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Mines and ERW

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Due to the history and nature of conflicts in the Ethiopia/Eritrea area, cleanup presents specific considerations and hazards. The lessons learned by the United Nations Mission in Ethiopia and Eritrea Mine Action Coordination Centre in mine/explosive rem-nants of war cleanup are presented, as well as recommendations on clearance operations for situations with mixed mine/ERW like that in Ethiopia and Eritrea.

by Bob Kudyba [UNMEE MACC]

Mines and explosive remnants of war continue to affect many parts of the world. One such area is the Horn of Africa, where wars have continued for the better part of the 20th century. U.N. Security Council Resolution 1320 formally established the United Nations Mission in Ethiopia and Eritrea in November 2000. At the same time, the U.N. Security Council formally established a Mine Action Coordination Centre within the United Nations Mission in Ethiopia and Eritrea. The resolution requires the MACC to coordinate and provide technical assistance for humanitarian mine action activities in the TSZ[1] [temporary security zone] and area adjacent to it.

History of the Mine and ERW Problem

The mine and ERW problems of Eritrea and Ethiopia stem from three historical periods. Eritrea was colonised by the Italians in the 19th century. During the Second World War, Italian and British forces fought a number of battles across Eritrea, culminating in a major siege on the town of Keren in 1941, which lasted nearly three months. These battles were fought in a conventional manner, consisting of aerial bombardments, artillery, small-arms fire and mine emplacement. Certain areas around Keren are considered hazardous today due to suspected contamination by mines and unexploded ordnance, particularly in the hills surrounding the township. Keren was the scene of a major battle again during the independence war years between 1961 and 1991.

After the Second World War, Eritrea was governed by Great Britain until the early 1950s, when it was handed over to Ethiopia to be part of the federation system; annexed by Ethiopia, Eritrea became its northernmost province. There was a resurgence of Eritrean nationalism in the early 1960s when the Eritrean population began

an insurgent campaign for independence against Ethiopian forces. This rebellion gradually developed into a more conventional war as the Eritreans gained support for their cause, won key battles and held ground. This struggle for independence lasted 30 years and affected the entire country. The Eritrean struggle for independence is possibly one of the most successful examples of a liberation war. Eritreans are justifiably proud of the establishment of their country, as it was won at great cost to the population and without "outside" help or support from other nations.

After the state of Eritrea was established in 1993, following a U.N.-monitored referendum in which the population voted overwhelmingly for independence, the relationship between Eritrea and Ethiopia was cordial. This relationship continued until several issues soured it, including the introduction of a new currency, the *nakfa*, which replaced the Ethiopian *birr*. The situation eventually deteriorated into a war lasting from 1998 to 2000 over non-demarcated borders. Then in 2000, Algiers brokered a peace accord.

This border war was an intense conflict, with both sides employing conventional war strategies that developed into a carefully planned and executed military operation reminiscent of World War I. The war was fought at terrible cost with an estimated 70,000 people killed and thousands more displaced. As a result of this conflict, the entire border area between the two countries from the Sudan in the west to the Djiboutian border in the east remains contaminated with mines and ERW today.

Interrelationship between Mines and ERW

As a result of these conflicts, most of Eritrea and the northern areas of Ethiopia remain contaminated with mines and conventional ERW. In a recent incident, a truck driver collecting stones for a building site was killed when his vehicle drove over a landmine on a vacant site just off a main road near the capital, Asmara. This mine was a remnant of the independence war years, quite possibly overlooked when the area was vacated.

In examining the history of the conflicts that have engulfed the region, mines and ERW are interwoven menaces rather than separate entities. It is not safe to just walk out to unexploded ordnance or an abandoned tank and attempt to remove or destroy items without

first establishing the history of the area and what military actions occurred there. This problem presents challenges to demining and explosive-ordnance-disposal teams operating within the UNMEE area. Deminers conducting clearance operations sometimes encounter UXO and other ERW, including abandoned military vehicles with live ammunition still on board. For example, during battle-area clearance, a number of vehicles with live ammunition scattered around them were found. The vehicles had been set on fire by retreating forces and the contents exploded, scattering the ammunition around the burning vehicles. In such cases, a path has to be cleared up to and around the vehicles to enable teams to work safely.

Demining operations within a post-conflict situation involving all aspects of conventional war scenarios will generally encounter a mixed threat of both mines and ERW in areas where battles have taken place and ground was contested. As battle conditions develop, the area will become littered with ERW of every imaginable description, in particular when the attacking force seeks to dislodge the defenders. It is inevitable that a percentage of the munitions directed at either side would fail to function, either through accident or by design. Disabled or destroyed tanks and other vehicles with supplies of ammunition present further challenges.

Problems Confronting the Clearance Operation

A scenario of this type presents additional problems to the clearing agency. What is perceived as the greater danger—the mined ground or the littered ERW? In many cases, local shepherds herding their animals have encountered UXO lying on the ground and resorted to throwing stones at it, through either idle curiosity or sheer boredom. Stones landing on nearby mines have caused the items to explode.

Locals scavenging among ERW for items that can be recovered for sale, such as copper and brass, enter mined areas in their quest for such items out of economic necessity.[2] In many cases these people are killed or injured. Emergency rescue measures, usually undertaken by demining organisations working in the area, need to be conducted immediately to recover the victim, or other locals will attempt an impromptu rescue operation, often with equally tragic results. Being involved in the recovery operation can be a traumatic experience for many personnel.[3]

In some cases, clearance operations can be disrupted when demining teams lack suitably cross-trained, qualified personnel to remove or disarm UXO and ERW in conjunction with any mines encountered within the clearance area.

ERW Encountered within UNMEE

Most conventional ERW items encountered within the UNMEE's operations consist of small-arms ammunition, mortars, artillery shells to 155 mm and *Boevaya Mashina*/rocket-propelled grenade-type rockets. These items have caused a number of casualties among the local population living within the TSZ and adjacent areas. Often the casualties are children, who are curious by nature and play with the items they encounter. These items, although usually small, can inflict quite horrific injuries to the child. A number of submunitions and aerial bombs have also been encountered during field operations. Submunitions have streamers and are an attractive shape and colour that readily attract a child's curiosity.

Table 1 gives an overview of ERW items encountered within the UNMEE.

Clearance Operations Recommendations

As a result of identifying and mitigating the ERW problems in Eritrea, UNMEE MACC has several recommendations for developing a good clearance operation. A thorough investigation is critical. A great deal of the information can be gleaned from discussions with various parties, including local inhabitants, militia, police and military personnel. Past operational reports from the area will also be of assistance. If the region was the subject of an Impact Survey and/or Technical Survey, it is also extremely important to consult the data presented in these reports. The clearance operation should examine the following:

- What is the history of the area?
- What forces and equipment were involved? This will give an indication of the types of ERW likely to be encountered. For example, tanks and artillery will mean larger ERW; submunitions can be delivered by artillery. Aerial bombardments would suggest the need to be conscious of larger ordnance and the possibility of submunitions.
- What was the intensity and duration of the campaign? A lengthy campaign means the likelihood of a greater number of ERW being present.
- Did the contested land change hands? It is the experience of UNMEE MACC that contested areas that changed hands resulted in many of the mines laid by one side being recovered and re-laid in other areas by the new owners.
- What are the items of ERW encountered in operations to date? This will determine the level of expertise required by the clearance organisation to deal with likely finds as the clearance operation encounters the items.[5] Depending on the number found and their frequency, these specialised personnel may need to remain on-site or be within close proximity to the operation while it is in progress. The items of ERW will also determine the type of equipment used to dispose of these items.[6]
- The area itself will need to be reviewed. If it is inhabited, the proximity of any discoveries of larger ordnance, in particular, will present additional considerations to the clearance operation. Should the item(s) be destroyed *in situ* or removed? If the item(s) cannot be moved due to lack of specialised equipment, what measures need to be adopted to mitigate the effects of destroying the item(s)?[7]
- Abandoned military vehicles need to be checked for ammunition and other explosive devices. Approaches to the vehicles need to be physically cleared to eliminate the possibility of mines. The presence of any potentially hazardous substances needs to be considered also.

ERW Item	Recorded in Incident* and Quantity Found Following Incidents
F1 hand grenade	Yes—2
Chinese wooden HG (type unknown[4])	Yes—1
M 75 Yugoslav HG frag	Yes—1
F1 HG fuse	Yes—3
Russian HG RGK3	Yes—1
RPG rocket	Yes—2
A fuse from an RPG rocket	Yes—1
Anti-aircraft bullet	Yes—1
POMZ	Yes—1
PMN	Yes—2
TM-46	Yes—5
TM-57	Yes—1
Belgian plastic PRBM3	Yes—13
Czechoslovakian PT-MI-BA III	Yes—1
Unidentified HG	Yes—3
Unidentified UXO	Yes—4
Unidentified AT mine	Yes—24
Unidentified explosive	Yes—1
TOTAL	67

Table 1: ERW Encountered in the UNMEE.
**Source: UNMEE MACC Preliminary Investigation Reports 2001–2005*

Conclusion

The experience of the UNMEE MACC is that mines and conventional ERW are an interwoven part of many clearance operations. However, it is essential to factor a worst-case scenario into any plan. The types of ERW encountered will determine the level of expertise required to complete the task and deal with any finds in the course of it. It is important that any clearance operation have adequately trained personnel to deal with ERW likely to be encountered during the course of any task.

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For additional references and further reading for this article, please visit http://maic.jmu.edu/journal/10.1/feature/kudyba/kudyba.htm/#addlrefs.

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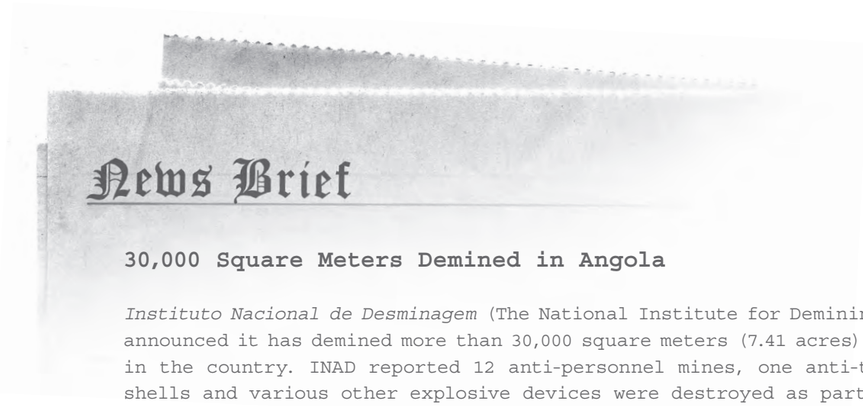

News Brief

30,000 Square Meters Demined in Angola

Instituto Nacional de Desminagem (The National Institute for Demining) in Angola recently announced it has demined more than 30,000 square meters (7.41 acres) of mine-affected land in the country. INAD reported 12 anti-personnel mines, one anti-tank mine, 206 mortar shells and various other explosive devices were destroyed as part of the clearance.

Fields demined by INAD were given to local populations for farming and other agricultural pursuits. The organization has begun reconnaissance work to locate and identify more mined areas in need of clearance.