



## DEFENSE TECHNOLOGY MONITOR

The American Foreign Policy Council's Review of  
Developments in Defense Technology

# Defense Technology Monitor: No. 25

February 26, 2018 **Richard M. Harrison**

**Related Categories:** Cybersecurity and Cyberwarfare; Military Innovation; Missile Defense; North Korea; Russia

### BACK TO AIRBORNE LASER BASING

The U.S. military is once again planning to place lasers on a military aircraft. The latest iteration of the effort would feature a 50 to 150 kilowatt-class fiber laser mounted on an F-15 fighter jet and capable of destroying enemy missiles or drones over a mile away. This fiber-type laser package is orders of magnitude smaller and less powerful than the one used in the Pentagon's now-defunct Airborne Laser Program, which employed a chemical megawatt-class laser housed on jumbo planes for missile defense. In contrast with traditional munitions that explode adversary missiles, the laser "burns up a hostile projectile's electronic system" and costs substantially less per shot. In addition to the fighter jet, consideration is also being given to placing laser weapons atop high altitude Predator drones. (*Wall Street Journal*, December 8, 2017)

### CAN EMP HELP CONFRONT NORTH KOREA?

The debate about how to protect the U.S. and its allies from North Korean nuclear missiles continues to rage. The newest (and controversial) suggestion is to use a directed energy weapon known as the CHAMP missile, short for "Counter-electronics High-powered Microwave Advanced Missile Project," which simulates an electromagnetic pulse attack by using "bursts of microwave energy to disable electronic devices such as computers, communications and air defense radar systems." The Boeing-developed weapon has been highly successful in testing, and possesses a unique advantage because it does no physical damage to sites or people. However, the missile has to fly very close to the electronic systems it is targeting in order to destroy them, making it less feasible for use against North Korean ICBMs - both because U.S. military planners would have to know their exact locations, and because the adversary missiles would have to be unshielded in order for the microwave rays to penetrate and disable the underlying electronics. (*Ars Technica*, December 7, 2017)

### AMERICA'S ELECTRIC GRID: STILL VULNERABLE

Even as defense planners discuss options for the offensive use of EMP weapons against threats such as North Korea, questions remain about whether or not the U.S. is prepared to defend against a large-scale EMP attack. Fueling the concern is the awareness that if the DPRK is able to successfully launch a nuclear-tipped missile (or carry one aboard a satellite) and detonate it 300 miles above the Earth's surface, it could cripple parts of the U.S. electric grid and other critical infrastructure. In response, over 6,000 participants from federal agencies, telecommunication firms, and North American utility providers recently conducted an exercise, dubbed "GridEx IV," to assess various scenarios that could cause catastrophic failure to the U.S. power grid as a result of EMP attacks, effects from geomagnetic storms, physical attacks on infrastructure, and cyber threats. The consensus was dire: all of the participants agreed that, in the event of such an attack or incident, there would be major problems with electric utilities nationwide, and that the country remains unprepared for such a scenario. (Bloomberg, December 22, 2017)

### NAVY JET GETS DRONE WINGMAN

The U.S. Navy continues to push for new ways to incorporate unmanned systems into its military operations. The latest initiative in this regard is the Dash X, a drone that will fly in combination with the Navy's carrier-based electronic warfare craft, the EA-18G "Growler." With a small 12 foot wingspan, the Dash X will reside in a capsule attached to the jet and, when deployed, will target enemy hostile radar emissions and relay the information to the Growler. The drone is cleverly designed to fly at the relatively slow speed of 60mph as a disguise, because enemy radars usually attribute slow flying objects to be birds. If the drone is successful, it will be able to be adapted to use with several other types of military aircraft in the future. (*Popular Mechanics*, December 7, 2017)

### ENHANCING RUSSIAN SOLDIERS...SOON

The Russian military is working to enhance the capabilities of its soldiers through the use of exoskeletons. Reportedly, Russian defense planners are seeking to outfit select Russian warfighters with a new titanium exoskeleton structure intended to significantly increase their capacity to lift heavy objects while retaining nimbleness. Russian military planners also believe that the use of an exoskeleton could allow soldiers to carry larger caliber weapons with increased speed. However, the defense manufacturer developing the exoskeletons is reportedly running into the same issues that U.S. contractors have faced for years - namely, that there is no good power source light enough and with enough energy to power the exoskeleton suit, so it is unclear how quickly they will be available for combat. (*Newsweek*, December 15, 2017)

