



# **Counter-Unmanned Aerial Systems (C-UAS) Training and Implementation at the National Training Center**

**NO.25-1093  
August 2025**



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## **Introduction**

The proliferation of unmanned aerial systems (UAS) has introduced significant challenges to military operations worldwide. These systems, ranging from commercial off-the-shelf (COTS) UAS to sophisticated military-grade drones, are increasingly utilized for intelligence gathering, surveillance, and weapon delivery platforms. As the conflict in Ukraine starkly highlights, UAS implementation is an unavoidable aspect of current warfare.

The National Training Center (NTC) serves as the nation's premier training venue, preparing U.S. military personnel to fight and win our nation's wars and counter these evolving threats. However, training at NTC faces several constraints that limit its effectiveness. This paper examines the current enemy UAS threat systems employed at NTC, the counter-UAS equipment available at NTC, training limitations, and recommendations to enhance the overall effectiveness of C-UAS training.

### **Threat UAS Replication at NTC**

Our adversaries have access to a variety of UAS platforms that pose a substantial threat to military operations. To replicate evolving UAS technology on the battlefield, NTC, in conjunction with the Emergent Threat, Training, and Readiness Capability (ET2RC) office, has invested in a variety of systems to replicate threat UAS systems to employ against the rotational units (RTUs). Among the most notable systems is the TSM 800, a UAS platform designed for military-grade threat simulation, capable of swarming up to 150 systems from a single ground control station.

Additionally, NTC offers various commercial drones such as the Parrot Anafi, DJI Phantom 4 Pro V2, and DJI Mavic 3, which may be used to conduct ISR, call for fire, or drop explosive munitions (simulated via nerf rounds). Recently, NTC has added the Parrot Disco to its inventory to replicate one way attack first person view (FPV) capability. Finally, NTC utilizes Grey Eagle to replicate enemy Group 4-5 UAS.

Weaponized commercial drones have been used in recent conflicts to devastating effect, demonstrating the necessity for robust countermeasures. Adversaries have showcased the ability to retrofit these drones with releasable munitions, a threat that is increasingly common in both conventional and asymmetric warfare. This evolution of UAS capabilities underscores the importance of implementing C-UAS centric training programs, improving detection, tracking, and neutralization methodologies in military training.

### **Counter UAS Capabilities at NTC**

NTC has incorporated several counter-UAS training systems that may be issued to the RTU that enable mitigation of these threats. Among these are Drone Busters, a

handheld device designed to jam radio frequency and Position, Navigation and Timing (PNT) signals, effectively disabling drones mid-flight. The RTU may draw up to six live Drone Busters and six replica training aids that are then distributed throughout the BCT in whatever manner they decide.

Additionally, the Mobile, Low, Slow, Unmanned Aircraft Integrated Defeat System (M-LIDS) has been adapted for training, using visually modified (VISMOD) Joint Light Tactical Vehicle (JLTV). These vehicles are issued in a set of two to mimic the Electronic Warfare (EW) and kinetic defeat platforms that a unit would see in an actual operation. This set of equipment is purely a VISMOD and offers no actual detection or defeat capability.

Finally, the RTU is afforded the opportunity to draw two, man portable Sky Views, a mobile UAS detection platform providing short range early warning and detection capabilities, further enhancing the realism of training scenarios. Outside of C-UAS specific equipment, the RTU is encouraged to employ passive air defense measures such as dispersion, camouflage, and occasionally deception. NTC has seen encouraging trends of command posts across the BCTs greatly reducing their footprints, enabling greater mobility and reducing their electromagnetic spectrum outputs.

### **Training Constraints at NTC**

While these systems offer some defense against UAS threats, their training value is diminished by several constraints, preventing Soldiers from gaining full-spectrum proficiency in counter-UAS operations. Despite the presence of advanced C-UAS technology, several factors limit the effectiveness of training at the NTC.

A major issue is the lack of Multiple Integrated Laser Engagement System (MILES) compatibility with a vast majority of current C-UAS weapons and UASs themselves, which prevents a fully immersive training experience. This is detrimental from the exercise control (EXCON) perspective because it causes both an inability to track current UAS employment across the battlespace, and it presents great difficulty in determining timely and effective engagements by the RTU against enemy UAS. Without MILES integration, training exercises cannot accurately reflect the engagement and neutralization of enemy drones, leading to a gap in force-on-force simulations.

Due to this limitation, an Observer Coach Trainer (OC/T) must be physically present on the ground at any potential engagement site to conduct white card adjudication, which involves gathering critical engagement data from the RTU, verifying the presence of UAS in the immediate area, and sending the data to the EXCON personnel at the NTC HQ building to manually adjudicate. This process is inherently slow. By the time a white card adjudication has been completed, the UAS in question accomplished its mission and moved out of the area. Compounding this is the fact that the number of OCs is

limited, meaning that many engagements are not reported or properly assessed at all. As a result, the realism of training is significantly diminished, reducing the effectiveness of C-UAS response training in a dynamic battlefield environment.

Further compounding the issues of lack of MILES and available OCs, another critical constraint is the restriction on GPS jamming. Many enemy drones rely on GPS for navigation, making GPS disruption a viable countermeasure. However, due to regulatory concerns and potential interference with civilian infrastructure/air traffic, GPS jamming is heavily restricted in training environments. This limitation prevents Soldiers from experiencing real-world tactics that could prove essential in combat scenarios. As a result, those who attempt to engage enemy UAS using only command-and-control (C2) jamming often perceive their efforts as ineffective, leading to a loss of confidence in the equipment and tactics being employed.

Beyond these technical limitations, a broader issue consistently seen at the NTC is the lack of emphasis on C-UAS training objectives at NTC. Although there is much talk amongst senior leaders about the importance of C-UAS in relation to maneuver operations, the current training environment nearly always prioritizes maneuver, intelligence, and combined arms tactics, relegating C-UAS training to a secondary role where it is thrown in a corner and forgotten about, only reemerging when a critical event, such as a drone swarm overflight of a BN HQ, reminds leaders of the importance of C-UAS. Even then, the moment is quickly forgotten when the focus is on the regeneration of combat power or conducting a combined arms breach. This leads to a reduced focus on integrating C-UAS operations into larger combat strategies.

Furthermore, the absence of robust Tactical Standard Operating Procedures (TACSOPs) and a lack of structured home station training prevents units from arriving at NTC with foundational C-UAS knowledge. Without standardized doctrine and pre-deployment training, Soldiers are forced to learn C-UAS tactics on the fly, reducing the overall effectiveness of training rotations.

Regarding the RTU's responses to a UAS threat, the lack of refined battle drills, standardized TACSOPs, and dedicated C-UAS planning or dedicated personnel (i.e. air guards) yields highly inconsistent results. Some Soldiers fail to notice drones altogether, while others may see them but hesitate, uncertain of the appropriate response. In some cases, Soldiers merely observe the drones with curiosity or indifference, while others seek out leadership for guidance—often wasting critical response time. When Soldiers do attempt to engage, they are frequently limited by the absence of MILES effects, the scarcity of OCs available to adjudicate engagements, and hamstrung by the inability to utilize the full capabilities of any systems they do have, further reducing the realism and effectiveness of the training.

## **Enhancing C-UAS Training at NTC**

To enhance C-UAS training at the NTC and across the force, several steps should be taken. First, the integration of MILES with C-UAS systems is necessary to provide realistic engagement simulations, ensuring that Soldiers gain experience in detecting and neutralizing UAS threats under combat conditions.

Additionally, establishing dedicated C-UAS training zones within NTC could mitigate airspace and regulatory restrictions and allow for controlled GPS jamming exercises. These zones would create a more authentic training environment, enabling units to test and refine their counter-UAS tactics. This can be achieved by improving interagency collaboration with the Federal Aviation Administration (FAA) and the Department of Homeland Security (DHS) to establish guidelines that balance effective training with regulatory compliance. In the long term, this collaboration will pave the way for emerging technologies, such as artificial intelligence-driven UAS detection and tracking, that will enable improved response times and threat identification.

Most importantly, a cultural shift is needed within training and doctrine to elevate C-UAS operations to a core mission set rather than an ancillary task. A greater emphasis on structured home station training would ensure that units arrive at NTC with a baseline understanding of C-UAS operations, reducing the need for remedial instruction.

Additionally, the development and enforcement of robust doctrine and TACSOPs would standardize C-UAS tactics across the force, ensuring consistency in training and execution. By integrating these measures, the military can significantly enhance its ability to counter the growing UAS threat, ensuring operational superiority in future conflicts.

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