

# Emerging air defense challenges

## Unmanned aerial systems

By 1st Lt. Nicholas Culbert

The battlefield of the 21st Century is becoming ever more complex. Long gone are the days where combined arms maneuvers and operations consisted of simply infantry, artillery, armor and fixed- and rotary-wing manned aviation. New combat domains are being exploited by our military and those of our enemies. From cyberwarfare, to space operations, to new developments in unmanned aerial systems (UAS), countering a growing number of threats has spread

resources thin in the effort to protect this nation and its critical assets.

According to a Torchbearer National Security Report published in July 2010, the U.S. Army deployed only “three UAS with 13 aircraft” in support of Operation Iraqi Freedom.<sup>1</sup> Today, the U.S. Department of Defense operates over 11,000 UAS in support of a multitude of operations worldwide.<sup>2</sup>

While the intentions of our military

and the Army are noble, the same cannot be said of America’s enemies. The growing intricacy of warfare and the increasing number of mission sets has left us, in some cases, vulnerable with little or no counter to emerging threats. As air defenders, it is our responsibility to address, adapt and counter these threats.

Lessons from the 2014 Russian annexation of the Crimean Peninsula and the resulting military conflict between Ukrainian

<sup>1</sup> Association of the United States Army | Voice for the Army – Support for the Soldier. Accessed Dec. 18, 2017. <https://www.ausa.org/sites/default/files/TBNSR-2010-US-Army-Unmanned-Aircraft-Systems-Changing-Modern-Warfare.pdf>.

<sup>2</sup> Department of Defense. “Unmanned Aircraft Systems.” DoD. Accessed Dec. 18, 2017. <https://www.defense.gov/UAS/>.

*Soldiers of 2nd Battalion, 263rd Air Defense Artillery, 678th Air Defense Artillery Brigade, South Carolina Army National Guard, conduct validation training at Fort Bliss, Texas. The validation training culminated with a live-fire event where Soldiers engaged drones with the Avenger weapon system and shoulder-mounted Stinger missiles during both day and night fire operations. (Sgt. David Erskine/U.S. Army)*

and Russian-backed forces have shown how effective and unpredictable UAS operations can be in a modern conventional war. As identified by the U.S. Army's Counter UAS (C-UAS) Strategy, both sides in this conflict have used UAS, large and small, for intelligence, surveillance and reconnaissance (ISR) purposes. However, Russian-backed forces have demonstrated "one UAS capability in particular... [emerging] as a substantial enabler: target acquisition for artillery."<sup>3</sup> This new tactic has far-reaching implications for a multitude of actors and poses a larger indirect fire threat to U.S. ground forces. The C-UAS Strategy goes even further, presenting claims that UAS conducting ISR in support of Fires resulted in nearly double accuracy during combat operations.<sup>4</sup>

Countering this new tactic and others like the weaponization of small UAS

(sUAS) is perhaps, alongside ballistic missile proliferation, the largest air defense challenge in the history of the branch. With air defense batteries deployed worldwide, often in fixed locations, and each with their own unique mission sets, integrated air and missile defense capabilities against sUAS and large UAS are needed more than ever.

The current arsenal of air defense weaponry is unfortunately, ill-suited to meet this task. With the mass proliferation of UAS and their commercialization, the cost to effectively employ these systems on the battlefield is miniscule in comparison to a multi-million dollar Patriot interceptor. New air defense systems are desperately needed to effectively and efficiently eliminate threats to key defended assets worldwide so as to preserve the mission set of already deployed air defense units. New funding and technology, while critical in

countering this new and emerging threat, are not the answer alone. Cross-domain warfare with fields such as electronic warfare and cyberspace operations will, and is, helping to redefine combined arms efforts to defeat America's enemies. Ultimately, the air defense strategy against emerging UAS threats will require a holistic approach, involving a joint effort with allies and partners, the development of new technologies, and the redefinition of combined arms and cross domain warfare.

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<sup>3</sup> United States Army Fires Center of Excellence (FCoE). "Counter - Unmanned Aircraft System (C-UAS) Strategy Extract." Home - Army Capabilities Integration Center. Accessed Dec. 18, 2017. [http://www.arcic.army.mil/app\\_documents/army-cuas-strategy.pdf](http://www.arcic.army.mil/app_documents/army-cuas-strategy.pdf).

<sup>4</sup> Ibid.

