



## MEDIA RELEASE

### Joint Non-Lethal Weapons Program



---

On the Web:

<https://www.jnlwp.com>

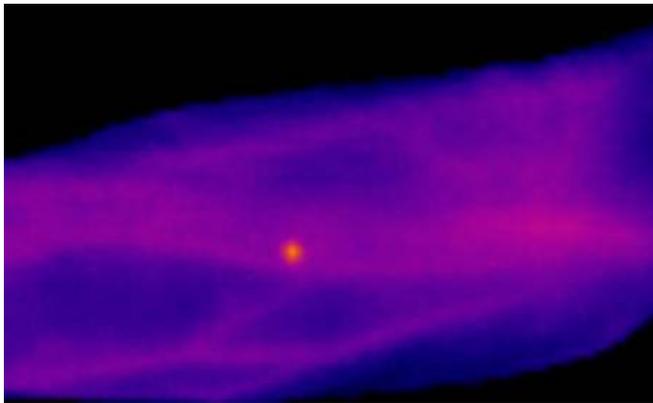
Media contact: +1 (703) 432-0905

---

### Non-Lethal Thermal Laser Prototype Evaluated

By Nancy Koreen

Posted September 14, 2009



*In this bio-effects image of an arm, the dot in the center indicates where a thermal laser is creating heat.  
Official DoD Image*

As the U.S. military works to develop additional escalation-of-force options for warfighters, many directed-energy technologies are emerging as promising solutions to address non-lethal counter-personnel capability gaps. One such effort the Department of Defense's Joint Non-Lethal Weapons Program (JNLWP) is funding is the research and development of a man-portable non-lethal thermal laser weapon system.

The Department of Defense defines non-lethal weapons as "weapons, devices and munitions that are explicitly designed and primarily employed to incapacitate targeted personnel or materiel immediately, while minimizing fatalities, permanent injury to personnel and undesired damage to property in the target area or environment. Non-lethal weapons are intended to have reversible effects on personnel and materiel." Non-lethal weapons provide warfighters with escalation-of-force options when lethal

force is not the best first response. These capabilities assist warfighters in discerning intent, delaying and deterring individuals, and discriminating targets in a variety of missions ranging from full-scale combat to humanitarian relief – all while minimizing casualties and collateral damage.

The idea behind the Thermal Laser System, which attaches to a rifle, is to use a laser to create a heating sensation to repel adversaries. The effect is similar to Active Denial Technology, which heats the outer layer of the skin to safely repel individuals. Non-lethal thermal laser technology has the potential to address the counter-personnel capability gaps of denying individuals access to an area, moving individuals in or out of an area and suppressing individuals. These capabilities can provide warfighters with additional escalation-of-force options with effects that are immediately reversible compared with non-lethal blunt-trauma munitions.

"Non-lethal weapons can provide essential capabilities in situations where reducing civilian casualties and unnecessary damage to property is crucial to mission success," said Colonel Tracy Tafolla, Director of the Joint Non-Lethal Weapons Directorate (JNLWD). "The JNLWP is working to develop new non-lethal directed-energy technologies that can help fill capability gaps and provide warfighters with critical escalation-of-force options."

In conjunction with the Office of the Secretary of Defense and the National Institute of Justice, the JNLWP is sponsoring the Air Force Research Laboratory's Directed Energy Technology Applications Branch to evaluate the prototype system. For the past several years, the Air Force Research Laboratory's Human Effectiveness Directorate Optical Radiation (AFRL/RHDO) Branch has been investigating the bio-effects of these thermal lasers. This research has established the non-lethal operating window of laser power required to produce the desired reversible effect.

With the bio-effects data established, AFRL/RHDO recently conducted a Thermal Laser Field Evaluation, marking the first experiment to take the technology out of the laboratory and attempt to establish military utility. The study collected data to determine the deterrent and suppression effectiveness of the Thermal Laser System against bare skin and through light clothing. According to Wesley Burgei, project engineer for the JNLWD, preliminary

results suggest that the system may have military utility. However, researchers and the Services must still weigh this utility against the system's identified limitations.

Semih Kumru, AFRL/RHDO's program manager for the Thermal Laser System, said the field evaluation is an essential step in the development of a new non-lethal weapon. "The field evaluation is invaluable in identifying improvements necessary before the Thermal Laser System reaches the hands of the warfighter," said Kumru.

The next step for the thermal laser project is to present the findings to Service representatives to determine interest. Upon establishing a lead Service, the project will refine requirements and develop additional systems for testing. As the Thermal Laser System project progresses, the JNLWP will continue to support efforts to develop technologies that provide additional non-lethal options to warfighters.

For more information on non-lethal weapons, visit the JNLWP website at <https://www.jnlwp.com>.