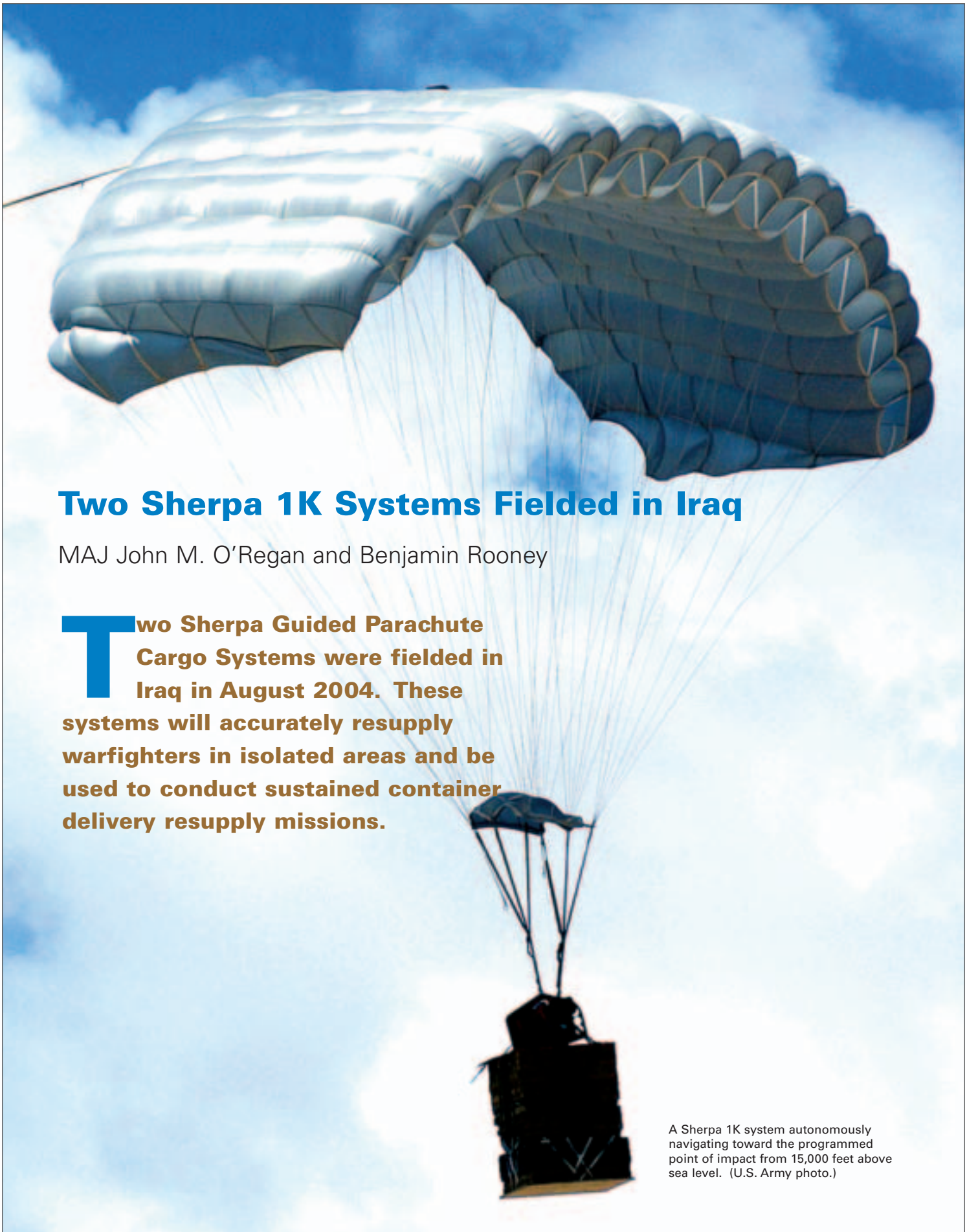

Two Sherpa 1K Systems Fielded in Iraq

MAJ John M. O'Regan and Benjamin Rooney

Two Sherpa Guided Parachute Cargo Systems were fielded in Iraq in August 2004. These systems will accurately resupply warfighters in isolated areas and be used to conduct sustained container delivery resupply missions.

A Sherpa 1K system autonomously navigating toward the programmed point of impact from 15,000 feet above sea level. (U.S. Army photo.)

The Sherpa 1K systems are part of the Joint Precision Airdrop System 2K (JPADS 2K) program managed by Product Manager Force Sustainment Systems (PM FSS) at the U.S. Army Soldier Systems Center in Natick, MA, under the command and control of Project Manager Force Projection and Program Executive Officer Combat Support and Combat Service Support (PEO CS & CSS). PM FSS executed a JPADS Operational Needs Statement (ONS) in less than 90 days after DA validated ONS to achieve the fielding.

The JPADS 2K Program's goals are to be able to release cargo systems from an altitude of up to 25,000 feet from C-130 or C-17 aircraft, land at a predetermined impact point within 100 meters circular error probable (CEP) and attain a 2,200-pound capacity.

This is the first time that a program of this complexity has been undertaken to turn "dumb" airdrop systems into "smart" ones. Because Joint forces will be continuously in asymmetrical conditions, this capability is essential for resupply. Accuracy and reliability are paramount with the goal to attain 100 meters CEP.

To date, testing at Yuma Proving Ground (YPG), AZ, reached about 175 meters CEP. During operational missions in Iraq, the systems landed an average 69 meters from the impact point after eight airdrop missions. Those combat airdrop missions with operational loads are a historic event and the first time a precision airdrop capability was demonstrated in the area of responsibility (AOR).

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The 1,200-pound-capacity Sherpa 1K system used in Iraq consists of a commercial laptop, airborne guidance unit, 900-square-foot rapid air movement (RAM) air canopy, accessory box and shipping container. The accessory box holds the hand-held controller, batteries for the airborne guidance unit and hand-held controller, mission planner cable, Global Positioning System repeater, tool kit, antennas and battery recharger.

Marines from the 1st Aerial Delivery Platoon of 1st Force Service Support Group surround the newly fielded Sherpa 1K systems. Product Manager Force Sustainment Systems fielded the systems in August 2004. The first precision resupply mission was conducted Aug. 9, 2004, to Marines operating at a forward operating base in western Iraq. (Photo by U.S. Marine Corps.)

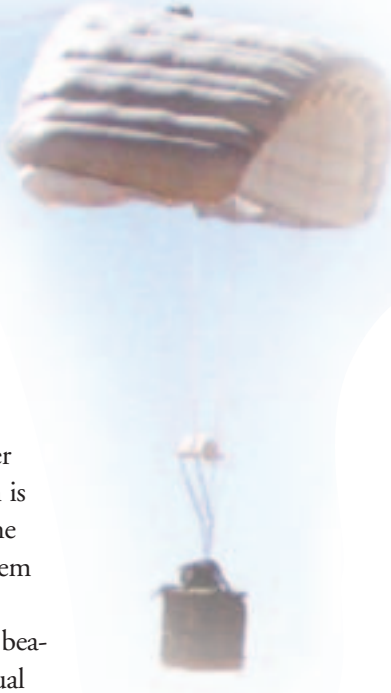
The Sherpa 1K system is easy to plan, rig and operate. The mission planner formulates a flight path based on winds from impact point through dispatch levels, total rigged cargo weight and desired impact point.

If wind information at the impact point is unavailable, the mission planner can extract a forecast from the Joint Air Force and Army Weather Information Network Web site. Winds are essential as the mission planner programs a flight path dependent on all information programmed into the Sherpa laptop.

Once the mission planner determines the mission profile, he provides the pilot or navigator and the loadmaster with an optimal, early or late dispatch point.

What this capability provides is a cone-shaped range in the sky to release the cargo as opposed to a single point. The canopy's RAM air design can penetrate 20-knot wind speeds.

The mission planner selects one of three modes: autonomous, beacon or manual. Autonomous mode is where the mission planner downloads the mission into the airborne guidance unit, and the system executes that mission. Beacon mode allows the warfighter on the ground to change the impact point while the Sherpa system is in flight. After the mission is changed, the Sherpa system navigates toward the beacon. Manual mode is where warfighters can navigate the system by conducting left and right turns and flaring the system for a softer landing.



Marines await a high-altitude supply drop near the impact zone. The offset capability of the Sherpa system makes it difficult to spot from the ground until the system has nearly reached its target and makes its final descent. (U.S. Army photo by MAJ John M. O'Regan.)

This capability is not traditional airdrop, so a shift in the current paradigm must occur for this superior technology to support warfighters across various battle spectrums. Precision airdrop allows the release of 16 systems on a C-130 and 40 systems on a C-17 that all can be programmed to land at one or multiple locations. This

benefit serves two purposes: one, it gets the warfighters the mission-essential supplies they need to maintain/sustain; two, it keeps essential cargo aircraft (C-130 and C-17) well outside/above enemy fire.

The Sherpa system was selected for deployment to the AOR because of its maturity and technical readiness level. It's a mature technology but not fully tested and evaluated by Army Test and Evaluation Command standards. Fielding this capability is a decision based on risk. The warfighter immediately receives a 60-percent solution, and system use allows the combat developer to refine the tactics, techniques and procedures. This is a more appropriate course of action than waiting until FY 08/09, when the final system is anticipated to reach a Milestone C decision. The DA G-3 Requirements Branch validated urgent ONS (UONS) on May 13, 2004. Through the integrated product team process, two Sherpa 1K systems and associated spares were field in August 2004. The fielding schedule is depicted in the accompanying chart.

Precision aerial delivery provides a high-altitude, airdrop resupply capability directly to forces on the ground. "The Sherpa 1K system is the first step toward achieving our objective to provide this capability to the Joint community," stated PM FSS LTC Lawrence Silas.

Fielding Schedule

D-day is May 14, 2004

Event	Timeline	Execution Date
Concept approval	D-1	13 MAY 04
Repair test items (systems)	D+35	18 JUN 04
Repaired items arrive at YPG	D+38	21 JUN 04
Training at YPG	D+53-62	6-15 JUL 04
Warfighters arrive at YPG	D+52	5 JUL 04
Sherpa overview/separation (riggers/mission planning)	D+53	6 JUL 04
Mission planning/ rigging training	D+54-55	7-8 JUL 04
Conduct drops at 10,000/25,000 above ground level	D+56-58	9-11 JUL 04
Additional maintenance training/pack-up	D+59-61	12-14 JUL 04
System transportation to the AOR	D+62-68	15-21 JUL 04
Personnel deploy to/arrive at AOR	D+67-68	20-21 JUL 04
Linkup with PEO CS & CSS liaison officer (LNO)	D+69-70	22-23 JUL 04
Transport system to warfighter location	D+71-75	24-28 JUL 04
In-country coordination w/Army, Air Force, Marine units	D+74-87	27 JUL - 9 AUG 04
Move to Camp Arifjan, Kuwait	D+87	9 AUG 04
Linkup with PEO CS & CSS LNO	D+88	10 AUG 04
Redeployment from the AOR	D+90	12 AUG 04

"Successful execution of the JPADS 2K UONS depended on the Army, Air Force and the Marines. If not for the PM Force Projection and Combined Arms Support Command, the program would not have been accelerated," Silas explained. "The program was a Joint effort. More than 500 personnel had an impact on the effort's success and are to be commended for a job well done. Warfighters received a superior capability compared to what they had and became proficient with the knowledge to operate, maintain and sustain systems for the indefinite future," he remarked.

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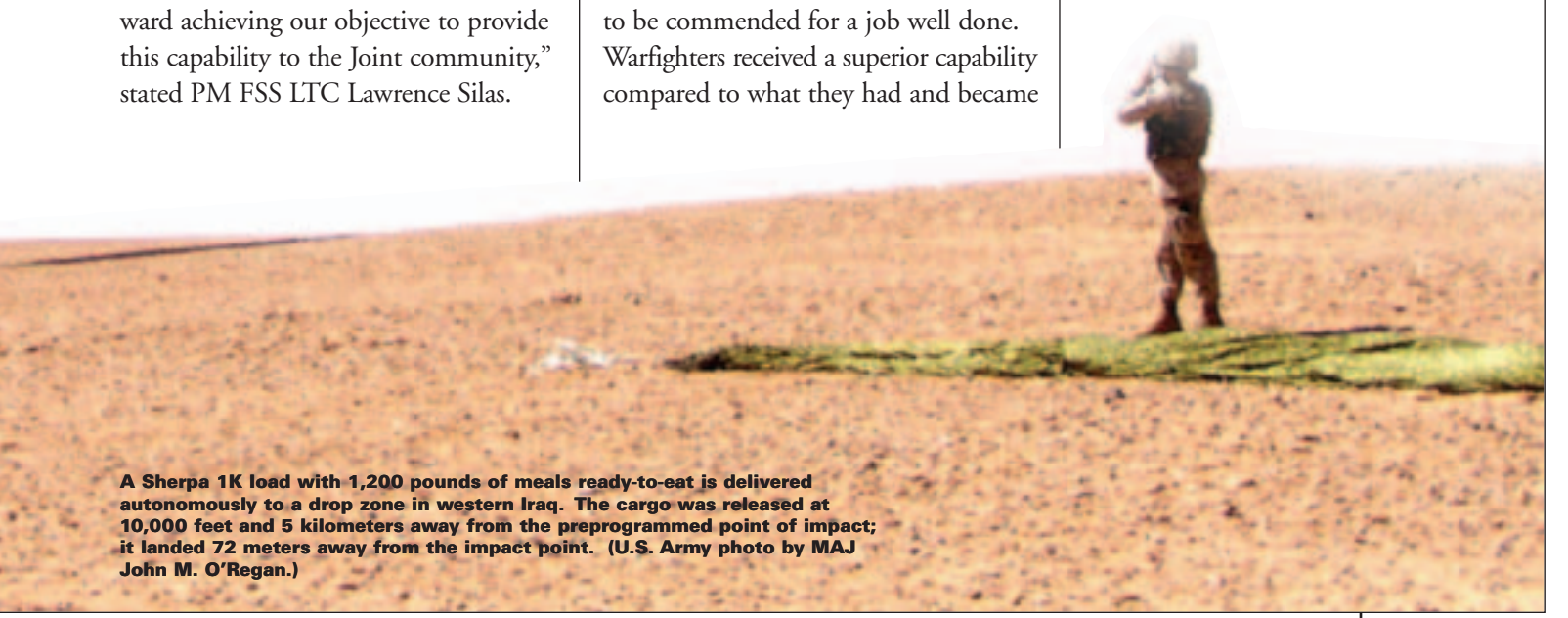
BENJAMIN ROONEY is the JPADS Lead Engineer, PM FSS, Natick. He has a B.S. in mechanical engineering from Northeastern University. Rooney is Level II certified in program management and Level I certified in systems planning, research, development and engineering.



A Sherpa 1K load with 1,200 pounds of meals ready-to-eat is delivered autonomously to a drop zone in western Iraq. The cargo was released at 10,000 feet and 5 kilometers away from the preprogrammed point of impact; it landed 72 meters away from the impact point. (U.S. Army photo by MAJ John M. O'Regan.)