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Related Categories: Cybersecurity and Cyberwarfare; North Korea; Turkey

INCREASINGLY, ROBOTS ON THE FRONT LINES

During a recent combined breaching exercise, U.S. and British soldiers were able to sit back and let robots do all of the heavy lifting. As part of the drills, UK-made "Terrier" unmanned vehicles were able to navigate and clear a fake minefield and set up a bridge across a trench for a tank — a highly dangerous operation that is usually conducted by engineers during combat. The innovation is significant; "The casualty rate for a breach is expected to be 50 percent," noted one officer. "Being able to take our guys away from that, and have some robots go in there, is a very positive thing for us. In the future, this can save engineers' lives." In addition to the ground-based robots, several aerial drones were utilized during the joint exercise for intelligence gathering and simulated chemical weapons search. (Military.com, April 8, 2018)

DPRK THREAT TRIGGERS NEW MISSILE DEFENSE FOCUS ON PLANES...

Despite the prospect of diplomatic talks with North Korea, Pentagon planners are searching for ways to bolster U.S. missile defenses - and fighter jets may provide the solution. For almost half a decade, the F-35 Joint Strike Fighter has been considered as an optional sensory component to missile defense systems, because it successfully identified a missile during its boost phase and transferred targeting information to traditional anti-missile systems in prior tests. Today, policymakers and military planners are studying whether it might be possible to use an F-35 carrying Advanced Medium-Range Air-to-Air Missiles (AMRAAMs) to destroy an ICBM shortly after launch. Such a development would represent a significant evolution in U.S. missile defense strategy; currently the country does not have any reliable options to terminate missile threats during their boost phase of flight. The North Korea scenario is top of mind in this exercise; given the proximity of U.S. and allied air bases to North Korea and the significant amount of F-35s stationed in the region, the fighter jet may prove to be a viable, and game changing, missile defense option if the capability can be proven. (*Breaking Defense*, April 11, 2018)

...AND DRONES

The Defense Department is also considering unmanned options by which to thwart North Korean missile threats, including the use of drones equipped with directed energy weapons. The idea is to have drones aloft in international airspace in the region at high altitudes, armed with high-powered lasers. These UAVs would effectively "lay in wait" and then destroy an enemy missile during its slowest stage of flight. Unfortunately, such a capability remains a ways off, according to nuclear and missile expert Matthew Kroenig. "We have directed energy interceptors on ships, so the basic technology is proven," he notes. "But it won't be until 2025 or so that this will be a real capability." (*Newsweek*, April 12, 2018)

TURKEY'S NEW UNDERWATER DRONE

Turkish drone maker Albayrak Savunma and researchers from the Karadeniz Technical University have teamed to create a naval mine in the form of a stingray. The metal shark-like underwater drone is manipulated remotely by encrypted acoustic sound waves, and is capable of using electromagnetic magnets to attach to enemy ships and detonate on command. The "stingray" is also able to remain in sleep mode so as to avoid detection, and carries defensive systems designed to deter predatory fish. (*Defense News*, April 18, 2018)

UNDERSTANDING THE EMP THREAT

North Korea's continued ballistic missile and nuclear weapon development has shed renewed light on a significant - and potentially devastating - threat: the one posed by an electromagnetic pulse (EMP) caused by the detonation of a nuclear weapon in the Earth's atmosphere. An effectively placed nuclear blast of this kind would not involve any immediate deaths, but the resultant EMP would destroy critical components of U.S. infrastructure, causing widespread electrical grid failure and generating cascading effects on other critical nodes. Unfortunately, the U.S. is not prepared to deal with the fallout of an EMP attack, which would involve significant loss of human life and from which it would cost trillions of dollars to recover. (Bloomberg, April 25, 2018)

[EDITOR'S NOTE: For more information on EMP and its national security implications, please see AFPC's recent *Strategic Primer* on the subject, available [here](#).]

WEAPONIZING INK

The role of 3D printers continues to advance on the battlefield, and their latest contribution could be in the realm of tattoos. Scientists from the University of Minnesota are developing a low cost printer (<\$400) capable of using silver flakes as the ink to print patterns directly on human skin, which can be used as biological or chemical agent sensor, or as a solar cell to power vital electronics. Reportedly, "the new, low-cost technology has also been utilized to print biological cells on a mouse's skin wound, which may pave the way for direct skin graft printing out in the field." If perfected, the technology would offer limitless potential for military applications, and provide many useful functions in civilian life as well. (*ZDNet*, April 27, 2018)