

# Self-Help Ammunition Destruction Options Worldwide (SHADOW)

In response to the increasing number of explosions at ammunition storage sites (ASA), Norwegian People's Aid (NPA) created Self-Help Ammunition Destruction Options Worldwide (SHADOW), a program emphasizing national capacity building for stockpile management and destruction through low-tech and cost-effective techniques. Following the success of its first SHADOW project in Moldova in 2010, in 2012 NPA implemented another SHADOW project focused on ASAs in cooperation with Moldova's National Army and Ministry of Defense.

by Lee Moroney and Kay Gamst [ Norwegian People's Aid ]



Safe-storage practices following SHADOW and IATG's principles were implemented in Moldova in 2012. (Note that appropriate high-definition labels and markings were applied during the process.)

Photo courtesy of Lt. Col. Andrewi Camerzan/National Army of Moldova.

The disastrous effects of the ammunition storage area (ASA) explosions in Brazzaville, Republic of the Congo, on 3 March 2012 are well documented. The series of explosions killed 280 people, injured 1,500 and displaced more than 20,000.<sup>1,2</sup> The subsequent, rapid response by the United Nations Mine Action Team organizations, the International Committee of the Red Cross and international nongovernmental organizations, such as MAG (Mines Advisory Group), provided a timely response that prevented further casualties and removed the risk of additional catastrophic events that scattered pieces of unexploded ordnance could have caused.

Since 1987, the Brazzaville explosion was only one of 453 recorded, unplanned explosions at munitions sites globally—events that have increased at an alarming rate over the last decade.<sup>3</sup> States Parties to the *Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-personnel Mines and on Their Destruction* (Anti-personnel Mine Ban Convention or APMBC) built capacity for stockpile destruction in order to implement their Article 4 obligations. The *Convention on Cluster Munitions* (CCM) in 2008 gave its States Parties additional experience for stockpile destruction as it relates to the States Parties' obligations under Article 3 of the CCM to destroy their



Example of in-country solutions: A Macedonia M93 mortar disassembly using locally procured tools with low-tech specialty equipment.

*Photo courtesy of Colin King.*

cluster munition stocks.<sup>4</sup> NPA and the Moldovan National Army took experience gained in cluster munitions stockpile destruction and applied it to addressing proper management and destruction of aging munitions in Moldova.

## SHADOW

Norwegian People's Aid (NPA) developed the Self-Help Ammunition Destruction Options Worldwide (SHADOW) program to assist in the timely destruction of states' stockpiles.<sup>5</sup> The program was developed on the basis of studies carried out in 2008–2009 by C King Associates Ltd with the methods developed by the Golden West Humanitarian Foundation (Golden West) on excess USSR RBK series dispensers in Cambodia from the Royal Cambodian Armed Forces (RCAF).<sup>6,7</sup> These studies resulted from a clear need for safe, practical and cost-effective solutions for local and national small-scale, cluster munition stockpile destruction. Overall, the study discovered that alternative safe and affordable techniques can be developed for the disposal of cluster munitions.

SHADOW's key features allow for in-country solutions, where national ownership of stockpile challenges is crucial. The NPA Operational Management package developed for each country is the core feature of efficient planning for SHADOW initiatives. The package includes the training of an indigenous management team, utilizing local, easy-to-obtain

materials to build and develop local capacities. With few facilities required and transportation kept to a minimum through efficient project planning and support from experienced NPA technical advisors, simple low-tech solutions are developed for safe, fast and affordable implementation activities.

The first NPA SHADOW project, funded by the Spanish Ministry of Foreign Affairs through the Organization for Security and Co-operation in Europe (OSCE) and the Norwegian Ministry of Foreign Affairs, totaling EU€60,765 (US\$82,151 as of 19 September 2013), took place in Bulboaca, Moldova in cooperation with its Ministry of Defense (MOD) and National Army in 2010. With on-site assistance from NPA, Colin King (C King Associates Ltd) and Len Austin (Golden West), a series of logical phases led to the implementation phase. The first phase, the verification and feasibility assessment, identified the cluster munition types and submunition payloads in storage, assessed their condition and confirmed whether SHADOW was suitable.

The research and development phase then established the minimum level of resources and activity required to complete the project safely. The final phase, the preparation and proving phase, tested a limited number of each type of submunition according to the processes determined in the previous phase to establish a basis for time analysis for planning the implementation phase. During the implementation phase, the



Norwegian People's Aid trained Moldovan civilians in the Moldova project. In this photo, PTAB 2.5M submunitions are extracted from an RBK dispenser.  
*Photo courtesy of Werner Anderson.*

country's stockpile of cluster bombs was destroyed in 17 days. Due to NPA's ability to mobilize assistance quickly with limited bureaucracy, the traditional barriers perceived between the National Army and civil society began to disappear. This further solidified the relationship between the two, leading toward similar future humanitarian projects.

#### **Ammunition Stockpile Management**

Similar to stockpiles of cluster munitions, Moldova has vast amounts of legacy munitions remaining from the Cold War era. Not only were the serviceability and integrity of the stored ammunition in question, the stockpiling practices and the conditions of the explosive storehouses (ESH) posed considerable risks of future unplanned explosions. The Moldovan government's ongoing work with OSCE to reduce the amount of surplus ammunition in the country also helped lead to cooperation between NPA and the Moldovan MOD for a second SHADOW project.

Building on the successful approach used for the destruction of the cluster munition stockpiles, NPA followed the prin-

ciples of the International Ammunition Technical Guidelines (IATG), taking advantage of low-tech, cost-efficient solutions and building sustainable local capacities through its SHADOW program. In collaboration with Moldova's National Army in 2012, NPA worked to enhance the safety and security of a medium-sized ASA surrounded by farming communities 37 km (23 mi) from the capital city.

The first phase of the project focused on an ESH filled with a range of munitions, which were designated for disposal. On initial inspection, ammunition needing immediate disposal had not been prioritized. Due to the limited support of previous ammunition-management projects in Moldova, the ammunition boxes were stacked haphazardly, had a mix of nomenclatures and included dangerously exposed items (such as loose propellant and propelled grenades). Environmental deterioration left a majority of the munitions in poor condition, which also raised concern about the integrity of the explosives.

The SHADOW project established processes to inspect, condition, store and classify munitions for immediate and

subsequent disposal. With assistance from the National Army, all ammunition was removed safely from the ESH under supervision. Technical officers, who received additional training from an NPA adviser, then inspected and stored the ammunition according to its category and designation.

After completion of this first phase, the ESH now stored palletized and segregated ammunition in a safe fashion, enabling personnel to account for, access and remove the ammunition in a safe manner. Separation distances were also followed in accordance with IATG, limiting the risk of propagation if an unplanned explosion occurred.

From June to July 2012, the second phase of the project focused on the remaining 11 ESHs within the same depot, which contained in total approximately 480 tons of ammunition. While these ESHs contained training ammunition, none of the boxes were palletized or raised off the ground, and very few had hazard markings, which are required for safe identification, storage and transportation. The simple processes of the first phase were followed, and all the ammunition was inspected and classified according to physical condition. This enabled the military to effectively manage its ammunition cycles, using the ammunition for training prior to the expiration of its shelf life or prioritizing it for disposal due to age and condition.

Within a three-month period, the completed project demonstrated that basic ammunition surveillance and management practices can be conducted safely and cost-effectively without expensive technologies or vast funding as long as thorough procedures and quality management checks are in place.

## Conclusion

IATG emphasizes that “the lack of resources in some states means that

it is not possible to establish a unique set of criteria that dictate conventional ammunition packaging and marking standards. Instead, it is necessary to identify a framework of guidelines, which provide the options for a graduated improvement in safety, packaging, and marking of ammunition and explosives within an integrated risk management process.”<sup>8</sup> The SHADOW project in Moldova illustrates that, with a small amount of funding and a dedicated cooperative team, an ASA’s level of safety can be significantly increased.

Moldova has shown considerable leadership in confronting its ammunition stockpiles. It should be commended for its effort to limit the risk of unplanned explosions, thus ensuring the safety and security of its civilian population. More challenges remain for Moldova related to its additional ammunition depots, but this first project in Bulboaca created the standards and processes for future successful projects. Together with its other partners, Moldova is working to develop national standards for the storage and transportation of ammunition.

NPA developed SHADOW as a preventive concept that emphasizes self-help, national ownership, capacity building, local employment and investment opportunities. It provides safe, simple, low-tech solutions to challenges and features an effective and achievable operational management system that encompasses critical aspects of stockpile management. The program improves the security of civilian populations through preventive measures.

Whereas support for comprehensive implementation of the APMBC and CCM are extremely important, this additional focus on ammunition safety and disarmament should be equally important for states, organizations and donors. ©

*See endnotes page 66*



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