

Mode S Transponders

This is an issue related to regulation and imposition of new rules by the unelected European body, the Joint Aviation Authority (JAA.)

For many years most aircraft have carried a transponder which is a radio capable of being interrogated by ground based radar, and enables Air Traffic Control to identify position, altitude and a unique code for each aircraft. These are known as either Mode A or Mode C transponders. The technology is limited, however, and renewal of this was required, at least for commercial air traffic operating in airways and in the Terminal Manoeuvring Areas (TMAs) which act as junctions for the airways. New technology has become available which allows a much greater level of data interchange between aeroplanes and air traffic. This is known as the Mode S transponder.

The problem lies not with the technology but with the method of implementation. Few would disagree that the new technology should be mandatory in the most heavily used areas of airspace. For those operating multi million pound aeroplanes, whether a 747 or a corporate executive in a LearJet, the cost of the technology (which starts at £5,000 and goes on upwards) is an insignificant proportion of the value of the plane. And the technology has the potential to significantly reduce ATC delays and to enhance safety.

However, the JAA is insisting that from January 2003 this technology is fitted to everything that flies, from a 747 arriving at Heathrow to a light plane flying into a small field like that at Fishburn, and – even more bizarrely – from a Glider operating from Sutton Bank to a parachutist jumping out of a plane for charity above Shotton Colliery. (Remember neither the glider or the parachutist have an integral power supply on board.) The CAA has made a concession for the UK, and delayed implementation by two years until 2005 for Instrument Traffic, and, I believe, 2008 for Visual Air Traffic. But this still imposes a huge cost burden – a £5,000 transponder would represent more than a fifth of the value of a typical aeroplane kept at Fishburn airfield. Not only this, but this situation is even more absurd for three reasons.

Firstly the transponder is only any use where an Air Traffic Service is being provided: ie where there is someone actually looking at the trace that the equipment produces on a radar screen. In considerable tracts of UK airspace there is no obligation to use a radar service, and in many areas even if one wanted to use a radar service, one is not provided. So we are likely to be forced to spend a considerable amount of money on equipment which may never be any use to anyone. This is akin to insisting that every cyclist had an HGV tachometer, even if they only ever cycle on bridle paths.

Secondly, despite the requirement to have the equipment by 2005, National Air Traffic Services currently only has one radar head in the whole country which is capable of interrogating a Mode S transponder. We will be “all dressed up with nowhere to go.” At present the equipping of GA aircraft, gliders, microlighters, parascenders and parachutists with these devices will be almost entirely pointless since they will offer ATC no extra functionality whatsoever.

Thirdly, I understand that the team of people implementing this at the Directorate of Airspace Policy section of the CAA is entirely military or ex-military. I have no question or doubt about the staff's professionalism, but they all come from a background where to a large extent money is no object: and in all cases when they were with the MoD they were spending someone else's money. Their ability to consider the extent to which this will impact on the more cash conscious end of civilian aviation must therefore be compromised.

Fourthly, even in Controlled Airspace where an Air Traffic Controller would be looking at the trace produced by the Mode S transponder, the additional information that a light plane's transponder will provide is minimal, since it will not be linked into the sophisticated electronic systems carried by more expensive aircraft. This is simply because the lighter aeroplanes do not have flight management computers, electronic autopilots and so on. The only increase in functionality the controller will have from a typical Mode S equipped light plane is a greater range of unique codes which can be allocated to the flight.

Finally, this technology (Mode S) has been around for over 10 years, and may well be superseded before 2010 by a different technology called ADS-B. Thus Mode S could be redundant in less than ten years: akin to forcing everyone to change to digital terrestrial television now, only to cease broadcasting on terrestrial channels in favour of something else by 2010.

Thus the implementation of Mode S for flights outside airways and the TMAs is flawed and unnecessary, and should be opposed in favour of a more long term useful solution.