# C-SUAS at the Tactical Level

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The purpose of this article is to summarize challenges and make recommendations regarding the integration of counter-small unmanned aerial systems (C-SUAS) at the infantry brigade combat team (IBCT) and below level in support of large-scale ground combat operations (LSGCO). These recommendations derive from observations and participation in multiple training events, tabletop exercises, and planning events conducted between January 2022 and January 2024.

Army Doctrine Publication (ADP) 3-0, *Operations*, defines LSGCO as "sustained combat operations involving multiple corps or divisions." Summarized from Army Techniques Publication (ATP) 3-01.50, *Air Defense Airspace Management (ADAM) Cell Operation*, the ADAM cell's role is to plan, coordinate, and establish connectivity for unified actions with communications systems; provide situational awareness and early warning; continuously plan and conduct airspace management requirements for the supported echelon; and conduct air and missile defense (AMD) and aviation planning to determine requirements across the spectrum of conflict. With the growing threat and proven use of SUAS on the battlefield, the modified table of organization and equipment (MTOE) personnel in AMD and ADAM cells across those corps, divisions, and their subordinate IBCTs cannot conduct doctrinal requirements to support commanders at echelon and simultaneously conduct engagement operations in support of C-SUAS. Therefore, C-SUAS must be a combined arms effort that is performed down to the lowest level, and Soldiers across the force at every echelon, but especially those filling direct combat roles, should be familiar with ATP 3-01.81, *Counter-Unmanned Aircraft System*, and proficient in C-SUAS tasks. These tasks, which are located on the Combined Arms Registry, are:

- Plan Passive AMD Measures to Counter UAS (441-CUAS-0001)
- Plan for C-SUAS Operations (441-CUAS-2001)


**A paratrooper assigned to the 173rd Airborne Brigade uses a Dronebuster 3B to disrupt enemy drones as part of Exercise Shield 23 in Pula, Croatia, on 20 April 2023. (Photo by SGT Mariah Gonzalez)**

- Develop a Unit C-SUAS Training Strategy (441-CUAS-1001)
- Operate C-SUAS Kinetic Systems (441-CUAS-1002)
- Manage Operational Status of C-SUAS Kinetic Systems (441-CUAS-1003)
- Operate C-SUAS Non-Kinetic Systems (441-CUAS-1004)
- Manage Operational Status of C-SUAS Non-Kinetic Systems (441-CUAS-1005)
- Operate C-SUAS Detection Devices (441-CUAS-1006)
- Manage Operational Status of C-SUAS Detection Devices (441-CUAS-1007)
- Perform Destruction of C-SUAS Equipment (441-CUAS-1008)

**An Increasing SUAS Prevalence**

Dropping grenades and explosives from SUAS isn't necessarily a new technique on the modern battlefield, but only in the past few years have we seen how incredibly devastating this method can be at scale. Not only have we seen the lethality of what these machines are capable of, but we are also seeing the second- and third-order effects of their use for propaganda. Most concerning, these systems are incredibly cheap when compared to advanced UAS that have gone through a government-procurement process, or when compared to some of the Army's more advanced air defense munitions that we currently rely on to defeat them. Whether the systems are purchased from a major online retail site or created in someone's garage, they can be employed en masse and are truly considered a disposable piece of equipment. Any military force that is not bound by the bureaucracy of traditional military acquisition processes will most certainly make use of these tactics, techniques, and procedures (TTPs) for the foreseeable future. As we have seen with both insurgency forces (ISIS) and conventional forces (Ukraine/Russia), drone-dropped grenades are now being used by insurgency forces against Israel and in other ongoing conflicts around the world.

Loitering munitions and one-way (or kamikaze) unmanned aerial vehicles are also not new to the battlefield. It was only through the recent exploitation of social media for use as propaganda that the concept of loitering munitions became major headlines. The Azerbaijani military made extensive use of Israeli-made loitering munitions in the Second Nagorno-Karabakh War in 2020. Both the IAI Harpy and Harop were used to devastating effects against Armenian air defense units, opening the way for larger UAS to neutralize the remaining defenses and target unprotected frontline units. The Russia-Ukraine war has also shown the world the unique capabilities of these types of weapons. On the Russian side, professionally developed systems like the Zala KYB and Lancet series have shown their effectiveness against both personnel and material. On the Ukrainian side, first-person view (FPV) quadcopters modified into precision-strike, loitering munitions have made their presence known on social media and with the Russian military. With both loitering munitions and dropped explosives, there are a large variety of designs being employed, and each comes with a unique set of challenges that makes developing proper countermeasures difficult. These challenges become even more prevalent when discussing expeditionary-type maneuvers like large-scale, long-range air assaults, where units are regularly outrunning the C-SUAS coverage of larger systems like the Fixed Site-Low, Slow, Small UAS Integrated Defeat System (FS-LIDS) and Mobile-Low, Slow, Small UAS Integrated Defeat System (M-LIDS).

While the airborne threat of improvised explosive devices continues to be present, it is important to acknowledge additional technologies that are finding their way onto the modern battlefield. Artificial intelligence has made recent headlines, but it is important to note that autonomous decision-making logic has existed for some time now and is well within reach of low-budget insurgencies and hobbyists. Like the software used in self-driving cars, this type of automation relies on a set of pre-determined rules and can be used for several different purposes, such as autonomously counting and identifying potential targets or being used for autonomous navigation in a denied, degraded, disrupted, space operational environment (D3SOE). A certain level of autonomy can also have benefits for ground control systems and operator survivability, increasing the stealth of an already hard-to-detect aircraft and increasing the lethality while flying beyond both visual and electronic line-of-sight.

**Observations**

The Air Defense Artillery (ADA) Branch has taken on the task of tackling C-SUAS by heading the Joint C-SUAS University at the Fires Center of Excellence at Fort Sill, OK. Corps, division, and brigade MTOEs all allocate air defense Military Occupational Specialties (MOSs), which include 14A (Air Defense Officer), 140A (AMD Systems Integrator), and 14G (Air Defense Battle Management System Operator). While the responsibility of a 14A is that of a generalized air defense officer, 140As and 14Gs are trained to integrate and operate specific equipment that provides information to and from the Joint Data Network which generates an integrated air picture for situational awareness. Currently, none of these MOSs are required to be trained through the professional military education pipeline on C-SUAS systems, tactics, planning, employment, and capabilities. While it is possible that some of these personnel have been to courses at the Joint C-SUAS University, much of what they know about C-SUAS, if anything, is solely from on-the-job training that they may or may not have been required to learn to facilitate an operation of which they played a part.

There are no dedicated C-SUAS personnel or organic equipment at any tactical echelon in the conventional Army, and the preponderance of C-SUAS equipment uses electronic warfare (EW) technologies with traditional air defense TTPs. While the air defense branch has enveloped the Joint C-SUAS University and the problem set that is C-SUAS, its personnel are simply not able to be solely responsible for the C-SUAS mission. This is a cause for concern when considering the potential Army 2030 regimental concept for personnel realignment. This realignment to more infantry-pure regiments will likely move the MOSs most closely associated with C-SUAS operations (EW, ADA, UAS) out of IBCTs altogether.

While many systems such as FS-LIDS, M-LIDS, and the Drone Buster have been fielded periodically as theater-provided equipment (TPE), these systems, aside from the Drone Buster, are not conducive for use by the combined arms community as is, let alone as part of an air assault or airborne BCT. When considering FS-LIDS, adding equipment that requires longer set up and tear down time, additional expert manning and storage space, and a different logistics tail are not practical ideas for any BCT and only make command posts (CPs) more vulnerable targets for enemy fires and effects. Equipment such as M-LIDS would most likely be relegated to a heavy weapons company inside of an infantry battalion as they would rarely be able to maneuver in the same terrain that a light infantry company would be required to traverse. Ounces equal pounds, and heavy weapons companies already have enough platforms and weaponry with which to effectively maintain and employ. These realities, and the fact that this equipment is not able to be effectively slung into combat for immediate action, show that they do not provide a common-sense approach to LSGCO for an IBCT.

**Recommendations**

While all Soldiers at every echelon should have a common knowledge and understanding of the “how-to” regarding C-SUAS in their area of responsibility (AOR), the reality of the matter is that if you can see or hear the SUAS, it is most likely too late. Electronic countermeasures should be actively utilized to deny

**Above left, Kinetic and Electronic Warfare Mobile-Low, Slow, Small UAS Integrated Defeat System (M-LIDS) and, at right, Fixed Site-Low, Slow, Small UAS Integrated Defeat System (FS-LIDS) (Graphics courtesy of Integrated Fires/Rapid Capabilities Office)**

threat SUAS freedom of maneuver inside of a corps, division, and BCT AOR. From the perspective of an air assault task force, this could be something like utilizing Bal Chatri to identify the presence of enemy SUAS and then using tactical-level EW assets to provide an active, wide-area countermeasure to the threat prior to its closing within visual intercept range. It is understandable that there is concern for EW fratricide, but given the vulnerability of an active and hot air assault landing zone, the benefits should and will outweigh the risks when discussing the employment of "blue" SUAS or communications networks in such a scenario. Ideally, an air assault task force should have the organic means of identifying and providing countermeasures to threat SUAS during, or in as little time as possible after, the initial insertion of troops.

The use of bulky systems such as FS-LIDS and M-LIDS seem to keep the tactical level in the counterinsurgency mindset that has accompanied the force over the last two decades. These systems will neither be conducive nor effective when being operated by forces who are responsible for closing with and destroying a near-peer enemy by means of fire and maneuver. While robust systems such as FS-LIDS or M-LIDS will likely have a place in the Army 2030 division air defense concept, they are not useful if given to the tactical maneuver echelons to utilize. If given to the tactical echelon's maneuver force, they should only be given to forces acting in a dedicated protection role (i.e., assigned a specific mission set to defend specified critical assets at echelon) and not the forces actively conducting LSGCO.

C-SUAS cannot be considered solely an EW or air defense problem set when conducting operations. While the Soldiers executing engagement operations will likely be MOS immaterial, the staff function of planning and integrating C-SUAS planners at every echelon brigade and above must include EW Technicians (MOS 170B), UAS Operations Technicians (MOS 150U), and 14As. The first pages of Army Doctrine Publication 3-19, *Fires*, outline many fires warfighting function tasks, among which are surface-to-air fires, cyberspace operations/EW, and airspace management; these tasks all support the C-SUAS effort. Therefore, ensuring that 170Bs, 150Us, and 14As are housed inside of the fires cell of a brigade will best provide commanders with sound recommendations supporting the C-SUAS mission. To be lethal, effective, and win across the spectrum of conflict in LSGCO, the C-SUAS effort must be a combined arms effort using fires warfighting function tasks to support the efforts of the protection warfighting function.

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