



Landmines in Libya: Technical Briefing Note (Update #2)

July 19, 2011

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This briefing note looks at the threat posed to civilians, including deminers, from landmines used or abandoned in the current conflict between forces of Muammar Gaddafi and opposition rebels. Human Rights Watch has confirmed the use of five types of landmines in six separate locations. Additionally, three types of mines have been found abandoned at two other locations:

Mine Types Identified in Libya during 2011 Conflict

<i>Name</i>	<i>Type</i>	<i>Country of production</i>	<i>User and Location</i>
T-AB-1	Antipersonnel	Brazil	Used by Government forces in Ajdabiya, Khusha, Misrata, al-Qawalish (3 separate locations)
Type-72SP	Antivehicle	China	Used by Government forces in Ajdabiya, al-Qawalish
Type-84A	Antivehicle	China	Used by Government forces in Misrata
PRB-M3 and PRB-M3A1	Antivehicle	Belgium	Used by Rebels in Ajdabiya; abandoned in storage in Benghazi
PRB-NR442	Antipersonnel	Belgium	Abandoned stockpiles in Ajdabiya

Libya is also affected by landmines used extensively during World War II desert battles. In addition, Libya used landmines during its conflict with Chad and has placed mines along other parts of its borders at various times. Some facilities are protected by minefields, such as an ammunition storage area outside of Ajdabiya that Human Rights Watch confirms is partially surrounded by a minefield marked solely by a deteriorating fence.

Use of sea mines in the port of Misrata has been documented, but is not addressed in this briefing note, which focuses on landmines. Additionally, a sea mine called “diverzantska podvodna mina model 66 -- SK790202” was found abandoned in storage in the Nafusa Mountains.

Landmine use in the Nafusa Mountains

Human Rights Watch confirmed the use of landmines by government forces in the Nafusa Mountains, in the western part of Libya. The Brazilian-made T-AB-1 plastic antipersonnel mines were placed in Khusha (coordinates N 32° 02.448', E 012° 12.710), about 10 miles north of the town of Zintan. Rebel fighters declared they had discovered the mines on or around June 1 and removed 169 of them.



Libyan rebels found and removed more than 150 of these antipersonnel landmines, the Brazilian-made T-AB-1, which government forces had placed north of Zintan in the Nafusa Mountains. © 2011 Human Rights Watch



Libyan government forces have also placed the T-AB-1 landmine in Misrata. The T-AB-1 plastic antipersonnel mine has a low metal content and is therefore difficult to detect. © 2011 Human Rights Watch

At least three minefields containing antipersonnel and antivehicle landmines were found on the outskirts of al-Qawalish village in the Nafusa Mountains. Two of the minefields were laid near each other on a pair of dirt roads leading to a boy scout building known as al-Malayab, west of al-Qawalish (coordinates N 31° 58' 50.79" E 12° 40' 32.23" and N 31° 58' 50.74" E 12° 41' 26.26"). Government forces had been positioned at the building. On July 6, after the rebels seized the area, three rebel vehicles struck mines on the dirt roads. The vehicles were destroyed and three people were wounded, two of whom were hospitalized. By the end of July 7, deminers had uncovered about 240 T-AB-1 antipersonnel mines and 46 Type-72SP antivehicle mines. Still more remained to be cleared.

The third minefield was laid along the main asphalt road to al-Qawalish, west of al-Malayab (coordinates N 31° 59' 2.26" E 12° 40' 29.58"). When Human Rights Watch visited the site, deminers had not begun work, but a vehicle that appeared to have been damaged by an antipersonnel mine lay by the road.

All three minefields are in areas with civilian traffic, but they were marked by rebel fighters to prevent people from entering them.



A rebel commander, Alejmi Ali Ahmed, 49, removing a Type-72SP antivehicle mine and T-AB-1 antipersonnel mine west of al-Qawalish village in the Nafusa Mountains on July 6, 2011. © 2011 Sidney Kwiram/Human Rights Watch



A rebel commander, Alejmi Ali Ahmed, with Type-72SP antivehicle mines, produced in China, and T-AB-1 antipersonnel mines, produced in Brazil, removed on July 6, 2011, from two minefields west of al-Qawalish village in the Nafusa Mountains. © 2011 Sidney Kwiram/Human Rights Watch

Reported landmine use in Brega and Zlitan

Recent media reports indicate that rebel forces have encountered mined areas near Brega and Zlitan. On July 18, Al Jazeera reported that rebels encountered antipersonnel mines in the streets of Brega after they retook the town from government forces. A week earlier, on July 10, AFP reported that rebels advancing into Zlitan declared one of their fighters had died and others were wounded in an antipersonnel mine explosion. The mines were reportedly placed by retreating government forces in the Suq al-Thulatha neighborhood of Zlitan. The type of mine was not specified. HRW has not yet verified this information.

Use of low metal content antipersonnel mines in Misrata

Researchers from Amnesty International documented on May 25, 2011 the use by government forces of Brazilian-made T-AB-1 plastic antipersonnel mines at two points in the Tammina neighborhood of Misrata, a residential area southeast of the center. More than 20 of these mines were cleared by rebels after a car had run over one of them, detonating it. The mines were buried in a random pattern a few centimeters below the surface of a dirt road linking a house, which had served as a base for government forces, to the main road.



A Brazilian-made T-AB-1 plastic antipersonnel mine found by Amnesty International researchers in Misrata, Libya. © 2011 Amnesty International

Rebel forces in Zintan have distributed pictures of T-AB-1 antipersonnel mines and claimed that they have cleared 169 of these mines from a location in that town.

Use of scatterable antivehicle mines in Misrata

Human Rights Watch has confirmed the use of “parachute mines” fired by Grad ground rockets into the port area of the city of Misrata by Gaddafi forces on the night of May 5, 2011. This was the first recorded use of remotely delivered mines.

Workers at the port told Human Rights Watch that they heard thuds around 9 p.m., which they thought were Grads in the distance. That night two guards patrolling the port in a truck ran over two of the mines. One of them, Faisal El Mahrougi, 32, suffered a broken foot, cuts to the abdomen and chest, 3rd degree burns to his leg and arm, and extensive soft tissue damage to his leg and arm. The other guard, Mohamed Nouri El Sherif, was lightly wounded.

According to port guards, the next day they found 28 of the mines around the port, and they destroyed them with gunfire, an expedient method of clearing this specific item given the sensitivity of its fuze. Human Rights Watch saw craters on the ground where the guards said they had destroyed the mines. The area affected was about 100 meters by 150 meters, about 300 meters southwest of the quay where all the big ships dock.

The quantity of mine-carrying rockets fired by government forces into the port area of Misrata is not known. There have not been any subsequent reports of mines being found from the strike.

Human Rights Watch worked with *The New York Times* to identify the munition used as a Chinese-produced Type-84 scatterable antivehicle landmine. In the process of confirming

this identification, other sources consulted by *The New York Times* provided a more specific identification of the mine as a Type-84 Model A. There are three known variants of the Type 84 mine, but the 2009 manufacture date markings on the mine indicate very recent production, which raises the possibility of this being a previously unknown variant or sub-variant.

Eight Type-84 Model A mines are delivered by a single unguided surface-to-surface 122mm rocket to a range of seven kilometers, according to ordnance identification and reference publications. Twenty four mine-carrying rockets can be fired from a single truck-mounted launcher. If they are fired together, this would result in a minefield approximately 650 meters long by 400 meters wide.

Each mine contains a shaped metal plate inside it that melts when the mine is detonated and is projected as a slug upward, intended to penetrate or disable a vehicle. These mines are equipped with a sensitive magnetic influence fuze, which also functions as an inherent anti-disturbance feature, as well as a self-destruct mechanism that can be set for a period of four hours to three days. These characteristics pose special problems as the mines sit on the ground, and they complicate efforts by deminers to clear the mines (see next page).



A live Chinese-produced Type-84 Model A antivehicle mine scattered into the port area of Misrata, Libya on the night of May 5, 2011. © 2011 Faraj al Kewedeir



A vehicle belonging to Misrata port workers damaged after hitting a Type-84 Model A mine, two workers were injured in the blast. © 2011 Faraj al Kewedeir



A view of the top of a Type-84-Model A antivehicle mine in the port of Misrata, the parachute slows the descent and orients the mine after it is scattered from its carrier rocket. © 2011 Faraj al Kewedeir



The remnants of a Type-84 Model A mine after it exploded, port workers shot the mines with rifle fire, the safest method of clearing this specific type of mine given its sensitive fuzing system. © 2011 Faraj al Kewedeir



The fuze on this Type-84 Model A mine is very sensitive and can detonate the mine in response to changes in its surrounding magnetic environment and the mine can also self-destruct without warning within four hours to three days after being scattered. © 2011 Faraj al Kewedeir

Landmine use near Ajdabiya

A BBC news report on April 17 showed rebel fighters placing low-metal-content Belgian-produced PRB-M3 antivehicle mines on the side of the main road into Ajdabiya. In addition, two witnesses told Human Rights Watch that rebel forces had transferred antivehicle mines from Benghazi to Misrata. Tens of thousands of these mines were seen by Human Rights Watch in weapons depots in Benghazi that rebel forces seized after the withdrawal of government forces in February.

Human Rights Watch reported that Muammar Gaddafi's forces laid both antipersonnel and antivehicle mines a few meters off the side of the main road on the eastern outskirts of Ajdabiya in late March, after at least two dozen antivehicle mines and roughly three dozen antipersonnel mines were found by electric company repair crews. The types of mines found include Brazilian-produced low-metal-content T-AB-1 antipersonnel mines and Chinese-produced metal-cased Type-72SP antivehicle mines.



Chinese-made Type-72 metal-cased antivehicle mines found in a recently laid minefield near Ajdabiya. © 2011 Human Rights Watch



A man holds a disarmed metal-cased antivehicle mine found in Ajdabiya on March 28, 2011. A civil defense team found and disarmed 24 antivehicle mines and an estimated 30 to 40 antipersonnel mines. © 2011 Human Rights Watch

Landmines abandoned in ammunition storage areas

As the Gaddafi government lost control over eastern Libya starting in late February 2011, anti-government rebels and civilians gained access to massive military weapon and munitions depots, abandoned by government forces. Among those depots are the 60-bunker Hight Razma facility on the eastern outskirts of Benghazi, a 35-bunker facility on the eastern outskirts of Ajdabiya, and a smaller facility near Tobruk.

A UN Mine Action Service (UNMAS) investigator working in cooperation with Human Rights Watch found 12 full bunkers of plastic PRB M-3 antivehicle mines. Civilians have been

looting antivehicle mines to re-use the explosives for fishing and the rebels have been harvesting the explosives from the mines to make improvised explosive devices. UNMAS has also found boxes of Belgian-made PRB-NR442 antipersonnel mines at a military camp at the East Gate of Ajdabiya. The packing dates on the boxes of NR442 mines indicate they were shipped to Libya after May 1981.



Boxes of plastic antivehicle mines at a military depot in Benghazi. According to the rebel military authorities, there are 12 such warehouses filled with antivehicle mines at this location alone. © 2011 UNMAS



Boxes of looted plastic antivehicle mines at a military depot in Benghazi. Local fishermen looted the mines to use the explosives for fishing. © 2011 UNMAS



PRB-M3 and PRB-M3A1 antivehicle mines left behind by government forces on the outskirts of Benghazi. © 2011 Human Rights Watch



A body of a Belgian-made NR442 bounding fragmentation mine and associated fuzes found at a military camp at the East Gate of Ajdabiya, Libya. The packing dates on the storage containers (not pictured) for these mines indicated they were shipped to Libya after May 1981. © 2011 UNMAS

Specific threats posed by landmines used in Libya

Each new instance of landmine use requires a response to warn the civilian population of the specific threat and to clear and destroy the mines as quickly as possible. The

characteristics of the types of mines used in Libya during the conflict poses a range of threats, particularly for deminers:

Sensitive Fuzes: Some antivehicle mines used in Libya in 2011 can function as an antipersonnel mine, posing a risk to civilians, due to their design or the operation of their fuzing mechanism:

- The PRB-M3 antivehicle mines laid along the roadside near Ajdabiya are equipped with a pressure-sensitive M30 fuze as their initiating charge. With this fuze, the mines can explode at pressure thresholds equivalent to the weight of a person if they are used without installing or properly adjusting the pressure-resistance plate, which is a separate item.
- The Type-84 Model A mine scattered into the port area of Misrata is equipped with a magnetic influence fuze, which explodes the mine when it detects a change in its immediate magnetic environment. This change can be the result of a vehicle passing over it or a person approaching the mine who is wearing or carrying a sufficient amount of ferrous metal, like military equipment or a camera. Additionally, given the sensitivity of the fuze, any change in orientation or movement of the mine may cause the fuze to function. Landmine identification reference guides caution deminers about this inherent antihandling threat posed by the Type-84 Model A mine.

Low-Metal Content Mines: The PRB-M3 antivehicle mine and T-AB-1 antipersonnel mine are extremely difficult for deminers to detect because they are made almost entirely of plastic. The challenge of detecting the mine is compounded in areas with a large amount of scrap metal, such as former battlefields.

Self-Destruct Scatterable Mines: The Type-84 Model A mine is reported by standard reference publications to possess a feature that, after a period of four hours to three days, causes the mine to explode on its own, or renders a portion of its fuzing mechanism inoperable. The way the self-destruct mechanism of the Type-84 Model A mine functions is not publicly known and there is no apparent external indication of what condition the mine is in or the hazard it poses as it sits on the ground.

Possible Booby-Traps: Both the PRB-M3A1 and Type-72SP antivehicle mines are equipped with one or more auxiliary fuze wells, used for fitting an antihandling device to the mine, in effect booby-trapping the mine so that it will explode if anyone tries to move it. The magnetic influence fuze in the Type-84 Model A scatterable mine also serves as an antihandling device.

Unmarked, Unmapped, and Unmonitored Minefields: In the two cases of use of hand-emplaced mines near Ajdabiya and the use of hand-emplaced antipersonnel mines in Misrata, forces using the mines did not mark, map or monitor the minefields. It is not known if Gaddafi's forces using the Type-84 Model A scatterable mines recorded any information regarding the quantities of mines used or the intended aim-points of the strike.

For more information, please see:

- Human Rights Watch, “Libya: Government Lays More Mines in Western Mountains,” July 8, 2011 - <http://www.hrw.org/en/news/2011/07/08/libya-government-lays-more-mines-western-mountains>
- Human Rights Watch, “Libya: Government Using Landmines in Nafusa Mountains,” June 21, 2011 - <http://www.hrw.org/en/news/2011/06/21/libya-government-using-landmines-nafusa-mountains>
- Amnesty International, “Libya: Civilians at risk amid new mine threat,” May 25, 2011 - <http://www.amnesty.org/en/news-and-updates/libya-civilians-risk-amid-new-mine-threat-2011-05-25>
- The New York Times, “Land Mines Descend on Misurata’s Port,” May 6, 2011 - <http://www.nytimes.com/2011/05/07/world/africa/07libya.html?src=tptw>
- Video of Misrata landmines, May 6, 2011 - https://www.youtube.com/watch?v=YCBwF2WoUb4&feature=player_detailpage
- Human Rights Watch, “Libya: Rebels Pledge Not to Use Landmines,” April 29, 2011 - <http://www.hrw.org/en/news/2011/04/29/libya-rebels-pledge-not-use-landmines>
- BBC News, “Libya conflict: Rebels accused of reneging on mines vow,” April 19, 2011 - <http://www.bbc.co.uk/news/world-africa-13138102>
- Human Rights Watch, “Libya: Government Use of Landmines Confirmed,” March 20, 2011 - <http://www.hrw.org/en/news/2011/03/30/libya-government-use-landmines-confirmed>
- Landmine and Cluster Munition Monitor: Libya - http://www.the-monitor.org/index.php/cp/display/region_profiles/find_profile/LY/2010
- Human Rights Watch reporting on Libya - <http://www.hrw.org/en/middle-eastn-africa/libya>
- Human Rights Watch Arms Division - <http://www.hrw.org/en/category/topic/arms>