CLOSE ENCOUNTERS OF THE LEGAL KIND: A NEED FOR AIRSPACE CHANGE?

Encounters between visual flight rules and instrument flight rules aircraft in Class E airspace have long been a source of concern in air traffic management. In this article, **Marc Baumgartner** describes three 'legal encounters' with collision risk, suggesting that airspace classification may need to be reorganised, especially to help deal with future threats to safety.

KEY POINTS

- **In Class E airspace, air traffic controllers shall not provide any separation between VFR and IFR traffic, while traffic information shall be provided as far as practicable.**

- **Controllers may work according the rules and yet serious mid-air collision risks remain.**

- **ATC, airspace users and the national supervisory authority do not necessarily share the same risk perception.**

- **New challenges to ATM may force a reconsideration of airspace classification.**

In a European lower airspace, IFR traffic in out of busy regional airports can be problematic where a portion of the arrival and departure routes are in class E airspace. In airspace E, air traffic controllers shall not provide any separation between VFR and IFR traffic. Traffic information shall be provided as far as practicable. There is no obligation for the VFR traffic in airspace E to provide information.

Here are three examples that illustrate why this is a problem.

Table 1: Airspace classes

Class	Controlled	IFR	SVFR	VFR	ATC Clearance	Separation	Traffic information
A	Controlled	Yes	No	No	Required	Provided for all flights	N/A
B	Controlled	Yes	Yes	Yes	Required	Provided for all flights	N/A
C	Controlled	Yes	Yes	Yes	Required	Provided for all IFR/SVFR to IFR/SVFR/VFR	Provided for all VFR
D	Controlled	Yes	Yes	Yes	Required	Provided for IFR/SVFR to other IFR/SVFR	Provided for all IFR and VFR
E	Controlled	Yes	Yes	Yes	Required for IFR and SVFR	Provided for IFR/SVFR to other IFR/SVFR	Provided for all IFR and VFR flights where possible
F	Uncontrolled	Yes	No	Yes	Advisory only	Provided for IFR/SVFR to other IFR/SVFR where possible	Provided where possible if requested
G	Uncontrolled	Yes	No	Yes	Not provided	Not provided	Provided where possible if requested

Case A

A small twin-engine aircraft flies in airspace E at flight level (FL) 90 under IFR Rules and under control with the sector. (Airspace E starts at FL 105 and below.) Approaching the handover point, where the controller transfers the pilot to the approach frequency of the destination airport, the controllers observe a VFR radar return squawking 7000, climbing opposite the IFR traffic. The VFR pilot calls the Flight Information Service, which provides him with a code in order to inform him about the IFR traffic on an opposite track. The air traffic controller informs the IFR pilot about the observed traffic with unknown intention. Several transmissions and coordination between the Flight Information Service and the coordinator of the en-route sector take place. The short-term conflict alert at the en-route sector triggers a visual and an audio alert. In the end, the IFR pilot decides to turn away from the VFR traffic. The air traffic controller is only allowed to give traffic information and cannot give avoiding instructions to the IFR traffic, as the ATCO's instructions could lead to a collision with an unknown traffic. The nearest miss-distance is less than 1NM and a few feet.

Case B

An IFR departure from a regional airport in a mountainous area is announced by the regional airport tower controller by phone to the en-route sector. This coordination is accepted by the en-route sector. A few moments later, a target squawking 7000 is observed at FL125 climbing (at this point Class E airspace goes until FL 145). At first call the Citation Jet (IFR departure) calls on the en-route sector frequency and announces a TCAS descent. But the Citation pilot also has a ground proximity warning, as he is in a valley and decides to avoid the traffic visually. As soon as the aircraft correlates the code and callsign, the short-term conflict alert at the en-route sector triggers an audio and visual alarm. The closest miss distance is less than 1NM and a few hundred feet.

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Case C

An IFR aircraft is routing inbound to a regional airport. The pilot reports on the frequency of the approach controller, and files an air safety report as it avoided a glider by a few metres.

All of these encounters are labelled as a 'legal encounter'. Everybody (except the IFR pilot in Case A – by choosing to turn away from the opposite traffic – which saved the day for everybody) has worked according the book and yet in all cases there were serious mid-air collision risks.

The controllers involved in these legal encounters have made reports and have asked for an immediate airspace re-classification or a change in procedure, or both. However, airspace users or the national supervisory authority do not necessarily share this risk perception. On the one hand, the aviation community lacks sufficient awareness of the services, roles and responsibilities applicable in Class E airspace. As one example, surveys have shown that most cockpit crews, operating under IFR, expect that air traffic control is responsible for providing separation with regard to any other traffic. On the other hand, to re-classify an airspace induces changes in perceived

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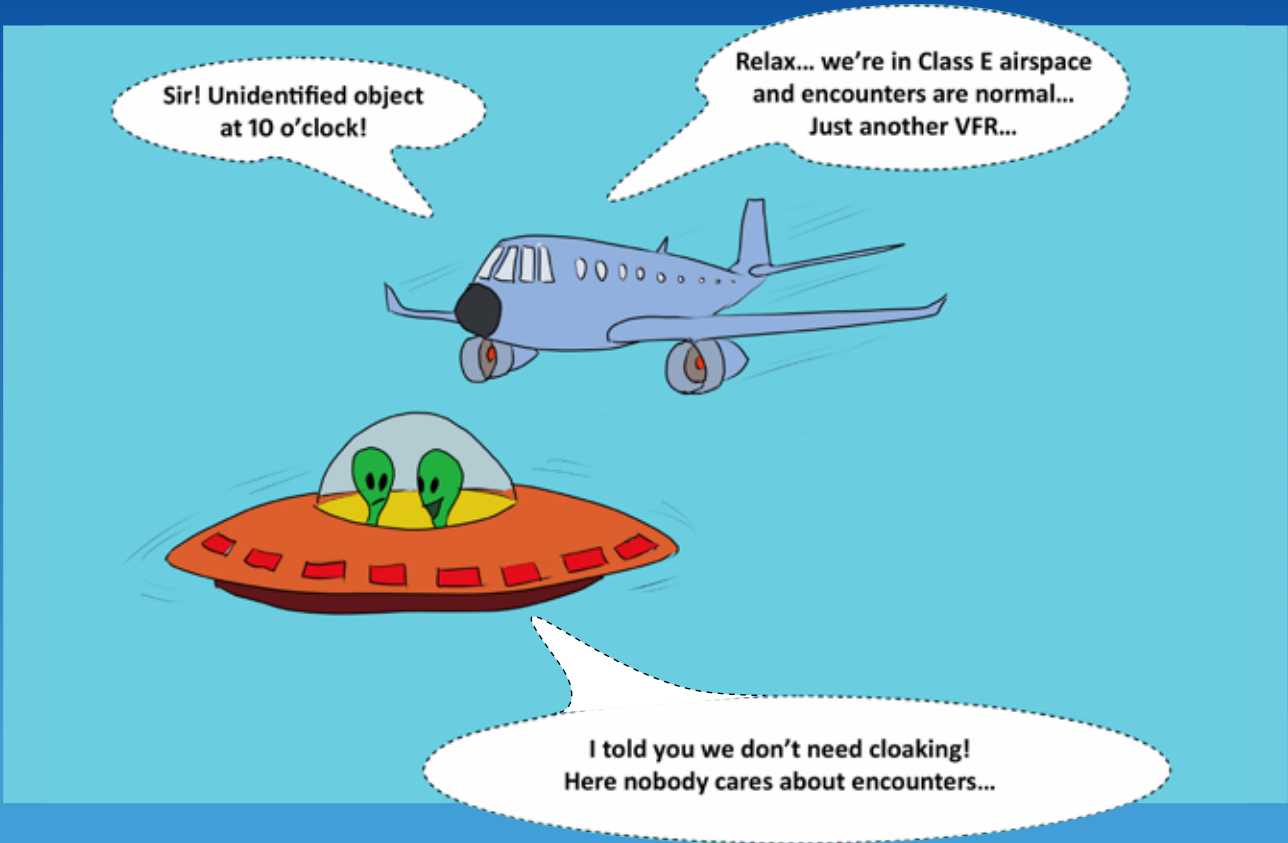
responsibilities and in the perceived degrees of freedom for controllers and pilots. The national supervisory authority is obliged to consider the complete set of stakeholders needs. Consequently, the national supervisory authority has until today not reclassified, but has promised to address these risks in an ongoing aviation infrastructure review project.

This illustrates why it is important to address air traffic management issues in a structured way as the Global ATM Concept of ICAO calls the layer of conflict management. The Global ATM Concept of ICAO explains the three different layers of conflict management.

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Conflict management will consist of three layers: strategic conflict management through airspace organization and management, demand and capacity balancing, and traffic synchronization; separation provision; and collision avoidance.

The airspace structure in the described cases is weak as it relies (when taking the ICAO conflict management approach) on the collision avoidance level to solve a problem which cannot be solved at a strategical level, due to political issues around the access to airspace by various users.

The controllers are wary and pay particular attention when clearing IFR aircraft into Class E airspace. Controllers mention to the pilots that they are entering airspace Echo and that they are possibly encountering unknown VFR traffic. From a duty of care point of view, legal encounters may be legally problematic and might be judged as a wilful act. Complicating matters in these specific situations is the fact that the VFR traffic are squawking 7000. This makes them potentially visible, though

suppressed by the radar processor in order to avoid cluttering of the radar picture, and not necessarily in contact with the controllers.

So the problem and the need for change has been identified, but how will it be resolved? While the described problem is based on a local experience, the issue of airspace classification has been known for decades as a thorny issue, in particular with the opening up of new regional airports and the feeder routes into these airports. Addressing the issue at national level would provide some space to breathe for ATCOs in the described cases. But reopening the work carried out at ECAC level a decade ago on airspace classification may have to be organised soon in order to cope with the new challenges the drone industry will bring to ATM.

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