



Under development by the Defense Advanced Research Projects Agency (DARPA), the aerial reconfigurable embedded system could resupply from sea basing assets located offshore and provide support for small contingency forces operating in austere locations. (DARPA artist concept)

Autonomous Aerial Resupply Systems Needed in BCTs

■ By Maj. Nicklas J. Van Straaten

In order to have an expeditionary capability to fight in a contested environment, the Army must decrease demands and increase logistics efficiencies and unit independence. Autonomous aerial resupply within the brigade combat team (BCT) is one capability that would meet these needs.

Unmanned aerial systems (UASs)

for cargo will be a key component at the tactical and operational levels of the Army of 2025 and beyond. They will make it possible to reduce manned cargo airlifts, ground vehicle convoys, and their associated risks and deliver high-priority parts and medical supplies to remote units with no vehicle access.

The potential to reduce demand

on sustainment Soldiers and automate Soldier tasks with cargo UASs is limitless. Using UASs for cargo would provide the capability to execute responsive sustainment to widely dispersed units when weather, terrain, and enemy actions pose unsuitable risk to manned air and ground assets.

This capability can reduce Soldier

exposure to risk, reduce ground distribution requirements, extend operational reach, increase delivery frequency to widely dispersed forces, decrease customer wait time through point-to-point delivery, and increase operational readiness.

Cargo UASs in the BCT

Supply convoys that operated in Iraq and Afghanistan often required air support from Kiowa or Apache helicopters. Using UASs for resupply would free up those manned aviation assets for combat missions.

According to a September 2009 report from the Army Environmental Policy Institute, Sustain the Mission Project: Casualty Factors for Fuel and Water Resupply Convoys Final Technical Report, the number of water convoys alone in 2007 was 3,725 (3,287 in Iraq and 438 in Afghanistan), which comes out to a little more than 10 convoys per day.

Having cargo UASs in the BCT, under the control of the brigade support battalion (BSB) support operations officer (SPO), would give the BCT the ability to be self-sufficient and not depend on support from external organizations. Not relying on external units would improve the SPO's ability to forecast resupply requirements for austere locations because a dedicated asset would always be available.

This is not a new concept. In recent deployments to Afghanistan, many BSB SPOs had civilian-contracted air assets at their disposal to use for personnel and cargo movements to remote locations. BCTs also already possess Raven UASs in their organizations, and airspace is coordinated and de-conflicted within the brigade air staff section.

If BSBs had the ability to use cargo UASs, they could run continuous operations, significantly reduce ground convoys, and potentially reduce the number of sustainment Soldiers required for each brigade.

Future Force Aerial Resupply

A 2014 information paper on the Training and Doctrine Command's technology and capability objectives for Force 2025 and beyond notes that the future Army requires avia-

exist in the combat aviation brigade.

Personnel requirements may or may not increase. We are some years away from knowing for sure, but what is clear is that the number of supply convoys would decrease, which would

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tion assets with extended reach and increased responsiveness capable of operating in all environments and conditions. The future Army will depend on its aviation assets to deliver combat power and supplies to austere points of need.

The Defense Advanced Research Projects Agency is already developing a cargo UAS prototype that the Marine Corps will field test later this year. This technology could be used to establish an initial Army operating capability for BSB resupply to combat outposts.

This system, called the aerial reconfigurable embedded system, is capable of conducting resupply from sea basing assets located offshore. It could provide support for special operations forces and other small contingency forces and free up manned cargo aviation for more demanding missions. The system's primary mission would be routine aerial resupply to augment the overall division sustainment effort.

Autonomous systems are combat proven and here to stay for the foreseeable future. Whatever system is eventually fielded by the Army to use for aerial resupply would be best employed by the end user, the BCT.

The Manpower Argument

Some would argue that placing cargo UASs in the BCT would increase personnel requirements to maintain and operate the systems. Others may counter that aerial resupply capabilities and air maintenance assets already

call for fewer personnel in the BSB distribution company. This reduction could cancel out the increase in personnel required for cargo UASs.

Cargo UASs are coming. If we do not start the conversation now about where they belong in Army formations, then they can turn into a "nice to have" sustainment capability that sustainers will not control.

If these systems are fielded and are not placed inside the BCT, they should at least be task organized with aligned supporting units in a manner that can be incorporated easily into BCT training and deployments. Once these assets are provided to the BCT for training or mission requirements, they should be directed by the SPO, who coordinates all resupply operations.

Whichever avenue the Army decides to take, sustainers should be involved in the dialogue now and provide input for how to incorporate these assets into operational and tactical doctrine.

Maj. Nicklas J. Van Straaten is a capability developer at the Combined Arms Support Command at Fort Lee, Virginia. He holds a bachelor's degree in government and world affairs from the University of Tampa and an MBA from the College of William and Mary. He is a graduate of the Ordnance Officer Basic Course, Combined Logistics Captains Career Course, and Command and General Staff Officers' Course.