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U.K. Government–Industry Partnership Targets London Airspace Infringements

The initiative has identified causal factors, emphasized procedural compliance and worked to improve communication between general aviation aircraft pilots and air traffic controllers. An independent Internet site enables stakeholders to monitor the results.

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FSF Editorial Staff

The recurrent problem of aircraft being flown into controlled airspace without clearance from air traffic control (ATC) has received increased attention in the United Kingdom because the airspace infringements have increased the risk of midair collisions and rapid avoidance maneuvers. An airspace infringement can result from problems or combinations of problems associated with the pilot, the aircraft or the air traffic controller. Some general aviation pilots — the group involved in about three-fourths of U.K. airspace infringements — also have said that, based on their experience, several problems with the current visual flight rules (VFR) environment warrant further study and/or solutions.¹

The U.K. Civil Aviation Authority (CAA) said in August 2005 that a strategic review of general aviation in the United Kingdom will be conducted by a joint industry–government team, with a final report prepared by June 2006. The review is expected to include identification of trends in various general aviation sectors; analysis of major developments, including airspace changes, new technology, costs, taxes and infrastructure; exploration of issues involving access to airports;



and examination of the effects of general aviation activities on other airspace users.²

“General aviation is probably far less understood by policy-makers than commercial aviation,” said Alex Plant, leader of the review team.³ “This review will help to improve understanding and provide a better evidence base for future policy and regulatory decisions.”

The centerpiece of recent CAA analyses of airspace infringements and recommended countermeasures has been the On Track project, designed “to identify the causal factors behind airspace infringements and to make recommendations for safety improvements.”⁴ The project initially was conducted from June 2001 to January 2003; the implementation of recommendations and monitoring of results have continued in 2005 through the CAA’s Airspace Infringements Working Group and the On Track Internet site, managed for CAA by the U.K. General Aviation Safety Council. Airspace infringements affecting commercial aircraft operations in the terminal control area of London, England, especially have prompted preventive efforts by ATC and pilots.

“National Air Traffic Services (NATS) considers the increasing number of aircraft infringing regulated airspace in the London area to be a significant safety issue and seeks [pilots’] assistance in improving this through better flight planning and navigation,” said Nigel Everett, moderator of the On Track Internet site.⁵

Some airspace infringements in the vicinity of London also have been reported as airprox⁶ incidents, he said.

“The worrying trend is the number of airproxes reported by [crews of] commercial airliners against traffic infringing the approach paths of Luton, Stansted, Gatwick and Heathrow [airports],” Everett said.⁷

Air traffic controllers are required to provide 5.0 nautical miles (9.3 kilometers) lateral separation of aircraft from unknown traffic or 5,000 feet of vertical separation from unverified Mode C (altitude-reporting) replies of transponders.

“The random nature of unknown traffic makes this exceptionally difficult to achieve on some occasions in the busy London environment,” Everett said.⁸

An average of 350 airspace infringements per year (1996–2004) have been reported to CAA under its requirements for mandatory occurrence reports (MORs),⁹ with more than 90 percent of infringement-related reports submitted by air traffic controllers. These airspace infringements have occurred in all types of controlled airspace but often have involved aircraft entering airways, temporary restricted airspace and control zones around airports. When an airspace infringement results in apparent loss of required separation between aircraft, the incident is investigated as an airprox by the U.K. Airprox Board (UKAB), categorized by severity and included in a semi-annual UKAB safety analysis. Brief descriptions of airspace infringements therefore represent a wide range of occurrences in which safety may have been affected to varying degrees, while airprox data reflect the relatively serious occurrences.

“The true number [of airspace infringements] is likely to be significantly greater (for a number of reasons, not every infringement is reported),” said a report for CAA titled *On Track — A Confidential Airspace Infringement Project*, published in July 2003. “Approximately 10 percent of all infringements involved a loss of separation, 5 percent resulted in an airprox and just over 1 percent resulted in a risk-bearing airprox.”¹⁰

When the project was begun, CAA said that innovative methods of looking at the airspace-infringement problem and its causes were required.

“In recognition of this potential hazard, especially around the Stansted area, the CAA commissioned ... On Track to take a fresh look at infringements by general aviation aircraft,” said the report. “To achieve this, a non-CAA project team was appointed to collect in-depth confidential data, not only on what happened but on why infringements occurred,

and to make recommendations ... based on comments and suggestions directly from pilots and controllers. ... The project team investigated 165 infringement reports [and] collected over 2,500 comments and suggestions for evaluation via an innovative Web site forum, e-mail, freepost [mail] and telephone.”

Two UKAB reports, analyzing airprox incidents reported in 2004,¹¹ help to place London-area airspace infringements into the broader context of U.K. aviation safety. During 2004, 207 airprox incidents were reported, compared with an average 201 per year during the preceding five years, CAA said. One of the nine risk category A airprox incidents (i.e., in which actual risk of collision existed) in 2004 involved a civil airliner, CAA said.¹²

“The proportion of the 207 incidents which were risk-bearing (33 percent) was the lowest for five years and compares with the five-year average of 38 percent,” CAA said. “Analysis of the data covering commercial air transport aircraft ... shows a rate of 0.54 risk-bearing [airprox] incidents per 100,000 flying hours in 2004 compared with 0.79 in 2003.”

On Track Project Raises Awareness

Peter Hunt, director of UKAB, said that 2004 airprox data reflected well on the efforts of U.K. airspace users and air traffic controllers to reduce airspace infringements, although each UKAB report presents a limited “snapshot of events.”¹³

“The one risk category A airprox involving a commercial air transport aircraft in the latter part of 2004, although serious, needs to be kept in [perspective],” Hunt said. “The proportion of risk category A events is down by over a third [compared with] the previous five-year average, while the proportion of risk-bearing incidents is down by one-sixth.”¹⁴

Airprox incidents involving commercial aircraft accounted for less than 40 percent of all airprox incidents in 2004, and the downward trend in the commercial air transport risk-bearing airprox rate continued, he said.¹⁵ The CAA initiative to reduce airspace infringements in turn can influence infringement-related airprox incidents, Hunt said.

“One very pleasing statistic ... is the drop in the number of airprox incidents involving the inadvertent penetration of controlled airspace,” he said. “Over recent years, awareness of the potential danger of airspace infringements in the United Kingdom has been raised through the CAA’s On Track research project and follow-up work by the Airspace Infringements Working Group.”¹⁶

Proposals by the Airspace Infringements Working Group — the first to address the On Track project’s findings and recommendations from CAA’s perspective — were published in October 2004.¹⁷

John Hills, representative of the CAA Safety Regulation Group and co-chairman of the working group, said, “Unfortunately, airspace infringements are still an issue in the United Kingdom. The number of incidents in 2003 (376 MORs) was the highest recorded since 1999 (413 MORs), and several of these resulted in airprox incidents. It’s important that infringements are reported as the data focuses our work on the practical solutions.”¹⁸

The On Track recommendations comprised airspace issues and ATC issues; lower-airspace radar services; global positioning system (GPS) and training in its use; radio telephony and navigation training; maps and charts; aeronautical information circulars and notices to airmen; transponder usage; pilot licensing issues; CAA–pilot community communication; and CAA investigation and follow-up procedures for airspace infringements.

“The independent On Track team’s report detailed a large number of recommendations that the working group will, where possible, seek to address,” said Phil Roberts of the CAA Directorate of Airspace Policy and co-chairman of the working group.¹⁹

In 2005, the On Track Internet site has been updated regularly to provide pilots and air traffic controllers with background on the nature and scale of airspace infringements (Table 1, page 4).

Perspectives Vary on Infringement Solutions

The following problem statements in the On Track report generated responses from the Airspace Infringements Working Group that are helpful in understanding the London-area airspace infringements by general aviation pilots:

- The report said that controlled-airspace allocation restricts the area of free airspace between control zones available for general aviation operations, creating traffic choke points and increasing infringement risk. In response, the working group said, “Every effort is made to ensure airspace structures accommodate as far as possible the requirements of all airspace users and that, where established, controlled airspace represents the minimum practicable amount required. ... It should be noted that controlled airspace is designed to provide procedure containment, and arbitrary ‘shavings off’ [reductions of controlled airspace] may result in that requirement not being met satisfactorily (i.e., without any mitigation for such changes). In addition, the resulting airspace structures could actually engender infringements by their very complexity”;
- The report said that airspace boundaries are not always visually identifiable to VFR pilots due to the absence of associated ground features. In response, the working group said, “A balance between controlled-airspace

design requirements, environmental demands and any need to align controlled-airspace boundaries along prominent ground features must be achieved. Although not commonplace, reference to geographical features by airspace boundaries is made wherever possible. The relative lack of infringements in the northern half of the United Kingdom may be due in part to there being more prominent ground features available for use as VFR navigational references, compared to the southern half. That said, lower levels of aerial activity and less complex airspace structures will also influence where and to what frequency infringements occur”;

- The report said that VFR corridors and their procedures are not well understood. In response, the working group said, “The establishment of VFR corridors in the Manchester and Luton/Stansted areas alleviate the VFR transit problems experienced in the past. The CAA will continue to monitor VFR-corridor requirements, but it should be noted that VFR corridors do not have to be established to facilitate passage of VFR traffic; routing via visual reference points is a viable and flexible alternative. ... Corridors are clearly marked on VFR charts, which have to strike a balance between pertinent information and clutter. ... Pilots are encouraged to notify the appropriate ATC units when visual reference points are not readily identifiable from the air or are obscured”;
- The report said that pilots often have difficulty understanding why a requested control-zone crossing has been refused by ATC and they have no formal method of reporting the refusal. In response, the working group said, “There is no formal requirement for controllers to explain why a zone-crossing clearance has been refused. Any such requirement would have significant radio-telephony workload implications. It is considered preferable for refusals to be pursued after the event. Controlling authorities of new controlled airspace structures are now required to record refusals; pilots may in turn submit refusal reports”;
- The report said that there is insufficient lower-airspace radar services coverage to meet general aviation requirements. In response, the working group said, “Lower-airspace radar services participation is not mandatory, although ATC units were encouraged to participate. ... Many non-lower-airspace radar services [ATC] units provide [air traffic services] outside controlled airspace.²⁰ ... NATS licensing, equipment and radar data provision, personnel, costs and funding issues currently render any upgrading of London [Flight Information Service] to provide a U.K. radar service unviable. ... A CAA study into the provision of air traffic services outside controlled airspace is under way. ... There is but a finite resource of secondary-surveillance

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Table 1
Airspace Infringements¹ Affecting Large Commercial Jets in the Terminal Control Area of London, England, and Associated Controlled Airspace²
September 2004–March 2005

Date	Brief Description ³
September 2004 (dates unspecified)	<ul style="list-style-type: none"> • “Avoiding action was issued [by air traffic control (ATC)] to a Boeing 737 [crew] against fast-moving unknown traffic inside the northern extremity of the London Terminal Control Area at 5,000 feet. Unknown traffic later was identified as a vintage jet fighter. Separation was lost.” • “A B-737 was broken [vectored] off the approach to Runway 23 at Stansted and repositioned due to unknown traffic flying through the final approach. The aircraft later was traced and identified as [non-U.K.]-based. On a later occasion, three inbound aircraft to Runway 05 at Stansted were repositioned due to unknown traffic in the zone.” • “Infringement of the Gatwick Control Zone resulted in a B-737 being repositioned due to unknown traffic coming into conflict [on final approach to] Runway 26L. The crew of the B-737 subsequently saw the infringing traffic and continued without incident. The pilot of the infringing aircraft later telephoned ATC claiming that his [global positioning system (GPS) navigation receiver] had [failed] and he subsequently had become unsure of his position.” • “Infringement of the Gatwick Control Zone by a Piper PA-28 [pilot in communication with] another ATC unit [occurred]. The PA-28 [pilot] was in receipt of a flight information service and thus was responsible for his own navigation. Heavy haze resulted in the aircraft penetrating the Gatwick Control Zone to the west, and avoiding action had to be taken by a departing B-737 [crew]. During this event, lateral separation was reduced to less than 2.0 [nautical] miles [3.7 kilometers] between the two aircraft, with the pilot of the PA-28 stating that he had not seen the B-737 as it passed abeam him.”
October 2004	<ul style="list-style-type: none"> • “On Oct. 2, a B-737 was broken off its approach to Runway 26 at Luton [by ATC] and repositioned due to an unknown Piper PA-31, which tracked from south to north through the final approach [course].” • “On Oct. 8, departures from Runway 05 at Stansted were stopped when unknown traffic was observed on radar tracking through the control zone. Subsequently, it was determined that the aircraft was a [non-U.K.]-registered Cessna 172. On the same day, a [non-U.K.]-registered microlight [aircraft] also penetrated the Stansted Control Zone without clearance. On this occasion, separation was lost against an inbound B-737.” • “On Oct. 21, penetration of the Gatwick Control Zone by unknown traffic resulted in a loss of separation with an inbound Airbus 320. Subsequently, the pilot telephoned to explain that while on a navigation exercise from Biggin [Biggin Hill Airport], the M23 [highway] was confused with the M25, resulting in the inadvertent infringement.”
November 2004	<ul style="list-style-type: none"> • “On Nov. 6, a Cessna 152 infringed the Stansted Control Zone, resulting in a B-737 being delayed as it was vectored away from the unknown traffic. [The] C-152 [pilot was reported] ‘slightly lost’ inbound to Andrewsfield.” • “On Nov. 19, avoiding-action vectors were issued to a McDonnell Douglas DC-10 and a British Aerospace 146 by Gatwick [ATC] to ensure separation against infringing traffic, later identified as an [aircraft] inbound to Redhill [Aerodrome].” • “On Nov. 22, avoiding action and radar vectors were issued to a B-737 and two A320s to take them clear of unknown traffic infringing the Luton Control Zone. Despite this, separation was not obtained at all times. [The infringing aircraft], later identified as a PA-28, was lost inbound to Earls Colne.” • “On Nov. 24, a B-737 was broken off the standard instrument departure at Stansted to avoid unknown traffic tracking towards the airfield. Other departing traffic was stopped for a period of time. Despite the infringing aircraft [pilot] turning off the transponder, the aircraft was traced and identified as a Robinson helicopter. To assist the aircraft in identifying the airfield, the runway lights had been turned on but, allegedly, the helicopter [pilot] was too low to observe them.” • “On Nov. 28, [an] unknown [aircraft in] the Heathrow Control Zone resulted in departures being halted for approximately six minutes. Prior to this, the required separation between [the unknown aircraft] and an A320 had been reduced below the required [separation] minimum. [The pilot of the infringing aircraft], later identified as a Piper PA-32, was lost while inbound to Elstree.”
December 2004	<ul style="list-style-type: none"> • “On Dec. 1, unknown traffic penetrating the London City Control Zone resulted in avoiding action being issued [by ATC] to a regional jet as it departed Runway 10.” • “On Dec. 15, infringement of the Luton Control Zone by a vintage jet [occurred]. The high speed of this aircraft resulted in separation being lost against a B-737 departing from Runway 26. The [vintage-jet] pilot later cited problems with his GPS and poor weather conditions [as causes] for the intrusion.” • “On Dec. 27, a northbound helicopter [pilot] endeavored to establish two-way contact with Luton [ATC] without success. Despite the lack of clearance, the aircraft continued through the control zone and crossed the final approach [course] of Runway 26, despite the presence of an inbound B-737 descending on the ILS ahead.”

Table 1
Airspace Infringements Affecting Large Commercial Jets in the Terminal Control Area of London, England, and Associated Controlled Airspace
September 2004–March 2005 *continued*

Date	Brief Description
January 2005	<ul style="list-style-type: none"> “On Jan. 2, a Robin aircraft penetrated the Gatwick Control Zone from the north, resulting in an A320 being repositioned on the ILS for Runway 26L. It appeared that the infringing aircraft [pilot] was experiencing difficulty in tracking the railway line to the north of the control zone.”
February 2005	<ul style="list-style-type: none"> “On Feb. 6, a [non-U.K.]-registered Rockwell Commander [pilot] strayed into the Heathrow Control Zone at 2,000 feet, tracking through the final approach of [Runway] 09L. Landing traffic, including an Airbus A319 and an A320, had to be broken [vectored] off final approach and repositioned. This caused significant disruption to the landing sequence.” “On Feb. 23, avoiding action was issued [by ATC] to a departing Boeing 777 almost immediately after [takeoff] from Heathrow due to fast-moving traffic entering the [London City Control] Zone from the south. Despite the best efforts of ATC, separation was lost between the two aircraft. Investigations showed that the infringing aircraft was a [non-U.K.]-registered Canadair Challenger in receipt of a radar service from an adjacent ATC unit. Later discussions of the event with the Challenger crew indicated that mishandling of the aircraft’s flight management system was the most probable explanation for the unexpected turn into the [control zone].”
March 2005	<ul style="list-style-type: none"> “On March 18, a Fokker 50 inbound to London City [Airport] was issued ... avoiding action due to the presence of unknown traffic that had penetrated Class A airspace to the east of the airfield. During this encounter, the required separation between the ... aircraft was not obtained.”

Gatwick = London Gatwick Airport Heathrow = London Heathrow Airport London City = London City Airport Luton = London Luton Airport
Stansted = London Stansted Airport

Notes:

1. U.K. Civil Aviation Authority (CAA). *On Track – A Confidential Airspace Infringement Project*. CAA Paper 2003/5. July 11, 2003. The report said, “One of the significant safety risks to the U.K. air transport system is believed to be the inadvertent or unauthorized penetration of controlled airspace by general aviation aircraft. This operational hazard, commonly called an ‘infringement,’ may result in serious harm either from an actual mid-air collision or from a rapid avoidance maneuver.”
2. London Terminal Control Centre reports of airspace infringements in Class A airspace and Class D airspace include the London Terminal Control Area, London City Control Zone, London Gatwick Control Zone, London Heathrow Control Zone, London Luton Control Zone and London Stansted Control Zone.
3. Brief descriptions of airspace infringements, recorded by London Terminal Control Centre, were among those posted by Nigel Everett, moderator, to the independent On Track Internet site sponsored by CAA for pilots and air traffic controllers. This Internet site is managed for CAA by the U.K. General Aviation Safety Council. This table comprises a subset of infringements that affected one or more large commercial jets.
4. CAA. Civil Aviation Publication 717, *Radar Control – Collision Avoidance Concepts: An Output of the Avoiding Action Working Group*. Jan. 31, 2005. This document said that air traffic controllers are trained to use the words “avoiding action” — requiring immediate action by the pilot to avoid the risk of collision — in radio communication with pilots whenever the controller realizes that the possibility of a serious loss of aircraft separation exists.
5. The U.K. Airprox Board defines airprox as “a situation in which, in the opinion of a pilot or controller, the distance between aircraft as well as their relative positions and speed have been such that the safety of the aircraft involved was or may have been compromised.”

Source: On Track: The General Aviation Airspace Infringements Web Site <www.flyontrack.co.uk>

radar [transponder] codes available, and careful management of the U.K. code-assignment plan must recognize global code-assignment pressures. Most ATC units have a set of codes allocated to them, some of which are used solely for transit services to aircraft or for local [aircraft-]conspicuity purposes. Pilots are encouraged to make proper use of these [transponder codes], the national conspicuity codes and Mode C”;

- The report said that lower-airspace radar services and control zone-crossing procedures are not fully understood by many general aviation pilots. In response, the working group said, “Pilots [operating under VFR]

should be aware that ATC may be busy when they call them and that the instruction ‘stand by’ means just that. It is not an ATC clearance, neither is it a precursor to a clearance. Normally, requests for clearances will be dealt with in the order in which they are received and issued according to the traffic situation. Also, planned routes through controlled airspace may appear simple on a chart but traffic patterns (and the density of traffic within that airspace) may make a planned route unrealistic in practice. Therefore, pilots should be prepared for a crossing clearance that does not exactly match a planned route but will permit safe transit of the airspace concerned”;

- The report said that pilots experience problems with VFR chart presentation and clarity. In response, the working group said, “The feasibility of incorporating visual reference point data into commercially available GPS [receiver on-line] databases is being investigated by the CAA. There is a risk that, after importing such data into a GPS unit, pilots may use the coordinate data as is, and directly overfly visual reference points rather than flying in reference to them”;

- The report said that conflicting advice exists for pilots on the practical use of transponders under VFR. In response, the working group said, “Pilots should be encouraged to operate secondary-surveillance radar [transponders] where fitted. The flight safety benefits of doing so outweigh perceived disadvantages. Mode C with Mode A enables controllers to determine the level of threat of an aircraft appearing within the lateral limits of controlled airspace but which in fact are operating beneath the controlled airspace, thus enhancing the degree of flight safety. ... In addition, use of Mode C greatly enhances the efficacy of airborne collision avoidance systems. The CAA recognizes the need for more publicity on transponder use and will consider how best to achieve this”;

- The report said that the current CAA enforcement/follow-up procedure for airspace infringements has been considered by general aviation pilots to be too aggressive and not helpful to safety. In response, the working group said, “The number of alleged [airspace] infringements that result in ... investigation/prosecution represents a very small proportion of reported infringements (e.g., in 2004, 10 percent were investigated, and approximately 2 percent were prosecuted). Investigations are normally initiated when the infringing aircraft has disrupted operations or the pilot has committed a gross navigational error. ... Most offenders are in fact dealt with by [a] formal caution, warning letter or advisory letter. ... The head of the Aviation Regulation Enforcement and Investigation Branch is responsible for identifying any safety issues and for alerting the appropriate Safety Regulation Group department so that appropriate action can be taken.”

The On Track report said that the following viewpoints also have been expressed by U.K. pilots and/or controllers:

- “Many infringements occur when an inexperienced pilot mistakenly assumes clearance to enter controlled airspace has been given simply by establishing contact with ATC, often at a late stage and very close to the airspace boundary;

- “Infringements ... were the result of misunderstanding the content of an aeronautical information circular or failing to read [a circular], particularly where temporary restricted airspace is established;

- “It is clear that many general aviation pilots use [GPS] equipment incorrectly and do not integrate GPS with their other navigational aids or map. There have been many examples of infringements where pilots have planned to fly a direct track using GPS, were not given clearance through controlled airspace and infringed while trying to re-route; and,

- “The use of an independent, open-forum style Web site ... to encourage free, direct discussion of infringement-reducing measures was universally viewed [by participating pilots and controllers] as a very significant, inclusive move forward.”

On the On Track Internet site, the General Aviation Safety Council said that most airspace infringements have occurred in southern England and can be attributed to the relatively

more congested skies and complex airspace structure. Collection of data on airspace infringements can be affected by aggressive/reliant reporting regimes at particular airfields, and the scale and pattern of airspace infringements can be affected temporarily by major air events involving large numbers of pilots flying under VFR, the council said. There are more than 8,000 U.K.-registered general aviation aircraft, and their exact rates of airspace infringement have not been calculated because accurate data are not available on general aviation hours flown/flights.²¹

“Investigations are normally initiated when the infringing aircraft has disrupted operations or the pilot has committed a gross navigational error.”

CAA Response Includes Free Navigation Aids

Other recent actions taken by CAA as part of the initiative to prevent airspace infringements include the following:

- The CAA Aeronautical Charts and Data Section in 2004 produced free online navigation aids to help pilots navigate under VFR through difficult areas of U.K. airspace where high levels of airspace infringements have been reported. The downloadable navigation aids are based on CAA’s 1:250,000-scale VFR chart series with some detail eliminated (e.g., height contours, forests and minor roads) but retaining motorways, rivers and railways. A color tint is applied to the boundaries of controlled airspace, with the appropriate height limitations also depicted in a color tint;²² and,

- Effective Nov. 11, 2004, the radio frequency 135.475 megahertz — called the Safetycom frequency — was

introduced in the United Kingdom for use at airports and airstrips with no assigned radio frequency for pilots operating under VFR. "If a frequency is published for an aerodrome, pilots of radio-equipped aircraft must use that frequency even during out-of-hours operations," CAA said.²³ "It is provided to help in avoiding potential collisions between aircraft by allowing pilots to broadcast their intentions for flight safety purposes. It is expected to be a busy frequency, used in many different locations, and it is particularly important that transmissions on Safetycom are concise and unambiguous and are not made beyond the height and range limits applying to the frequency. ... Pilots must also remember that there is no air traffic service associated with Safetycom and that use of the frequency does not confer any right of way or mean that they are receiving [an ATC] service."

Further recommendations on preventing airspace infringements in specific U.K. locations frequently have been published on the On Track Internet site by the moderator and by NATS air traffic controllers who regularly contribute information about current airspace-infringement issues.

For example, in the On Track forum discussion of an airspace infringement that occurred on Jan. 22, 2005, the moderator and air traffic controllers provided the following insights:

- "The growth of traffic at all the London airports in recent times has resulted in fewer opportunities to clear [pilots of VFR] aircraft through the [control] zones;
- "The mandatory carriage of [a traffic-alert and collision avoidance system (TCAS)] by public transport aircraft means that integrating VFR general aviation traffic is now not so flexible as before. Recent examples of [pilots of] VFR traffic taking their own visual separation against commercial aircraft and the subsequent TCAS resolution advisories [RAs] received by the larger aircraft [crews] are good examples. Crews have no choice but to follow a TCAS RA, even if the conflicting aircraft is taking its own visual separation. The repositioning of an aircraft back onto the instrument landing system [approach] following a TCAS RA can add another 30 [nautical miles (56 kilometers) to the route of] an inbound aircraft;
- "The missed-approach altitude of most major London airfields is now 3,000 feet (for flight management system reasons) which, in turn, requires that more airspace be safeguarded in case of an instrument flight rules go-around. This again reduces the flexibility of the [ATC] service that can be offered to VFR general aviation [pilots] within controlled airspace; and,
- "Free-flow procedures for departures to improve airfield capacity and efficiency of airport movements

mean that airfield departure routes have to be constantly safeguarded, further reducing the ability [of ATC] to handle general aviation [aircraft] movements."

In summary, U.K. air traffic controllers will attempt to provide clearances whenever possible for pilots flying under VFR to cross through their respective control zones, but the pilots must consider this action as a "bonus" — not a guaranteed response — and be prepared to proceed by alternate routes without causing an airspace infringement, they said.♦

Notes

1. U.K. Civil Aviation Authority (CAA). *On Track – A Confidential Airspace Infringement Project*. CAA Paper 2003/5. July 11, 2003. On Track: The General Aviation Airspace Infringements Web Site. "Detailed Infringement Statistics." <www.flyontrack.co.uk>. The Internet site said that, based on CAA mandatory occurrence reports, U.K. airspace infringements attributable to general aviation aircraft comprised 70 percent to 75 percent of all the infringement-related reports from January 2000 to May 2004.
2. CAA. "CAA Proposes Strategic Review of U.K. General Aviation." News release, Aug. 3, 2005.
3. Alex Plant is head of economic policy and international aviation, Economic Regulation Group, CAA.
4. CAA. *On Track – A Confidential Airspace Infringement Project*.
5. Everett, Nigel. Moderator's comments posted on On Track: The General Aviation Airspace Infringements Web Site. May 2004.
6. The U.K. Airprox Board (UKAB) defines airprox as "a situation in which, in the opinion of a pilot or controller, the distance between aircraft as well as their relative positions and speed have been such that the safety of the aircraft involved was or may have been compromised."
7. Everett, Nigel. April 2004.
8. Everett, Nigel. December 2004.
9. CAA. *On Track – A Confidential Airspace Infringement Project*. "Detailed Infringement Statistics." Mandatory occurrence reports are submitted in accordance with Civil Aviation Publication 382, *The Mandatory Occurrence Reporting Scheme*.
10. In the terminology of the UKAB, risk-bearing airprox means that an actual risk of collision existed or that the safety of the aircraft was compromised.
11. UKAB. *Twelfth Report by the U.K. Airprox Board: Analysis of Airprox in U.K. Airspace (January 2004 to June 2004)*. *Thirteenth Report by the U.K. Airprox Board: Analysis of Airprox in U.K. Airspace (July 2004 to December 2004)*. The following risk categories have been adopted at the international level: A – risk of collision (an actual risk of collision existed); B – safety not assured (the safety of the aircraft was compromised); C – no risk of collision (no risk of collision existed); and D – risk not

determined (insufficient information was available to determine the risk involved, or inconclusive or conflicting facts precluded such determination).

12. CAA. "U.K. Airprox Board Publishes Twelfth Report." News release, April 19, 2005. "U.K. Airprox Board Publishes Thirteenth Report." News release, July 26, 2005.
13. UKAB. *Twelfth Report by the U.K. Airprox Board: Analysis of Airprox in U.K. Airspace (January 2004 to June 2004)*.
14. UKAB. *Thirteenth Report by the U.K. Airprox Board: Analysis of Airprox in U.K. Airspace (July 2004 to December 2004)*.
15. CAA. "U.K. Airprox Board Publishes Thirteenth Report."
16. CAA. "U.K. Airprox Board Publishes Twelfth Report."
17. CAA. "First Proposals to Reduce Airspace Infringements Published." News release. Nov. 9, 2004.
18. Ibid.
19. Ibid.
20. CAA. "CAA Seeks Views on Air Traffic Services Outside Controlled Airspace (ATSOCAS)." News release, May 16, 2005. CAA said that Phase 1 of its review of air traffic services outside controlled airspace (ATSOCAS) was completed in November 2004. "[The

review] confirmed there was no common level of understanding between pilots and air traffic controllers regarding their individual responsibilities and the differences between the air traffic services available," CAA said. "The review concluded that a revised ATSOCAS scheme, based primarily on pilots' needs, should be developed. Phase 2 of the ATSOCAS Review was launched [in May 2005] with the release of a consultation paper ... aimed at all commercial, general aviation and military aircrew. A future phase will address the air navigation service provider's perspective."

21. On Track: The General Aviation Airspace Infringements Web Site. "Infringement Statistics."
22. On Track: The General Aviation Airspace Infringements Web Site. The on-line navigation aids are not to be used for navigation but are meant as an aid to primary visual flight rules navigation, CAA said. The U.K. Air Navigation Order requires pilots to carry a current approved chart. The On Track Internet site also provides aerial photography within the navigation-aid files solely for the purpose of assisting pilots in understanding the limits of restricted/controlled airspace and identifying visual reference points. The disclaimer for the navigation aids says, "The CAA, while exercising great care in the compilation of these charts and associated information, will not be responsible for the adequacy or accuracy of their contents, or for any omissions therein."
23. CAA. "CAA Introduces New Safetycom Radio Frequency." News release, Oct. 5, 2004. "CAA Seeks Views From Pilots On Safetycom Frequency." News release, July 15, 2005.

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