Low-Cost Aerial Delivery Systems (LCADS) Provide Soldiers With Critical Supplies

Scott Martin

The Army's LCADS program has received accolades from the operational community. This is due in large part to LCADS' decidedly low-tech approach to solving resupply challenges in the U.S. Central Command area of responsibility. To understand the LCADS program's achievements, consider the background and 20th century history of aerial resupply.

A USAF C-130 conducts an LCLA airdrop test at Rhine Luzon drop zone, Fort Bragg, NC. LCLA is a specialized subset and recent addition to the LCADS family. (U.S. Army photo by Jim Finney, U.S. Army Airborne and Special Operations Test Directorate.)

LCADS Low-Velocity parachutes descend to the ground in Afghanistan after being airdropped by a C-17. (USAF photo by SSgt Angelita Lawrence.)

Although airdrop was not widespread in Vietnam, innovations such as the Low-Altitude Parachute Extraction System and other ad hoc creative systems came into existence there. These systems were developed in response to the threat of anti-aircraft fire, parachute supply availability, and the ability to meet airdrop accuracy requirements in a challenging mountainous jungle environment.

Airdrop Challenges

In the wake of the 1990–1991 Gulf War, U.S. forces found themselves in a succession of humanitarian relief efforts. Not only did these humanitarian missions nearly wipe out the entire Army inventory of parachutes, the majority of the high-cost, durable equipment was never recovered. Most significant was *Operation Provide Promise* where 28,748 Container Delivery System (CDS) resupply bundles were dropped into Bosnia. Conservatively, that represents $80 million in current-year dollars of unrecovered equipment. Despite this experience, the Army still did not pursue a low-cost alternative until the worst-case scenario was realized.

Less than a decade later, *Operation Enduring Freedom* (*OEF*) represented the perfect storm. Aside from the sheer volume, the logistical challenges weighed heavy on the Soldiers trying to execute the mission. A year into *OEF*, the rigging facilities available in theater were meager at best. It was not feasible to conduct any parachute packing or repair work of any scale. Nearly all of the parachutes had to be contingency packed in CONUS and air-shipped to Afghanistan at considerable cost.

The return of the airdrop equipment from the forward operating bases (FOBs) being supplied by airdrop became another quandary. Referred to as retrograde, the theater hired local contractors to "truck" used parachutes back to the main operating base. This policy seemed the right thing to do. Unfortunately, more than 90 percent of the retrograded parachutes were damaged beyond economical repair and needed to be inspected, demilitarized, and turned into the Defense Reutilization and Marketing Office for accountability. Seeing the magnitude of this multifaceted problem, the Army established a formal requirement for a low-cost airdrop capability and looked to the acquisition community for a solution.

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Family of Low-Cost Air Items

The Army's Product Manager Force Sustainment Systems (PM FSS) Cargo Aerial Delivery Team, part of Project Manager Force Projection under the leadership of Program Executive Office Combat Support and Combat Service Support, responded to the requirement with a proposal for a family of low-cost air items. Using in-house designs, PM FSS tested and incrementally fielded the Low-Cost Container (LCC), Low-Cost High-Velocity (LCHV) parachute, and the Low-Cost Low-Velocity

(LCLV) parachute. Since fielding, the LCC, LCHV, and LCLV have gone from being alternative items to essentially supplanting the legacy equipment. This achievement can be attributed in part to the ability of the Integrated Logistics Supply Center (ILSC) to provide intensive item management of LCADS items, but also because of the exceptional advantages the ILSC offers to Soldiers.

One of the key and easily measurable advantages for the LCADS program is, of course, cost. LCADS, when compared to legacy systems, has achieved a 50-percent cost reduction by using a simplified design that decreases manufacturing expense. Additionally, it uses economical geotextiles (polypropylene) for its canopy fabric.

Part of the Army requirement for LCADS was the need for the parachutes to be prepacked by the manufacturer. Moreover, all LCADS products are regarded as one-time-use, expendable items. This was a major paradigm shift for the Army, as the Army doctrine now allows Soldiers to abandon the LCLV at the drop zone or FOB to be repurposed as shelters and other building materials.

Further Improvements

Although the LCADS is a robust capability, the U.S. Army's Logistics Innovation Agency (LIA) recognized an opportunity to improve upon it. The LIA partnered with the U.S. Army Natick Soldier Research, Development, and Engineering Center to develop and rapidly field a Low-Cost Low-Altitude (LCLA) capability. The LCLA uses a scaled down LCADS parachute to create tactics and procedures that allow ultra-low drop altitudes. These low-altitude drops (150–300 feet above ground level) increased both aircraft survivability and drop accuracy.

Since transitioning to PM FSS as part of LCADS, LCLA has achieved Type Classification and Full-Rate Production approval, allowing it to continue down the path of becoming fully institutionalized as part of joint airdrop doctrine. To that end, the U.S. Transportation Command and U.S. Army Training and Doctrine Command have endorsed a priority effort to expand the LCLA capability with focus on two primary areas: increasing payload weights of the LCLA bundles and qualifying the system on the U.S. Air Force (USAF) C-130 fleet of aircraft.

The maximum an LCLA bundle can weigh is 1,000 pounds. The C-130 uses floor space on the ramp to conduct the LCLA airdrop while leaving the entire cargo compartment floor for other mission use. This allows the C-130 to conduct multiple objectives in a single sortie. The LCLA bundles are also more size appropriate for the platoon-sized teams conducting patrols or embedded in Afghan villages. The C-130 opens the door for more night airdrop to troops in need of emergency resupply as well.

LCLA bundles are more size-appropriate for the platoon-sized teams conducting patrols or embedded in Afghan villages. (U.S. Army photo by SGT Gary Hawkins.)

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The entire LCADS family of items has proven to be an operational and cost-effective solution to the aerial resupply challenges faced by U.S. forces in *OEF*. PM FSS takes pride in the integrated product team effort that has carried the program to its current operational success. This level of success will be held as the standard while we pursue program enhancements during the continuous product improvement process to further simplify resupply for our combat forces.

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