News Release

Defense Advanced Research Projects Agency

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DARPA Demonstrates Affordable Moving Surface Target Engagement using both JDAM and JSOW Weapons

The Defense Advanced Research Projects Agency (DARPA) Affordable Moving Surface Target Engagement (AMSTE) has for the first time demonstrated the ability to perform multiple, simultaneous precision engagements of moving surface targets using modified Joint Direct Attack Munitions (JDAM). DARPA also demonstrated for the first time the ability to engage a single moving target with a modified Joint Stand-Off Weapon (JSOW).

These precision-guided weapons were used very effectively against fixed targets in Operation Enduring Freedom. The techniques demonstrated will permit inventory weapons like the JDAM and JSOW to be employed in a new role to precisely engage moving surface threats.

On September 30, an F-14 launched the two AMSTE-configured, inert, 2000-pound JDAM weapons at two different targets within a convoy moving at 18 mph across the range at Naval Air Warfare Center Weapons Division, China Lake, Calif. The two weapons were launched from 20,000 feet, at a range of approximately six nautical miles. The targets were tracked using two stand-off airborne ground moving target indicator (GMTI) radars, one a Joint Surveillance Target Attack Radar System (JSTARS) radar and one a surrogate for a Joint Strike Fighter radar. The sensor data was networked between the two aircraft and fused in the AMSTE tracking software to provide continuous, precise geolocation updates on the designated targets. Post-launch, each weapon was individually directed to its target using in-flight target update (IFTU) messages transmitted from the JSTARS. One of the weapons passed within feet of the target vehicle before impacting roughly five meters beyond the target; the other weapon miss distance was approximately 10 to 13 meters from the target.

Later the same day, an F/A-18 launched a single, AMSTE-configured JSOW weapon at a tank moving at roughly 15 mph in traffic with a convoy progressing in the opposite direction at 18 mph. Weapon-launch occurred at 30,000 feet and at a range of approximately 35 nautical miles. Once again the weapon was directed to the tank using multi-laterated GMTI radar and real-time IFTUs. The IFTUs were passed to the weapon using a standard Link-16 data link, demonstrating the ability to direct an AMSTE weapon using a standard Joint Tactical Information Distribution System (JTIDS) data link. The inert JSOW scored a direct hit on the moving tank, separating the turret from the main body of the tank.

"These flight tests continue to mature the AMSTE vision of enabling the network-centric stand-off precision engagement of moving targets," explains Stephen Welby, Deputy Director of the DARPA Information Exploitation Office. "This week's tests demonstrate the ability to

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support multiple, simultaneous engagements within the AMSTE concept. They show that the AMSTE concept is applicable to weapons with JDAM-like characteristics as well as long-range glide weapons like JSOW. And we've demonstrated this week the ability to provide AMSTE updates to a weapon in-flight using standard Link-16 data links. This ability to provide networked precision engagement of movers is a powerful transformational capability for U.S. warfighters."

Additional AMSTE experiments are planned for late October at Eglin Air Force Base, Fla., when the AMSTE team will evaluate approaches to support continuous tracking of multiple vehicles for extended durations in very complex motion scenarios. These tests will assess the ability of feature-aided tracking tools to support long-term track maintenance of high-value targets through the targeting cycle.

DARPA's AMSTE program is developing a network-centric targeting approach that will couple standoff airborne radar sensors and low-cost weapons in a real-time engagement network. Under the AMSTE approach, data from multiple airborne ground moving target indicator (GMTI) radar sensors are fused to provide weapons with real-time target position updates while in-flight. AMSTE will provide a new strike capability to engage moving surface threats from standoff ranges, in all weathers, using affordable precision-guided munitions.

The AMSTE program is funded by DARPA and managed by DARPA and the Air Force Research Laboratory, Rome, N.Y. Development of the AMSTE demonstration system was led by Northrop Grumman Integrated Systems Sector, Melbourne, Fla., with JDAM weapon subcontract support from Boeing Phantom Works, St Louis, Mo., and JSOW subcontract support from Raytheon, Tucson, Ariz.

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