Adding new punch to aerial deliveries

U.S. Army

NATICK, Mass. (Aug. 16, 2013) -- It sounds like something you might find in a boxing gym, but the "Enhanced Speed Bag" system, or ESB, actually could provide a potent new punch to aerial deliveries in Afghanistan.

The Enhanced Speed Bag, or ESB, being developed at the Natick Soldier Research, Development and Engineering Center, is designed to enhance the current method of free-dropping supplies into areas where typical resupply methods are impractical.

"A helicopter does not want to come in and land because it's such a hostile threat or the environment and/or terrain will not permit the aviators to land safely," said Dale Tabor, an equipment specialist with NSRDEC's Aerial Delivery Engineering Support Team, or ADEST.

For small-element supply packages, units utilize ad-hoc techniques.

"Basically, what they do is they package up needed supplies in aviators' kit bags, duffel bags, ruck sacks and whatever they can get their hands on without really any formal procedures," Tabor said. "You get a wide variety of packages and techniques out there."

The results are just as varied, with inaccurate deliveries and loads that fall to earth with contents damaged or non-mission capable, requiring additional work for the ground forces to segregate and inspect the contents of packages they received.

"So what we focus on is to give the Soldier a material solution with a standardized configuration of packaging materials and a device to reduce the rate of descent," said Tabor, "as well as take into consideration threat avoidance for the aircraft and air crews."

Enter the EBS, which ADEST personnel began working on in 2011, after receiving a request from the U.S. Army Armament Research and Development Center Combat Service Support, Logistics Research and Development Branch. The system, which costs less than $600 apiece, includes a linear brake, speed line and multipurpose cargo bag that can deliver supplies accurately from 100 feet without requiring helicopters to linger.

The proposed solution is a "one-stop shop of materials and formal techniques to standardize the resupply of small elements on the ground," Tabor said. "It'll minimize the aircraft in the threat envelope and provide a reasonable expectation of survivability for Soldiers to conduct their missions."

The speed line and the multipurpose cargo bag are designed for one-time use. The linear brake can be used again and again.

The multipurpose cargo bag is made of polypropylene with securing straps, carrying handles, and a honeycomb and foam kit inside to dissipate energy.

"The linear brake is an adjustable system, and the multipurpose cargo bag is compatible with the Low-Cost, Low-Altitude family of parachutes for a wide variety of mission profiles intended to meet survivability of up to 90 percent of the contents of each package," Tabor said.

According to Tabor, the system is easy to use.

"Our goal with this is a non-[military occupational specialty]-specific task, focused on the infantry skill set," Tabor said. "It's a hands-free device. You push it out of the aircraft, and you have to do nothing else. Once it goes a hundred feet, the rope will fall to the ground and it's gone.

"The other benefit with this type of deployment is pinpoint accuracy where the terrain and/or the environment are not suitable for current methods of aerial delivery," said Tabor, "such as jungle, mountainous and/or urban environments."

An evaluation was conducted in July at the Asymmetrical Warfare Group Battle Lab at Fort A.P. Hill, Va. More than 12,000 rounds of ammunition were dropped from a 100-foot crane using the EBS system, with a goal of 90 percent survivability of Class V munitions with the ESB in comparison to losses with a currently utilized ad-hoc technique. Once the ammunition was drop-tested, a thorough inspection and a live-fire functions test were completed.

"We exceeded (expectations) with 98 percent survivability when using the ESB and multipurpose cargo bag," Tabor said.

Soldiers from the U.S. Army Mountain School in Jericho, Vt., and the 165th Aerial Delivery Support Company, Georgia Army National Guard, participated in the event, contributing to its success by providing expertise in packaging of the Class V, weapons system, and command and control responsibilities for range operations.

"We still have to work through the aviation community, develop aircraft procedures and complete (Army Test and Evaluation Command) testing," Tabor said. "We have procedures established, but they have to be tested and validated."

"This isn't just meant for ammunition," said Tabor of the system. "It can be used for any commodity or supply to provide commanders a reasonable expectation of survivability of the items needed for the fight."

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