



ISRAEL MATTERS!

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Israelis Test Classified Tunnel Tech To Stymie Terrorists

Israel has developed systems that are uncovering a great number of tunnels that cross the Israeli border from Gaza and Lebanon.

These technologies are being studied by the U.S. military, which is working hard to prepare for what they believe will be enormously complex tunnel warfare in Asia. The U.S. Army for example, recently launched an accelerated effort to train for subterranean combat. Finding new tunnels will be a key part of such combat.

The Israelis are combating terrorists trying to enter Israel through the tunnels. The huge effort involved in digging these tunnels, especially in the rocky soil in Northern Israel, was made to give Hamas in Gaza and the Hezbollah in Lebanon an advantage after the Israeli Iron Dome anti-missile system proved its capability against their rockets.

After the first tunnels were discovered under the Israeli border with Gaza the Israel Defense Forces [IDF] made it a top priority to find ways to detect digging operations and existing tunnels. A technology lab, manned by a team of, physicists, engineers, intelligence personnel, and geologists, was hastily established in the Gaza Division of the IDF for detecting tunnels.

It's part of integrated efforts by Israeli on the technological, intelligence and operational fronts. The laboratory later was expanded to the border with Lebanon after tunnels were discovered there. That lab is the technological arm for detecting the tunnels and uses innovative soil research that includes scanning and decoding signals. It is also working to improve existing technologies and strives to develop new detection and mapping detection techniques. The laboratory members work closely with intelligence personnel for detection, mapping and ways to destroy them.

The IDF last year completed a four-month review of what it considered its outdated approach to underground combat, and published a new training manual.

These efforts appear to have led to a series of successes over the past few months, with the exposure and destruction of a number of tunnels from Gaza and Lebanon to Israel. It is a highly classified system based on sensors that monitor what is happening on the ground and provide warning in the event of a cavity discovery, but its full details may not be published. Grouped together, these sensors have a strategic significance since it appears to be the first effective system of its kind in the world for this purpose.

In addition to the detection systems, the IDF's special units within its engineer's corps have been equipped with a special conical penetrator, special drilling systems, systems that can be inserted into a tunnel to check it, a robotic system used to inject certain "emulsions" after the tunnel is detected and before it is destroyed and another special "emulsion" used to quickly seal the tunnel's shaft.

In July, the IDF uncovered a cross-border attack tunnel that entered Israeli territory from the Gaza Strip, five years after the start of a 2014 operation aimed at finding and destroying such passages.

The tunnel was found during the construction of an underground barrier around the coastal enclave, the Israel Defense Forces said.

The cross-border tunnel is the 18th discovered since the end of the 2014 war.

The military proposed building the underground barrier on the Gaza border following the 2014 Gaza war, known in Israel as Operation Protective Edge. During the fight-

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ing, Hamas made extensive use of its tunnel networks to send fighters into Israel as well as to move its terrorist operatives and munitions within the Gaza Strip.

Work began in earnest on the Defense Ministry-led project in 2016. According to the military, it is due to be completed by the end of 2019.

The 65-kilometer (40 mile) barrier is being constructed entirely inside Israeli territory, 50 meters (some 55 yards) from the Gaza border at its closest point and 300 meters (328 yards) away at its farthest.

Hundreds of people, some Israeli and others from abroad, are involved in the project, wearing flak jackets and under guard by IDF soldiers as protection against attack from terror groups in the Strip.

Concrete factories were built next to the Gaza Strip to speed up construction.

To build the underground wall, the workers are using a common construction technique known as “slurry walls,” in which they dig narrow vertical slits straight down into the ground and then fill it with reinforced, sensor-laden concrete, which acts as both a physical barrier and a detection system.

The workers use a hydromill, a powerful piece of drilling equipment brought to Israel from Germany that cuts deep holes into the earth.

In addition to opening up the ground where the barrier will be constructed, the hydromill also exposes any previously undiscovered or newly dug Hamas tunnels that enter Israeli territory. The space left behind by the hydromill — and any Hamas tunnels that get in the way — is filled with a substance known as bentonite, a type of absorbent clay that expands when it touches water.

This is meant to prevent the trenches from collapsing, but also has the additional benefit of indicating the presence of a tunnel, as the bentonite would quickly drain horizontally into it.

To create the wall, workers later pour regular concrete into the trench and reinforce it using metal supports with sensors attached.

All told, the fortification of the Gaza border is expected to cost some NIS 3 billion (\$877 million), with NIS 2.4 billion (\$700 million) of that going toward the subterranean wall.

In addition to the underground barrier, the army also began construction earlier this year on a new metal fence, some six meters (26 feet) tall, as well as adding additional breakwaters on the coast around Gaza and other protective measures in order to prevent infiltration into Israel from the sea, as occurred during the 2014 Gaza war.

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