

PHYSICAL SECURITY AND STOCKPILE MANAGEMENT: LESSONS LEARNED FROM IVORY COAST

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Physical Security and Stockpile Management (PSSM) involves providing the necessary physical infrastructure and national capacity in order for states to safely secure and account for weapons and ammunition under government control. This involves the construction and rehabilitation of armouries and ammunition stores in line with international standards as well as the design, implementation and training of national agencies to effectively manage and monitor their stockpiles.

Using the example of work conducted by The HALO Trust, this paper will focus on the provision of that physical infrastructure. Specifically it will look at the construction and rehabilitation of armouries and ammunition stores on a national scale in Ivory Coast.

Before examining the works conducted in Ivory Coast, it is first necessary to understand why the international community is becoming more focused on the issue of weapons and ammunition safety and security. The two main threats that PSSM looks to counter are Unplanned Explosions at Munitions Sites (UEMS) and SALW proliferation.

UNPLANNED EXPLOSIONS AT MUNITIONS SITES (UEMS)

The poor storage of weapons and ammunition poses a serious threat both to the civilian population as well as to the security and stability of states. According to the Small Arms Survey, between 1979 and 2014 there were a recorded 520 Unplanned Explosions at Munitions

Sites (UEMS) in 103 countries and territories, affecting more than half of UN member states and covering every continent except Antarctica. The frequency of UEMS has increased dramatically in recent years. The potential scale of these events cannot be understated. In Lagos, Nigeria in 2002 a UEMS was responsible for the deaths of nearly 1,500 people. More recently a UEMS in the middle of Brazzaville, Republic of Congo killed 290 people while injuring over 3,000. This incident occurred on a Sunday while the majority of the surrounding population were attending church (some of the most robust structures in the town). The local market and school were destroyed in the blast. Had the incident occurred on any other day then the casualty figure would have been significantly higher.

Ammunition stores should be designed, managed and situated in such a way that a UEMS should not pose a direct threat to civilians. The International Ammunition Technical Guidelines (IATGs) provide the necessary reference for national authorities to enable this. With many countries holding aging stockpiles of Cold War era ammunition, a lack of proper training and poor quality infrastructure, the threat of UEMS will continue to increase in the near future. Furthermore, urban creep around existing ammunition depots has exposed civilian populations to the threat of UEMS. Unless action is taken, the number and scale of these catastrophic events will continue to rise and pose a serious threat to the lives of civilians.



Picture above: Residential area devastated by a huge explosion at a munitions depot in Brazzaville, Republic of the Congo. The blast killed approx 290 and injured over 3,000 people. Around 120,000 people were displaced as a result of the damage and destruction of 17,000 homes.

SMALL ARMS AND LIGHT WEAPONS PROLIFERATION

The issue of Small Arms and Light Weapons (SALW) proliferation, trafficking and trading of illicit weapons is of serious and growing concern, particularly in Africa and the Middle East. For many developing or fragile states, poor management, physical security, regulation and accounting of SALW can lead to firearms being stolen or raided from national stockpiles. The ease of access to these weapons only serves to promote armed violence while increasing the fragility of those states to armed uprisings and coups. There is also a particular concern with regards to the accountability of Man Portable Air Defence Systems (MANPADS) as these weapons in the wrong hands pose a serious threat to international aviation security.

According to the OECD, the incidence of armed conflict and combat deaths have been declining in recent years. But the number of people killed by armed violence has not. Approximately 740,000 people die each year as a result of armed violence¹, the majority of which occur in non-conflict environments. By ensuring that weapons are securely stored and properly accounted for, it reduces the potential for these weapons to leak from government stockpiles and thereby targets one of the root causes of armed violence.

The International Small Arms Control Standards (ISACS) were designed by the UN Coordinating Action on Small Arms (CASA) to provide guidelines on SALW control. The ISACS include key standards pertaining to weapons storage that should be followed, where possible, by organisations engaging in PSSM activity.

PHYSICAL SECURITY AND STOCKPILE MANAGEMENT IN IVORY COAST

Following the 2011 civil war in Ivory Coast, the HALO Trust was contracted by the United Nations to conduct an Explosive Remnants of War (ERW) survey in the country to determine the level of contamination and requirements for clearance operations. During the survey, the poor security of weapons and ammunition in military, gendarmerie and police facilities was identified as a significant problem. In many cases stores had been broken into and pillaged, leading to thousands of government weapons going missing. Ammunition was badly stored and control of both weapons and ammunition was negligible. The ammunition in many cases was badly degraded.

Following the assessment, there was a UEMS in the town of Daloa in August 2011. The site had previously been identified by the American Defense Threat Reduction Agency (DTRA) in 2009 as being at risk of an incident due to poor storage of ammunition. Sixty BM21 rockets which were being stored in an accommodation block ignited sending the rockets across the city during the night causing the death of one person and serious injuries to five others, as well as causing wide spread panic across the population and the partial evacuation of the town. The ammunition store explosion highlighted the requirement for immediate action to be undertaken to reduce the risk of further incidents and casualties.

Following this incident HALO was contracted to conduct further assessment of weapons and ammunition storage facilities in Ivory Coast and, working under the United Nations, began a national PSSM program involving the rehabilitation and construction of 95 armouries and 77 ammunition stores. This included the construction of large scale ammunition storage areas capable of housing stockpiles of large quantities of 1.1 high explosive ammunition. All these facilities have either been, or are in the process of being, returned to operational use for the safe and secure storage of weapons and ammunition.

REHABILITATION WORK

An initial site assessment is conducted in order to determine the areas requiring improvement, as in some cases the existing ammunition stores and armouries can be rehabilitated. Where stores are beyond repair, or non-existent, then the requirement for the construction of new stores is determined.

In Ivory Coast, the initial site assessments are conducted by the HALO PSSM Specialist (Ammunition Technician) and HALO Construction Manager who discuss security concerns and storage requirements with the camp commanders, armourers and ammunition technicians. This is followed by a physical inspection of the stores and the compound perimeter. Detailed structural and security assessments are produced; site plans and Bill of Quantities are determined;



Pictures above: Before and after rehabilitation works at an ammunition storage area in Ivory Coast.

and provisional work schedules are drafted for approval by the relevant authorities.

The rehabilitation work is put out for tender with approved contractors who have a proven track record to ensure that good quality work with value for money is achieved.

CONSTRUCTION WORK

Where there is a requirement for new construction, the design of ammunition stores and armouries combines three principal factors:

1. Physical security
2. Protection of the ammunition or weapons from the elements
3. Mitigation of damage to the ammunition within, caused by an adjacent accidental explosive event.

In order to produce a clear plan for the construction, HALO deploys experienced construction managers, ammunition technician specialists and consults with engineers, topographical surveyors, soil analysis specialists and lightning professionals.

The design and construction of ammunition storage areas is determined by the type of ammunition to be stored. For ammunition other than Small Arms Ammunition (SAA), quantity distances will determine the location of the stores in relation to inhabited and vulnerable buildings and public traffic routes. Once an appropriate site has been identified and approved by the relevant authorities then the site plans are finalised by the specialists. In order to simplify the planning process that goes into the design of an ammunition storage facility, HALO normally recommends two different types of buildings for ammunition Hazard Division Groups 1.1, 1.2 and 1.3 – Heavy Walled Structure (HWS) and Earth Covered Building (ECB). The store designs include armoured doors with reinforced frames which are integrated/fixed into the building structure, to provide sufficient strength and security. Thick reinforced concrete ceilings are covered with a metal roof to protect from the elements and reduce interior temperatures. Ventilation is fitted to the front and rear of each store – design in such a way as to increase security. Each HWS store is fitted with



Pictures above: Before and after of a newly constructed large-scale Ammunition Storage Area (ASA) in Ivory Coast.

lightning protection by a lightning specialist, in order to conform to international standards.

In order to increase the security of the ASA, razor wire topped perimeter walls, fences, guard towers and guard posts are constructed. Electricity, perimeter lighting and strategically placed spotlights are installed depending on circumstances and, in some instances, CCTV cameras fitted linked with the command post. Mains water supply for the guard posts and fire-fighting facilities is also provided.

The topographical survey maps determine the installation of the site drainage to prevent soil erosion and damage to the stores.

While the construction of armouries tends to be more straightforward than ammunition stores, it is still necessary to ensure that the requisite standards are put in place to ensure that weapons are stored in a secure facility.



Pictures above: Works on a newly constructed armory in Ivory Coast.

LESSONS LEARNT

A number of lessons were learnt during the course of this program with standards and practices being refined to ensure that the highest standards were implemented in a cost effective and competitive manner.

National Plan

It is essential for any PSSM program to be drawn up in close cooperation with the national authorities and in line with a national plan. The national authorities are the ultimate end users and understanding their requirements is key to implementing an effective program.

There is a danger with agencies rushing into a new state and conducting stand-alone projects, such as rehabilitating half a dozen armouries, or different agencies conducting PSSM projects without any coordinating body or national standards in place.

Projects implemented in isolation will only succeed in achieving partial and potentially substandard results. When it comes to the physical infrastructure for government controlled weapons and ammunition stocks, it is first necessary to develop a national plan to determine the actual requirements. This entails working closely with national authorities and security forces to determine the scale and distribution of facilities needed to effectively house their stocks. It also involves conducting surveys and assessments to determine the respective cost to undertake these works and, if necessary, revising the plan to ensure it is realistic given the available funding.

National Standards

Many states lack national legislation or regulations concerning building standards for armouries and ammunition stores. While the ISACs and IATGs cover

the key principles concerning these standards, they remain guidelines and cannot be applied as stand-alone documents. National standards must be developed relevant to the environment to ensure that safe, secure and realistic storage facilities can be both constructed and maintained. In Ivory Coast, the HALO Trust developed Best Practice Guides that, in the absence of national regulations, were approved by the UN and served as the national standards for these facilities. In addition to ISACs and IATGs, numerous other sources were drawn from to draft these guidelines including:

- Firearms Security Handbook
Produced by the (United Kingdom) Home Office, the Association of Chief Police Officers in England, Wales and Scotland and the British Shooting Sports Council
- OSCE Handbook of Best Practices on Small Arms and Light Weapons
- OSCE Handbook of best Practices on Conventional Ammunition
- OSCE Best Practice Guide on Physical Security of Stockpiles of Conventional Ammunition
- International Mine Action Standards (IMAS)
- Manual of NATO safety principles for the storage of military ammunition and explosives
- South African National Standard: Storage of firearms and ammunition
- South African National Standard: Strong room and vault doors
- Best Practice Guide on Physical Security of Stockpiles of Conventional Ammunition.

While temporary stores may be required when rehousing stocks, substandard structures such as using ISO containers as armouries, should not be relied



Pictures above: In order to ensure proper standards and safe storage facilities are built, it is important not to neglect details such as the installation of proper lightning protection on Heavy Wall structured ammunition stores. While not inexpensive, they are a key requirement to preventing a UEMS from a lightning strike.

upon for permanent facilities. In order for armouries and ammunition stores to be safe, secure and lasting it is necessary for them to be constructed in line with international standards. When developing national standards, it is essential to take into consideration the availability of materials and the technical levels achievable in the area.

When it comes to the design of ammunition stores, IATGs must be referenced in order to ensure that the appropriate quantity distances² are employed. This ensures that the population, infrastructure and vulnerable buildings are kept outside of the hazard area in the event of a UEMS. Building ammunition stores requires specialists to interpret and calculate the building specifications, capacity and limitations. HALO employs experienced and qualified Ammunition Technicians to ensure building works are implemented in line with the relevant standards. This is particularly relevant for large-scale ammunition storage areas and the industry should take care to ensure that these works are only undertaken by qualified personnel to ensure that safe and quality structures are built for this purpose.

Construction

A strong understanding of local markets, detailed work plans, rigorous oversight and maintaining an open and competitive tender process are required. In order to ensure quality and cost effective results, oversight entails regular site visits throughout construction works and a proper QA/QC system to hold contractors accountable to the schedule, budget and necessary standards drawn up in the work plan.

Supporting works

When it comes to implementing a national PSSM program, the scale of supporting works should not be underestimated. This includes the logistical and EOD requirements for evaluating, segregating, transporting, rehousing and potentially disposing of large quantities of ammunition stockpiles. As always, this needs to be done with close cooperation and approval from the national authorities who ultimately own and are responsible for these.

SUMMARY

The unsafe storage of munitions poses a serious threat, particularly to civilians living in close proximity to inappropriately stored and degrading ammunition. "Leaking" Government stockpiles are recognized as a main source of illegal small arms in circulation. It is possible to directly address this issue by improving the security, safety and accountability of ammunition and weapons in government control. The work to improve the condition and standards of armouries also mitigates the risk of weapons being stolen or looted from stores, thereby contributing towards security and stability while reducing the potential threat of armed violence.

Using the example of work conducted by HALO in Ivory Coast, this article has focused on the importance and benefits of delivering comprehensive PSSM projects in line with international standards. It must be stressed that the provision of the physical infrastructure is not enough in itself to ensure the safety and security of weapons and ammunition. An effective PSSM program also needs to ensure the national capacity, legislation and systems are in place to manage, monitor and maintain these facilities. ■

REFERENCES

- 1 OECD, 2009. 'Armed Violence Reduction: Enabling Development'. p.13 http://www.genevadeclaration.org/fileadmin/docs/OECD_Guidelines.pdf
- 2 Quantity distance is the designated safe distance between a potential explosion site and an exposed site (IATG 01.80).

ABOUT THE AUTHORS



Goran Tomasevic has worked for HALO since 2006. He was managing a Weapons & Ammunition Disposal project in Angola, mine clearance operations in Cambodia and a Physical Security and Stockpile Management (PSSM) project in Ivory Coast, before deploying to

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Prior to joining HALO, Mark spent four years working in Afghanistan both for NGOs and in the private sector. Mark has a Masters degree in International Security Studies from the University of St Andrews and a Bachelors degree in Geography from the University of Trinity College Dublin. Mark has been the Programme Manager for the Ivory Coast since January 2014. He is currently leading the PSSM assessment in Guinea Bissau.