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Adapting the ERW Community to Combat IED Threats

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FEATURE

ADAPTING THE ERW COMMUNITY TO COMBAT IED THREATS

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IED charge fitted for anti-lift.
All photos courtesy of Janus Global Operations.

In Iraq and other regions soon to be liberated from the Islamic State of Iraq and the Levant (ISIL), recovery and stability efforts are hindered by improvised explosive devices (IED), which threaten civilians returning home and/or assisting with reconstruction. According to *Relief Web*, the Anbar Provincial Council "discourage[d] the premature return of internally displaced persons (IDP) to Fallujah due to the remaining IEDs left behind by the Islamic state of Iraq and al-Sham (ISIS) militants."[1] This threat, coupled with the consequences of an asymmetrical conflict, has changed the operating environments encountered by organizations that respond to explosive remnants of war (ERW). In order for post-conflict explosive hazard search and removal activities to stabilize these areas, organizations must be prepared to adapt to the dynamic and challenging environments that are associated with improvised explosive device disposal (IEDD).

With origins seated in specialized military and police counter-terrorist explosive ordnance disposal (EOD) teams, IEDD incorporates experience from a wide spectrum of conflicts and forms a distinctive branch of the wider EOD discipline. The practice is often difficult and costly as it requires specialized equipment and advanced training. The difficulty and ambiguity of the IEDD tasks, along with the potential catastrophic consequences of accidental detonations, have long made it an exclusive activity for military or special police units. In recent years, the prevalence of the IED threat has resulted in IED awareness and search skills training to the vast majority of personnel deployed in conflict operations. Since an IED is considered a weapon from combatants, organizations that conduct IEDD are faced with similar security challenges as militaries and local police. This integrated understanding of explosive hazards and their operational impacts has reached ERW removal organizations. This prompts the question: how can existing mine action organizations and personnel adapt to address this threat and effectively support stability operations?

DISTINGUISHING MINE ACTION FROM IEDD

ERW removal and mine action organizations have a wealth of experience operating in post-conflict areas to remove explosive hazards. Some organizations have categorized IEDs as a type of improvised landmine in order to catalogue and address it within the confines of their scope and mandates. However, IEDs can vary greatly, even in the same operational theater. This variation can be in the form of a simple pipe bomb used by ISIL as a hand grenade to a multi-switched device incorporating multiple main charges.

The battlefields of the 20th century were often open areas, fought between traditional force-on-force opponents using conventional ordnance, which included mines that were placed as both barrier obstacles, as well as nuisance minefields, targeting vulnerable points such as bridge abutments or landing strips. The vast majority of these mines were non-electrical and recognized and approved render safe procedures (RSP). They were often placed in areas that could withstand a high order detonation, if demolition in situ was required. Due to the materials and methodology used in the creation of these devices, historical means of recognition and

Suicide IED belt found in Ramadi, Iraq.

the ability to reference technical publications to determine a suitable RSP are less valuable. Not only have the means of disposal changed, but search procedures can differ when working with IEDs. For example, a road that might have a crush wire IED will likely have a switch, which is difficult to detect with traditional demining procedures unless search teams are equipped with the training and equipment specific to IED threats. These factors reduce the suitability for a traditional demining approach and require the adaptation of new training and procedures, which are principally taken from recent military experience.

ISIL and groups like the Taliban are now aware that nonmilitary actors will be used to search and clear areas after they were forced to withdraw. It serves their interest to make clearance organizations' tasks difficult. It is critical that organizations understand that IEDs in liberated areas are still serving ISIL's purpose of harassing and restricting movement through death or injury. Incorrectly categorizing all IEDs in liberated areas as abandoned or legacy devices or as simple conventional mines creates further risk to life and property. When ISIL places IEDs in houses, schools, government buildings, and other critical infrastructure points, they are actively targeting the credibility of the local authority. The inability to dispose of these IEDs can adversely affect the confidence that the local populace has in said authority. This can lead to discontent, which can devolve into further violence. This has proven to be an effective Taliban tactic, technique, and procedure (TTP) against the government of Afghanistan. The Taliban has utilized IEDs to actively disrupt the government's ability to provide the fundamental services required to affirm its authority.

Traditionally, most community-based ERW removal organizations were considered noncombatants. Community-based mine action organizations in Afghanistan remove devices left behind from previous wars. The Taliban and ISIL view IEDs as weapons, and disposing of these weapons causes insurgents to react with hostility and see mine action organizations as combatants. In Afghanistan, mine action organizations are advised to never destroy IEDs and instead report them to local authorities to avoid violent reactions from the Taliban. Organizations that are conducting IEDD operations must adapt to this important risk and provide the proper security and risk management from being targeted by insurgent groups.

LEARNING FROM EOD EXPERIENCE

Organizations involved in post-conflict ERW removal can benefit from the experience of IEDD operators in approaching these items with philosophies and principals specific to IEDs as opposed to mines. Traditional unexploded ordnance (UXO) clearance operations relied heavily on technical publications of recognized RSPs for specific conventional ordnance and military booby trap switches. Since each encountered IED can vary greatly in terms of materials and deployment, the traditional ERW RSPs counter the nature of the improvised threat. Militaries adapted to this by adopting a philosophy of approaching each IED as a unique threat and have applied this in their training.

IED RSPs do not always mirror UXO procedures. For example, IEDD principles encourage standoff distances and devices such as remote control vehicles (RCV), unmanned aerial vehicles (UAV), or hook and line kits to conduct circuit disruption from a safe area. Additionally, due to the preponderance of electrically initiated IEDs, water-based disruptors are often used to achieve neutralization. These can include improvised general emplaced disruptors made from water bottles and detonating cord.

Why conduct an RSP versus destruction? There might be opportunities to dispose of an IED in situ, where bulk explosives are used to cause a high order detonation of the device. Although this can be the safest and easiest option, destruction in situ can present problems. Common obstacles include: the unavailability of explosives, potential damage to the surrounding area, and unclear legal authorities to conduct high order detonations in the host country. Destruction of an IED in situ can also expose an operator to a viable device for longer than necessary. For example, when dealing with a pressure plate IED, if the IEDD operator intends to destroy it in situ, the operator needs to achieve intimate contact between the IED's main charge and an explosive donor charge (unless

UXO scrap from a single sector at Al Anbar University, Iraq.

they have access to a shaped charge or large amount of bulk explosives). If the pressure plate is adjacent to or directly above the main charge, the operator will need to spend a considerable amount of time feeling for the main charge while in close proximity to the firing switch. The resultant explosion may also interfere with other IEDs in the vicinity, thus increasing the hazard. Therefore, even if an IED can be destroyed in situ, the operator might still elect to follow RSPs and disrupt the power source remotely or semi-remotely.

DEFINE AND UNDERSTAND THE THREAT

The pressure plate IED (PPIED) became synonymous with Afghanistan. Although the Taliban also deployed vast numbers of devices that were self-detonated, or detonated via radio control or command wire, the PPIED often posed the greatest challenge to Coalition Forces. Although many variants were deployed, the general tactic was identical. The device was concealed and buried in the ground with a simple electrical circuit utilizing a firing switch created via two contacts held in the open position by spacers. When the weight of the target is applied to the pressure plate, the contacts come together, the circuit completes, and the device detonates.

Previously in Iraq, PPIEDs were used on a small scale against Coalition Forces. ISIL, however, has used PPIEDs and other victim operated IEDs (VOIED) in vast quantities. These have often been emplaced in a defensive manner in order to restrict avenues of approach as the Iraqi Army begins their offensive ground operations to liberate ISIL-controlled areas. They often deployed PPIEDs in a manner similar to conventional barrier minefields, linking natural obstacles. These devices, like those in Afghanistan, continue to utilize a simple firing circuit with a normally open switch.

A key factor for organizations to consider during IEDD operations is that the batteries powering many IEDs have unusually long life spans. Many IEDs are designed to not draw any current from the IED's power source. When compared to the shorter life of a standard nine-volt battery in a house smoke alarm, ISIL devices may be viable for several years after they are emplaced. The number of IEDs that have functioned in the Al Anbar Province of Iraq 8–10 months after the area was liberated clearly demonstrates that batteries contain enough voltage to detonate these devices.

ISIL has taken the effectiveness of pressure plate IEDs and has sought to develop devices and tactics to further optimize VOIEDs in the urban environment. As identified in Al Anbar Province and other areas, ISIL made extensive use of a variety of IED types in homes, schools, factories, and infrastructure like water, power, and sewage plants. These include trip wires, crush switches, hydraulic switches, anti-lift triggers, and a variety of pull switches. The vast majority of these VOIEDs normally employ an open firing switch that functions as a result of a door being opened, an object being moved, or a person walking through a doorway. This again means that there is no electrical draw of the power source and the device can stay viable for an extensive period of time.

TRAIN FOR THE THREAT

IED Search and Detect Operations. Training in open-area, route, building, and infrastructure search and detect (SnD) procedures is essential to meet the challenges posed in

IED search operations at Al Anbar University, Iraq.

urban post-conflict zones. These procedures take a systematic approach depending on the terrain and environment while also assessing the intent and capability of the device user. This approach can vary considerably from the use of instruments on un-prepared surfaces to utilizing visual checks in buildings and on prepared surfaces.

A key difference between SnD and manual minefield clearance is the adoption of IED threat assessment into planning the safest and most appropriate search procedure. For example, the crush wire switch is difficult to detect both visually and via search equipment. Instead, the adopted search procedure should be focused on initially avoiding areas where the crush wire switches are likely laid. Instead, the searcher locates other components of the IED, such as the main charge. Once a searcher detects a possible device, it is marked and reported to an IEDD operator for an RSP or disposal.

IED Disposal Operations. IEDD-qualified staff need to be conversant with both conventional ordnance and the full array of IEDs. As IEDs vary considerably, training must introduce the student to various devices instead of specializing in one specific device type. Detailed training in explosive theory (including the use of homemade explosives), IEDD philosophies and principles, task scene management, and threat assessment and execution all need to be covered specific to IEDD. The current International Mine Action Standards (IMAS) do not sufficiently prepare an operator for the dynamic situations they will face in the field. A unique set of standards must be developed for IEDD.

Local personnel hired to aid and (eventually) assume the responsibility of IEDD in a post-conflict area must be properly vetted and cleared by the local government before receiving any IEDD training. The technical knowledge that is acquired through training is a restricted defense commodity, and it can be exploited to create IEDs. Proper vetting and monitoring of employees by the IEDD organization and open communication with the local authorities is vital to ensure that this technical knowledge is not given to insurgents.

Risk Education. The need and scope for risk education is evolving, and it is critical that it be delivered in an effective and controlled manner. With vast numbers of residential, commercial, and critical infrastructure buildings targeted by groups like ISIL, risk education needs to be immediate. Large numbers of displaced persons are waiting for the fighting to end before returning to their homes. Educating the returning populace to access their homes safely is required as searching and clearing every house in an affected area is impractical. However, this is not meant to replace IED search and clearance by the recognized organization. If IEDs are deemed highly likely or are confirmed, then the house, business, or area must be assigned by a coordinating body to an IEDD organization or local police with the capacity to implement SnD operations safely.

Equip to Meet the Challenge. At the conceptual level, IEDD operations employ similar equipment as conventional EOD operations. However, the equipment needed for IEDD operations is not only more advanced but can often be subject to export restrictions. Organizations must realize the limitations of equipment designed to combat different threats and must employ disruptors that can double as dearmers, hook and line kits that are fit for purpose, and personal protective

equipment (PPE) that is sufficient for the task. Seeking alternate equipment as a means of circumnavigating problems posed by acquiring controlled equipment is dangerously irresponsible. Without the proper equipment, the risk that operators face is greatly increased.

An equipment area that is in need of further detailed consideration in the future is the use of mechanical clearance to include tillers, flails, ploughs, and excavators. As with mechanical minefield clearance, these machines can be used to facilitate the rapid creation of a confirmed hazardous area, enabling the start of the search and clearance phase that will likely still need to be conducted. IEDs that were encountered in Iraq have typically had main charges with a net explosive weight (NEQ) ranging from 10 to 20 kg (22 to 44 lb). The damage that these charges would cause, even to armored and remotely operated machines, severely limits their effective use. Whereas the use of machinery has a place within IEDD, organizations need to carefully develop standard operating procedures (SOP) to utilize machines effectively.

CASE STUDY: RAMADI, IRAQ

Janus commenced IEDD operations in Ramadi, Iraq, in April 2016. Janus first established an operations base and recruited local deminers to retrain as searchers. These personnel were trained in IED SnD as well as battlefield area clearance (BAC). International technical advisors with IEDD experience were employed to conduct training, mentoring, and operational EOD/IEDD tasks. The challenges initially faced by the project were similar to those often encountered by ERW eradication organizations in the post-conflict environment. These included the requirement to build relationships with local stakeholders and operating in an evolving situation with no clear tasking authority.

OPERATIONAL ASPECTS IN RAMADI

Explosive hazard threats from IEDs. ISIL employed a wide range of both conventional ordnance and IEDs. Therefore, in addition to the requirement to clear significant quantities of Coalition and Iraqi Army UXO, the task of combatting ISIL's IEDs was immense in scale and filled with many uncertainties. The majority of the United Nations Development Program's initial priority tasks focused on searching and clearing critical infrastructure. Explosive hazards could range from a victim-operated crush-wire IED, to an improvised pipe bomb, to a conventional 81 mm mortar. In addition, large air-dropped munitions including numerous variants of 500 lb aircraft bombs were regularly encountered and posed a direct threat to the local population.

ISIL has also developed an extensive range of projected IEDs (from rockets and mortars to large improvised rocketed assisted mortars). A large portion of these are direct copies of conventional ordnance, incorporating cast-and-milled main bodies with homemade explosive fill and a detonating cord booster. The fuze is often an improvised copy of a military fuze, incorporating a plain detonator modified by the attachment of a percussion cartridge often taken from a 0.22 caliber cartridge. All of these improvised munitions need to be handled with care due to the unknown state of the explosive fill and functionality of any built-in safety features.

The wide range of explosive threats present in Ramadi reinforces the need for comprehensive training and operational approaches. Destruction of IED belts and pressure plates in situ is difficult due to the inability of acquiring adequate high order explosives. In Iraq, the only organization that can deliberately initiate a high order explosion is the Iraqi Army. This scarcity of high order explosives combined with the need to prevent further damage to Ramadi's critical infrastructure necessitates RSPs. Each RSP is different depending on how the device was emplaced and the individual situation that the operator encounters. It is critical to ensure that the Iraqis are trained for this task as local capacity is built. SnD is more complex than destroying IEDs in place in an open, permissive environment. They must master the concepts of IEDD.

FULL SND vs SURFACE BAC

Prior to deployment, Janus developed a SnD training package based around the anticipated IED threat. Once deployed, these were further amended to take into account the significant number of non-pressure plate IEDs that were encountered, such as crush wire IEDs, trip wires, and anti-lift devices. Thus the courses developed for the students included basic explosive theory, device component parts, land service ammunition recognition, search equipment, procedures, and individual search drills. Additional training was also provided on BAC procedures, which proved to be a key element in increasing productivity when the threat of an active IED could be discounted.

Combined SnD and BAC training creates a higher level of productivity in many cases. In one case, a large water treatment plant was occupied and cleared by the Iraqi Army with workers returning and starting operations at the site. Non-technical surveys and some technical surveys were conducted in order to ensure that a surface BAC search could be safely conducted to locate conventional UXO and IED component parts. This adaptability in operations enabled a site to be

completed in approximately two days when full SnD might take two weeks.

STOCKPILE CLEARANCE AND EXPLOSIVE HAZARD SPOT TASKS

After the Iraqi Army completed their ground assault of Ramadi they started the process of clearing the city of some of the IEDs left behind by ISIL. Often these were the devices that were placed in roads and the most significant buildings, therefore representing an immediate threat to military operations. These devices were then placed at the side of the road and formed uncontrolled stockpiles. These roadside stockpiles represented a significant explosive hazard. When the local population and construction workers returned to Ramadi without appropriate risk education, they started to add items to these piles. These items required detailed IEDD/EOD procedures to confirm that they were safe to move to a central demolition site (CDS) for final disposal.

The management of the deliberate clearance of the stockpile needed to be coordinated with a range of local and international stakeholders in order to achieve an adequate security cordon, evacuation of bystanders, and demolition. These stockpiles often represented an explosive hazard simply by the unstable nature of the homemade explosives and lack of basic explosive safety knowledge by the individuals that left the ordnance. For example, an electrical power source could be positioned adjacent to an electrical detonator that was still attached to a 20 kg (44 lb) IED main charge, which if it had functioned, could have detonated an additional 2,000 kg (4,400 lb) of explosives.

LOOKING TOWARD THE FUTURE

The use of IEDs by ISIL is immense and has changed the face of what ERW response efforts will look like in the region for some time. This threat shares characteristics with other conflicts across the world including Afghanistan, Libya, Mali, Nigeria, Somalia, and Syria. Acceptance of sound IEDD principals is the cornerstone for organizations to develop effective programs.

The environments in which organizations operate are also likely to continue to become less defined with fluctuation in terms of stakeholders, armed groups, and the overall security situation. Groups such as ISIL are becoming more aware that after they leave an area, ERW organizations are deployed to clear explosive hazards. These organizations have become targets.

It is hard to quantify the lives saved and the utility provided by IEDD in square meters cleared or the number of devices found. Educating the donor community about the highly specialized personnel and equipment required to meet this modern challenge effectively is an ongoing effort. We must accept the realities of limited funding yet still appreciate the critical importance that IEDD capacity brings immediately following a conflict. When the work and sacrifice of government militaries concludes, the private sector and humanitarian actors need to ensure that populations can safely re-inhabit liberated cities and towns. Employing specifically tailored approaches to the unique scourge of IEDs is fundamental to the ERW community and ultimately, the safety of civilians and operators alike.

The asymmetrical conflicts of the 21st century no longer resemble the battlefields of the past. When ongoing conflicts end, ERW organizations will be required to clear the path for civilians returning to their homes. In order for these post-conflict efforts to be successful, the ERW community must evolve to counter these threats. The IEDs that are left after the fighting ends in Iraq are testament to the modified tactics of the terrorist organizations. ERW organizations must adopt IEDD principles and practices in order for post-conflict recovery to occur.

See endnotes page 66

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