Picture credit: US Dept. of Defense

SNIFFING OUT TROUBLE

Mark Rutherford *reports on the growing importance of explosion detection dogs in airport security*

We tend to assume that technological advancement is always the way forward; just the thing to keep us happier, healthier and safer. When considering the aviation security space, are advancements in scanning tech, facial recognition software and the wider internet of things what will keep passengers and air cargo safest from today's sophisticated threats?

While advanced technologies are welcome innovations in safety and security, staying steps ahead of threats to the public and critical infrastructure, sometimes a combined approach is required. This requires a fuller overview of all threats, not just those at the more advanced end of the spectrum. The increased instances of 'low-tech terror' have proven that those wishing to do harm will resort to tactics that circumvent high-tech security systems by employing methods considered so old-fashioned or out of date that advanced systems cannot monitor for or anticipate them.

Some methodologies combine knowledge of both low-tech and high-tech approaches, such as the potential for terrorist organisations to hide explosives and explosive components inside consumer electronics like laptop computers in order to bypass some scanning technologies. There is perhaps one countermeasure that such threats cannot effectively contend with; natural instincts. The use of dogs to detect explosive threats is well established internationally in the aviation, air cargo and logistics fields. Detection dogs (DDs), explosives dogs (EDs), explosives detection dogs (EDDs), free running explosives detection dogs (FREDDs); call them what you like, they're teams of specially trained dogs and handlers working effectively to detect explosives in an aviation security (AvSec) environment.

It is widely expected that specially trained canines will be used in even wider screening roles in the future

Until very recently, FREDDs were not a widespread method of screening within UK AvSec. It is, however, something that has been explored here before. The deaths of 270 people in the tragic 1988 incident where Pan Am Flight 103 exploded over Scotland, widely known as the Lockerbie bombing, led to new research into the effectiveness of dogs in the detection explosives. The UK's Department for Transport (DfT) and Ministry of Defence Science and Technology Laboratories (Dstl) began to assess and provide a solution whereby dogs could be employed to detect explosives hidden inside air cargo consignments.

TRACK AND TRACE

The scale of this logistical venture presented a problem. It was not seen to be practical to open hundreds of packages in order to check for explosive threats, so a process of Remote Explosives Scent Tracing, known as REST, was developed. By the late eighties, REST was being trialled in airport environments, and by 2001 it was renamed RASCO or Remote Air Sampling for Canine Olfaction. Samples of air were extracted from the target source, in this case a consignment of goods, and presented to the RASCO dog. If the dog reacted to the sample presented, this would indicate to its handler that the sample contained an explosive trace.

While this seemed an effective and straightforward solution, in 2014 (with very little prior notice) the UK Government withdrew the licences of all dog handling companies in the UK. Internationally it was rumoured that the DfT was responsible for RASCO being withdrawn as a screening method entirely. This proved untrue, though a conclusion had been reached that the dogs were either not always working when they should have been or could not effectively detect the range of explosives the UK Government had specific security concerns around. Inevitably, the potential likelihood of an attack, coupled with this known vulnerability, meant the risks were too high to continue operating RASCO and licences were revoked.

Dog handling companies came to realise that regaining a licence would be cost prohibitive and that the Government needed to redefine how dogs were to be trained and certified. Most importantly, questions arose on the best way to quality assure (QA) their training and performance to ensure that dogs were working consistently and able to detect explosives traces across the list of known threats. During a period where all other states continued to authorise the use of dogs to detect explosives, the UK did not, leaving a three-year period where dogs were unable to be used within aviation security.

In 2017, FREDDs once again became available to support security screening and safety within the AvSec space. New and unique measures have been put in place to ensure that FREDDs are trained, certified and quality assured to the highest standards.

FREDDs undergo an intensive 12-month training programme, and each FREDD can only be licenced to work alongside one specific handler (each handler can be licenced for up to two FREDDs, maximum), ensuring a close working bond and a great degree of control and efficiency. The list of explosive threats that the dogs are required to detect is a closely guarded secret and is under constant review and amendment, but if a prospective FREDD is unable to detect every single threat on the list they will not be licenced. Similarly, if the handler is unable to get their FREDD to perform consistently when detecting explosives, they will also not be licenced.

Previously, certification of FREDDs was the responsibility of the DfT and Dstl, but it has recently transferred to Redline Assured Security, working under the authority of the Civil Aviation Authority (CAA). All companies looking to provide AvSec explosive detection dog services within the UK are able to seek guidance from both Redline and the CAA, before and throughout the training and certification process.

THE LIST OF EXPLOSIVE THREATS THE DOGS ARE REQUIRED TO DETECT IS A CLOSELY GUARDED SECRET

Even with high-quality, rigorous training and a reliable certification process, security screening is a high-pressure job, and FREDD handlers are under intensive scrutiny to keep air cargo and aviation security operations flowing smoothly and safely. A QA framework that guarantees that FREDDs are capable of detecting the required range of explosives and will perform this function consistently as and when expected is essential. Subjecting FREDDs to a calibration test (much as you would calibrate any other piece of security screening equipment) prior to working is key to ensuring the dog is fit to commence operational duties. More stringent and comprehensive QA assessments should be undertaken in various training and working environments to make sure each FREDD remains capable of screening effectively, no matter what the potential distractions are, and can detect threats across the full list of explosives. The UK Government has committed to the need for a thorough process that safeguards the air cargo industry and the wider travelling public; this QA remit now falls to Redline to be consistently and properly executed.

MAN'S BEST FREDD

With the use of FREDDs now fairly quotidian within the UK, providers are beginning to provide dog and handler teams for certification and QA, and considerations for the future are the next logical step. While FREDDs are pivotal in a role that screens and protects air cargo, questions surround their inevitable use in the wider context of passenger and airport security.

Despite these uncertainties, the UK Government has now forged ahead and unequivocally set the bar for the international community to ensure that the use of FREDDs to detect explosives destined for air travel

is effective. There is no doubt that the application of FREDDs will be expanded to other areas of the aviation industry to further guarantee the safety of the travelling public, such as the screening of hold baggage or even the searching of aircraft before take-off.

THE LOCKERBIE BOMBING LED TO RESEARCH INTO THE SUCCESS OF DOGS DETECTING EXPLOSIVES

Although primarily focused on explosive threat detection 'behind the scenes', a substantial benefit of employing FREDDs in a wider security context is humanising (or rather, perhaps, 'doggyising') the conversation around AvSec for the public. People will always respond to, and connect with, stories of working animals much better than they will with new scanning technologies, no matter how impressive or advanced. Seeing FREDDs at work and engaging with media stories about their use gets people talking about AvSec and how we're working to keep people safe.

Indeed, we may see specially trained canines used in even wider screening roles in the future, as studies progress into whether dogs can be used to detect COVID-19 and other viral health hazards that could impact how, and how safely, people travel.

Regardless of their future applications, in the UK more so than other nations there exists a greater caution around the use of explosive detection dogs, which has been reflected by the three-year suspension of their use. As FREDDs begin to get to work, with eyes and noses fixed firmly on the future, the need for a stringent and combined programme of training, certification and ongoing QA has never been greater. As their use and successes see FREDDs expand outside of their current role in the air cargo space, new protocols will be written, certification processes approved and stringent QA frameworks put in place. Redline will be working closely with the UK Government and dog handling teams to help develop these, integrating the ongoing need for adaptability, for intuitiveness and for an intelligent solution to the challenges we face. As a well-trained FREDD adapts to new challenges, so too will those ensuring that they operate to the highest standards doggedly keep pace ●

Mark Rutherford is Business Director at Redline Assured Security, where his focus is on delivering a wide range of technically integrated solutions to complex and challenging problems worldwide.

The need for a stringent and combined programme of training has never been greater

Picture credit: US Dept. of Defense