FACT SHEET

UNITED STATES AIR FORCE

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PERSONNEL HALTING and STIMULATION RESPONSE (PHaSR)

The **Personnel Halting and Stimulation Response (PHaSR)** is a rifle-sized laser weapon system that uses two non-lethal laser wavelengths to deter, prevent, or mitigate an adversary's effectiveness. The laser light generated by this weapon illuminates or "dazzles" aggressors, temporarily impairing individuals and their ability to see the laser source.

PHaSR is the first-of-a-kind system that can be operated by a single operator, incorporating an innovative power source that makes the system completely self-contained. The system uses two low-power diode-pumped lasers; one visible wavelength and one mid-infrared wavelength.

It was designed for military and law enforcement applications by ScorpWorks, a research unit in the Laser Division of the Air Force Research Laboratory's Directed Energy Directorate at Kirtland Air Force Base, New Mexico. Also involved in its development was the Laboratory's Human Effectiveness Directorate at Brooks City-Base, Texas, which characterized the system to ensure it can operate safely and continues to study the biological effects.

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Funding for PHaSR came from the Joint Non-Lethal Weapons Directorate and the National Institute of Justice: the former organization interested in the technology for military applications and the latter for civil law enforcement uses.

In the past, illuminator lasers such as PHaSR have been too powerful at close ranges and ineffective at long ranges when eye-safe. The PHaSR version now under development by the ScorpWorks will incorporate an eye-safe laser range finder so that the maximum safe laser energy can be placed on target, regardless of range (near or far).

HISTORICAL PERSPECTIVE: One of the Directorate's earlier illuminator laser work was Saber 203 which used what was then a state-of-the-art semiconductor laser to give it an effective range of 300 meters. The laser was specially fitted into an M-16 combat rifle carrying a 40-millimeter grenade launcher.

Saber 203 system had two parts. One was a metal capsule about the size and shape of a 40-millimeter grenade that housed the laser emitter. An operator would load the capsule into the launcher as if it were an actual grenade. The second component was a battery pack that snapped on to the weapon's underside. A button on the battery pack "fired" the laser in a continuous or pulsed beam to illuminate a target. In an emergency, the capsule could be ejected quickly and replaced with a grenade.

Lightweight, simple to operate, and easy to handle, Saber 203 could also be used as a laser designator. It could counter night vision devices. The system was used successfully in 1995 by U.S. Marines in Somalia during Operation United Shield.

Saber 203 led to the development of the Battlefield Optical Surveillance System, or BOSS. This was a grouping of lasers, optics, sensors and communications equipment mounted on a High Mobility Multi-purpose Wheeled Vehicle, commonly refer-red to as a Humvee.

Among its components was a doubled Nd/YAG (green) laser or an optional red laser that could be used to visibly designate a threatening individual. The threatening individual's reaction to visible illumination would help determine his intent: if hostile, direct force could be used, and if non-hostile, firing lethal rounds could be averted.

-AFRL-

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