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Drones: closing airports

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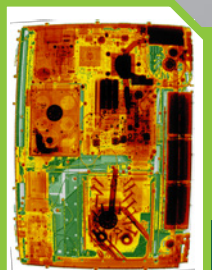
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DRONES: POSING A THREAT TO *ALL* AIRCRAFT

by Philip Baum

Christmas time is supposed to be the season of goodwill to all men, yet it has also, historically, been the period in which there have been a disturbing number of attacks against civil aviation. 21 December marked the 30th anniversary of the loss of Pan Am 103 over Lockerbie and it was also the date on which Richard Reid tried to board a flight in Paris with a bomb in his shoes; he did not manage to board due to concerns over his appearance and behaviour, only to return and board the flight the next day when, fortunately, he failed to ignite the fuse. And, of course, it was on Christmas Day itself that Umar Farouk Abdulmutallab attempted to destroy a Northwest flight en route from Amsterdam to Detroit with a bomb in his underpants. And there are many more examples.

Small wonder then that, when London Gatwick airport had to be closed due to there being multiple sightings of drones over a three-day period in the week leading up to Christmas, one of the concerns was that there had been a deliberate attempt to, at best, disrupt, or, worst-case, attack our civil aviation system. After all, the 1960s-80s were the hijacking era, the 80s to the noughties the bombing era and the last decade has seen authorities have to consider and respond to attacks against aircraft inflight, caused by laser strikes on aircraft cockpits, suicidal pilots (we think of Germanwings and, potentially, the cause of the still unsolved loss of MH370), cyber-related incidents, missiles (MH17)...and drones.

The aim of terrorism is to disrupt our daily lives, and that can be achieved whether or not an attack succeeds. Look at the impact of the liquid explosive plot as an example. And at London Gatwick; the net result of that week's incident was that tens of thousands of

passengers and crew had their Christmas travel plans disrupted, and many did not make it home for family festivities as the industry was already working at capacity at that time of year. If flights are cancelled, there is simply no space on other flights to accommodate all those who want travel.

It is estimated that 300,000 new drones are sold every month. There would have been an abundance of the latest must-have technological gadgets awaiting new owners beneath Christmas trees. The vast majority of users will pilot their aircraft – as that's what they are – responsibly and adhere to guidelines. Yet there are a disturbing number of incidents of misuse being reported. In the US, the Federal Aviation Administration received in excess of 100 reports per month of drone sightings close to airports and “eleven events involving aircraft having to be manoeuvred out of the way of a drone.” Also in December, an Aeromexico B-737, arriving in Tijuana from Guadalajara, was seemingly hit by a drone and the images (see Air Watch) show just how close a call that flight had with meeting a catastrophic end. Most pilots believe that it's not a question of if, but when, an aircraft will meet its demise as a result of a drone incident.

Pilots can manoeuvre their way around drones – if they see them in time. But drones are comparatively small and, given the speed at which aircraft fly, there are no guarantees that this will be the case. And whilst they may be small, they are still predominantly constructed out of metallic products. The industry has enough of a problem with bird strikes causing damage to, and failure of, engines. In New York, it is estimated that the authorities kill thousands of birds every year in order to safeguard aircraft from these metal-free organic hazards. Illustrating the threat, one only has to look at the crash of the US Airways flight into the Hudson River when, it is believed, a flock of Canadian geese caused the loss of both engines. Imagine the impact of a drone swarm.

The British Airline Pilots Association is asking the UK government to toughen

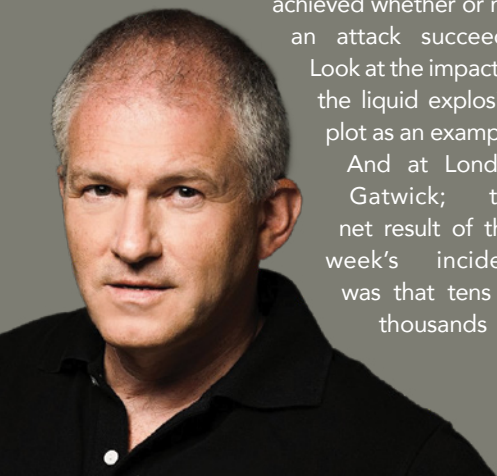
the penalties for drone misuse, abuse and acts of foolhardiness, and “to create a larger no-fly zone around airports.” I agree, but whilst sentencing and no-fly zones might help prevent hobbyists using drones irresponsibly, they do not address the threat posed by those who intend to target aviation and who care little for what the user guidelines or penalties are.

In 2018, we had the attempted assassination of the Venezuelan president in a drone attack and, in Yemen, we have had Houthi rebels targeting Saudi facilities using drones. In the UK, the security services are using drones to effect better surveillance, but, internationally, the fear is that the more the military and police use the technology, the greater the likelihood of them falling into the hands of those with malicious intent. After all, we only have to look at the original source of weaponry used against our forces in Afghanistan and Iraq.

On the surface, one might consider the primary threat to be the more sophisticated fully-autonomous drones with their ability to hit their targets with millimetre precision and change course depending on the target's movement and weather conditions. In the wrong hands, they are something to fear, but of greater concern is the huge proliferation of semi-autonomous drones which can be remotely piloted via GPS towards their target. There are also what are known as ‘dumb bombs’ – available to buy for around £200 – where the drone can be piloted by an operator close by. The fear is not only the damage the drone itself can cause to an aircraft, but also what that drone might carry as its payload.

Detonating even a small explosive charge next to an aircraft could have disastrous results, but, even if it fails to destroy it, the climate of fear it would create would be regarded by a terrorist organisation as a success. On the ground, there is understandable concern that drones might be used to target airports, or indeed any location, carrying chemical or biological weaponry.

The ease of access to drones, and their comparative low cost, has made them an attractive tool for terrorist groups.



In the same way that we have seen terrorists use vehicles to plough their way into groups of innocent pedestrians, worshippers, revellers and shoppers, so too we are exposed to the risk of people, who may not be suicidal themselves, opting to attack from the skies remotely.

For aviation, we have to consider what can be put in place as a defence. The first challenge is that of detection, and the second is the way in which we intervene when a potential threat is identified.

For detection, our eyes and ears are, as always, not to be discounted, but there is also a range of acoustic, infrared and electro-optical measures on the market. Other vendors, in this rapidly expanding marketplace, are investing their research into a focus on countermeasures. Some of these are high-tech in nature – jamming and spoofing – whilst others are the more visible, traditional solutions. Trials are underway on the use of counter-drones, which can intercept rogue intruders into restricted airspace, falcons (and other birds) which can be trained to fly out and grab an unwelcome drone, and various canon systems that can fire anything from missiles to water.

There's little doubt that the threat posed by drones is taxing the authorities and concerning pilots, but we must ensure that we do not over-react. There will be incidents, such as the number of drones in circulation but there are also car incidents, and far more of them on the roads, so before you cave in and avoid taking to the skies, do remember that aviation remains the safest form of transport.

Or at least civil aviation is. General aviation still has inherent risks and people prepared to take them. On 21 January this year it would appear that the Emiliano Sala took such a risk when he commissioned the pilot of a Piper PA-46 Malibu to fly him from Nantes to Cardiff following his transfer between French and Welsh football clubs. It was a freezing, dark winter's night and many within the industry considered it foolhardy to fly a single-engine aircraft across the English Channel in windy conditions. Any problem would lead to a ditching and, in such conditions, survival would be unlikely. As fate would have it, the pilot did have to request permission to descend from 5,000 feet to 2,300 feet, whilst Sala himself was sending WhatsApp voicemails indicating

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the severity of the situation they found themselves in. Soon after, all contact with the aircraft was lost and Sala never realised his dream of playing in the English Premier League. Cardiff City FC supporters were to mourn the player they never saw play.

Drone incidents, as we have also witnessed in places as far afield as Queenstown and Newark since the Gatwick shutdown, are responded to with an abundance of caution and rightly so. Whilst general aviation does not carry the passenger loads that commercial aviation does, it must also become more risk averse. In the same way that commercial aviation is developing SeMS (security) programmes following the success of SMS (safety) ones, general aviation must also better respond to the emerging security threats facing the aviation industry as a whole. All aircraft face the threat of drones but none more so than those in the general aviation space. ■

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