AMERICAN FOREIGN POLICY COUNCIL

Defense Technology Monitor No. 66

July 16, 2021 **Autumn Kearny** , **Richard M. Harrison**

Related Categories: Military Innovation; Science and Technology; Warfare; China; Europe; Israel; Russia

U.S. SPECIAL OPS TO USE ISRAELI INDOOR DRONES...
The Pentagon is increasingly incorporating drones into military operations — and that includes UAV use in buildings during urban warfare. Rather than placing the warfighter at risk, newly-developed drones are able to enter buildings and perform a multitude of operations. The Pentagon's Irregular Warfare Technical Support Directorate is relying on Israeli defense tech company Xtend to provide drones that are "optimized for the urban warfare challenges, including Close Quarters Battle (CQB) counter drone (C-UAS) interception counter improvised explosive device (C-IED) missions, and subterranean (Sub-T) operations." The Israeli-built drones provide significant value because "the challenge is [that] you don't have GPS or lighting indoors and may have furniture or open windows with turbulence, and also propeller wash and the physics of flying in a confined space," says Xtend's Ido Bar-On. The drones are shaped like quadcopters, travel about a foot off the ground, and have a flight endurance of approximately 10 minutes. (*Defense News*, May 10, 2021)

...AS CHINA DEVELOPS COUNTER DRONE TECH
The U.S. and Russia have settled on various innovative tech and techniques for countering the threat posed by drones (see *Defense Technology Monitor* nos. 41 and 64). China, meanwhile, is resorting to a cruder method: saturating the target with rapidly-fired bullets. Leaked photos show China may be developing a 20-barrel Gatling gun for counter-drone operations. Typically, such weapons are used to shoot a multitude of bullets toward a target such as low flying planes or cruise missiles. However, it appears the Chinese are developing the weapon - which boasts more than double the number of barrels of an ordinary Gatling gun - in order to counter large drone swarms. The photo evidence is inconclusive, but the system may have two firing mechanisms. Either way, the newly-designed system is likely to help China protect airfields, ports, and supply depots from drone swarms. (*Popular Mechanics*, May 26, 2021)

A ROYAL ROBOTIC SUBMARINE
Like the U.S. Navy, the British Royal Navy is now experimenting with uncrewed submarines capable of hunting for mines, running intelligence gathering operations, or conducting surveillance (see *Defense Technology Monitor* no. 58). Testing is currently underway of a 7,400-ton nuclear-powered hunter-killer submarine that will be independently operated by artificial intelligence. The AI system is contained in a box less than half a foot in length, and which utilizes hardware commonly used in gaming consoles. Impressively, the system will be able to make decisions to preserve battery life and mimic the actions of a human ship captain. This submarine will not be armed, but developers believe the next generation will be equipped with the ability to launch their own autonomous vessels. (*BBC News*, May 21, 2021)

RUSSIAN WAR ROBOTS JOIN THE RANKS
Warfighting robots are no longer confined to science fiction, as the Russian military is increasingly incorporating them alongside human soldiers. At a recent "New Knowledge" Forum, Russian Defense Minister Sergey Shoigu detailed how the Russian military is conducting "a major effort" to mass produce artificial intelligence-driven war machines capable of making complex battlefield decisions without human intervention. Autonomous and semiautonomous warfighting systems are not new for Russia, with the Kremlin utilizing the Syrian conflict as a proving ground to test the effectiveness of robotic systems - a process that appears to have made significant headway. (*RT News*, May 21, 2021)

NEW ARMY EYES SAVING LIVES
Over the last several years, the U.S. Army has been hard at work improving gear for the warfighter with upgraded headsets (see *Defense Technology Monitor* nos. 36 and 48) to improve battlefield awareness, and the trend continues with new gunsights. Machine guns and grenade launchers are not exactly known for their accuracy, but that might be changing with the creation of the Family of Weapons Sights-Crew Serve (FWS-CS) gunsight. According to a press release for the project, "the FWS-CS is the first machine gun optic to utilize the 'disturbed reticle' technology. Along with calculating the range to the target, the ballistic calculator can adjust for air density and works with any of the Army's current machine gun systems." Additionally, the system is capable of thermal and infrared imaging to allow for night time use. Moreover, the sight can be linked to other local sensor systems in the area for more complete battlefield awareness, which will help distinguish adversarial targets from friendly forces. (*Popular Science*, April 23, 2021; *Military & Aerospace Electronics*, May 6, 2021)
