

Military Experimenting With 'Spray On' Armor For Humvees

BY NATHAN HODGE

The Office of Naval Research is experimenting with a spray-on coating that may help make vehicles more impervious to roadside bomb attacks and mine strikes.

At a Navy-sponsored research and development (R&D) conference yesterday, Rear Adm. Jay Cohen showed a video clip of a Humvee being demolished by a land mine. The footage—shot at the Marine Corps Warfighting Laboratory, Quantico, Va.—was part of a test to see if an explosive-resistant coating sprayed on the vehicle would help better protect the crew inside.

According to Cohen, the explosion "destroyed the Humvee, but the passenger compartment [was] left intact," Cohen said.

The new technology soon may be tested against real mines and improvised explosive devices (IEDs). An ONR spokesperson said that researchers are now training Marines to apply the coating to vehicles in Iraq, where coalition forces continue to take casualties from a variety of roadside bombs.

The spray coating is polyurea, a high-strength synthetic that has a range of industrial applications. It is used in pipelines for corrosion control, in landfills and oil containers for liquid containment and as a non-skid surface on the decks of ships and vehicles.

When sprayed with the material, a vehicle frame or door can absorb more blast energy, preventing metal from splintering. According to the ONR spokesperson, the coating, which can be molded or sprayed, "has very good energy-absorbing qualities."

Specialty Products Inc. of Lakewood, Wash., makes the explosive-resistant coating, which has been dubbed Dragon Shield HT for use by the Marines.

"We have taken our strongest product that we have commercially available right now and we have adapted it a bit for the Marines so it suits their needs," said Shere Bush, SPI vice president of new business development.

The Department of Defense already is spending millions to buy up-armored Humvees and bolt-on vehicle armor kits to better protect deployed troops. Advanced coatings may add another level of protection against mines and IEDs.

ONR's research effort was spurred in large part by a suicide attack on the guided missile destroyer USS Cole (DDG 67) in Aden harbor, Yemen, in October 2000. A small boat packed with explosives detonated beside the ship, tearing a hole in its side, and 17 sailors were killed.

Naval researchers wanted to find a better way to protect ship hulls, and explosive resistant coatings were seen as one way of preventing breach of metal structures. Air Force researchers also explored spray-on coatings for reinforcing building after the 1996 attack on the Khobar Towers complex in Saudi Arabia

Explosive-resistant coatings are not the only new initiative in the works. Addressing the same conference, Navy Secretary Gordon England said the Navy was planning to award contracts sometime over the next few weeks to companies that are offering new ways to detect and defeat IEDs.

The SBIR (small business innovation research) awards are targeted at small firms that traditionally don't bid on defense contracts.

"Basically, how do we defeat IEDs, how do we defeat indirect weapons like mortars?" said England, describing the task researchers face. "... While we still have a lot of capability, we still don't have the silver bullet."

England noted that low-tech threats like mortars and roadside bombs "are the hardest ones to defeat."

The U.S. military, he said, seems "to be very good at complex systems, [but] we're not as good at these very simple systems."

Noting that adversaries adapt quickly to U.S. countermeasures, England added, "The threat we're against is a very sophisticated threat. ... We come out with countermeasures, and they modify. Within a week of it, they keep morphing what they do."

The Navy secretary also urged his audience to think about ways to improve other defensive equipment such as helmets. He suggested that protective headgear needs to be improved—making helmets more lightweight and more protective, and perhaps even offering some kind of climate control.

As reported previously, advanced body armor has saved many soldiers from potentially lethal injuries to the torso. England pointed out that serious head wounds still are a problem.

"If you go out to Bethesda [Naval Hospital], you visit our military people, the situation you find today is that we have SAPI [small arms protective inserts] plates, we have armor meant to protect people," he said. "The problem is, we ... have a lot of loss of limbs, we have a lot of eye damage, we have a lot of head damage."

Added England: "We need to continue this research to find out how we mitigate this."

The United States, the SecNav said, is going to be engaged in a global anti-terror war for a long time, so "we need to develop, in my judgment, an R&D base, an R&D capability to deal with this kind of warfare."