

THE BATA EXPLOSIONS: LESSONS LEARNED

By Frederic Maio Programme Manager and staff of Ammunition Management Advisory Team (AMAT) at the Geneva International Centre for Humanitarian Demining (GICHD)

Abstract

This article is informed on experiences and findings of the Geneva-based Ammunition Management Advisory Team (AMAT) which carried out a mission to Bata, Equatorial Guinea as part of a United Nations Office for Disarmament Affairs (UNODA) Quick Response Mechanism (QRM) in the aftermath of a series of explosions in the city. It describes how AMAT deployed an assessment team to determine the cause of the explosions and the opportunities and challenges rapid deployment created. Building on the key findings of the mission, this paper aims to provide a concrete example of the importance of the capability to respond quickly to an adverse event anywhere to identify, reduce and mitigate the risk of further explosions.

More broadly, this article takes the example of the Equatorial Guinea blasts and subsequent QRM deployment to illustrate the benefits of putting in practice the internationally accepted standards reflected in the International Ammunition Technical Guidelines (IATG)^[1]. Acting on the concrete recommendations made, both during and after the mission, can, this article postulates, reduce the risks of future similar incidents as well as inform on longer-term actions to significantly increase the safety and security of a state's national ammunition stockpile.

[1] <https://www.un.org/disarmament/convarms/Ammunition/IATG>

INTRODUCTION

In the early hours of the 8th of March 2021, the head of the Geneva-based Ammunition Management Advisory Team (AMAT) received a phone call from UNODA's headquarters in New York. A series of explosions had taken place in the city of Bata in Equatorial Guinea. The explosions occurred within the ammunition storage area at the Nkoa Ntoma military camp and killed at least 100 people, with 600 more injured. In addition, there was considerable infrastructure damage to the military camp, the storage area, and the surrounding buildings. The potential for the casualty numbers to rise from residual contamination, as well as the risk of further explosions, was high.

The Minister of State for Equatorial Guinea had requested immediate assistance from UNODA and its regional centre for Peace and Disarmament in Africa (UNREC). The key outcome of this request was that UNODA decided to trigger the UN SaferGuard Quick Response Mechanism (QRM), an instrument established to allow specialists' rapid deployment to assist States in the urgent management of ammunition stockpiles, including in the aftermath of accidental explosions of ammunition.

Although the risk of accidental explosions in ammunition storage areas can never be fully eliminated – even within the most well-developed militaries – the probability can be reduced and resulting negative consequences mitigated.^[1] In the aftermath of an

explosion, it is vital to carry out a rapid assessment of the explosion site to understand what happened and why it happened, capturing lessons learned to prevent similar incidents in the future. Under QRM's Terms of Reference "rapid" is defined as within 72 hours.

Selecting and equipping the team, as well as all logistical planning for the deployment, started early the following day and turned out to be no mean feat: the one flight a week from Europe to Equatorial Guinea lands in Malabo, the country's capital, on an island 250 kilometres from the site of the explosion in Bata on the mainland. That flight was leaving in 72 hours. For the QRM to live up to its expectations, it was crucial to respect the 'quick' part, which in turn meant that a lengthy list of administrative tasks had to be completed extremely rapidly - a list which was even longer and more complicated than usual due to public health measures in place for travelling during the Covid-19 pandemic. These included procuring special visas and carrying out the required PCR tests. With the teamwork of the United Nations Development Programme (UNDP), UNODA and AMAT, the necessary preparation was completed in time and the team could board their flight to Malabo.

The team arrived in Bata five days after the incident, immediately travelling to the explosion site and starting the work required. The mission had four primary objectives:

1. To assist in determining the cause of the incident.
2. To identify further explosion risks through a rapid risk assessment on the ground.
3. To assist in reducing the risk of further explosion incidents through technical advice on risk reduction and mitigation measures.
4. To provide recommendations on follow-up technical support, including the coordination of bilateral offers of assistance from individual Member States, and potential further support from United Nations entities, including the Mine Action Service.

The assessment led to the identification of the sequence of events that occurred on 7 March 2021. Whilst a brush fire was the immediate cause of the explosive event, several underlying factors contributed to its occurrence and the magnitude of the consequences. These include civilian encroachment of the ammunition storage area, improper stockpile management practices, and lack of recognition of the risks posed by stockpiles of commercial explosives. Criticism of the government or the national armed forces' practices is not the purpose of this article, rather the article aims to show what can be achieved when the international community can, and does, respond to a situation rapidly.

The article begins with an explanation of the methodology used by the QRM team, followed by the explosive event analysis before detailing the challenges and gaps identified. It concludes with recommendations and lessons learned.

METHODOLOGY

The team used the following methodologies to obtain insights into the cause of the 7 March explosion:

Explosion site visits: The team immediately established communication and cooperation with Equatorial Guinea's national authority, the armed forces and the UN Resident Coordinator. Having gained an understanding of which other actors were already operational in response, and in agreement with these parties, the team was deployed to the ammunition storage area at Nkoa Ntoma military camp for 11 consecutive days (13-23 March). The aim was to collect primary information on the cause of the accident in accordance with the IATG on Risk Management¹ and Ammunition Accidents, Reporting and Investigation.²

The team assessed current practices pertaining to ammunition storage, safety, and security and built a picture of activities carried out at the blast site prior to, and at the time of, the incident. The team performed a

1 IATG 02.10 Introduction to Risk Management Principles and Processes; 02.20 Quantity and Separation Distances; 02.30 Licensing of Explosive Facilities; 02.40 Safeguarding of Explosive Facilities; and 02.50 Fire Safety

2 IATG 11.10 Ammunition Accidents, Reporting and Investigation; 11.20 Ammunition Accident Investigation Methodology; and 11.30 EOD Clearance of Ammunition Storage Area Explosions



Photo 1: Location of the Nkoa Ntoma military camp in the city of Bata.

combination of activities including visual inspection, review of available regulations, witness interviews and discussions with relevant authorities in charge of the safety and security of the storage area and the barracks. These are presented in further detail below.

Chemical analysis: During the mission, the assessment team benefited from collaboration with the UN Disaster Assessment and Coordination (UNDAC) team, established by the Office for Coordinating Humanitarian Affairs (OCHA) in Geneva. A Swiss government-seconded Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) specialist to UNDAC was attached to the assessment team from day one, conducting crater analyses, explosive detection and blast damage estimates, as well as measuring the levels of radiation, toxicity and heavy metals around the blast site.

Key stakeholder interviews: From 13th to 23th March, the assessment team conducted 34 interviews with local community representatives residing in the immediate surroundings of the Nkoa Ntoma military camp. The assessment team was careful to ensure that interviewees reflected the social makeup of the surrounding area, so at least 50% of the interviewees were women, some

accompanying small children who were also asked to provide any insights after parental permission was granted. Three adolescents were also talked to. In addition, the team spoke with 15 stakeholders from key authorities and responding agencies including members of the Equatorial Guinea Ministry of Defence and armed forces, international organisations operating in Equatorial Guinea, and the bilateral state agencies (from Cameroon, France, Israel, USA and Qatar) providing humanitarian and Explosive Ordnance Disposal (EOD) support.

EXPLOSIVE EVENT ANALYSIS

The information gathered by the assessment team made it possible to establish the course of events in the Nkoa Ntoma district of Bata (see Photo 1) on 7 March, entailing a fire, several powerful explosions at the ammunition storage area, and the aftermath.

The first explosion, according to witnesses from the local community, was very powerful. It was followed by several others, all originating from the part of the military camp housing a storage area for commercial quarrying explosives and accessories, as well as from the central ammunition and weapons depot for the country's continental region (see Photo 2).



Photo 2: Nkoa Ntoma military camp - aerial view of the ammunition depot (1) and the commercial explosives storage site (2) before the explosion on 7 March 2021.

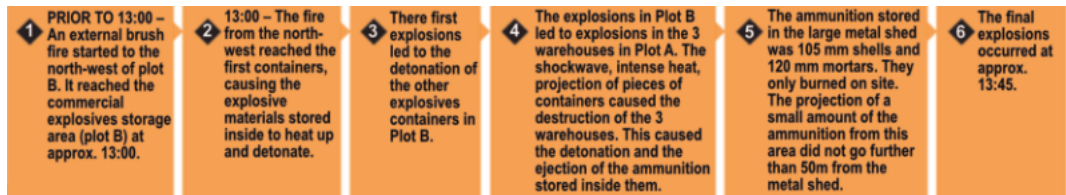
Based on the evidence gathered and other information available to the team, the assessment concluded that the sequence of explosive events began with the first explosion occurring at the commercial explosives' storage site (see Photo 2). This conclusion is supported by the results of the cross-checking of information obtained from the Equatorial Guinean military, the analysis of satellite photos, and the results of the technical assessment of the post-blast site carried out by the team.

Witness testimony and physical evidence suggested a brush fire (of unknown origin) triggered the first set of explosions. The fire started to the north-west of plot 2 (see photo 2). The military firefighters dispatched to the site were unable to control the flames, which quickly reached a height of more than five metres. The fire spread rapidly towards a grouping of dozens of shipping containers due to the northerly wind, causing the commercial explosives stored inside the containers to mass-detonate.

The next explosions involved the regional ammunition depot on the other side of the perimeter wall (see Photo 2). This site consisted of three main storage buildings and two smaller warehouses, all constructed of reinforced concrete, and an enclosed metal hangar. The reinforced concrete buildings housed ammunition and weaponry. Due to lack of space, boxes of 105 mm shells and 120 mm mortar rounds were also stored in the hangar.

The discovery of numerous weapons and ammunition, originating from the ammunition storage area, on the surface of the area where commercial explosives from public works companies were stored, is regarded as proof of the fact that the explosion of the military depot occurred after the explosion of the commercial explosives. If not, the weapons and ammunition would have been covered by the earth and debris from the explosion of the containers.

Graphical illustration of the simplified sequence of events:



Nkoa Ntoma military camp – aerial view of the ammunition depot (A) and the commercial explosives storage site (B) before the explosion on 7 March 2021.

IDENTIFIED CHALLENGES

Civilian encroachment into the ammunition depot danger area at the Nkoa Ntoma military camp

The general increase in population throughout Equatorial Guinea, as well as the migration to the cities in search of better living conditions, has led to an exponential growth in the population of the urban area of Bata. Between 2004 and 2021 the city's population increased from 159,000 to 435,000 inhabitants. In 2004, the Nkoa Ntoma military camp was in the forest, whereas by 2016 it

had been absorbed by the city. Therefore, for security and safety reasons, the ammunition storage area must be relocated, and measures taken to prevent future encroachment within its danger area.

Improper stockpile management practices

The post-explosion assessment showed that weapons and ammunition were stored in the same warehouses, and that within the warehouses small arms and



Photos 3 and 4: Example of EOD clearance progress at Nkoa Ntoma military camp, March 13 and March 23 2001.

grenade launchers were loaded with ammunition. This practice exemplifies a critical safety non-compliance. In addition to these basic issues, there were several other shortcomings that suggest that the warehouse managers were not sufficiently trained on the good practice such as those detailed in the IATG and the Modular Small Arms-control Implementation Compendium (MOSAIC).³ The management of the skills of ammunition and weapons technicians must be monitored individually, and collectively, to ensure effective and efficient operation of arms and ammunition depots.

Risks posed by commercial explosive stockpiles

Discussions with the logistics officers in charge of the ammunition storage area at the Nkoa Ntoma military camp suggested that the provision of security for the explosives stored by civilian companies on the site, next to the depot, was not the responsibility for the military. This situation is even more surprising given that, by all accounts, the basic rules of security were not respected by these companies, and access to the site was not controlled.

IDENTIFIED CAPABILITIES AND GAPS

EOD capabilities and needs

According to the information from the discussions with Equatorial Guinea army officers, the force is not equipped with operational EOD capability, although several officers and NCOs have been trained abroad over the past decade, notably through the bilateral cooperation with France.

The explosions at the Nkoa Ntoma camp site resulted in the area's contamination with unexploded ammunition and explosives. This contamination will require the timely intervention of EOD technicians capable of conducting a thorough search for hidden items, removing the danger following a detailed analysis of the situation, and, where necessary, disposal by destruction in-situ.

Ammunition management capabilities and needs

The assessment identified the technical, structural, and organisational capacity gaps which led to the 7 March explosion. The explosive event may have been prevented if the risks were properly understood and appreciated.

3 MOSAIC: Modular Small-arms-control Implementation Compendium.

Training and empowering of national experts in ammunition and explosives safety management is required. The security is equally important and calls for the development and implementation of adequate national standards and policies governing ammunition and explosives stockpiles at a national level. This should follow the training and upgraded technical management capacities.

Future location for weapons, ammunition and explosive materials

The IATG approach the through life management of ammunition and explosives through an evidence-based, risk management approach. Weapons and ammunition, ammunition and explosives, detonators and explosives, and ammunition and certain other ammunition, have to be separated from one other in transport and storage. Safety distances from one stored energetic material to others must be calculated, and adhered to, to avoid a sympathetic mass detonation as experienced in Bata.

RECOMMENDATIONS

The recommendations below are based on the post-incident assessment conducted by the QRM team as described above. They are based on technical advice and measures within international guidelines (IATG and MOSAIC) that govern safety and security activities and the management of stocks of ammunition, explosives and weapons under a state control.

The implementation of these recommendations will significantly reduce the probability of risks materialising and mitigate their effects, should they occur, to reduce the chances, and effects, of incidents such as that of 7 March 2021.

EOD clearance (short-term)

This assessment recommends the selection, training and equipping of an operational EOD capability for Equatorial Guinea to deal with the clean-up operation and call-outs. The current scenario underscores the need for the army to obtain the necessary technical skills, equipment, and mobility to establish two operational EOD teams in the country.

Training in ammunition safety and security management (short-term)

This assessment also identifies the need for IATG-compliant training and mentoring of storekeepers, depot managers, ammunition inspectors and regulators in the management of ammunition and commercial explosives. The short-term goal of the training should be the identification and significant reduction of risks posed by ammunition and explosive materials. In particular, this could include immediate training for improving physical security and stockpile management practices, with a particular focus on accounting, firefighting and evacuation, safe storage, and access control.

Establishment of a continental ammunition storage area (medium-term)

The assessment strongly suggests the building of a new ammunition and explosives storage area, away from the local population. The design and planning of the ammunition storage area should be guided by the IATG.

Development of national standards and legislation for ammunition and explosives (medium-term)

Finally, the assessment supports the development of national standards to regulate the technical, operational, and logistical aspects of the management of stockpiles of ammunition and explosive materials, in line with the IATG, and compatible with other standards, conventions and agreements of Equatorial Guinea. The national standards, once approved, should guide the drafting of a legislation to govern the national authorities and ensure safe and secure management of weapons, ammunition and explosives, as well as keeping ammunition and explosives a safe distance from people and critical infrastructure.

The role of commercial explosives in the 7 March events highlight the importance of effective oversight and quality control of commercial (quarrying) explosives and accessories, and of private companies. This is not particular to Equatorial Guinea: according to available information, globally about one

quarter of all accidental explosions at ammunition storage areas occur within non-state, privately owned facilities, and often result from extreme weather conditions and external fire, criminal activity, or improper handling.⁴ In the course of the development of national standards and legislation for ammunition and explosives management, the national government should include adequate provisions in the legislation for the oversight and quality control of commercial explosives and of private companies operating in the country.

CONCLUSION

Whilst these recommendations are far reaching, it is the firm conclusion and belief of AMAT that what mattered the most in the follow-up is that the emergency request for international support was triggered immediately by the government of Equatorial Guinea, allowing for search and rescue operations to start and emergency aid to get to the casualties. In addition, the assessment team was granted full access on arrival, and able to immediately work on assessing the risk of further incidents. Whereas states like Equatorial Guinea may not have properly appreciated the risks posed by accumulating ammunition and explosives stockpiles, many states are increasingly aware of the risks and address them: taking up the IATG is the first step to a sustainable risk reduction. This article shows that the recommendations made by the assessment team included several risk reduction measures which can be put in practice fairly quickly and without significant financial resources, greatly increasing the safety and security of ammunition and, therefore, of the local population. The recognition that many states do not have the expertise, resources, or support to manage ammunition safely and securely is the reason why AMAT exists; to support and advise. It is the hope of AMAT that the QRM would be activated before, not after, an accidental explosion already having caused massive loss of life and material cost. ■

ABOUT THE AUTHOR



Frederic Maio joined GICHD in their Ammunition Management Advisory Team (AMAT) in June 2019. As Programme Manager, Frederic coordinates the implementation of AMAT's activities in partnership with donor governments and local authorities.

Prior to joining GICHD, Frederic worked in the field of humanitarian mine clearance and security sector reform. From 2007 to 2015, as an operations manager for Mines Advisory Group and Handicap International, Frederic oversaw ERW clearance programmes in Sudan, Vietnam, Cambodia and Afghanistan and directed emergency response ERW clearance operations in Gaza, Libya and Syria. More recently Frederic spent 3 years working with The Geneva Centre for Security Sector Governance (DCAF) as head of their Ramallah Office.

Frederic studied in Geneva and Nottingham and holds a BA in Business Management and an MA in International Relations and Political Science.

4 http://www.smallarmssurvey.org/fileadmin/docs/H-Research_Notes/SAS-Research-Note-41.pdf