

# DISRUPTIVE FORCE

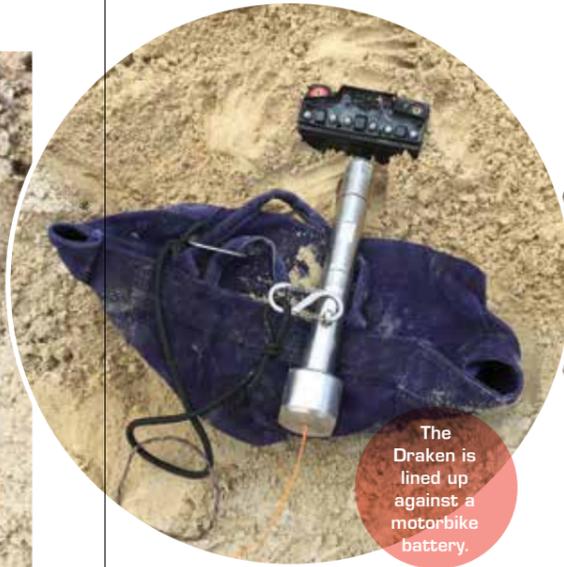
**ROLAND ALFORD**  
 DESCRIBES THE CHALLENGES OF EOD IN REMOTE AREAS

*The world of EOD is currently going through one of its cyclical changes that occur whenever we move from a period of military engagement to post conflict. The defeat of ISIS has seen the final withdrawal of all but a few pockets of military advisors. This time the transition is slightly different from those that have gone before – as many of the IED threats that have been faced remain, but the task of dealing with them is being given to commercial companies.*

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IED completely disrupted: phone cut in half by high-speed water.



The Draken is lined up against a motorbike battery.



Here the battery is broken up.

IEDs have been renamed as Improvised Landmines (ILMs) and even more recently the term Abandoned Explosive Ordnance (AXO) has appeared in some sectors. The job of disposing of them has gone from a military-only affair to one being dealt with by organizations and companies that once specialized in landmine clearance, a somewhat controversial development that has led to inevitable questions about when an IED becomes an Improvised Landmine and what training an operator should have before attempting any action against them.

One harsh truth is that there are far more devices to be dealt with than high-threat operators to deal with them – so the industry has had to evolve and innovate, as the problem will not go away by itself.

### Restricting operator equipment

One interesting consequence of this change is that the new operators, who are civilians, do not come with the same protections and benefits they had as serving militaries. Perhaps surprisingly for some, working on a UN contract does not free them from new national restrictions placed on those operating in country.

The decision by the Iraqi government to ban all non-Iraqi military from possessing explosives caused obvious problems for companies like my own – which specializes in making IED disruptors that, for the most part, use high explosives as a means of safely destroying IEDs (ILMs).

It also denied operators, in one

simple move, access to some of the main tools they need to dispose of these devices safely.

The reasons for such a ban are clear and it is easy to see why a government would want to restrict access to explosives but this has not helped those working to clear these areas of devices. Tragically, it is probably safe to say that this has directly led to the deaths of several operators who were forced to work without the most appropriate tools for the job.

For Alford Technologies this situation was both an impediment to sales of much-needed equipment – but also an opportunity to develop new tools that avoid the problem. We had been working on some ideas in the background for a number of years, but there had not really been a clear need for them until the new situation meant their time had come.

### NEW DISRUPTOR

The first of these is the Draken Disruptor – which is essentially a self-loaded barrelled disruptor. For several decades, the mainstay tool for the IED Operator has been the Pigstick or equivalent. This is essentially a steel barrelled gun which fires a powerful cartridge that shoots a barrel full of water at an IED – something like a high-powered version of the foam water guns used at the pool. Such is the speed and force of the water when it hits the target that it is capable of breaking apart many types of device before they have time to function; the device is neutralized and rendered safe.

### Exporting the ammunition

In the current theatres of operation the Pigstick would be a highly useful piece of kit, were it not for the expense and difficulty of obtaining the specialist ammunition that it requires. Exporting that ammunition and getting it through customs is often a challenge too difficult to



Mixing PLX explosive is quick, simple and clean.



Prototype Vulcaplex used against a small IED.



Tested against known targets, Draken performed as well as the Pigstick.

achieve and hand carrying ammunition is not an option. There have been many reported instances of operators arriving in theatre, collecting their Pigsticks and finding that they do not have any ammunition. Often, the ammunition has still not arrived by the time they come to leave and go home and the disruptors, still unused, sit idly by.

The Draken was designed to overcome these issues. Made from the same grade of stainless steel and having very similar performance to the original PigStick, it differs in a few ways, but most importantly, it is designed to be used with self-loaded ammunition. In fact, the cartridges are re-loaded standard 12-gauge shotgun shells with an electrically initiated squib obtained on ebay and a suitable amount of double-based shotgun propellant. Everything needed can either be ordered directly over the Internet or bought locally from a gun shop (guns are still widely available in these countries).

### Independent operation

The concept is that once you have a Draken Disruptor, you can operate independently pretty much anywhere in the world. In the box there are enough supplies (minus the propellant) to do several hundred firings after which you can order more supplies from us (rubber

bungs) or improvise and continue to source materials locally. As such the through-life cost of the Draken is a fraction of the cost of traditional disruptors and their ammunition.

The disruptor was not designed to be particularly lightweight or 'tactical' but some of the clever design features that are not readily visible to the user actually mean that the Draken has relatively little recoil – and even if you forget to clip on the bungee cord lanyard, it only recoils a few metres rather than the 50 m or so that the Pigstick would go. It is also quick and simple to fill with water and even comes with two barrels – a standard Pigstick-sized barrel and a half-length mini-Pigstick barrel.

### Liquid binary explosives

Barrelled disruptors are a relatively new departure for Alford Technologies and our main expertise lies in the use of high explosives in our disruptors. Clearly, not having access to explosives should have dealt a fatal blow to any shaped charges used in EOD, but another one of those ideas whose time has come is the use of liquid binary explosives.

These explosives are made from two chemicals which by themselves are not explosive, but which when mixed become highly effective explosives. These materials can be safely and legally transported into country and are not explosive until required. Detonators are still required but those can normally be obtained more easily than the main explosives.

The main issue with these binary explosives is that they are not as powerful as a typical plastic explosive, so binary explosives have tended to be used in very simple countermine charges. Shaped charges need to be specially designed to achieve the sort of

performance needed to be useful.

### Shaped charges

Enter the Vulcaplex shaped charge system. Based on the company's highly effective Vulcan system and, critically, designed to have similar performance, it used a variant of Picatinny Liquid Explosive, commonly known as PLX. The Vulcaplex currently comes in two models, one with exactly the same magnesium projectile used in the Vulcan for low-ordering conventional munitions and the second is a highly powerful water projectile with far greater penetration than the Draken. This is suitable for piercing steel-cased devices and destroying internal components.

Over time, the range of PLX driven charges will be added to giving PLX-driven versions of other Alford tools – such as the Bottler and MiniMod. ✨



Draken is used to open a car boot.



A car boot is opened.

*Roland Alford was perhaps destined to become an explosives engineer. Helping his father 'on the range' from the age of eight to look for blown-up fragments of bombs, he went on to study mechanical engineering before spending the next few years as a journalist. He now runs his family company Alford Technologies, which received the Queen's Award for Enterprise in 2004 and for Innovation in 2009.*