IEDs and Their Impact on Mine Action

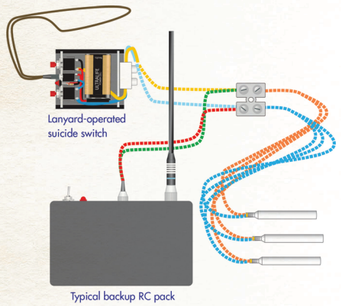
This article addresses the increasingly prevalent threat of improvised explosive devices around the world. The author carefully defines this often unpredictable and unconventional "weapon of choice" and outlines the steps to eliminate the hazard it presents to global security. The article also discusses the role IEDs play within the scope of mine action, arguing their danger exceeds that of traditional mines and other unexploded ordnance.

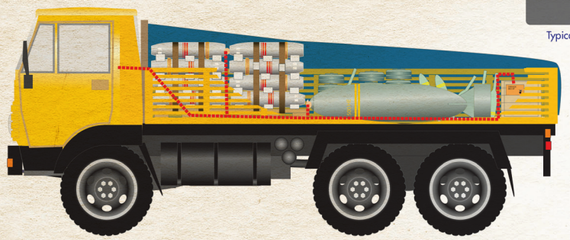
by Adrian King [Hazard Management Solutions, Ltd.]

Large Vehicle-Carried IED, U.N. Building, Baghdad 19 August 2003

Device Constuction
A Soviet Kamaz military variant flatbed truck (possibly with a civillian paint job) loaded with approx. 454kg of mixed military ordnance, including a 226kg aircraft bomb, covered with a tarpaulin. Plastic explosive with blasting caps would have been placed at various points in the load, probably inserted in the fuze holders of some of the larger items of ammunition.

Device Initiation
A simple suicide switch in the cab is the likely means of initiation, (possibly of the lanyard-operated type recovered from various locations in Iraq). It is also likely that a radio-controlled backup circuit was also present in the cab, incorporating a modified radio control reviever.





Notes:

Munitions shown are purely representative.

Not all munitions would have been destroyed in the explosion.

Components not to scale.

This illustration shows the construction of an IED used to destroy the U.N. building in Baghdad, Iraq, 19 August 2003.
GRAPHIC COURTESY OF HAZARD MANAGEMENT SOLUTIONS

It is well-reported that improvised explosive devices create a lethal and prevailing threat that is responsible for hundreds of deaths across the globe each month. The question of how the escalating presence of IEDs will impact mine action should be addressed, alongside the issue of how we can improve our understanding of the threat and what actions need to be taken to reduce it.

IEDs have become synonymous with the ongoing conflicts in Iraq and Afghanistan. To an outsider (based on media reporting) IED use by terrorists and insurgents appears to be focused solely in these theaters; however, IEDs

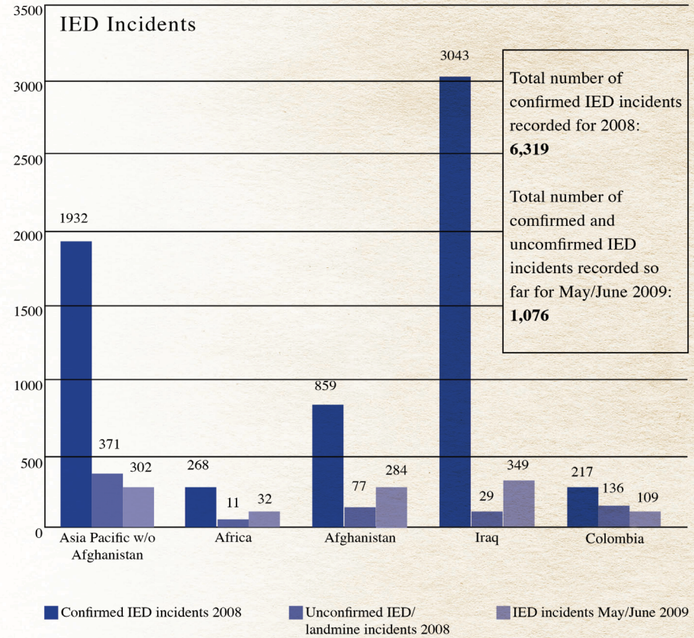


Figure 1: IED incidents for selected regions and countries in 2008 and during May/June 2009.
GRAPHIC COURTESY OF HMS

are in fact a global problem and have been in use for a considerable period of time. Wherever the militarily weak or poorly resourced confront superior forces with advanced technologies in armed conflict, IEDs provide an ideal weapon in much the same way landmines do. Throughout modern history, states, individuals, and criminal and terrorist groups have used them to murder, intimidate, extort and destabilize the infrastructure of government and undermine the rule of law.

In the mine-action community, IEDs, although often recognized as significant threats where prevalent, are not generally understood or analyzed in any depth. As a result, the advice provided for mine-risk education and the formulation of procedures that humanitarian-demining and battle-area-clearance personnel must adopt for IED removal and disposal are questionable. A number of possible reasons exist as to why mine action has failed to incorporate effective countermeasures to IEDs. Primarily, the International Mine Action Standards have never fully addressed the subject. As a result, the expertise required to properly analyze the impact of IEDs and thereby identify the requirement for action has not been resourced. No generic doctrine exists to form a basis for the development of IED standard operating procedures, IED-risk education, country assessment and threat analysis, for both the security of personnel and the conduct of mine clearance and related operations.

In Figure 1, the IED threat is shown by the number of IED incidents occurring in sample regions and countries during 2008, and those recorded from 1 May through 30 June 2009. From the data provided, the number of incidents is



Dealing with a booby-trapped cache of IED components buried inside a refuse bin.
PHOTO COURTESY OF HMS

clearly very high, and although fatalities and injuries are not given, they are likely to be significantly higher than those caused by landmines. Landmine casualties are rarely high for a single incident, whereas an IED contained in a truck and initiated in a busy marketplace can claim tens or even hundreds of victims. In Iraq alone during 2007, 5,480 civilian deaths were recorded as a result of multi-fatality bombings,[3] whereas 5,426 casualties were recorded globally for mine-related injuries, including victim-operated IEDs for the same period.[1] These IED statistics have not been included as a comparison to mine-related injuries, but simply to show the prevalence of IED use.

What is an IED?

According to the *Landmine Monitor Report 2008*, an improvised explosive device is "a device placed or produced in an improvised manner incorporating explosives or noxious chemicals. An IED may be victim-operated or command-detonated. Victim-operated IEDs are banned under the Mine Ban Treaty, but command-detonated IEDs are not."[1]

IEDs are normally categorized by their method of initiation, such as timer-activated, command-fired or victim-operated. They are then further subcategorized by their explosive effect: blast, blast/fragmentation, incendiary or blast/incendiary. The method of delivery is a further type of classification, e.g., to the target—vehicle-borne IED, person-borne IED (suicide) or water-borne IED. Each method of initiation has its advantages and disadvantages, and the perpetrator will normally decide on the method of employment by the type of target to be attacked and its accessibility. For example, for exact targeting of a vehicle convoy, command-fired IEDs with a large payload offer the greatest opportunity for success for the perpetrator, who can choose the precise time of detonation to overcome a vehicle's armor and attack the individuals inside. In other circumstances, a time-initiated IED may be better-suited, where escape of the bomb-layer is deemed essential and command firing cannot be considered due to the security infrastructure or the nature and situation of the target. Suicide IED attacks can be carried out at any location, providing security can be negotiated, and suicide bombers have perpetrated some of the most devastating attacks. Victim-operated devices, although essentially random, can be targeted, such as in the form of an under-vehicle IED. Until recently, IED incidents generally occurred as a result of planned and targeted attacks on individuals or organizations. Currently, however, IEDs can be utilized almost anywhere, in any location or terrain, and in any area of the battlefield, where inevitably they will eventually impinge on mine-action operations and activities. In Afghanistan, for example, IEDs are used as a tactical weapon, targeting International Security Assistance Force troops and affecting force mobility, but IEDs also have the capability to considerably affect operational aims and even strategic planning. They are used in Afghanistan to deny ground, protect troop positions and serve as an early warning of attack in much the same way as a conventional alarm mine. In Colombia and Nepal, IEDs are also employed as a protective measure in the same way as a defensive minefield, but they are sometimes placed with the facility to fire the devices on command as opposed to being victim-operated.

Current trends in IED manufacture indicate a growing use of command-fired devices, especially those employing a radio signal as the method of arming and initiating. This progression is one seen globally, with perpetrators taking advantage of communications and radio technologies available worldwide. Insurgents used radio-controlled IEDs in Iraq in most attacks on Coalition Forces, where remote-controlled roadside bombs caused many casualties in the mid-stages of the recent conflict. Electronic countermeasures were then developed to jam the insurgents' radio signals as forces travelled through the range of the device's radio receiver. Insurgents responded by introducing infrared switches armed remotely by radio signal outside the range of the electronic-countermeasure equipment, where a passing vehicle or foot patrol could trigger the device. Afghanistan has shown similar trends, but instead of infrared switches, electronic-countermeasure equipment is defeated by using long command wires from a distant vantage point with a good view of the device location. Recently, however, as command-wire detection procedures have become more successful, simple victim-activated devices have been used in significant numbers. These IEDs are manufactured using predominately nonmetallic and



A U.S. soldier guards a road in Afghanistan where the command wire for an IED was found, August 2009.
PHOTO COURTESY OF DIMA GAVRRYSH / AP

nonmagnetic materials, making them difficult to locate with conventional detection equipment.

As technology development has advanced in countering the IED threat, the perpetrators have responded by changing their methods of attack and device construction. Therefore, defeating the device is now considered just one element of a much broader effort in which substantial multifaceted resources are now being applied to intercept the IED attack cycle at all levels (such as at the stage of device manufacturing, or even sourcing device components). The ultimate objective is to stop the device from being laid in the first place.

Mine-action Implications

Within the International Mine Action Standards, IEDs do not feature prominently as being a target for specific clearance activity. They are referred to in the levels of qualification for demining/explosive-ordnance-disposal operations, but this reference is not in detail. The ability of a mine-clearing entity to competently deal with IEDs, should they be encountered, is left to specialist mine-clearance staff, who may be inadequately prepared.

Organizations undertaking mine-clearance tasks rely heavily on the employment of personnel with military or similar backgrounds to undertake the more difficult EOD tasks, and IEDs certainly fall within this category. However, this reliance is a dangerous precedent, as nations' training standards for IED disposal vary considerably, and the differing levels of expertise can present a risk to civilians and the individuals undertaking IED disposal tasks. This fact has been clearly illustrated by NATO operations in Afghanistan where inadequately trained and equipped personnel have been killed performing tasks beyond their capability and where national EOD doctrine did not include IED-disposal operations.

Much more could be done to establish generic operating procedures for deminers and implement basic instructions for assessing and dealing with IEDs. Under the current structure of the IMAS documentation, there is the ability to publish technical annexes for complex weapon systems or specialist EOD tasks. As an interim measure, IEDs and IED-disposal operations could be addressed in such a document, giving basic knowledge, generic standard operating procedures for search-and-disposal action, and the corresponding minimum equipment requirements—including the personal protective equipment required for demining operations in locations where IEDs may be encountered.

Clearing IEDs presents the deminer with a number of difficult decisions. Unlike a landmine or item of unexploded ordnance, IEDs are improvised to the extent of the imagination of the bomb-maker, so there is no guide or diagram that can be followed to formulate a structured neutralization or disarming plan. There are, however, courses of action to take based on assessment of the threat conditions and by a process of deduction, evaluation of the likely type of device, and the best method of clearance. However, due to the nature of the task and even with the benefit of knowledge and experience, IED defeat operations are often only calculated leaps into the unknown, where the level of specialist training and equipment sophistication can be critical in achieving a successful outcome.

MRE, although normally of a very high standard, rarely addresses IED threats in full, which vary between regions and countries in the same way as a landmine or UXO threat. Inclusion of an IED module in such education programs should be considered a priority where the threat exists and affects daily life, and the program must include an accurate threat analysis of the country or area in question. Generic briefings, although they have their place, may not correctly address specific threats, leaving critical gaps in knowledge that could lead to the use of inadequate drills and regimes. IED briefings should also form part of any pre-deployment training for mine-action staff, whatever their level of involvement. Personnel designated to operate in post-conflict areas where the ground situation has not been fully resolved should expect to be targeted by IEDs and must therefore receive appropriate education before they are deployed.

Conclusion

IEDs pose an unconventional and relatively unpredictable threat. They cannot be countered by traditional means. Mine-action personnel, although used to following convention and doctrine within regulated organizations, will be at risk if they continue to serve without considering the growing global use of IEDs. These devices will continue to kill and maim a greater number of innocent victims than mines or UXO for the foreseeable future. They are the "weapon of choice" for non-state actors, and their use is widespread. It is inevitable that those actively involved in mine-action operations will encounter IEDs far more frequently than ever before. Intervention at the clearance level is occurring now, and we must ensure that personnel are equipped with a thorough assessment of the risk, and that adequate provisions are made to mitigate threats.

See Endnotes, Page 79



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