# Airspace infringement:
## sudden & unexpected

**By Nikolay Iotchev, BULATSA**

Rather than look at how airspace infringement (AI) affects the controller's job – safety, workload, capacity, etc. – I will instead illustrate by examples some of the types of AI which our ANSP experiences. It may be that your 'usual' experience of AI differed from ours.

If so, some of our AI types may not be so common and might be a surprise if they were to happen to you. So now you can read about them first, and if you do experience them in the future, then you will have 'seen them before' here!
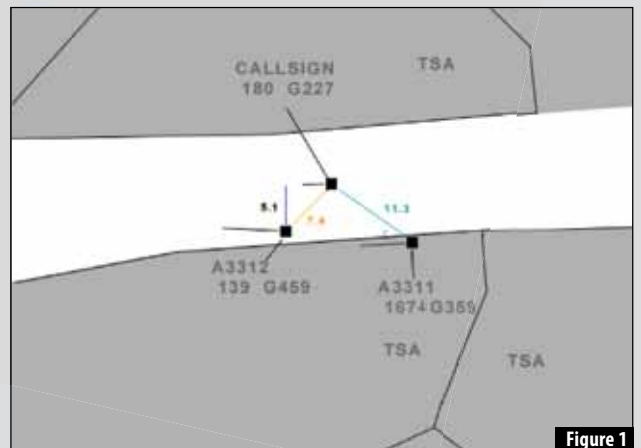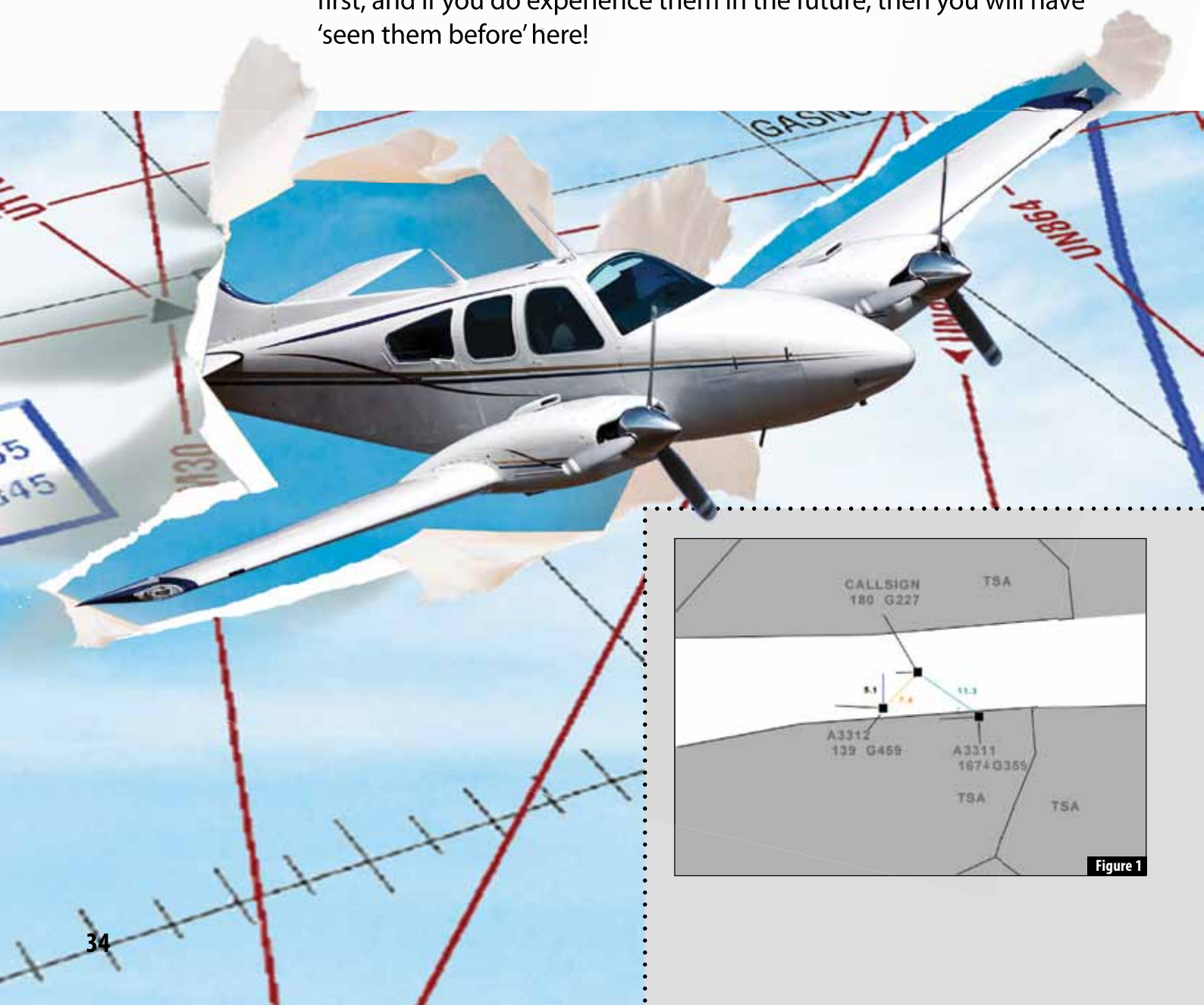

Figure 1

We controllers like to think that pilots infringe airspace and that we are there to help them not to. Why is that? Because we do our best to keep the traffic under our control from entering unauthorised airspace in the form of temporary segregated areas (TSAs), danger areas (DAs), prohibited areas (PAs) and restricted areas.

To help us in our task, our ANSP provides us with area proximity warning (APW), which is fully integrated in our radar system. Does it help us to succeed every time? Not really.

Our APW works by warning the controller when their own traffic is about to enter a TSA or other restricted airspace rather than the other way around. Up to now, however, it does not warn a controller when traffic not being controlled by our unit enters our controlled airspace. Most of the time for us, such intruders are military aircraft from the national air force. Because there is no radio contact, their behaviour is unpredictable and poses a danger if there is civil traffic nearby. What separation should our controllers aim to apply when this happens?

> ## Our APW works by warning the controller when their own traffic is about to enter a TSA or other restricted airspace rather than the other way around.

We have a regulation which stipulates the separation minima between controlled traffic in terms of the minimum horizontal or vertical distance but does not and cannot lay down any rule for infringements, so we must 'do our best' to achieve safe separation even if it turns out to be less than it would be if both aircraft were under our control.
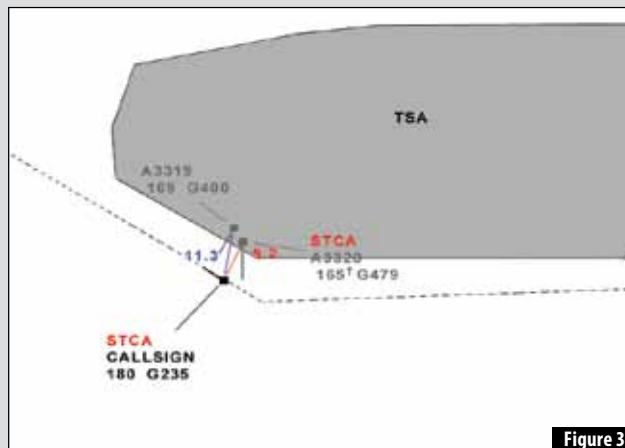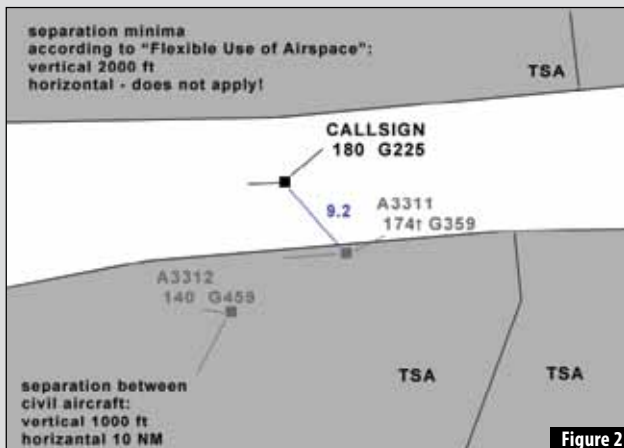
Our situation is made worse by the fact of airspace designation. TSA horizontal boundaries come as close as 6 miles to controlled airspace used as civil air routes. Until recently, we were

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required to maintain a minimum horizontal separation of 10 miles between civil aircraft under our control below FL245, which meant that it was possible to have less separation than this between a civil aircraft in the airway and a manoeuvring military aircraft in a TSA without needing an AI to occur! Have a look at Figures 1 and 2.

However, since March 2010 we now apply only a 5-mile minimum horizontal separation above FL095, so this particular dichotomy in separation standards has been 'fixed'. See Figure 3.



**Figure 2**



**Figure 3**

Airspace infringement: sudden & unexpected (cont'd)

# LET US LOOK AT SOME MORE EXAMPLES OF AIs FROM OUR EXPERIENCE:

## Controlled civil aircraft enters TSA or a danger, prohibited or restricted area

A summer day with a lot of big Cb build-ups making tracking the airway centre-line difficult for civil traffic leads to lots of requests for deviation.

Poor communication between two sectors on transfer meant that the transferring sector was unaware that deviation requests were likely ahead and agreed with the military authorities the activation of a TSA requiring a minimum overflight altitude of FL250 when the traffic being released was at only FL200. A transfer to the wrong frequency was then inadvertently given - thus wasting precious time - and as a result a passenger aircraft entered an active danger area at FL200 with neither the (correct) receiving sector or the aircraft being aware of its existence. APW, although activated, provided no practical help. See Figures 4 and 5.


Figure 4


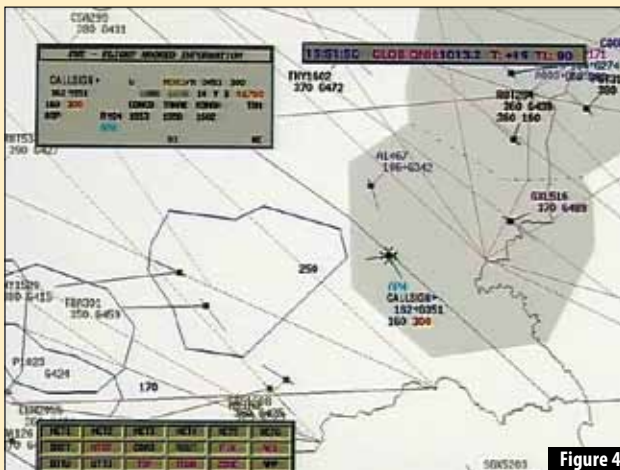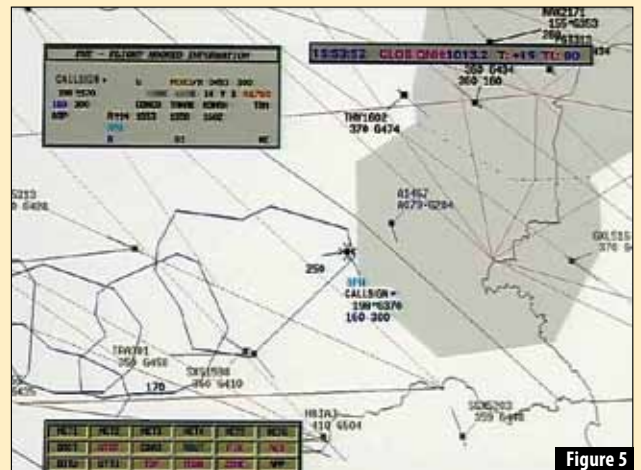Figure 5

## Military aircraft working in a TSA enters nearby airway horizontally without clearance

This is relatively easy to see coming if a careful watch is kept on the TSA boundary and returns (radar symbols) from military traffic near the edge of it - it is relatively easy to see when a military aircraft has left the TSA even though we have no APW protection.
See Figures 6 and 7.


Figure 6

## Military aircraft working in a TSA enters nearby airway from above without clearance

A breach of an upper boundary is much harder to detect than a horizontal breach. Loss of separation is a real risk. See Figure 8.



Figure 8



Figure 7

## A totally unexpected intruder

Unlike military aircraft, where the potential for an incursion is known to exist whenever they can be seen manoeuvring nearby, we sometimes see primary returns entering our airspace not only with no radio contact and unknown intentions but also with no SSR return. This type is scary. You know that an aircraft is in 'the vicinity' but you do not know exactly where. We controllers do not like uncertainty, we want to be sure, and in this case, the only way to do this is to try and create an outsized safety buffer in case the intruder actually is in our airspace, at whatever altitude. See Figure 9.



Figure 9

Perhaps it is usually different for you, but we often have our most difficult times during the summer at peak traffic periods when the weather is good enough for our military friends to have planned all their exercises, and perhaps good enough too to encourage a GA pilot from one of our neighbouring countries to visit.



Figure 10