

Bagram C-130s drop high-tech cargo delivery system

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9/1/2006 - **BAGRAM AIR BASE, Afghanistan (AFPN)** -- The same global positioning technology that helps fighter and bomber pilots deliver smart bombs with pinpoint accuracy now allows cargo bundles dropped from cargo planes to steer themselves to drop zones.

A C-130 Hercules from the 774th Expeditionary Airlift Squadron here dropped supplies to a U.S. Army unit in Afghanistan Aug. 31, using the military's newest airdrop system for the first time in a combat zone.

An Air National Guard crew, deployed from Alaska's 144th Airlift Squadron, dropped bundles using the Joint Precision Airdrop System, or JPADS, which the Army and Air Force have been developing together since 1993.

"This was the first Air Force employment of the joint precision airdrop system in an operational or combat airlift mission," said Maj. Neil Richardson, chief of the combat programs and policy branch at Air Mobility Command. He deployed here as part of the JPADS Mobile Training Team to oversee the first combat use of the system and to train C-130 crews how to use it.

"The system did exactly what it was designed for and delivered ammunition and water to ground troops here in Afghanistan," he said.

The JPADS is a family of systems designed to bring the same accuracy to the airlift community that strike pilots have enjoyed since the development of GPS-guided bombs, called joint direct attack munitions, or JDAMS.

"It's the JDAMS of logistics," Major Richardson said.

The goal, when the system is fully developed, is to field four sizes of JPADS - extra light, light, medium and heavy. Though still in the concept-development phase, the heavy JPADS may be able to airdrop up to 60,000 pounds of cargo, more than enough to deliver the Army's eight-wheel Stryker combat vehicle.

"Soldiers in forward fighting positions will have a viable means of airdrop re-supply, which is more accurate and increases survivability of critical supplies, like ammunition, fuel, food and water," said Chief Warrant Officer Cortez Frazier, aerial delivery chief for Combined Joint Task Force-76's Joint Logistics Command.

"JPADS will ensure the war fighter can continue to combat and win against terrorism," he said.

The JPADS loads have GPS receivers which are updated, while traveling in the airplane, through a repeater in the cargo bay that re-broadcasts the aircraft's GPS coordinates to electronics fastened to the cargo.

When dropped, the GPS receivers guide steering mechanisms that literally fly the cargo, under a rectangular para-foil, to the desired point of impact.

"They are autonomously steered by GPS and electro-mechanical steering actuators," said Maj. Dan DeVoe, a command tactician at the Air Mobility Warfare Center, McGuire Air Force Base, N.J., and also on the mobile training team. The actuators pull risers on a parachute -- turning it one direction or another -- to position the load over the desired point of impact.

Once the load is positioned over the drop zone, a second parachute deploys and the cargo descends almost straight down to troops on the ground.

In Afghanistan, C-130 crews drop the light version of JPADS, dubbed the "screamer" because it falls at 100 mph. It can deliver container delivery system bundles, containing food, water, ammunition and other supplies,

weighing 500 to 2,000 pounds, to troops on the ground.

"We're resupplying small units, so we don't need a big volume of parachutes and equipment," said Army Lt. Col. Robert Gagnon, the deputy commander of the 10th Sustainment Brigade, whose job is resupplying Soldiers in Afghanistan. "It allows us to get into a small area from a stand-off distance, where the aircraft is out of harm's way."

Prior to dropping the screamer, a C-130 loadmaster will pitch a small transmitter called a dropsonde from the back of the aircraft, which relays wind speeds and direction back to the navigator's laptop computer.

"It's a very accurate, very real-time wind picture of what's going on out there," Major Richardson said. "A lot of your error comes from wind and we've taken a lot of the error out."

Under traditional airdrop procedures, C-130 navigators guided the aircraft's pilots to a single point in space to take advantage of forecasted winds to blow unguided loads under a parachute to a drop zone on the ground as the cargo descended.

Because the winds were forecasted, they may or may not have been the same by the time the aircraft actually arrived at the drop zone.

With JPADS, navigators gather up-to-the-minute information about wind direction and speed, then, because the loads can steer themselves, can fly to an area over the drop zone to release the loads as opposed to a single point.

"As long as you are in that launch acceptability region, you can call green light and your loads are going to go to their intended targets," Major Richardson said.

In addition to accuracy, JPADS allows different bundles to steer themselves to more than one drop zone.

"You can basically fly to an area, drop the bundles, and they will steer where they need to go," Major DeVoe said. "With one green-light call, bundles can go to multiple locations."

The increased accuracy and ability to drop to more than one location at the same time means that Soldiers on the ground recover the cargo quickly and know exactly where it will land.

"(JPADS) ensures the supplies are received in a timely manner," Colonel Gagnon said. "The Soldiers get what they need, when they need it and how they need it. The drop zone is set up for a shorter period of time, the loads come in, the aircraft is gone and the Soldiers are gone before the enemy knows what's taken place."

The new system also allows aircrews to drop from higher altitudes, moving C-130s farther from the threat of enemy ground fire and still deliver cargo accurately by air drop. The higher an aircraft drops, the less accurate the loads become -- until now.

"JPADS takes the aircrew and the aircraft out of harm's way by being higher and further away from the drop zones and therefore, further away from the threats," Major Richardson said.

"On the ground side, the precision of the airdrop systems themselves allows the guys to pick up all the stuff right around the desired point of impact, as opposed to being dispersed or scattered across the entire drop zone," he said. "They're not risking their lives gathering the loads."



Joint Precision Air Drop System bundles fall out of the back of a C-130 Hercules Aug. 25. The drop was made from almost 10,000 feet above sea level and was calculated using up-to-the-minute wind data relayed from two small dropsondes deployed 20 minutes earlier. The dropsondes calculate wind speed and relay the information back to the aircraft, helping to calculate the correct drop point. (U.S. Air Force photo/Senior Airman Brian Ferguson)



Tech. Sergeants Steven Hayes and Luzmarina Arevalo install the center vertical restraint in a C-130 Hercules Aug. 25. Sergeant Hayes is a loadmaster and Joint Precision Air Drop System, or JPADS, trainer from the Air Mobility Warfare Center. Sergeant Arevalo is a loadmaster with the 774th Expeditionary Airlift Squadron. The 774th EAS performed the first operational drop of a new Global Positioning System-guided JPADS bundle. (U.S. Air Force photo/Senior Airman Brian Ferguson)



Maj. Russ Hedden and Maj. Daniel DeVoe look over the Joint Precision Air Drop System mission planner computer while on an airdrop mission over Afghanistan Aug. 25. Major Hedden is a navigator with the 774th Expeditionary Airlift Squadron. Major DeVoe is the command tactician at the Air Mobility Warfare Center. (U.S. Air Force photo/Senior Airman Brian Ferguson)



(From left) Army Lt. Col. Robert Gagnon, Maj. Neil Richardson and Maj. Daniel DeVoe review procedures for testing the new Joint Precision Air Drop System in Afghanistan. The system is designed to deliver airdrop loads to troops on the ground with more precision than the normal airdrop system. Colonel Gagnon is the deputy commander of the 10th Sustainment Brigade. Major DeVoe is the command tactician at the Air Mobility Warfare Center. Major Richardson is the chief of combat programs and policy branch at Air Mobility Command. (U.S. Air Force photo/Senior Airman Brian Ferguson)



Master Sgt. Gordy Heinen and Tech. Sgt. Steven Hayes acquire Global Positioning Satellite signals on two dropsondes before the first operational test of the Screamer 2k Joint Precision Air Drop System Aug. 31 over Afghanistan. The dropsondes calculate wind speed and relay the information back to the aircraft, helping calculate the correct drop point. Sergeant Heinen is a loadmaster with the 774th Expeditionary Airlift Squadron. Sergeant Hayes is a loadmaster with the Air Mobility Warfare Center. (U.S. Air Force photo/Senior Airman Brian Ferguson)



Joint Precision Air Drop System bundles fall out of the back of a C-130 Hercules Aug. 25. The drop was made from almost 10,000 feet above sea level and was calculated using up-to-the-minute wind data relayed from two small dropsondes deployed 20 minutes earlier. The dropsondes calculate wind speed and relay the information back to the aircraft, helping to calculate the correct drop point. (U.S. Air Force photo/Senior Airman Brian Ferguson)



Army Spc. Oscar Osorio attaches the parachute activation cord of a Joint Precision Air Drop System bundle to a C-130 Hercules static line before an airdrop over Afghanistan Aug. 31. Specialist Copley is a parachute rigger with the 647th Quartermaster Detachment. (U.S. Air Force photo/Senior Airman Brian Ferguson)



A new Global Positioning System-guided Joint Precision Air Drop System bundle, known as Screamer 2K, floats to the ground after being dropped from the back of a C-130 Hercules over Afghanistan Aug. 31. The drop was made from 17,500 feet above sea level, and was the first joint Air Force-Army operational drop of JPADS in the U.S. Central Command area of responsibility. Four bundles were dropped from the Alaska Air National Guard C-130. All four bundles arrived at the drop zone, resupplying Army troops on the ground with ammunition and water. (U.S. Air Force photo/Senior Airman Brian Ferguson)



Joint Precision Air Drop System bundles float to the ground after being dropped from a C-130 Hercules Aug. 26. The drop was made from almost 10,000 feet above sea level and was calculated using up-to-the-minute wind data relayed from two small dropsondes deployed 20 minutes earlier. The dropsondes calculate wind speed and relay the information back to the aircraft, helping to calculate the correct drop point. (U.S. Air Force photo/Senior Airman Brian Ferguson)