

The View from Here: Drones, Drones, Drones

By John Knowles

In the cover story for this month's *JED*, John Haystead writes about an important piece of the US Army's Navigation Warfare (NAVWAR) strategy: Alternative Position, Navigation and Timing (A-PNT). Military and government leaders have been paying more attention to PNT and NAVWAR over the past 12-18 months mainly because unmanned aerial systems (UAS) and unmanned surface vessels (USVs) have played prominent roles in the Russia-Ukraine War and in Houthi attacks on shipping in the Red Sea. In the context of Electromagnetic Spectrum Operations (EMSO), these drones are the logical successor to the radio-controlled improvised explosive devices (RCIEDs) encountered in Iraq and Afghanistan nearly 20 years ago. In order to use RCIEDs, adversaries in Iraq and Afghanistan relied on newly available maneuver space in the EMS that was enabled by commercial telecommunications systems and devices. RCIEDs were effective weapons until the US and its coalition partners stepped up their EW strategy and equipped their forces with communications EW systems to shrink the adversaries' EMS maneuver space and minimize the RCIED threat.

The same EMS maneuver lessons are true for today's conflicts. Global navigation satellite systems (GPS, GLONASS, Beidou and Galileo), inexpensive RF/E0/IR sensors, real-time datalinks, and telecommunications networks have become global EMS commodities. It was only a matter of time before military forces integrated these EMS commodities with weapons system "commodities" in the form of commercial drone platforms. Countries, such as Ukraine, Iran and Iran's Middle East proxy forces, have embraced this approach and more are poised to follow.

In the Black Sea, Ukraine has used domestically produced anti-ship missiles to push Russian naval forces off its southern coast. It then significantly extended its reach into the Black Sea with sea drones, which have forced Russia's Black Sea fleet to ports east of Crimea.

In the Red Sea, along the coast of Yemen, Houthi forces (acting as Iran's proxy) have used a combination of anti-ship ballistic missiles, anti-ship cruise missiles, one-way attack drones and USVs to attack western naval forces (without much success) and commercial shipping (with far more success). Ukraine and the Houthis have had success with their missiles and drones because they have leveraged widely available EMS commodities to operate in a relatively uncontested EMS maneuver space. The EMS maneuver advantages exploited by these drones will continue until naval forces develop better EW strategies and equip themselves with the appropriate EW systems (GPS and communications jamming systems) to degrade and deny the drones' access to the EMS. In the meantime, many other countries have observed the role of drones in the Black Sea and the Red Sea and are poised to follow suit.

The true power of drones is not their small size or low cost. Rather it's their ability to maneuver in the EMS. If that EMS access is diminished or denied by well-conceived EW strategies and effective EW capabilities, then like all weapons systems, the drones' inherent weaknesses (limited range, speed and payload) will become obvious. Until then, drones will continue to look like the "weapons of the future."