, AAC and the CAA publicise the effect of rotor downwash on canopy-suspended air vehicles.	Military HQs have publicised the information; rejected by the CAA which considers that information for helicopter pilots on the hazards to other aircraft of rotor downwash and wake turbulence is sufficiently promulgated.
	2. HQAC considers tasking UKLF Sqn/No 1 AIDU to annotate key hang-glider sites on 1:250000 charts.	1AIDU have annotated key hang-glider sites.

Airprox	Recommendation	Comments
2013169	Lee-on-Solent reviews their arrival procedure to mitigate easterly and westerly joining traffic.	Following on from your Airprox Board recommendations from the 2013 reported event; I can confirm RCAM have now introduced as part of our Airfield Safety Initiatives, a Full Airfield Pilot Briefing created with the support of the Daedalus Air Safety Committee, NATS and Fleetlands, alongside the launch of our new official Airfield website (www.daedalusairfield.co.uk), with dedicated pages to Visiting by Air. We have also enacted a mandatory PPR for visitors, to enable PPR to be a tool to ensure better safety briefing and awareness.
2013072	HQ Air Command considers reviewing the location of the Brize East training area with respect to suitability and coordination with other airspace users.	OC OUAS and the HQ 3 FTS AS team are constantly reviewing ops from Benson and 22(Trg) Gp HQ supports the SQEP panels and risk reviews that have been and are being conducted. The MAC risk with GA/gliders has been for some time, and continues to be, actively managed and the present D&G is 'no TS, no fly'. No 3 FTS has engaged with HQ JHC regarding weekend provision of ATC at Benson and have a formal arrangement with SATCO RAF Brize Norton regarding provision of a TS when possible. Furthermore, and not specifically related to this Airprox, a funding line has been identified to fit P-FLARM to all Tutor ac (in addition to the TAS already fitted) to further mitigate MAC risk with gliders.
2013180	CAA considers highlighting radio-sonde procedures to potential operators.	CAA SARG has been in discussions with the Royal Meteorological Society about the communication of the requirements of the ANO to school, universities and members of the public. CAA are also reviewing the contents of CAP 736 which refers.

Partially Accepted

Airprox	Recommendation	Comments
2013095 2013099 2013121	The CAA reviews VFR/SVFR traffic procedures within CAS wrt RA occurrences in TCAS equipped aircraft.	The CAA does not fully accept this recommendation and are of the view that an understanding of the locations of TCAS RAs involving VFR/IFR integration in CAS, the frequency of these and the severity of the resultant events is required before any further action to review VFR/SVFR traffic procedures within CAS is undertaken. Such analysis may of course precipitate detailed consideration of VFR/IFR integration procedures, should the results indicate this is appropriate.

Rejected

Airprox	Recommendation	Comments
2013035	NATS Ltd review the procedure for Mode S display, especially near the FIR boundary.	NATS Ltd rejected the need to change its procedures regarding Mode S display and intends to make no change to the current use of Mode S SFL information in the LAC operations.
2013063	CAA GA unit consult with non-powered aircraft parent organisations to review prior promulgation of competition task routeing and way-points to AIS and airfields close to task track.	The CAA notes this Recommendation but considers that through the auspices of the Airspace and Safety Initiative (ASI) the matter has already received sufficient exposure with organisations such as the British Gliding Association (BGA) and the British Hang Gliding and Paragliding Association (BHPA).
2013096	The CAA and MAA review the suitability of ATS procedures within the Class C elements of TRAs.	DAATM did not consider that the background classification of the airspace had a bearing on the Airprox. In the UK, above FL195, the background airspace classification is Class C; however, when the TRA is active the Class C rules are suspended, as is the case for Military Danger Areas and Military Training Areas, and different rules are applied. To ensure the utility of the TRAs for mil operational training it is vital that the rules applied are appropriate to the type of activity that is taking place, regardless of the background classification. The ability to adopt different rules for activities within the TRA is fundamental to the Flexible Use of Airspace (FUA).
2013071	HQ Air Command develops SOPs and phraseology for Tactical Approaches.	Each ac type will employ different tactical approach procedures, so the development of SOPs and phraseology for all tactical approaches would be impossible to achieve. However, crews have been reminded of the importance of passing timely and accurate positional information calls, with intentions, to ATC when conducting non-standard, tactical approaches to airfields.
2013145	The CAA reviews the required content of airfield briefs with specific emphasis on informing foreign visiting pilots of their responsibilities under ATSOCAS.	The CAA have rejected this recommendation.
2013146	Panshanger aerodrome reviews their booking in and out procedures.	Rule 17 of the Rules of the Air (2007) requires that: "The commander of an aircraft arriving at or departing from an aerodrome in the United Kingdom shall take all reasonable steps to ensure, upon landing or prior to departure, as the case may be, that the person in charge of the aerodrome or the air traffic control unit or flight information service unit at the aerodrome is given notice of the landing or departure." Despite the fact that the light aircraft pilot in question had not recorded his/her landing, the Panshanger Airfield manager declined to review his airfield's booking in and out procedures.
2013148	The BHPA publicise the location of commonly used launch sites to the wider aviation community.	The BHPA have rejected this recommendation on the grounds that there are too many sites and variables to chart all of them and only including some may misled pilots into believing this is an exhaustive list. Furthermore, some sites may be extremely active in favourable weather conditions but then not used for the majority of the time, again misleading pilots into believing it is an unused site. The BHPA notes that the number of Airprox involving its members is an extremely small percentage and the members themselves view the risk of MAC as low.

Airprox	Recommendation	Comments
2013150	The CAA reviews the required content of airfield briefs with specific emphasis on informing foreign visiting pilots of their responsibilities under ATSOCAS.	CAA have rejected this recommendation.
2013071	HQ Air Command considers the provision of additional surveillance in areas of poor radar performance.	ATM Force HQ has investigated and carefully considered the technical feasibility of integrating NATS radar feeds into Watchman radar displays to supplement coverage in areas of known poor radar performance. However, it is unrealistic to utilise NATS radar feeds at this time as the data provided via the Onward Routed Radar Data contract remains non-assured. ATM and ASACS Force Commands continue to work with NATS towards a resolution.
2013162	The BHPA considers publication of an article in the wider aviation press regarding the correlation between weather, wind and launch site usage.	The BHPA feels that it has produced numerous articles in the past and is reluctant to produce an article for an editor that doesn't want one. It feels a better strategy would be to include information on its operations within military training. Finally it considers an article on the correlation between weather and launch site would only serve to mislead pilots (see response to 2013148).
	JHC, HQAC, NCHQ, AAC and the CAA publicise the effect of rotor downwash on canopy-suspended air vehicles.	Military HQs have publicised the information; rejected by the CAA which considers that information for helicopter pilots on the hazards to other aircraft of rotor downwash and wake turbulence is sufficiently promulgated.

AIRPROX CATALOGUE 2013

The table below is an abbreviated form of the full 2013 Airprox catalogue available at 2013 Airprox Catalogue on the UKAB Website: individual reports can be accessed through the 'Airprox No' links in the table.

Airprox No	Date	Risk Category	Aircraft 1 Type	Aircraft 2 Type
2013001	11/01/2013	B	EC135	EUROFIGHTER TYPHOON
2013002	12/01/2013	C	CHEROKEE / WARRIOR / ARROW	NANCHANG CJ6
2013003	12/01/2013	B	SUPER CUB	NANCHANG CJ6
2013004	16/01/2013	C	HAWK	HAWK
2013005	02/02/2013	C	AIRBUS A320, A321	A319
2013006	29/01/2013	C	LYNX WILDCAT AH1 (AW159)	LYNX WILDCAT AH1 (AW159)
2013007	01/02/2013	A	HAWK	HAWK
2013008	12/02/2013	C	DA42 TWIN STAR	FALCON 20FJF/20C/20D/20E/20F/2
2013010	05/02/2013	E	SIKORSKY S92 HELIBUS	NH90
2013011	28/02/2013	C	A319	EMBRAER 190/195
2013012	27/02/2013	E	CESSNA C510 MUSTANG	F-86 SABRE
2013013	03/03/2013	C	VIKING GLIDER (103 ACRO)	CHEROKEE / WARRIOR / ARROW
2013014	14/03/2013	C	CHEROKEE / WARRIOR / ARROW	CESSNA 182 SKYLANE
2013015	18/03/2013	C	HAWK	HAWK
2013016	29/03/2013	C	PARACHUTIST	COMMANDER 114
2013017	06/04/2013	B	R-21/00 /12 /60, ALPHA	SU-29
2013018	06/04/2013	C	CITATION 550, 551,560 (II - V)	CHEROKEE / WARRIOR / ARROW
2013019	20/04/2013	C	VIGILANT MOTOR GLIDER	CZAW SPORTSCRUISER
2013020	20/04/2013	B	SCHLEICHER ASG 29	PIPER SENECA
2013021	23/04/2013	E	EMBRAER 170/175	HAWK
2013022	25/04/2013	E	A319	TOMAHAWK
2013023	25/04/2013	C	ECUREUIL SA 350	BARON 58
2013024	09/04/2013	C	AIRBUS A320, A321	CESSNA 206
2013025	28/04/2013	B	VIKING GLIDER (103 ACRO)	COUGAR GA7
2013026	29/04/2013	A	CESSNA 182 SKYLANE	BOEING EC135
2013027	30/04/2013	B	TORNADO GR, IDS	DG800, DG808
2013028	01/05/2013	C	EUROFIGHTER TYPHOON	TUCANO
2013029	01/05/2013	C	A319	RV4, RV6, RV6A, RV8 HOMEBUILT
2013030	02/05/2013	C	SUPER KING AIR 200/300/350	EUROFIGHTER TYPHOON
2013031	06/05/2013	A	GLIDER (UNSPECIFIED)	TRAVELAIR
2013032	02/05/2013	C	GULFSTREAM III, IV, V	SUPER KING AIR 200/300/350
2013033	12/05/2013	C	ASW27B GLIDER	NAVAJO, CHIEFTAIN
2013034	30/04/2013	C	EUROFIGHTER TYPHOON	EUROFIGHTER TYPHOON
2013035	14/05/2013	C	BOEING B737	A319
2013036	14/05/2013	C	AGUSTA 139	F15 EAGLE
2013037	16/05/2013	B	JETSTREAM 41	F15 EAGLE
2013038	15/05/2013	C	AIRBUS A320, A321	EUROFIGHTER TYPHOON
2013039	22/05/2013	C	DAUPHIN SA 365	TOMAHAWK
2013040	19/05/2013	B	CHEROKEE / WARRIOR / ARROW	CHEROKEE / WARRIOR / ARROW
2013041	16/05/2013	E	CHEROKEE / WARRIOR / ARROW	SUPER CUB
2013042	25/05/2013	A	DR 400/180,400/180R	CHEROKEE SIX
2013043	29/05/2013	C	AGUSTA A109	AGUSTA A109

Airprox No	Date	Risk Category	Aircraft 1 Type	Aircraft 2 Type
2013045	22/05/2013	A	ECUREUIL SA 350	TORNADO GR, IDS
2013046	01/06/2013	C	VIGILANT MOTOR GLIDER	GAZELLE SA 341
2013047	03/06/2013	C	TORNADO GR, IDS	PARAGLIDER - UNSPECIFIED
2013048	04/06/2013	A	LYNX HAS/HMA MK8	LYNX HAS/HMA MK8
2013049	08/06/2013	D	ASK 13 GLIDER	UNKNOWN
2013050	07/06/2013	E	ISLANDER BN-2/BN-29	KING AIR 90/100
2013051	16/06/2013	C	MICROLIGHT (UNSPECIFIED TYPE)	EC-120 COLIBRI
2013052	22/06/2013	B	RJ REGIONAL JET	206L LONGRANGER
2013053	25/06/2013	C	EUROFIGHTER TYPHOON	PARAGLIDER - UNSPECIFIED
2013054	23/06/2013	C	"JUMBO" JET B747	"JUMBO" JET B747
2013055	27/06/2013	C	EC135	R44 ASTRO (ROBINSON)
2013056	27/06/2013	C	A319	TWIN OTTER DHC-6
2013057	26/06/2013	B	VENTUS GLIDER	CHEROKEE / WARRIOR / ARROW
2013058	21/06/2013	C	CHEROKEE / WARRIOR / ARROW	CIRRUS SR22/SR20
2013059	26/06/2013	B	ASK 13 GLIDER	CESSNA 182 SKYLANE
2013060	30/06/2013	E	A319	MD-90
2013061	01/07/2013	C	DR 315,300/108	SENECA
2013062	26/06/2013	C	EUROFIGHTER TYPHOON	GLIDER (UNSPECIFIED)
2013063	01/07/2013	A	VENTUS GLIDER	ALPHA JET
2013065	30/05/2013	C	TORNADO GR, IDS	IKARUS C42 MICROLIGHT
2013066	03/07/2013	C	LYNX A.H MK I	TIGER MOTH 82A
2013067	03/07/2013	B	TUCANO	HAWK
2013068	07/07/2013	C	LANCASTER	ROBINSON R22
2013069	06/07/2013	A	CHIPMUNK DHC-1	COMANCHE
2013070	09/07/2013	E	B777	EUROFIGHTER TYPHOON
2013071	11/07/2013	B	TUCANO	TB20 / TB21 TRINIDAD
2013072	14/07/2013	B	ASW 20 GLIDER	AQUILA A210/211/211GX
2013073	13/07/2013	B	VIGILANT MOTOR GLIDER	CHEROKEE / WARRIOR / ARROW
2013074	12/07/2013	C	IKARUS C42 MICROLIGHT	CHEROKEE / WARRIOR / ARROW
2013075	26/06/2013	B	SEA KING, S-61 (MIL MODELS)	MICROLIGHT (UNSPECIFIED TYPE)
2013076	10/07/2013	C	CESSNA 152	CHEROKEE / WARRIOR / ARROW
2013077	17/07/2013	C	VIGILANT MOTOR GLIDER	CHEROKEE / WARRIOR / ARROW
2013079	17/07/2013	B	CHEYENNE III	GLIDER (UNSPECIFIED)
2013080	14/07/2013	B	MD520N, MD600N, MD902 EXPLORER	CESSNA 172
2013081	19/07/2013	B	SEA KING, S-61 (MIL MODELS)	TORNADO GR, IDS
2013082	18/07/2013	A	A319	PARA-MOTOR/POWERED HANGLIDER
2013083	20/07/2013	C	VIGILANT MOTOR GLIDER	CHEROKEE / WARRIOR / ARROW
2013084	20/07/2013	C	VIGILANT MOTOR GLIDER	HURRICANE
2013085	22/07/2013	C	AIRBUS A320, A321	DHC-8 (DASH 8)
2013086	19/07/2013	D	AIRBUS A320, A321	UNKNOWN
2013087	21/07/2013	A	CESSNA 152	SUPER KING AIR 200/300/350
2013088	26/07/2013	D	LS8 GLIDER	UNTRACED LIGHT AC
2013089	24/07/2013	A	SUPER CUB	R44 ASTRO (ROBINSON)
2013090	30/07/2013	B	EUROFIGHTER TYPHOON	HUNTER
2013091	23/06/2013	D	AIRBUS A330	UNKNOWN
2013092	01/08/2013	B	EV97 EUROSTAR	MOONEY M20
2013093	01/08/2013	B	MICROLIGHT (UNSPECIFIED TYPE)	HERCULES C130
2013095	23/07/2013	E	REGIONAL JET (RJ)-70,-85,-100	DR 400/2+2

Airprox No	Date	Risk Category	Aircraft 1 Type	Aircraft 2 Type
2013096	05/08/2013	B	EMB-135,145	EUROFIGHTER TYPHOON
2013097	04/08/2013	B	ASH 26 GLIDER	CESSNA 182 SKYLANE
2013099	01/08/2013	E	RJ REGIONAL JET	R44 ASTRO (ROBINSON)
2013100	06/08/2013	E	REGIONAL JET (RJ)-70,-85,-100	HELICOPTER (TYPE UNKNOWN)
2013101	02/08/2013	C	TUCANO	GLIDER (UNSPECIFIED)
2013102	14/07/2013	C	FALCON 50, FALCON 900	DUCHESS 76
2013103	07/08/2013	E	TORNADO GR, IDS	ECUREUIL SA 350
2013104	09/08/2013	E	CHINOOK CH47	PIPER APACHE
2013105	09/08/2013	C	BULLDOG SC3	DISCUS GLIDER
2013106	09/08/2013	B	CHEROKEE / WARRIOR / ARROW	CHEROKEE / WARRIOR / ARROW
2013107	09/08/2013	A	MERLIN, EH-101	TORNADO GR, IDS
2013108	09/08/2013	A	MERLIN, EH-101	MOONEY M20
2013109	07/08/2013	E	HERCULES C130	CHEROKEE / WARRIOR / ARROW
2013110	10/08/2013	C	VIGILANT MOTOR GLIDER	UNKNOWN
2013111	14/08/2013	B	VIGILANT MOTOR GLIDER	UNKNOWN
2013112	14/08/2013	A	VENTUS GLIDER	NAVAJO, CHIEFTAIN
2013113	10/07/2013	B	EV97 EUROSTAR	CHEROKEE / WARRIOR / ARROW
2013115	31/07/2013	C	HERCULES C130	TORNADO GR, IDS
2013116	18/08/2013	B	DR 400/2+2	UNKNOWN
2013117	21/08/2013	C	EUROFIGHTER TYPHOON	525 CITATIONJET
2013118	20/08/2013	A	LS8 GLIDER	NAVAJO, CHIEFTAIN
2013119	23/08/2013	B	PAC750XL, PAL P-750XSTOL	NAVAJO, CHIEFTAIN
2013120	28/08/2013	B	ECUREUIL SA 350	IKARUS C42 MICROLIGHT
2013121	07/08/2013	E	RJ REGIONAL JET	AGUSTA A109
2013122	31/08/2013	B	ASW15 GLIDER	F-86 SABRE
2013123	27/08/2013	C	ADVANCED TURBO PROP	CESSNA 172
2013124	03/09/2013	C	HERCULES C130	HAWK
2013125	04/09/2013	C	ASW15 GLIDER	JETRANGER 206
2013126	05/09/2013	A	DG 500, 505	DUCHESS 76
2013127	07/09/2013	B	SPITFIRE	UNKNOWN
2013128	09/09/2013	E	GROB 115, TUTOR	TUCANO
2013129	11/09/2013	B	DA42 TWIN STAR	LYNX AH MK7
2013130	12/09/2013	C	ECUREUIL SA 350	STRIKEMASTER BAC167
2013131	01/09/2013	C	MD520N, MD600N, MD902 EXPLORER	CASA 131E
2013132	03/09/2013	E	AIRBUS A320, A321	AIRBUS A320, A321
2013133	16/09/2013	E	TORNADO GR, IDS	BAE 146-100
2013134	16/09/2013	A	SIKORSKY S92 HELIBUS	EC135
2013136	21/09/2013	E	EC135	R44 ASTRO (ROBINSON)
2013137	22/09/2013	C	VIGILANT MOTOR GLIDER	CESSNA 172
2013138	23/09/2013	B	BELL 412 (MOD - GRIFFIN)	AGUSTA A109
2013139	20/09/2013	B	SPITFIRE	CESSNA 172
2013140	26/09/2013	E	TUCANO	OBSERVER (8F)
2013141	23/09/2013	C	JETSTREAM 41	SIKORSKY S92 HELIBUS
2013142	29/09/2013	C	CESSNA 152	CIRRUS SR22/SR20
2013143	22/09/2013	B	TOMAHAWK	TOMAHAWK
2013144	08/09/2013	D	EMBRAER 190/195	PARAGLIDER - UNSPECIFIED
2013145	04/10/2013	C	GROB 115, TUTOR	CITATION 550, 551,560 (II - V)
2013146	07/10/2013	A	MD520N, MD600N, MD902 EXPLORER	UNKNOWN

Airprox No	Date	Risk Category	Aircraft 1 Type	Aircraft 2 Type
2013147	05/10/2013	C	ASK 13 GLIDER	CESSNA 406
2013148	05/10/2013	C	PARAGLIDER - UNSPECIFIED	UNKNOWN
2013149	10/10/2013	B	BN2T TURBINE ISLANDER	MIRAGE 2000
2013150	17/10/2013	C	525 CITATIONJET	CESSNA 182 SKYLANE
2013152	29/10/2013	C	VIKING GLIDER (103 ACRO)	AGUSTA A109
2013153	01/11/2013	C	GROB 115, TUTOR	GROB 115, TUTOR
2013154	06/11/2013	E	SIKORSKY S92 HELIBUS	MICROLIGHT (UNSPECIFIED TYPE)
2013155	07/11/2013	E	HERCULES C130	TORNADO GR, IDS
2013156	05/11/2013	C	"JUMBO" JET B747	BOEING B767
2013157	10/11/2013	A	EC135	NAVAJO, CHIEFTAIN
2013158	10/11/2013	B	PITTS SPECIAL	EXTRA 200, 300 SERIES
2013159	13/11/2013	B	SLINGSBY T67A	CIRRUS SR22/SR20
2013160	15/11/2013	B	ECUREUIL SA 350	CHEROKEE / WARRIOR / ARROW
2013161	21/11/2013	E	"JUMBO" JET B747	CITATION 10
2013162	09/10/2013	C	HANG GLIDER (UNSPECIFIED)	SEA KING, S-61 (MIL MODELS)
2013163	21/11/2013	C	CESSNA 406	DA42 TWIN STAR
2013164	23/11/2013	E	A319	CHEROKEE / WARRIOR / ARROW
2013165	23/11/2013	B	RV4, RV6, RV6A, RV8 HOMEBUILT	HAL PUSHPAK, AERONCA 11 CHIEF
2013166	23/11/2013	A	IKARUS C42 MICROLIGHT	CESSNA 404
2013167	22/11/2013	D	TORNADO GR, IDS	UNKNOWN
2013168	26/11/2013	C	MERLIN, EH-101	CHEROKEE / WARRIOR / ARROW
2013169	23/11/2013	C	ASK21 GLIDER	HR 200/100B
2013170	01/12/2013	D	ECUREUIL SA 350	UNKNOWN
2013171	02/12/2013	A	CHEROKEE / WARRIOR / ARROW	TORNADO GR, IDS
2013172	03/12/2013	C	MICROLIGHT (UNSPECIFIED TYPE)	CHINOOK CH47
2013173	07/12/2013	A	VIGILANT MOTOR GLIDER	CHEROKEE / WARRIOR / ARROW
2013174	08/11/2013	C	REGIONAL JET (RJ)-70,-85,-100	FOKKER 50
2013175	12/12/2013	E	PIPER SENECA	GROB 115, TUTOR
2013176	01/12/2013	B	PUCHACZ GLIDER SZD-50-3	SKYHAWK 175
2013177	18/12/2013	C	MD520N, MD600N, MD902 EXPLORER	CHEROKEE / WARRIOR / ARROW
2013178	09/12/2013	E	SIKORSKY S92 HELIBUS	SIKORSKY S92 HELIBUS
2013179	20/12/2013	B	HAWK	HAWK
2013180	18/12/2013	D	HAWK	UNKNOWN
2013181	29/09/2013	D	VIKING GLIDER (103 ACRO)	UNKNOWN

GLOSSARY OF DEFINITIONS AND ABBREVIATIONS

Risk Categories

Risk Category	ICAO 4444 PANS-ATM AIRPROX risk classification	Eurocontrol severity classification scheme (ESARR 2)[2]	UKAB Board Guidelines word picture	Proposed UKAB collision risk descriptor and word picture (not yet adopted or approved)
A	Risk of Collision: ...aircraft proximity in which serious risk of collision has existed.	Serious incident.	Situations that stop short of an actual collision, where separation is reduced to the minimum and / or where chance played a major part in events and nothing more could have been done to improve matters. Late sightings frequently attach to these cases.	**Providence**. Situations where separation was reduced to the bare minimum and which only stopped short of an actual collision because chance played a major part in events: the pilots were either unaware of the other aircraft or did not make any inputs that materially improved matters.
B	Safety not assured: ...aircraft proximity in which the safety of the aircraft may have been compromised.	Major incident.	Those cases, often involving late sightings, where avoiding action may have been taken to prevent a collision, but still resulted in safety margins much reduced below the normal.	**Safety much reduced**. Situations where aircraft proximity resulted in safety margins being much reduced below the normal either due to serendipity, inaction, or emergency avoiding action taken at the last minute to avert a collision.
C	No risk of collision: ...aircraft proximity in which no risk of collision has existed.	Significant incident	By far the most common outcome where effective and timely actions were taken to prevent aircraft colliding.	**Safety degraded**. Situations where safety was reduced from normal but either fortuitous circumstances or early enough sighting/action allowed one or both of the pilots to either monitor the situation or take controlled avoiding action to avert the aircraft from coming into close proximity.
D	Risk not determined: aircraft proximity in which insufficient information was available to determine the risk involved, or inconclusive or conflicting evidence precluded such determination.	Not determined.	Reserved for those cases where a dearth of information renders impossible any meaningful finding.	**Non-assessable**. Situations where insufficient information was available to determine the risk involved, or inconclusive/conflicting evidence precluded such determination.
E	No ICAO risk classification	No safety effect: occurrences which have no safety significance.	Met the criteria for reporting but, by analysis, it was determined that normal procedures, safety standards and parameters pertained.	**Non-proximate**. Met the criteria for reporting but normal procedures, safety standards and/or separation parameters pertained.

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[2] ESARR - **E**UROCONTROL **Sa**fety **R**egulatory **R**equirement.

Abbreviations

aal	**above aerodrome level**
ac	aircraft
ACAS	Airborne Collision Avoidance System
ACC	Area Control Centre
ACN	Airspace Co-ordination Notice
ACR	Approach Control Room
A/D	aerodrome
ADC	Aerodrome Control(ler)
ADR	Advisory Route
AEF	Air Experience Flight
AEW	Airborne Early Warning
AFIS(O)	Aerodrome Flight Information Service (Officer)
A/F	Airfield
agl	above ground level
AIAA	Area of Intense Aerial Activity
AIC	Aeronautical Information Circular
AIP	Aeronautical Information Publication
AIS	Aeronautical Information Services
alt	altitude
amsl	above mean sea level
ANSP	Air Navigation Service Provider
AOB	Angle of Bank
A/P	Autopilot
APP	Approach Control(ler)
APR	Approach Radar Control(ler)
ARP	Aerodrome Reference Point
ASR	Airfield Surveillance Radar
ATC	Air Traffic Control
ATCC	Air Traffic Control Centre
ATCO	Air Traffic Control Officer
ATCRU	Air Traffic Control Radar Unit
ATIS	Automatic Terminal Information Service
ATM	Aerodrome Traffic Monitor
ATS	Air Traffic Service
ATSA	Air Traffic Service Assistant
ATSOCAS	ATS Outside Controlled Airspace
ATSI	Air Traffic Services Investigations
ATSU	Air Traffic Service Unit
ATZ	Aerodrome Traffic Zone
AWACS	Airborne Warning and Control System
AWR	Air Weapons Range
AWY	Airway
BGA	**British Gliding Association**
BHPA	British Hang Gliding and Paragliding Association
BMAA	British Microlight Aircraft Association
BMFA	British Model Flying Association
BS	Basic Service
CANP	**Civil Air Notification Procedure**
CAS	Controlled Airspace
CAT	Commercial Air Transport
CAVOK	Visibility, cloud and present weather better than prescribed values or conditions
CC	Colour Code - Aerodrome Weather State
cct	Circuit
CFI	Chief Flying Instructor
CLAC	Clear Above Cloud
CLAH	Clear Above Haze
CLBC	Clear Below Cloud
CLBL	Clear Between Layers
CLNC	Clear No Cloud
CLOC	Clear of Cloud
CMATZ	Combined MATZ
CPA	Closest Point of Approach
C/S	Callsign
CTA	Control Area
CTR/CTZ	Control Zone
CWS	Collision Warning System

DA	**Decision Altitude**
DAP	Directorate of Airspace Policy CAA
DF	Direction Finding (Finder)
DH	Decision Height
DME	Distance Measuring Equipment
DS	Deconfliction Service
DW	Downwind
E	**East**
EAT	Expected Approach Time
elev	elevation
ERS	En Route Supplement
est	estimated
FAT	**Final Approach Track**
FIR	Flight Information Region
FIS	Flight Information Service
FISO	Flight Information Service Officer
FMS	Flight Management System
FO	First Officer
FOB	Flying Order Book
FPL	Filed Flight Plan
fpm	Feet per Minute
FPS	Flight Progress Strip
FW	Fixed Wing
GAT	**General Air Traffic**
GCA	Ground Controlled Approach
GH	General Handling
GMC	Ground Movement Controller
GP	Glide Path
GS	Groundspeed
G/S	Glider Site
H	**Horizontal**
hdg	Heading
HISL	High Intensity Strobe Light
HLS	Helicopter Landing Site
HMR	Helicopter Main Route
hPa	Hectopascals (previously millibars)
HPZ	Helicopter Protected Zone
HQ Air	HQ Air Command
HUD	Head-Up Display
IAS	**Indicated Air Speed**
iaw	In accordance with
ICF	Initial Contact Frequency
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IMC	Instrument Meteorological Conditions
ivo	In the vicinity of
JSP	**Joint Services Publication**
KHz	**Kilohertz**
km	Kilometres
kt	Knots
L	**Left**
LACC	London Area Control Centre (Swanwick)
LARS	Lower Airspace Radar Service
LATCC(Mil)	London Air Traffic Control Centre (Military)
LFA	Low Flying Area
LFC	Low Flying Chart
LH	Left Hand
LJAO	London Joint Area Organisation
LoA	Letter of Agreement
LOC	Localizer
LTMA	London TMA

MATS	**Manual of Air Traffic Services**
MATZ	Military Aerodrome Traffic Zone
METAR	Aviation routine weather report
MHz	Megahertz
M/L	Microlight
MOD	Ministry of Defence
MRP	Military Regulatory Publication
MSD	Minimum Separation Distance
N	**North**
NATS	National Air Traffic Services
NDB	Non-Directional Beacon
NK	Not Known
nm	Nautical Miles
NMC	No Mode C
NR	Not Recorded
NVD	Night Vision Devices
NVG	Night Vision Goggles
OACC	**Oceanic Area Control Centre**
OAT	Operational Air Traffic
O/H	Overhead
OJTI	On-the-Job Training Instructor
Oo	Out of
OOS	Out of Service
PAR	**Precision Approach Radar**
PCAS	Portable Collision Avoidance System
PD	Practice Diversion
PF	Pilot Flying
PFL	Practice Forced Landing
PI	Practice Interception
PIC	Pilot-in-Command
PINS	Pipeline Inspection Notification System
PNF	Pilot Non-flying
PS	Procedural Service
QFE	**Atmospheric pressure at aerodrome elevation**
QFI	Qualified Flying Instructor
QHI	Qualified Helicopter Instructor
QNH	Atmospheric pressure altimeter setting to obtain elevation when on the ground
R	**Right**
RA	Resolution Advisory (TCAS)
RAT	Restricted Area (Temporary)
RCO	Range Control Officer
RCS	Radar Control Service
RH	Right Hand
ROC	Rate of Climb
ROD	Rate of Descent
RMZ	Radio Mandatory Zone
RP	Reporting Point
RPAR	Replacement PAR
RPAS	Remotely Piloted Air Vehicle
RPS	Regional Pressure Setting
RT	Radio Telephony
RTB	Return to base
RTF	Radio Telephony Frequency
RVR	Runway Visual Range
RVSM	Reduced Vertical Separation Minimum
RW	Rotary Wing
RWxx	Runway xx, e.g. RW09

S	**South**
SA	Situational Awareness
SAP	Simulated Attack Profile
SAS	Standard Altimeter Setting
ScACC	Scottish Area Control Centre (Prestwick)
ScATCC(Mil)	Scottish Air Traffic Control Centre (Military)
SERA	Standardised European Rules of the Air
SFL	Selected Flight Level [Mode S]
SID	Standard Instrument Departure
SMF	Separation Monitoring Function
SOPs	Standard Operating Procedures
SRA	Surveillance Radar Approach
SSR	Secondary Surveillance Radar
STAR	Standard Instrument Arrival Route
STCA	Short Term Conflict Alert
SUP	Supervisor
SVFR	Special VFR
TA	**Traffic Advisory (TCAS)**
TAS	True Air Speed
TC	Terminal Control
TCAS	Traffic Alert & Collision Avoidance System
TDN	Talkdown Control(ler)
TFR	Terrain Following Radar
TI	Traffic Information
TMA	Terminal Control Area
TMZ	Transponder Mandatory Zone
TP	Turn Point
TRA	Temporary Restricted Area
TRUCE	Training in Unusual Circumstances and Emergencies
TS	Traffic Service
TWR	ATC Tower
UAR	**Upper Air Route**
UAS	Unmanned Air System
UAV	Unmanned Air Vehicle
UHF	Ultra High Frequency
UIR	Upper Flight Information Region
UKDLFS	United Kingdom Day Low Flying System
UK FIS	UK Flight Information Services
UKNLFS	United Kingdom Night Low Flying System
unk	unknown
unltd	unlimited
USAF(E)	United States Air Force (Europe)
U/S	Unserviceable
UT	Under Training
UTC	Co-ordinated Universal Time
UW	Upwind
V	**Vertical**
VCR	Visual Control Room
VDF	Very High Frequency Direction Finder
VFR	Visual Flight Rules
VHF	Very High Frequency
VMC	Visual Meteorological Conditions
VOR	Very High Frequency Omni Range
VRP	Visual Reporting Point
W	**West**
Wx	Weather
XXXX	**Unknown or deliberately dis-identified information**