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TAKING DOWN THE NETWORK: GETTING LEFT OF THE BOOM IN THE COUNTER-IED FIGHT

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Exercise Solo Flight

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EXERCISE *SOLO FLIGHT* – EXERCICE *SOLO FLIGHT*

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TAKING DOWN THE NETWORK: GETTING LEFT OF THE BOOM IN THE COUNTER-IED FIGHT

INTRODUCTION

The first decade of the 21st century has seen the Improvised Explosive Device (IED) emerge as the weapon of choice for those who seek to challenge Western nations and their militaries, but who lack the resources or means to do so in conventional battle. These groups include terrorist organizations such as Al-Qaeda (AQ) or the Islamic State of Iraq and the Levant (ISIL), as well as insurgent forces in Iraq and Afghanistan. In opting to employ IEDs, however, these organizations are not breaking new tactical ground. As early as the American Civil War, IEDs were used to achieve tactical effects at places like Petersburg and Mobile Bay.¹ By 1919-20, extremists and anarchists in the United States were using homemade bombs to target government officials and institutions, including Wall Street.² Improvised demolitions were again militarized by European resistance movements during the Second World War, primarily to sabotage rail lines and bridges. U.S. forces again encountered IEDs in Vietnam, where the Viet Cong employed them both on land and in rivers. Overall, these devices accounted for a third of U.S. casualties.³ Afghan mujahedeen employed them against the Soviet military in the 1980s, foreshadowing their re-emergence a generation later.⁴ But few organizations could match the IED expertise of the Irish Republican Army (IRA) in Northern Ireland. Over a nearly 40-year period starting in the early 1970s, the IRA deployed a range of homemade bombs, ranging from the simple to the highly complex, against British soldiers and infrastructure. At its height, this

¹ Peter Singer, "The Evolution of Improvised Explosive Devices." *Armed Forces Journal* (February 2012). <http://www.brookings.edu/research/articles/2012/02/improvised-explosive-devices-singer>

² Department of Defense, *Counter-Improvised Explosive Device Strategic Plan 2012-2016*. (Norfolk: Joint Improvised Explosive Device Defeat Organization, 2012), 2.

³ *Ibid.*

⁴ Glenn Zorpette, "Countering IEDs." *IEEE Spectrum* 45, no. 9 (September 2008): 29.

campaign saw the IRA emplacing up to 140 bombs a year.⁵ Within the U.S., two of the most spectacular terrorist attacks during the 1990s were conducted with improvised truck bombs.

Timothy McVeigh's attack in Oklahoma City was, until the attacks of 9/11, the deadliest terrorist attack on American soil, while the 1993 attack on the World Trade Center drew much attention, but caused little actual damage.⁶

In spite of the prevalence of what would today be classified as IEDs, the term did not enter the common lexicon until the second Iraq War in 2003.⁷ Within the Canadian context, an IED is "device placed or fabricated in an improvised manner incorporating destructive, lethal, noxious, pyrotechnic, or incendiary chemicals and designed to destroy, incapacitate, harass, or distract."⁸ While some success against IEDs can be realized in preventing or mitigating their destructive potential, the only way to proactively neutralize them as a strategic threat, to get "left of the boom," is to prevent their use through the disruption of the networks that finance, build, emplace, and employ them. Defeating the network is thus the key to defeating IEDs as a strategic threat. To prove the thesis, this paper will first consider why IEDs have emerged as a mainstay of modern conflicts across the globe and examine the networks required to produce end employ them. Against this background, the North Atlantic Treaty Organization (NATO) Counter-IED (C-IED) strategy will be presented, with a focus on its three pillars, namely Prepare the Force (PtF), Defeat the Device (DtD), and Attack the Network (AtN). From this framework, the disproportionate effects of AtN activities in not just defeating, but also preventing IED employment will be demonstrated.

⁵ Zorpette, "Countering IEDs.": 29.

⁶ Department of Homeland Security. *IED Attack - Improvised Explosive Devices* (Washington, D.C.: The National Academies Press, 2007), 1.

⁷ *Ibid.*

⁸ Department of National Defence, B-GJ-005-315/FP-001, *Canadian Forces Joint Publication 3-15, Countering Improvised Explosive Devices* (Ottawa: DND Canada, 2012), 1-4.

WHY IEDS?

While IEDs are most commonly associated in westerners' minds with the recent conflicts in Iraq and Afghanistan, they have become almost ubiquitous in modern conflict zones. During August 2012, for example, IED attacks were carried out or disrupted in places as dispersed as Yemen, Nigeria, Spain, Russia, and Columbia. These devices were employed against a broad range of targets from security forces and government infrastructure to rival political organizations, commercial infrastructure, and civilians.⁹ Though primarily encountered on land, IEDs can also be employed in maritime and air environments.¹⁰ While there are a myriad of reasons why IEDs have emerged as a choice weapon for insurgents, terrorists, and other militant groups, they can be broadly grouped as tactical advantages and strategic advantages.

Tactical Advantages

At the tactical level, IEDs present four main advantages to threat elements employing them, namely design simplicity, resource availability, cost, and risk reduction. As an improvised weapon, there is no fixed design for an IED. There are, however, five basic components in any IED: a switch, an initiator, a power supply, a main explosive charge, and a container or casing.¹¹ When the switch is closed, the electricity in the power source is used to set off the initiator. While the initiator is normally a blasting cap, the switch can include a range of devices, including cellular telephones, timers, or pressure plates.¹² Similarly, almost any battery can provide the power source: from AA to car batteries, or the IED can be wired into the local power

⁹ Department of Defense, *JIEDDO Global IED Monthly Summary Report August 2012* (Norfolk: Joint Improvised Explosive Device Defeat Organization, 2012), 2-3.

¹⁰ Department of National Defence, B-GJ-005-315/FP-001, *Canadian Forces Joint Publication 3-15, Countering Improvised Explosive Device* (Ottawa: DND Canada, 2012), 1-4.

¹¹ *Ibid.*, 1A-1.

¹² John Caldwell, *Understanding the Basics of Improvised Explosive Devices* (Norfolk: Civil-Military Fusion Centre, 2011), 2.

grid.¹³ The main explosive charge is the primary destructive element of the IED and can range from unexploded military ordinance (UXO) to commercial or homemade explosives (HME). The casing serves to contain the IED, and may also assist with camouflaging and providing additional shrapnel when the IED is detonated.¹⁴ While a skilled IED maker can produce very complex IEDs, including secondary charges and anti-tamper devices, the simplicity of the basic design makes the IED an easy weapon for threat elements to create. Beyond the simplicity of IEDs, all of the elements required tend to be readily available, particularly in areas with a history of conflict. The prevalence of materials drives the third advantage of cheap production. In Iraq, the materials required to build a simple IED could be purchased for around \$30.¹⁵ Finally, unlike a direct fire attack such as an ambush, IEDs allow threat elements to maintain a degree of standoff from their target, decreasing the chance of detection and increasing their survivability.¹⁶ All of these characteristics make the IED an appealing weapon from the tactical perspective.

Strategic Advantages

While providing undeniable tactical benefits, IEDs also provide several key strategic advantages that make them a weapon of choice for threat elements. Of critical importance, IEDs generate bold imagery which can be exploited for the dual purposes of shocking domestic and foreign audiences while attracting new recruits to the threat organization. Linked to the benefit is the erosion of public support for the military mission. Western populations, and by extension their governments, have become highly adverse to casualties, resulting in the public questioning

¹³ Headquarters, Department of the Army, *Improvised Explosive Device Defeat*. FMI 3-34.119 (Washington, DC: Department of the Army, 2005), 4-2.

¹⁴ *Ibid.*

¹⁵ Rachel Martin, "The IED: The \$30-Bombs That Cost The U.S. Billions," *NPR*, December 17, 2011. <http://www.npr.org/2011/12/18/143902421/in-iraq-fighting-an-improvised-war>.

¹⁶ John Moulton, "Rethinking IED Strategies: From Iraq to Afghanistan." *Military Review* 89, no. 4 (Jul/Aug 2009): 27.

whether a given campaign is worth the price being paid in blood.¹⁷ As noted by Lieutenant-General Michael Barbero, former director of the U.S. Joint IED Defeat Organization (JIEDDO), “The greatest producer of casualties on the battlefield in the 20th century was artillery, and my assessment is the IED is the artillery of the 21st century.”¹⁸ IEDs can also be employed to achieve a range of strategic effects, including generating feelings of insecurity in local populations to delegitimize host nation governments, influencing national political will, and fracturing multinational effort.¹⁹ Finally, by adapting their use of IEDs, threat elements can force conventional forces to drastically alter their operational doctrine. One need look no further than the development of NATO C-IED doctrine to see the massive effort and associated massive costs caused by the proliferation of IEDs. With such a broad range of potential benefits across both tactical and strategic domains, it is little wonder that IEDs have proliferated to the degree seem currently.

IED SYSTEMS

In order to understand how to address the challenges posed by threat elements employing IEDs, it is necessary to understand the overall system required to support their use. The IED system comprises “[the] personnel, resources and activities and the linkages between them that are necessary to resource, plan, execute and exploit an IED Event.”²⁰ A generic IED system is shown in Figure 1, along with a representative timeline showing the broad sequencing of elements in relation to the IED Event.

¹⁷ *Ibid.*, 29.

¹⁸ Martin, “The IED: . . .,”

¹⁹ Joint Chiefs of Staff, *Counter-Improvised Explosive Device Operations*. JP 3-15.1 (Washington, D.C.: Joint Chiefs of Staff, 2012), I-4.

²⁰ NATO Standardization Agency, *Allied Joint Publication 3.15(B), (NU) Allied Joint Doctrine for Countering Improvised Explosive Devices* (Brussels: NATO, 2012), 1-6. An IED Event is further defined as “[a]n event that involves one or more of the following types of actions or activities in relation to IEDs: an explosion; an attack; an attempted attack; a find; a hoax; a false; or, a turn-in.”

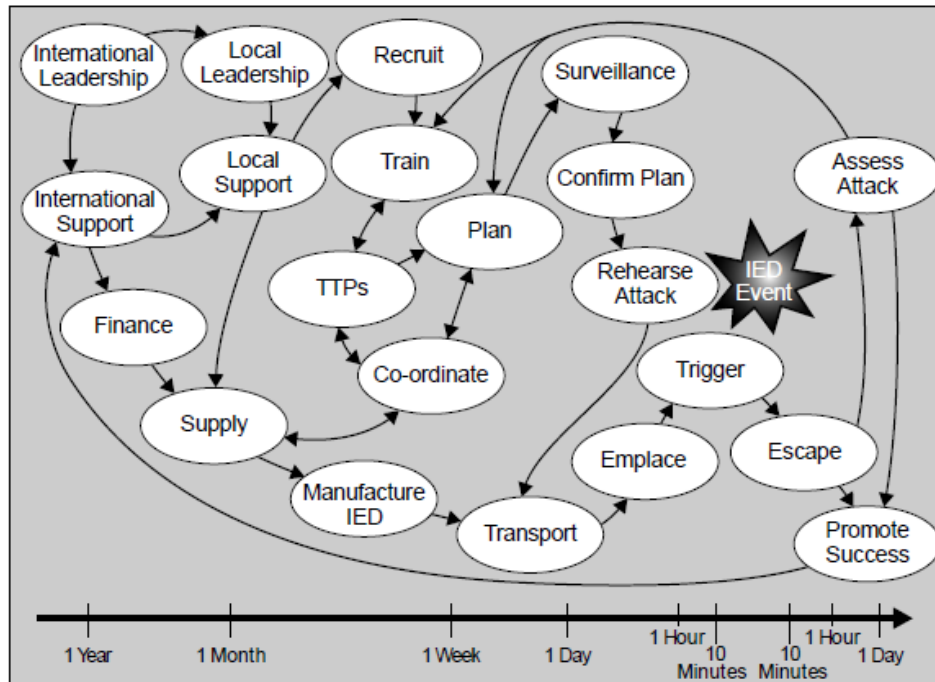


Figure 1 – Example of an IED System

Source: NATO Standardization Agency. *Allied Joint Doctrine for Countering-Improvised Explosive Devices*, 1-2.

Within the system, it is important to note that the IED Event is only one node among many. Depending on the level of sophistication, the IED system could have redundant nodes, for example it may have multiple IED manufacturers, or it may have no redundancy. With the increase in globalization, there exists the potential for some parts of the system, potentially finance and supply, to be located abroad where resources, with financial or materiel are more readily available. Similarly, the proliferation of communications systems means that IED systems can now draw on technical expertise and planning support from actors far beyond their local area.²¹

Beyond the system above, there exists a social dimension to IEDs. In addition to the network funding, building, and employing the IED, there is a local community within which the network exists. This community must consent to the IED network's activities, although that

²¹ *Ibid.*, 1-3.

consent can range from willing assistance to coerced acquiescence.²² It is important not to overlook the community element when considering ways in which to target the IED system.

THE NATO C-IED FRAMEWORK

Despite the long history of IEDs as a weapon of insurgents, at the start of the Iraq and Afghanistan operations there was no existing doctrine to holistically counter them within either NATO or its member states. Recognizing that they were being out-manoeuvred by insurgent IED operations in Iraq and Afghanistan, NATO nations began creating new military organizations in an attempt to understand and regain the strategic initiative. The earliest of these organizations was the United States Army IED Task Force (TF), established in October 2003. Focused on the provision of C-IED training for Army units, and the acquisition of C-IED equipment and intelligence gathering methodologies from commercial sources, academia and other services, the Army IED TF was merged into the Joint IED Defeat TF in 2004, and finally into the Joint IED Defeat Organization (JIEDDO) in 2006.²³ JIEDDO was the first national C-IED organization to expand beyond the initial focus on training and device defeat, adding a third line of operations for attacking IED networks. The Canadian equivalent to the JIEDDO, the Canadian Forces (CF) C-IED TF, was created in late 2007.²⁴ Like JIEDDO, it had the three lines of operation.²⁵ Between 2006 and 2008, the U.S., U.K., Australia, and Canada all published some version of their doctrine on C-IED operations.²⁶ These were consolidated into the NATO C-IED doctrine laid out most recently in Allied Joint Publication (AJP) 3.15(B) Allied Joint Doctrine for

²² A. Steven Dietz, "Countering the effects of IED systems in Afghanistan: an integral approach." *Small Wars & Insurgencies* 22, no. 2 (May 2011): 338.

²³ GlobalSecurity.org, *Joint Improvised Explosive Device Defeat Organization*, Apr 2, 2012. <http://www.globalsecurity.org/military/agency/dod/jieddo.htm>.

²⁴ While both the JIEDDO and CF C-IED TF have been renamed (to the Joint Improvised-Threat Defeat Agency (JIDA) and the Canadian Armed Forces Joint Counter Explosive Threat (CAF JCET) TF respectively), the legacy names will be used, as they remain extant in respective national doctrines.

²⁵ Department of National Defence, 3000-1 (DLFR), *CF C-IED WNG O 001* (Ottawa: DND Canada, 2007), 3/12.

²⁶ Department of National Defence, *Canadian Forces Joint Publication 3-15...*, REF-1.

Countering – Improvised Explosive Devices, published in 2012. The NATO C-IED approach is illustrated in Figure 2.

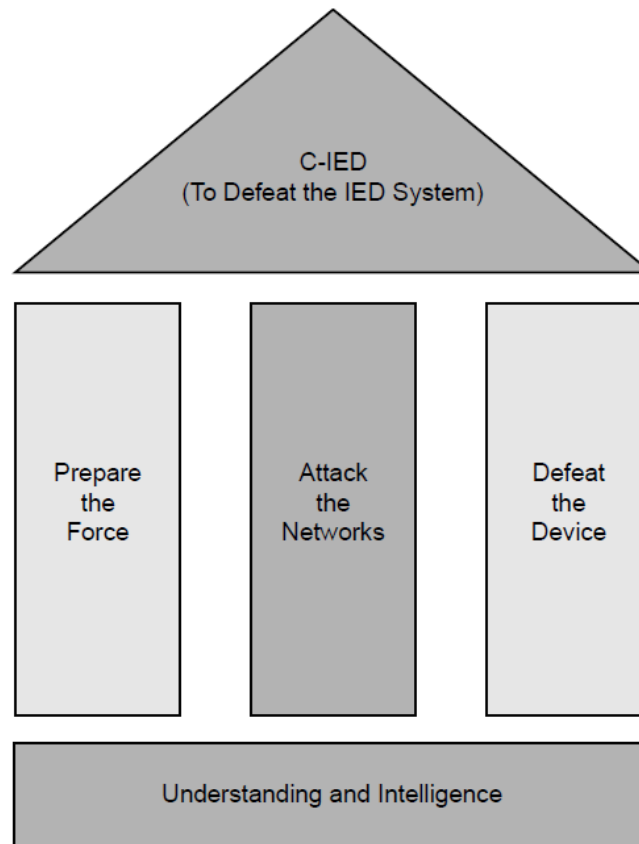


Figure 2 – The NATO C-IED Approach with Supporting Activity Pillars
 Source: NATO Standardization Agency. *Allied Joint Doctrine for Countering-Improvised Explosive Devices*, 1-7.

In line with U.S. and Canadian C-IED doctrine, AJP 3.15(B) describes three supporting activities within the C-IED strategy, namely Attack the Network (AtN), Defeat the Device (DtD), and Prepare the Force (PtF).²⁷ Underpinning the three complementary pillars is a base of Understanding and Intelligence. Adapting measures within the three pillars to effectively counter IEDs requires a sufficiently clear understanding of the environment and actors in order to determine the linkages and bonds which make up the IED networks within the overall IED system. Building on the understanding requires intelligence structures capable of processing the

²⁷ Within U.S. doctrine, PtF is labeled as Train the Force. Joint Chiefs of Staff, *Counter-Improvised Explosive Device Operations ...*, III-6.

information gained through the understanding of the IED system, and turning it into intelligence, which can support decision-making, by tactical and operational commanders.²⁸

Prepare the Force

The first pillar of the NATO C-IED approach comprises “...the supporting measures and activities necessary to ready a force for operations where there is the threat of an Improvised Explosive Device System as part of the Counter-IED approach.”²⁹ Within Canadian C-IED doctrine, PtF is focused mainly at the tactical level, emphasizing such elements as teaching enemy IED tactics, techniques, and procedures (TTPs), correct employment of CF C-IED TTPs, and operation of C-IED equipment. It includes elements of pre-deployment training, in-theater training, and a mention of host-nation training.³⁰ The latter addresses the potential requirement to develop within the host nation security forces a C-IED capability to include partnered training.

NATO doctrine takes a far broader view of PtF activities, seeing it as combination of effective preparation, host nation capacity, and capability development. Effective preparation requires a balance of education and training. While seemingly similar, the nuanced difference is in the degree of situational uncertainty.³¹ Training focuses on inculcating TTPs to address recognized situations, while education aims to give the broad base of knowledge to allow for adaptive decision making in unfamiliar or unknown situations. Training can also focus on teaching the specific skills and processes used in AtN activities. Beyond just training, developing host nation capacity can encompass elements of Security Sector Reform (SSR). Key to successful SSR is a clear plan of required host nation capabilities, remembering that the organizations and structures that work for western militaries may not be suited to other cultures

²⁸ NATO Standardization Agency, *Allied Joint Publication 3.15(B)* ..., 1A-4.

²⁹ *Ibid.*, 5-1.

³⁰ Department of National Defence, *Canadian Forces Joint Publication 3-15* ..., 6-3.

³¹ NATO Standardization Agency, *Allied Joint Publication 3.15(B)* ..., 5-2.

and forces. Capability development is necessary to overcome the inevitable evolution of enemy TTPs and to properly introduce new equipment into use. To ensure new capabilities are fully matured, eight Lines of Development (LoDs) are identified, across which the capability is measured. The LoDs are: doctrine; organization; training; materiel; leadership and education; personnel; facilities; and interoperability.³² Of these, interoperability is particularly important, as it is essential to enable allies to jointly operate effectively and efficiently. It is also historically an area of weakness, particularly with relation to intelligence sharing. Given the underpinning of Understanding and Intelligence, the compartmentalization negatively affects coalition ability to effectively counter new enemy TTPs.

Overall, PtF is a reactive approach to IED defeat. In particular, effective preparation and capability development both rely on the input from AtN and DtD to validate current training and education packages, and to identify capability gaps to be addressed.

Attack the Network

AtN provides the C-IED system with the ability to "...isolate the component parts of the networks through the co-ordinated and selective use of physical and cognitive activities to defeat the Improvised Explosive Device System."³³ This highlights that AtN is not just about physical or kinetic activities. Rather, "AtN activities strive to undermine the enemy's ability and willpower to construct and employ IEDs."³⁴ This is achieved through the targeting of either network capabilities, for instance a bomb-maker, or the links between the networks, such as interdicting the movement of key IED components. Holistically, there are several ways in which networks can be attacked. Pressure, in the form of either direct actions or targeted intelligence operations, can be exerted on the network, forcing a reaction. Alternatively, individual elements of the

³² *Ibid.*, 5-8.

³³ *Ibid.*, 3-1.

³⁴ Department of National Defence, *Canadian Forces Joint Publication 3-15...*, 4-1.

network can be targeted for isolation and neutralization, essentially breaking the network apart bit by bit. Underlying grievances motivating the group can be addressed to remove the will for action, or figureheads can be delegitimized to make group membership less appealing.³⁵ The means of attacking the network can come from many sources, including politics and diplomacy, legal, economics, military forces (whether host nation, coalition, or special forces), or even the host nation population. Targeting of IED networks is an iterative process, where each iteration draws on the information gained from the previous iteration to increase the probability of successfully attacking the target.

Even if AtN activities are unsuccessful in preventing the building, emplacing, or detonating of an IED, AtN can still exploit the situation to gain valuable information for future AtN or other operations. Field, Theatre, and Out-of-Theatre exploitation can still provide key information on the IED, helping to build the understanding of the IED network and enable better targeting of future AtN activities.³⁶ Field exploitation provides basic technical assessment of the IED, along with a basic tactical assessment of friendly and adversary TTPs. At Theatre level, a more detailed technical and forensic assessment is conducted, including identifying similar devices and potential component sources. Out-of-Theatre assessment provides further detail, including analysis of electronic components. The assessment draws on expertise from other government departments, and is quite time intensive.³⁷

AtN provides an offensive element of the C-IED system. While it is dependent on the analytical skills provided in PtF, and can be helped by information received from DtD activities, AtN can actively target elements of the IED system without having to wait for those elements to engage friendly forces.

³⁵ NATO Standardization Agency, *Allied Joint Publication 3.15(B)* ..., 3-4.

³⁶ Department of National Defence, *Canadian Forces Joint Publication 3-15*..., 4-7.

³⁷ *Ibid.*, 4-9.

Defeat the Device

The last pillar of NATO C-IED is concerned with defeating the IED, and in so doing, maintaining freedom of manoeuvre for friendly forces.³⁸ Defeat is achieved through three key activities: detect, neutralize, and mitigate. These are, in order, the desired outcome of a DtD activity. The most desirous situation sees an emplaced IED detected before it has the potential to cause harm to friendly forces. The detection can be through technical means, for example observation by an Intelligence, Surveillance, and Reconnaissance (ISR) asset or IED robot, or by a dismounted investigation by military personnel. Detection is the preferred option for DtD because knowing the location of the IED provides the option to address it now, or cordon it and resolve it at a future time. Should detection not be feasible, the next option is to neutralize the IED. The action involves rendering the device "...either temporarily or permanently ineffective."³⁹ Temporary ineffectiveness is achieved either through avoiding the device and denying it the ability to cause damage, or through inhibition, which temporarily interrupts the functioning of the device through, for example, jamming which prevents the device receiving its remote detonation signal. Key to note is that the disruption caused by inhibition is transient and will only last while the inhibitor is actively preventing the IED from functioning. Permanently rendering an IED ineffective involves either the destruction or rendering safe the device. While the former is safer, as it can be remotely accomplished, it denies the recovery of evidence, which could be exploited for AtN activities, and may not render the device completely ineffective. Render safe procedures, in contrast, generally entail greater risk, as they generally require an

³⁸ NATO Standardization Agency, *Allied Joint Publication 3.15(B)* ..., 4-1.

³⁹ *Ibid.*, 4-9.

IED Disposal (IEDD) Technician to physically render the device safe, but provide greater confidence in the device's state, and preserve exploitable evidence.⁴⁰

Should detection and neutralization fail, the IED will function and the mitigation portion of DtD comes to the fore. Within the C-IED context, mitigation is the "...technical, tactical and information actions undertaken to minimise the effects of an IED Event," and applies to both minimizing the potential of an IED detonation, and minimizing the effects of an actual detonation.⁴¹ Technical actions could include analysis of historical data to identify likely IED locations so they can be avoided (potential) and the use of stand-off height and vehicle hull shape to reduce blast impact on a vehicle and its occupants (actual). The conduct of vulnerable point searches is a tactical measure to reduce IED potential, while direction on the wearing of personal protective equipment (PPE) is a tactical mitigation of actual detonation effects. Deception plans (potential) and literature describing IED event impacts (actual) are examples of information actions.⁴²

Like PtF, DtD remains reactionary in that it must wait for the IED to be emplaced or detonate before it can have an effect. Data on IEDs detected and neutralized feeds into AtN activities, while information on the emplacement TTPs of threat forces and the changed to increase the effectiveness of friendly TTPs drive changes in training conducted under PtF.

Results

The overall results from the application of the NATO C-IED framework have been mixed. On the one hand, it did not result in a precipitous drop in either the number of IED Events, of the overall number of casualties they caused. At the same time, the framework did prevent IEDs from becoming even more lethal, despite a dramatic increase in both their use, and

⁴⁰ Department of National Defence, *Canadian Forces Joint Publication 3-15* ..., 5-5.

⁴¹ NATO Standardization Agency, *Allied Joint Publication 3.15(B)* ..., 4-4.

⁴² *Ibid.*, 4-6.

the size of the individual IEDs.⁴³ Figure 3 shows the relative efficacy of IEDs in Afghanistan for U.S. fiscal years 2009 and 2010. Note that while the total number of IED attacks spiked, the percentage of effective attacks only varied plus or minus six percent. This was combined with a decrease in the rate of U.S. personnel killed by IEDs.⁴⁴

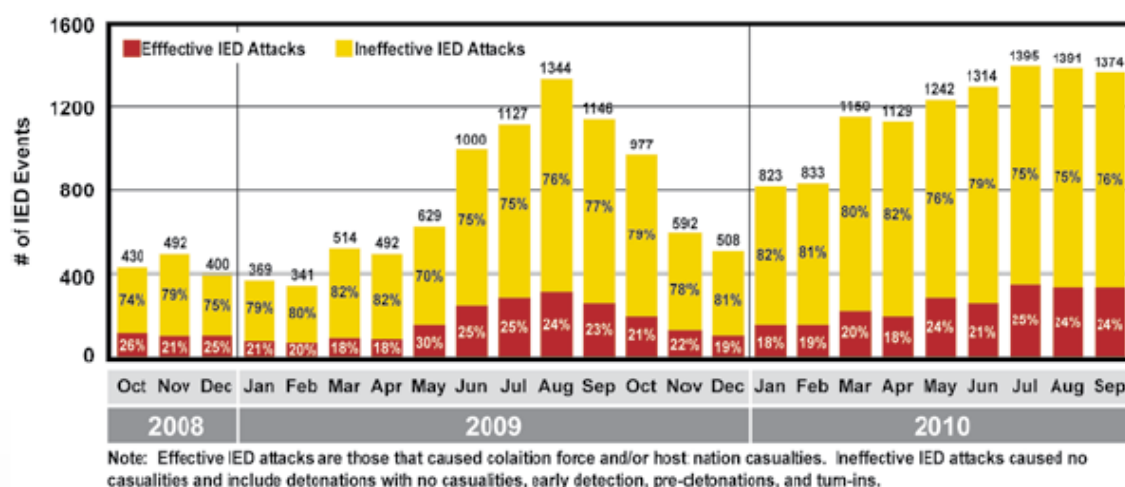


Figure 3 – Afghanistan IED Efficacy Trends, U.S. Fiscal Years 2009-2010

Source: Department of Defense, *Joint Improvised Explosive Device Defeat Organization Annual Report 2010*, 6.

GETTING LEFT OF BOOM

As noted above, each of the pillars in the NATO C-IED approach provides support to the others, reinforcing the overall strategy. Mutually supporting, however, does not mean all contribute equally. In the desire to proactively defeat IEDs, that is to defeat them left of boom, AtN activities are far more effective and efficient.

Economics of IED Defeat

Western militaries and the west in general have developed a view of technology as the universal panacea and the fight against IEDs has been no exception. Almost from the start, there

⁴³ Yochi J. Dreazen, "Destructive Force of IEDs on the Rise." *National Journal*. Jul 7, 2011. <http://search.proquest.com/docview/1418436695?accountid=9867>.

⁴⁴ Department of Defense, *Joint Improvised Explosive Device Defeat Organization Annual Report 2010* (Washington, D.C.: Joint Improvised Explosive Device Defeat Organization, 2010), 6.

has been a push to develop the one vehicle, or sensor, or piece of equipment which will magically slay the IED beast. One military academic summed up the U.S. solution as “hide and pray: hiding behind more armor [*sic*] and praying that there’s a technical solution.”⁴⁵ Indeed, in spite of its holistic approach to IED defeat, JIEDDO remains “...built around a technical solution approach focused on research and development, testing, and fielding the elusive “silver bullet” to defeat IEDs.”⁴⁶ More than a decade after the start of the organized C-IED fight and in spite of the expenditure of tens of billions of dollars worldwide, the technological solution remains elusive.⁴⁷

At the heart of the problem is the simple economics of IEDs. Because they are built from a range of materials by unconventional organizations, there is no standard IED. Unique designs arise in various conflict zones based on a myriad of factors, including the technological sophistication of the threat force and the availability of various components. The factors can be seen in the difference between the IEDs built in Iraq, and those in Afghanistan. In Iraq, an insurgency from a well-educated, modern society developed sophisticated IEDs using technology to defeat American defences. In Afghanistan, in contrast, a generally low level of education precluded a similar strategy, so insurgents focused instead on developing more and more massive bombs using material widely available in agrarian society.⁴⁸ Yet western militaries have attempted to find and field technological solutions to these highly fluid threats. The highly technological nature of these solutions (and the dysfunctional nature of our acquisition systems) means that they hugely expensive to field both in time and treasure. Their defeat, however, is anything but. Threat networks have, at times, been able to counter newly fielded equipment

⁴⁵ Zorpette, "Countering IEDs.": 28.

⁴⁶ Richard F. Ellis, Richard D. Rogers, and Bryan M. Cochran, *Joint Improvised Explosive Device Defeat Organization: Tactical Successes Mired in Organizational Chaos; Roadblock in the Counter-IED Fight* (Norfolk, VA: Joint Forces Staff College, 2007), 6.

⁴⁷ Lest the reader think the cost exaggerated, the 2006 JIEDDO budget for equipment alone was \$2.45 billion U.S. Department of Defense, *Joint Improvised Explosive Device Defeat Organization Annual Report 2006*, (Washington, D.C.: Joint Improvised Explosive Device Defeat Organization, 2006), 6.

⁴⁸ Dreazen, "Destructive Force ..."

within days. Thus a \$2 billion U.S. program to field jammers to defeat remotely triggered IEDs is negated by the minimally expensive tactic of replacing remote triggers with pressure plates.⁴⁹

Beyond the challenge of maintaining the initiative against an enemy who can adapt more rapidly, there is also the challenge of increasingly large IEDs. Experience in Afghanistan showed a constant shift to larger IEDs. For example, in May of 2008, less than half of IEDs had a main charge of 25 pounds or more; by December 2009 it was up to 75%. One October 2009 IED even had a main charge of 1000 pounds. Emplaced IEDs, that is, those that are buried, are essentially unlimited in size, being constrained only by the time available to emplace them. With IEDs of this size, there is no effective mitigation.⁵⁰

In the end, the problem with both PtF and DtD is that they remain reactionary methodologies. They can decrease the likelihood of an IED causing casualties and they can increase the likelihood of locating it prior to detonation, but they cannot prevent emplacement. In order to get left of the boom, it is necessary to go on the attack.

Going on the Offensive

As previously identified, AtN activities are the only true proactive pillar in the C-IED system. By seeking to target the systems that finance, resource, manufacture, transport, and emplace IEDs, AtN efforts have the ability to prevent IEDs from becoming a threat in the first place. Beyond allowing for proactive engagement, AtN provides several other key advantages in the C-IED fight. First, because there are numerous nodes within the IED system, there are more potential choke points. If, for example, investigations show that all the IEDs in a given area are reliant on one particular item, for example a detonator, the elimination of the source of that item can produce disproportionate effects, potentially disrupting the entire network. Similarly,

⁴⁹ Zorpette, "Countering IEDs.": 31.

⁵⁰ Dreazen, "Destructive Force ..."

incremental disruptions to numerous nodes within the network may cause cascading effects, resulting in an overall disruption that is greater than the sum of its parts. It should be noted that AtN activities must incorporate both kinetic and non-kinetic actions and also require the reinforcing of friendly networks to undermine and counter adversary networks.⁵¹

Seeing the advantages of AtN activities, there exists the need to translate the broad concepts into actions across the levels of war. Figure 4 shows one model for conducting AtN at the tactical level.

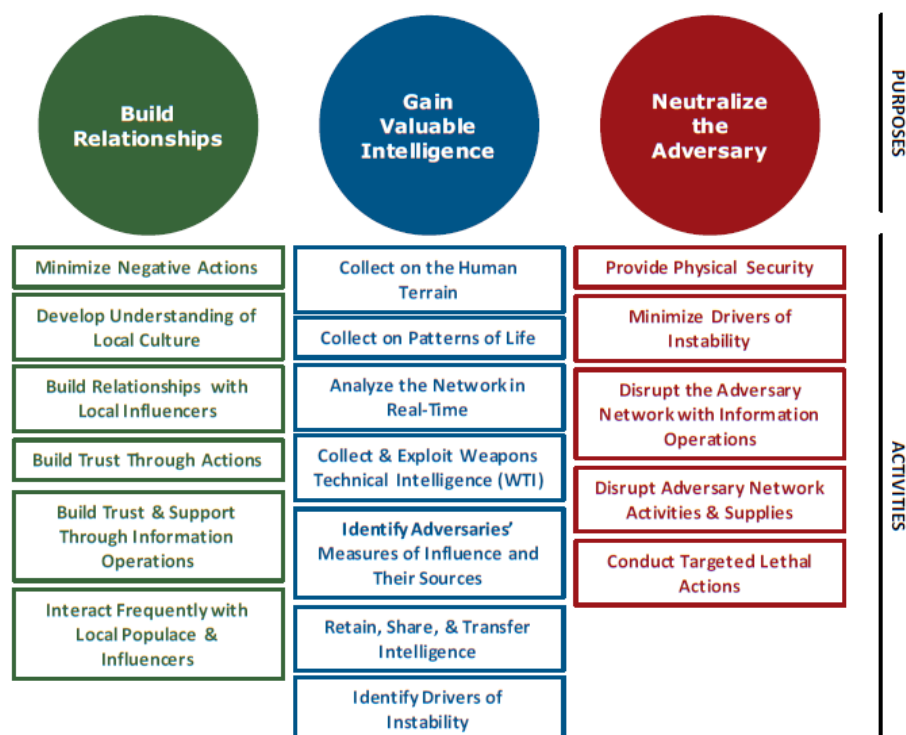


Figure 4 – Attack the Network Purposes and Activities

Source: Department of Defense, *Attack the Network Field Guide - Afghanistan*. 7.

In this case, three broad purposes were identified, and activities designed within them. Through building relationships with key local leaders, broad local support is gained, which serves to split the threat actors from their support system. These relationships allow friendly

⁵¹ Department of Defense, *Attack the Network Field Guide - Afghanistan* (Washington, D.C.: Joint Improvised Explosive Device Defeat Organization, 2011), 5.

forces to gain valuable intelligence, which is useful to neutralize the adversary. Feedback loops also exist, whereby gaining intelligence allows for the building of better relationships, as it helps the local population gain the trust of friendly forces. Similarly, activities to neutralize the adversary reinforce the relationships and help to generate more intelligence. While this is one model, it is important to note that, particularly at the tactical level, AtN activities must be tailored for local culture, power structures, and social dynamics.

At the operational level, AtN focuses on refining the understanding of the operational environment and the focusing of resources to target key nodes. The operational level plays a key role in enabling tactical success by providing tactical level leaders with the training, coordination, and specialist support to enhance the effectiveness of subordinate AtN activities.⁵²

Strategic AtN focuses on transnational, international, and global threat networks. At this level, AtN is far beyond merely a military problem, requiring the involvement of international partners and multinational forces. At the strategic level, AtN activities will require the employment of all forms of national power, including diplomatic, informational, military, and economic, to shape the actions and opinions.⁵³

The Network Fights Back

So what, then, are the challenges to successful AtN activities? And, having identified them, how can they be overcome? The most obvious challenge, yet also one of the hardest to overcome, is to effectively analyse the structure and function of the target network. When looking to understand IED networks, western organizations tend to look for structures and hierarchies that they recognize. Doing so is particularly dangerous, as many who are now members of threat networks have studied at western institutions and understand the kind of

⁵² Joint Chiefs of Staff, Counter-Improvised Explosive Device Operations ..., IV-8.

⁵³ *Ibid.*

structures the west will be looking for. There is thus the risk that a shell network, taking the form conventional forces expect, would be set up to draw attention, preventing them from seeing the true network.⁵⁴ In order to counter the threat, and increase the chances of properly identifying the threat network structure, it is necessary to see beyond what is expected.

Achieving this deeper view requires a broader lens than a military is likely to be able to produce. The most obvious solution in this case is to employ the Comprehensive Approach (CA). The CA seeks to synchronize the actions of a broad range of partners to achieve synergistic results beyond what any one partner could have achieved on their own. These partners run the gamut from other militaries, to other government departments (OGDs), non-governmental organizations (NGOs), and international organizations (IOs). Employing the CA requires not just coordinating activities among these groups, but collaboratively addressing problems from the outset to ensure that responses are aligned across the spectrum of organizations. With AtN activities, the CA provides an opportunity to collaborate with organizations who view the world through a far different set of assumptions and preconceptions than our own. The unique perspectives of these organizations may help prevent militaries from seeing the structures and organizations they expect to see in the threat network, and instead allow the enemy's true form to emerge. In this way, the threat network can more effectively targeted and disrupted, while friendly and neutral alternatives are reinforced.

CONCLUSION

While it is clear from the above that all three pillars in the NATO C-IED approach are essential if we hope to defeat IED networks, it is equally clear that achieving any significant measure of success in preventing IED events, that is, getting left of the boom, must be heavily

⁵⁴ James M. Nyce and Sidney W.A. Dekker, "IED casualties mask the real problem: it's us." *Small Wars & Insurgencies* 21, no. 2 (June 2010): 411.

predicated on attacking IED networks. These networks have shown themselves to be highly adaptable, and effectively targeting them takes considerable effort. It is not enough to simply bring kinetic means to bear across the network. Rather, a judicious mix of kinetic and non-kinetic means must be employed, combined with efforts to reinforce neutral or friendly networks to supplant those targeted.

IEDs are by no means a new weapon, however the rise of the internet, combined with large-scale industrialization the world over, now means that the materiel and knowledge on how to construct IEDs now exists almost anywhere on the planet western militaries might deploy. While it would be naïve to think that the next mission on which the CAF deploys will look the same as Afghanistan, it is even more naïve to think that the IEDs are an Afghanistan problem. Threat networks the world over have had 15 years to see the combines tactical and strategic impacts that IEDs have had on the missions of the early 21st century. To believe that any force would choose to ignore a weapon of such potential is foolish.

Just as ISIL and AQ continue to use IEDs, so will future threat organizations. And if NATO militaries want to counter this threat, they will need to remember the lessons of Afghanistan. The NATO C-IED framework has shown an ability to counter the innovations in IED construction and employment, it has not been decisive. To address this issue, it is necessary to become more proactive in attempting to defeat IEDs before they are emplaced; to get left of the boom. Properly applied, leveraging the local cultural and social expertise of governmental and non-governmental, AtN activities have the potential to achieve these results. Only time, and the next CAF deployment, will show if militaries can master taking down the network.

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