

# WebMemo



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## Pentagon Should Battle Pirates and Terrorists with Laser Technology

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Directed Energy Weapons, particularly those powered by lasers, have long been the stuff of science fiction. Due to recent innovations in commercial solid-state lasers and their adaptation to military uses, potential and immediate national security applications for these weapons are apparent.

The Pentagon, however, has been agonizingly slow in fielding operational prototypes. This must change. There are real-world missions for which laser weapons are needed right now. Additionally, fielding prototypes is essential for developing the appropriate tactics, techniques, and procedures for employing these new capabilities. Unless the military gets these new technologies in the field, it is doubtful the full potential of such weapons will ever be realized. Additionally, further delays make it unlikely that a constituency will develop within the military to strongly advocate for developing and fielding directed energy weapons.

**Dangerous World.** Pirates off the coast of Somalia, terrorists armed with shoulder-fired heat seeking missiles that can down commercial airliners, and road-side improvised landmines waiting to ambush military and civilian convoys all share something in common: They are threats capable of harassing both governments and the private sector. Additionally, such dangers are not easily countered by conventional military capabilities.

*At Sea.* Terrorists, criminals, and pirates have all used small boats for attacking both military and civilian shipping and to smuggle contraband. In 2000, while docked in Yemen, the U.S. warship

*Cole* was struck by a small boat laden with explosives. The al-Qaeda-directed operation killed 17 crew members and crippled the ship. Off the coast of Florida, smugglers attempt to run their human cargo to the United States at night in small, fast boats. Often the U.S. Coast Guard, which is charged with stopping these smugglers, has little alternative but to try to shoot out the engines while running at high speed, all the while trying not to injure the human cargo huddled in the belly of the boat. Routinely, pirates venture out into the waters of the Gulf of Aden in similar small craft, capturing commercial ships and selling their cargo while holding the crew and craft for ransom.

*In the Air.* In 2002, terrorists fired two shoulder-fired missiles at a commercial airliner in Kenya. Thankfully, they missed; there were 200 passengers on board. In 2003, the U.S. government successfully intercepted an attempted arms sale of a shoulder-fired Iglu SA-18 missile, capable of downing commercial aircraft three miles in range and two miles in altitude. These examples demonstrate that malicious actors have an enduring interest in obtaining and using shoulder-fired missiles as terrorist weapons.

This paper, in its entirety, can be found at:  
[www.heritage.org/Research/HomelandSecurity/wm2144.cfm](http://www.heritage.org/Research/HomelandSecurity/wm2144.cfm)

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*On the Ground.* In Iraq, improvised explosive devices (IEDs), essentially home-made landmines, were used as the weapon of choice against coalition forces. IEDs quickly became one of the major sources of death and injury to both military personnel and innocent civilians. Many of the tactics and innovations pioneered in Iraq were exported to other theaters. Similar IED attacks, for example, have been used against NATO troops in Afghanistan.

All these means were adopted by terrorists and criminals because they are cheap, effective, and difficult to counter with conventional military and law enforcement means.

**Breakthrough Technology.** Lasers can be effectively used to counter the above-documented threats because they:

- Can use a high-powered beam of energy to disable electrical components or detonate explosives, rendering the attack means (e.g., boat) or the warhead of a missile useless;
- Come with an almost infinite magazine—as long as the weapons have power, they can be recharged and fired again;
- Can be aimed effectively using existing target acquisition systems (such as radars and optics like night-vision goggles); and
- Can be employed with a minimum of risk toward surrounding civilians, buildings, or vehicles (such as aircraft, cars, and ships).

These advantages provided by directed-energy weapons are achievable. The Pentagon, however, has been reluctant to field these weapons because the technology was not suitably mobile and robust enough for use on the battlefield. Lasers, for example, could be attenuated (their power diluted) by dust in the air. But the development of commercial solid-state lasers and improvements in laser optics

has largely addressed these issues.

Yet the Pentagon is still reluctant to field these weapons because they cannot achieve the power and mobility the military thinks it needs for many battlefield missions. Today, however, mobile lasers can be fielded for low-power weapons (approximately 25 KW). Such weapons, while not very powerful, would be effective for addressing a range of threats. They could, for example:

- Disable the engines of small boats and planes;
- Detonate shoulder-fired missiles before they strike their targets; and
- Trigger IEDs from a safe distance before they threaten passing convoys.

Fielding such weapons now would not only address a range of legitimate and problematic threats; it would also provide critical operational experience in using these new weapons.

**Time to Act.** Despite the important role these new weapons could play, the military services continue to develop them at a snail's pace. Currently, there are no plans to field operational prototypes of low-powered laser weapons. The Department of Defense stood up the Joint Improvised Explosive Device Task Force because the services could not develop new capabilities fast enough to deal with emerging threats in Iraq. The Joint IED Task Force, or a similar task force, should be assigned with developing operational prototypes for low-powered lasers and getting them in the hands of our troops now.

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