The Need for Collaboration Between Ordnance Manufacturers and UXO Clean-up Personnel

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Recommended Citation
Available at: http://commons.lib.jmu.edu/cisr-journal/vol16/iss3/2
The Need for Collaboration Between Ordnance Manufacturers and UXO Clean-up Personnel

The ability to locate unexploded ordnance remotely and accurately increases the safety and efficiency of clearance efforts. To achieve maximum effectiveness, UXO manufacturers and removal groups should coordinate resources and information to create new and practical technologies to assist in efforts to identify failure rates and prevent civilian casualties. The Lost Puppy Proposal is one example of a life-salvaging technology that could result from such collaboration.

by Jack Imbar | Imbar Demining International |

Long-term danger from unexploded ordnance is a major concern for our generation and future generations. As war and military training continues, the number of munitions used increases, resulting in increased UXO contamination. As new ordnance is deployed, mine action companies will likely fail even further behind in clearance efforts, leading to more threats from explosive remnants of war to civilians and a further reduction in usable land.

ERW causes casualties and prevents land usage long after a war is over. For example, in the 32 years (1975–2007) following the end of the Vietnam War, the Ministry of Labor, Invalids and Social Affairs in Vietnam reported that landmine and ERW-related incidents killed 38,649 people and injured 65,852 in Vietnam.1 The total number remains unknown, due to the absence of a nationwide casualty data collection system. According to the Landmine and Cluster Munition Monitor, in 2011 there were 31 reported casualties (14 killed/17 injured) and in 2010, there were 42 casualties (8 killed/34 injured).2 These casualties are reminders that ordnance life cycles do not always end at military deployment. If ordnance fails to explode on a mission against military targets, it may later explode on civilian or explosive ordnance disposal contact, resulting in noncombatant casualties.

Contemporary civilian mine-clearance initiatives began in the late 1990s, in part with MAG’s (Mine Advisory Group) efforts, in noncombatant casualties. As new ordnance is deployed, mine action companies will likely fail even further behind in clearance efforts, leading to more threats from explosive remnants of war to civilians and a further reduction in usable land.

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Contemporary civilian mine-clearance initiatives began in the late 1990s, in part with MAG’s (Mine Advisory Group) survey efforts in Afghanistan after Soviet withdrawal.1 Only recently has traditional thought involving the use and subsequent fates of deployed ordnance shifted. Since UXO decay leaves behind explosive, chemical, biological and/or nuclear hazards, as well as heavy metal residue, failed ordnance is considered hazardous waste.3 Ordnance manufacturers have not been held accountable like other manufacturers that produce hazardous waste. Ordnance consumers—militaries and nation states—bear responsibility for failed ordnance if they are used contrary to the specifications for the product given by the manufacturer. However, if munitions are used in line with the manufacturer’s specifications, and their failure rates are higher in the field than in testing, the manufacturers should be held accountable. At this point, there is no accurate recording of actual failure rates in the field, and thus this reality is not clearly known. As any failure may result in post-conflict civilian casualties, even “acceptable” rates that are within the purchase specifications require swift and effective remediation. The absence of sufficient recording of field failure rates has contributed to the largely undocumented deployment of ordnance globally over the last century. In addition munitions have been dumped or abandoned following conflict. This points to the reality that current methods of location, identification and disposal must evolve in order to progress toward efficient land clearance.

Collaboration Across Sectors

The primary goal of a weapons manufacturer is efficiency. Munitions should be safe for the handler and do what they are supposed to do with minimal failure rates. Exact failure rates in real world conditions, historically and currently, are largely unknown. The results seen in testing ordnance are significantly better than the wide variance seen in actual field rates. Where this is not the result of variant factors in the field, UXO contamination remains from ordnance that failed to perform to standard, that is, failed to explode as intended.

Ordnance manufacturers need to know overall failure rates in the field, beyond the limits of their testing. Subsequent reporting of clearance efforts is one of the only ways manufacturers/users can verify failure rates. Knowing these failure rates will help manufacturers improve their product, and eventually reduce these rates. As a result, cooperation between manufacturers and UXO-clearance companies is the next logical step to achieving increased efficiency and safety. Manufacturers and clearance companies are related by their work with ordnance. The absence of manufacturers in the clearance process is problematic and contributes to contamination challenges today. Collaboration between ordnance manufacturers and clearance firms may lead to the following outcomes, which would benefit all parties involved: 1. Decreased failure rates and thus increased effectiveness 2. Increased safety protocols for handlers and remediation teams 3. Limited hazardous waste from failed ordnance 4. Decreased casualties from failed ordnance 5. Increased avenues to analyze effectiveness of copycat munitions systems not subject under law to the same scrutiny as original models 6. Decreased long-term expenses, as clean-up time and effort would be greatly reduced Manufacturers and clearance personnel have been engaged in dialogue while attending various conferences. By attending each other’s conferences, understanding of perspectives will improve and may develop into effective and collaborative clearance strategies beneficial to all affected parties. By expanding existing technologies and collaborating in clearance efforts, ordnance manufacturers and UXO-clearance personnel may make a post-conflict country safer within a matter of months rather than several decades.

Lost Puppy Proposal

A potential solution that may effectively address the inability of manufacturers to detect failure rates and facilitate clean-up efforts is a theoretical concept referred to as the Lost Puppy Proposal. To facilitate the collection of failed ordnance, or “lost puppies,” a radio-frequency identification microchip would be placed in both the ordnance and the fuze at the time of manufacture. After deployment of the ordnance, personnel would be able to locate the chip from a distance within any UXO with a compatible detector. The detector receives a numbered code from the chip, which corresponds to information in a secured database that identifies the item for the UXO technician and suggests how best to deactivate it. Similarly, most commercial explosives are required to have a crochip would be placed in both the ordnance and the fuze at the time of manufacture. After deployment of the ordnance, personnel would be able to locate the chip from a distance within any UXO with a compatible detector. The detector receives a numbered code from the chip, which corresponds to information in a secured database that identifies the item for the UXO technician and suggests how best to deactivate it. Similarly, most commercial explosives are required to have a
The increased cost of production to implement this procedure is transferred directly to the customer, as are all costs of manufacturing. Controlled testing of a prototype technology is the best way to prove the economic viability of this process. Once developed, increasing the volume will decrease the cost. Additionally, as this technology will significantly ease clean up, it will pay for itself many times over through the reduced need for surveys, EOD clearance teams, victim assistance, mine risk education, etc.

As the ordnance consumer becomes familiar with these new protocols of cooperation, certain advantages could be gained from tactical and safety perspectives. For example, with the proposed radio detection chip and the correct detection, the military can discover which ordnance companies deliver the best performing products. This information will help determine who will obtain contracts and ultimately who will assist the military in performing its operations efficiently. The collaboration between ordnance manufacturers and UXO clearance personnel can help all parties reach goals with greater efficiency and, more importantly, save innocent lives.

Where We Are Today

The Lost Puppy Proposal is very timely. Recent advances in microchips with radio-frequency technologies, to aid in post-deployment detection, may be suitable for installation in newly manufactured ordnance. The microchip currently is used for inventory of manufactured ordnance. The microchip used in the microcrop and detection system has been promoted as explosive- and fuse-safe. It can be easily detected at length through metal and water, should withstand the rigors of deployment and can pass the very crucial Hazards of Electromagnetic Radiation to Ordnance (HERO) standards.1 Including microchip technology in munitions could contribute to:

1. Quickly locating failed and hazardous weapons in the field
2. Identifying UXO items before excavation begins
3. Efficiently eliminating harm to civilian populations

UXO professionals worldwide acknowledge the concept of Lost Puppy as a possible and viable solution. It was presented at the 2011 Parisar ordinance conference centered on safety in Brisbane, Australia, to ordnance manufacturers and those involved in UXO remediation.2 While questions remain about the implementation of such protocol, the consensus at this conference was overwhelmingly positive for the need of a similar solution and for dialogue between related industries.

See endnotes page 65.

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The initiative of the African Union/United Nations Hybrid Operation in Darfur (UNAMID) Ordnance Disposal Office the first Knowledge, Attitudes, Practices and Beliefs Survey conducted in 2011–2012 in Darfur to assist with the annual work plan. The KAPB study was developed and implemented in close cooperation with National Mine Action Centre Sudan, UNICEF, MineTech International and the two national nongovernmental organizations, the Friends of Peace and Development Organization and JASMAR Human Security Organization (formerly known as the Sudanese Association for Combating Landmines).

The KAPB study’s main purpose was to acquire a baseline and direction for the risk education program in order to better adapt risk education to the local context and needs. Under the supervision of UNAMID Ordnance Disposal Office and NMAC Sudan, a total of 1,671 persons (893 female/778 male; 745 children/926 adults) of different subgroups (students, nuns/herders, farmers, teachers, community leaders, workers, etc.) were interviewed between May and July 2012 in 20 different villages and internally displaced persons camps in North, South and West Darfur.

The results of this first baseline KAPB study provided useful information and highlighted several gaps to be addressed by risk-education stakeholders working in Darfur.

Background

In 2003, the Darfur conflict devastated western Sudan’s Darfur region, an area with approximately 7.5 million people of different ethnic groups and covering about 493,380 sq km (190,418 sq mi). As a result of persistent violence and fighting, many people fled their homes; estimates indicate the number of IDPs is 2.2 million.2 Due to ongoing fighting, explosive remnants of war continue to pose a significant threat to the safety and security of residents, displaced and returning populations.

In Darfur, mine action work largely focuses on disposing unexploded ordnance. The changing situation of the Darfur conflict implies high risk of recontamination wherever fighting occurs regardless of previous clearance efforts. UXO, such as mortars, rockets, aerially delivered bombs and grenades, pose a high risk to the individual in terms of casualty and lethality radius due to the large amount of explosives and the fragmentation effect. The reported UXO accidents also involved children, usually boys. In 2011, 122 mine/UXO casualties (32 killed/90 injured) were reported in Sudan.3

Since 2007, risk education teams from two local NGOs, FPDO and JASMAR Human Security Organization, have worked in Darfur under the coordination of the UNAMID Ordnance Disposal Office, NMAC Sudan and UNICEF.4 They work to raise awareness of ERW dangers among communities and displaced populations by providing community and school-based risk education through various training and public-information activities.

Darfur: Baseline KAPB Survey

This article summarizes the first baseline Knowledge, Attitudes, Practices and Beliefs Survey conducted in Darfur since 2003. The purpose of the survey was to gain a better understanding of the knowledge, attitudes, practices and beliefs of the at-risk population in Darfur regarding explosive remnants of war, and to evaluate aspects of transfer of knowledge, use of mass media and surveillance mechanisms.