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Sidebars

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Close Air Support System Helps Reduce Fratricide

by **Sandra I. Erwin**

With a combination of new software, rugged palmtop computers and handheld radios, Marine engineers and aviators have developed a close-air support system that could help lower the risk of friendly fire.

The system, called ACASS (advanced close-air support), automates the process by which a forward air-controller on the ground transmits the location of a target to a pilot in the cockpit, thus minimizing the chances of human error.

The program is in development at the Marine Corps Warfighting Lab, in Quantico, Va.

ACASS currently only works with the AV-8B Harrier jump-jet, but it could be installed on most Navy strike aircraft in the future, said Marine Maj. Brian McKinney, who runs the program at the lab.

The forward air-controller (FAC) uses a rugged handheld computer with a built-in GPS receiver, which turns the PC into a moving map. He illuminates the target with a laser rangefinder and the location of the target automatically appears on the PC screen's digital map. He communicates with the cockpit using a 2.5-pound multi-band handheld radio. The \$5,000 device, called Multiband Inter/Intra Team radio, replaces 44 pounds and \$45,000 worth of older radios.

"When you lase a target, a box pops up on the map, with a 10-digit military grid," he explained. The grid is computed based on the target's latitude, longitude and elevation. The FAC then lets the computer compile the so-called nine-line brief. The nine-line brief includes the nine pieces of standard information that a forward air controller needs to send to the pilot who will strike the target. It's used by all U.S. military services and NATO. The nine-line brief also tells the pilot the position of friendly forces in the area.

The FAC then can transmit the nine-line brief to the aircraft, and the information appears on the pilot's cockpit display.

The biggest advantage of ACASS, McKinney said, is that it minimizes the likelihood of human error.

The process by which the geo-coordinates of a target are communicated in close-air support operations has not changed much since World War II. Today, the FAC uses a map to find a target, he copies down the grid coordinates and radios the pilot to "stand by for a nine-line." The pilot, meanwhile, has to grab his pen and write down the 10-digit grid on his kneeboard — at the same time he is flying the airplane and watching out for enemy fire. After he's copied down the information, the pilot has to manually punch in the grid coordinates into his mission computer. "See how that creates possibilities for errors?" McKinney asked.

With ACASS, the information goes straight to the pilot's display. He only has to push one of two buttons: to accept or deny the target coordinates. If he accepts them, the information is dumped into his mission computer, which feeds data to the bomb's guidance system. On his heads-up display, he sees an icon representing the target. "He never has to fat-finger anything," said McKinney. "It eliminates the errors of transcribing."

The Marine Corps has been testing ACASS since August 2000. Eventually, said McKinney, it will be combined with the current ground-to-air technology, called the target location, designation handoff system (TLDHS).

The weak link in the ACASS today is the laser rangefinder, he noted. "It's not as accurate as it needs to be." Experienced FACs are able to compensate for the rangefinder's inaccuracy by relying on their own map-reading skills and expertise to verify a target location.

Even though the system only works with the Harrier, McKinney expects that it will be installed on all Navy F/A-18s, Joint Strike Fighters and on the upgraded Cobra gunships. To be ACASS-compatible, an aircraft must have a digital communications system.

The Warfighting Lab loaned five ACASS systems to the Spanish and Italian air forces, which fly Harriers. The lab has received inquiries from the other U.S. military services regarding ACASS, said McKinney, but he added that it's still too early in the program to know whether it would have utility for the U.S. Air Force or Air National Guard. —

