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Landmines in Libya

Landmines are an unfortunate part of Libya's past and present. As such, the author discusses the various types of mines that have been found so far, providing a technical overview of each. With his landmine analysis, King warns of the difficulties that lie ahead as deminers begin to address the problem.

by Colin King [Fenix-Insight Ltd.]

Until recently, the primary threat from mines in Libya originated from the Western Desert Campaigns of the Second World War (June 1940–February 1943) and a series of conflicts with Chad between 1978 and 1987. During the recent civil war, it emerged that Libya also has substantial landmine stockpiles, and that both anti-personnel and anti-tank mines had been laid during the hostilities. In addition to the common Cold War legacy weapons found in many countries, there have been some unexpected finds, including landmine types of which little was previously known.

What follows is a brief technical overview of the mines and mine threats recently found in Libya, including some of the questions raised by these findings.

Type 84

Perhaps the most significant recent find is the Chinese Type 84. For many years those working in demining knew about this rocket-dispersed scatterable munition (84 represents the approximate year of introduction), but there were no reports that the mine had ever been deployed and little technical detail was available. Suddenly, in May 2011, these mines were used against the port of Misrata, and for a time a number remained unexploded in the streets before they were cleared.

The Type 84 used in Libya differs slightly from those shown in Chinese sales literature, but key features remain, including a parachute, three folding prongs (designed to stick into the ground on impact) and electronic magnetic influence fuze. Initiation using magnetic influence is particularly significant to deminers since these fuzes can be highly sensitive to both the proximity of small magnetic objects and to movement. It is unknown whether this Type 84 variant incorporates a self-destruct feature but, if so, it has clearly failed in a number of cases. As the explosive-ordnance disposal community has learned over the years, this is hardly a surprise; so-called back-up fuzes not only fail with alarming regularity, but also provide another potential means of accidental initiation.



The Chinese Type 84 is a scatterable AT mine initiated by a magnetic influence fuze.
All photos courtesy of the author.

TAB-1

The TAB-1 is a Brazilian AP blast mine that has already been responsible for a number of casualties in Libya. It was also used in Ecuador and Peru, but little was known of its make-up until it was examined recently.

Although not a true minimum-metal mine, the metal content of the TAB-1 is low, with the only metallic components being the mild steel firing pin (0.36 g) and the aluminum detonator capsule (estimated at 0.15 g). The main charge is approximately 60 g of Pentolite (PETN/TNT mixture^{1, 2}). There is also a small booster pellet, which appears to be PETN, in the base of the fuze. The simple mechanical fuze screws into the central well of the mine body and is actuated by a pressure of approximately 20 kg. There is no safety or arming device. Also noteworthy is that the TAB-1 is used as the initiator for an AT mine (also designated TAB-1). The two tend to be supplied and used together; therefore, there is a distinct possibility that the AT mine may also be present in Libya.



The Brazilian TAB-1 is a low-metal AP mine, also used to initiate an AT mine of the same designation.

Belgian M3 and M3A1

The most common mines in Libya appear to be the Belgian M3 and M3A1—around 250,000 are stockpiled in Benghazi alone. Although a relatively simple and basic AT mine, the M3 is notable for its minimal metallic content (which makes it very difficult to detect) and powerful 6 kg charge of TNT, RDX³ and aluminum.



The Belgian M3 is a minimum-metal mine with a powerful charge of TNT, RDX and aluminum.

Unlike the M3, the M3A1 incorporates two auxiliary fuze wells for booby trapping; one in the side and one in the base. This capability is particularly relevant given that compatible anti-handling devices have also been seen in Libya. Even more worrying is the prospect that, without the pressure-plate assembly fitted, either of these mines could be initiated by the weight of a person, thereby converting the AT mine into an oversized AP mine.



The M3A1 is a variant of the M3 which incorporates two auxiliary fuze wells.

Type 72 SP

The Chinese Type 72 SP metallic AT mine was featured in numerous videos from Libya, with large stocks held in Benghazi and probably elsewhere. The Type 72 (one of several Chinese mines with this designation) is externally similar to the Russian TM-46, but uses a completely different fuze, which incorporates an effective blast-resistant mechanism. It also has a spring-loaded pressure plate to allow the fuze to reset after being subjected to overpressure.



The Chinese Type 72 SP AT mine, with blast-resistant fuze to the left.

Use of the SP suffix was previously unknown, and this is believed to refer to an export version for tropical use. In this variant, sand-colored paint had been sprayed over the olive green used on most Chinese mines; this is clearly visible around the internal voids and wells. There is a large auxiliary fuze well in the base for booby trapping, but there have been no sightings of the anti-handling devices used with this mine.



The Belgian NR 413 fragmentation mine can be initiated by any of four tripwires.



Sectioning a live NR 413 AP mine for examination.

Other Mines

Other mines present in Libya include the Belgian NR 413 stake mine and NR 442 bounding mine, both of which are AP fragmentation weapons with significant ranges.

The NR 442 is normally buried and uses a pressure fuze to initiate a propel-

lant charge; this fires the mine body out of the ground before detonation occurs at a height of about a meter. The mine contains 2,500 steel fragments that are lethal within 25 m but can cause injury or death at far greater ranges.

The NR 413 is normally mounted on a steel stake and initiated by any of four tripwires. At a time when the tripwire threat in most countries has virtually disappeared, clearance teams in Libya may once again be forced to adopt laborious and time-consuming tripwire search procedures in areas where this mine is suspected.

The NR 109 trip flare, also present in Libya, is easily confused with the NR 413. Despite the similarity of the fuze and body, the components of these two devices have different threads and are not interchangeable.

Two other mines, neither of which was previously associated with Libya, have also been found in Benghazi. Both the Yugoslav TMA-5 and the Czech PT Mi-Ba-III are minimum-metal AT blast mines that can be difficult to detect. These are large mines capable of immobilizing main battle tanks, and would completely destroy any civilian vehicle.

The PT Mi-Ba-III fuze incorporates a cocked striker, meaning that the mechanism is spring-loaded and therefore capable of functioning at any time. The plastic collar retaining the striker is vulnerable to deterioration in hot dry conditions, making this mine extremely dangerous to handle. This mine was believed to have been responsible for a number of casualties during the First Gulf War (1990–1991) and is definitely a blow-in-place item.

Conclusion

The mine threat in Libya could create a significant challenge for deminers, with a combination of unrecorded minefields, difficult detection, the

presence of tripwires and the potential deterioration of fuze mechanisms. Demining nongovernmental organizations have already begun clearance operations with the United Nations Mine Action Service Joint Mine Action Coordination Team, working to coordinate operations. In addition to the standard process of survey, minefield delineation and clearance, a major stockpile destruction program will also be needed.

Sadly, despite widespread adoption of the AP Mine Ban Convention,⁴ mines have once again played a role in modern conflict. They bring with them the dangerous, costly and laborious process of demining, along with the disheartening prospect of long-term socioeconomic impact on the communities where they are found.◊

See endnotes page 83



Colin King served 14 years in the British Army, mostly in explosive ordnance disposal, including operations in the Bosnia, Falklands, Gulf, and Kosovo; he also led the first British team to train Afghan deminers. He worked as a British EOD school instructor and an EOD intelligence analyst before his final tour with the Gurkhas and later starting his EOD consultancy. Recently, he has been involved in mine clearance on the Falkland Islands, studies into the effects of landmine aging and assistance to regional cluster-munition stockpile-destruction programs. King also writes two reference yearbooks, *Mines and Mine Clearance* and *Explosive Ordnance Disposal*, for Jane's Information Group. This article is based on King's brief visit to Libya in July 2011, where he disassembled and examined a selection of landmines.

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