

Brian O'Shea looks at the current generation of bomb blankets coming out of the cupboard

Comfort blanket

In the "golf bag" of EOD preparedness there are few clubs as old and well loved as the bomb blanket. Much like the sand wedge, it has its place – we all know what it is for, and while other, sexier woods and irons have appeared like electronic counter measures (ECMs), unmanned ground vehicles (UGVs) and bomb suit, its simplicity, cost and effectiveness means there is little to beat the bomb blanket. Bomb blankets are effectively layers of tough aramid material that will stiffle as much of the blast and fragments as possible, yet the only constant in life is change and two companies have taken different approaches to the "old faithful" and tried to make it more 21st Century.

A clever take on an old puzzle

A new company, Kirintec (A Kirin being a mythical Chinese creature said to appear in conjunction with a sage – thanks Wikipedia!) has come up with a new bomb blanket that has an active ECM device built into it, called Rebus (a pictogram puzzle). The concept is that the closer the ECM is to the improvised explosive device the less power is needed to block out the signal – as you are effectively interposing between device and detonator – and the closest you can get to the device is to cover it. Yet one of the reasons that bomb blankets have remained in the golf bag is the fact that they are easy to use and cheap, two things that are never included in the same sentence as ECM. So are Kirintec effectively creating a highly specialised product? Not according to Roy Peers-Smith, Managing Director of Kirintec. "It is easy to think of it as a bomb blanket with an ECM system built into it, but it is better to think of it as an ECM system with a bomb blanket built into it," he said. "ECM systems are traditionally quite complex; they require technical back up, are specialist in nature and they need specialist teams to deploy them. The idea for Rebus came about to counter scenarios such as the 2004 Madrid bombings, where you have multiple devices deployed in an

environment where they are likely to cause a lot of harm. One may be discovered, or detonate, while you continue to find other suspect packages, and the response time for traditional ECM teams could be quite long – so we spotted an issue for first responders regarding what they do in that scenario. If you have a jamming device that doesn't need programming, and is simple to use and deploy, it provides a good stopgap between that and a full ECM or EOD team."

Yet one of the charms of the bomb blanket is that it provides a solution while you are waiting for better assets and teams to arrive – the last thing you want is to either have to spend ages setting up the ECM, or to have to pull a traditional bomb blanket off to replace it with this one. This is perhaps where Mr Peers-Smith's distinction of it being an ECM first and blanket second becomes important. Kirintec are foremost ECM manufacturers, and as such are more focused on making ECM effective. "The system is very simple to operate because it is pre-programmed to cover simultaneously all typical RCIED threats like GSM and 3G mobile phones, UHF and VHF walkie-talkies so there is no set up to consider," said Roy Peers-Smith. "One of the key considerations when using conventional ECM is the disruption to other parts of the spectrum, and in particular communications. Using ECM in airports is very tricky, for example, so a big part of Rebus' advantage is it is very low power, but is very effective in terms of the range of signals it can block simultaneously with focussed energy. Plus the blanket has a layer of electromagnetic screening material sewn into it which keeps the jamming signal contained underneath, so it can be low-power but concentrated on the device under the blanket. At the same time, the screening material stops that signal escaping, so you can still use your communication systems, mobile phones, etc, immediately adjacent to the Rebus blanket."

The blanket itself weighs 32lb, comes in 1.5 metre squares and offers V50 protection. "It is an integrated system," said Mr Peers-Smith. "The blanket has a special antenna which will only work with the Rebus control unit – a battery-powered box that comes with the system and is connected to the blanket through a lead to provide the jamming signals. The only control function is the ability to switch it on. There is a one-minute ramp up time to give you a chance to get out of harm's way and it brings up the signal slowly so there isn't a sudden jolt of RF energy that could trigger anything."

"Rebus is designed to counter that gap between first responder and full blown ECM/EOD. It won't fully replace that, but it is a cost-effective means of dealing with multiple suspected RCIEDs before that full team has a chance to respond. So it has a part to play and is an economic way for users who don't have a complex response infrastructure or a full-blown ECM capability to provide a good level of protection," he concluded.

Warm and snugly

While Rebus is designed to defeat the traditional threat posed by IEDs, Radiation Shield Technologies (RST) are working on a bomb blanket designed specifically for the threat beloved of politicians and media pundits – the "dirty" bomb. The major threat from a dirty bomb is not necessarily the immediate blast, but rather the radioactive particles that are disseminated by the blast. Conventional bomb blankets do in fact offer some protection against alpha and beta particle emitters – in the same way that any thick piece of clothing would – but RST's bomb blanket is aimed at the big beasts: the gamma emitters, caesium 137 and cobalt 60 (660Kv and 1,200Kv respectively). RST are the manufacturers of Demron, the only (to the Editor's knowledge) "fabric" able to offer protection against gamma radiation. Ron DeMeo, President of RST, explained how

the technology worked. "We use a polymer and nanomaterials as a support for the Demron; there is no aramid in the product but there is a high-density polyethylene which has been shown to be anti-ballistic to begin with," he said. "We are using a nano-metal, which has to be quite strong for ionising radiation – the same metal will block bullets and fragments, so if you can imagine taking a piece of steel and bringing it down to a fine powder on the nano-scale, mixing with it a high density polyethylene that makes it into a piece of fabric, you end up with a resistant type of fabric that blocks radiation as well as well bullets and blast."

Nano-metal does not mean nano-weight, however; a one metre squared bomb blanket weighs in at 60lb – over twice as heavy as a conventional blanket. Yet it is not just radiation that the blanket reduces, but also radio frequency. "We have passive attenuators inside the material; the same reasons why we are good at blocking radiation means that we are good at blocking certain frequencies of RF," said Ron DeMeo. "Other frequencies will defeat the blanket – we are not an active jammer. So we will reduce the cell phone range but we are not sure what we will do against other frequencies."

RST has a great number of certificates and proof of their ability to reduce gamma radiation, and this is not the focus of this article, but what is the concept of use for the bomb blanket? Their bomb blanket has been devised to mitigate Radiological Dispersal Devices and IEDs, specifically gamma emitters – since alpha and beta are less likely for R-IEDs. The fact that the device is for gamma emitters, which as a device are way up on the "attention-grabbing" scale (somewhere around about eye-watering), so any R-IED that is discovered lighting up the dosimeters and detectors in a 4th of July-like manner is going to bring the whole EOD circus to town. So why do you want a blanket for this? Surely you would send the UGV and Dynasafe-type containment vessel downrange, keeping the man out of the loop – and all the while you have set up an ECM system that whites out anything more complex than string and cup for up to ten miles! There is also the practical problem that



Rebus might be the solution to the problem of ECM in airports. ©Kirintec

any explosion under the blanket will vent a lot of radiological particles out of the sides – negating any effect "right of boom". "We have looked at a collar as well, and that will basically act as a side mitigator," said Ron DeMeo. "In a perfect case scenario, when you have all those resources available, then it would be better to have a robotic system to put it inside a containment vessel. But if you are in a situation where that is not practical, – if, for instance, you have a chance encounter and don't have time to get the equipment, or if you are in a mixed environment and you're not sure whether it is radiological or not, or you still have enemies in the area – a blanket provides you with additional capability that other blankets do not. If you are approaching the source the blanket will act as a shield for you; obviously you'll have legs outside the shield, but it does your torso and it is a good way to approach an unknown source without sophisticated equipment."

Blanket appeal

Both detectors have a place in the golf bag; they both effectively offer you time to get other, tailor-made resources in place – ECM in Rebus' case, large containment devices for RST. As such they no doubt have efficacy, but half the joy of the bomb blanket was the fact that it was ubiquitous; specialist bomb blankets run the risk of being treated like specialist equipment, which means they are kept in specialist store and lack the speed of deployment that the systems are built for. Both systems are, understandably, more expensive than normal bomb blankets, so they will not reach the same ubiquity as the conventional ones, but some room will have to be found in the golf bag. "Our blanket is heavier than most blankets," said Ron DeMeo. "We produce a special dry bomb blanket. The first responder can see that, and will then pick whichever tool he thinks is the most appropriate for the situation he has encountered."