



# ZEUS-HLONS

HMMWV Laser Ordnance Neutralization System



## Summary

- Effective stand-off engagement range of up to 300 meters
- Mounted on uparmored High Mobility Multi-purpose Wheeled Vehicle (HMMWV)
- C-17, C-130 transportable, helicopter sling certified
- Built to withstand heavy rain and extreme heat
- Capability to accept targeting coordinates from airborne platforms using Global Positioning System (GPS)
- Laser produces low-level detonations

**ZEUS-HLONS, the first high-power laser weapon system to successfully engage and negate unexploded ordnance (UXO) was developed under the direction of the U.S. Army Space and Missile Defense Command.**

ZEUS-HLONS is a solid-state laser system with an effective stand-off engagement range of up to 300 meters against unexploded ordnance and surface laid landmines. ZEUS is mounted on an uparmored High-Mobility Multi-purpose Wheeled Vehicle (HMMWV). The laser works by focusing energy on the outer casing of the target, heating the munition until it is destroyed by internal combustion. The combustion created by the laser produces low-level detonations rather than activating the explosive power designed into landmines and UXO.

# ZEUS-HLONS

HMMWV Laser Ordnance Neutralization System

**SMD-TC**  
Space & Missile Defense  
Technical Center

## Overview

ZEUS-HLONS is a solid-state laser system with an effective stand-off engagement range of up to 300 meters. ZEUS is mounted on an uparmored High-Mobility Multi-purpose Wheeled Vehicle (HMMWV). The ZEUS-HLONS system offers a roll-on roll-off capability that is C-17, C-130 transportable and is also helicopter sling certified.

## Benefits for Tomorrow's Defense

March 18, 2003, marked a pivotal date in the history of Directed Energy as ZEUS-HLONS became the first high-power laser weapon system to be deployed in a combat zone. At the direction of the Department of the Army, the U.S. Army Space and Missile Defense Command (SMDC) deployed ZEUS to Afghanistan in support of OPERATION ENDURING FREEDOM. The system was used for six months at Bagram Air Base, Afghanistan, where it successfully engaged and negated more than 200 pieces of unexploded ordnance (UXO), at one point setting a record for ordnance disposal by negating 51 pieces in less than 100 minutes.

During numerous tests, ZEUS-HLONS destroyed more than 1,400 targets and successfully completed operations during heavy rain and in extreme heat.

ZEUS-HLONS provides the capability for the crew to engage targets on a find-shoot basis using a joystick control system, search an area, store targeting coordinates, and destroy targets in a series using the system-aided map. If destroying targets in a series, the computerized system will automatically slew from a destroyed target to the next where the operator will fine tune targeting before firing. Automatic targeting increases the rate of engagement and provides a record of neutralization verification.

Development of such a system has multi-service interest. As the lead Army agency for high energy laser technology development, SMDC is working to upgrade the system to a kilowatt-class laser.

During military operations, surface laid landmines and UXO, such as conventional and cluster bombs, artillery and mortar rounds, and rifle grenades, pose a serious hazard for our Soldiers and allies. Historically, UXO has also caused death and injury to civilian populations. ZEUS-HLONS is a new capability for the counter UXO teams toolkit used to neutralize explosive hazards and is a major step toward force protection for the Future Force.

Other possible missions for ZEUS-HLONS include:

- Clearing active and test training ranges of exposed landmines and UXO
- Clearing airport tarmacs and runways
- Clearing UXO from battlefields or during peacekeeping missions
- Clearing UXO from Base Realignment and Closure Sites
- Humanitarian clearing of landmines

## Technical Concept

The ZEUS-HLONS laser works by focusing energy on the outer casing of the target, heating the munition until it is destroyed by internal combustion. The combustion created by the laser produces low-level detonations rather than activating the explosive power designed into landmines and UXO.

The laser system includes a color camera for locating targets and a visible laser for targeting the co-boresighted invisible low-power laser on an aim point. The system can locate targets using the zoom lens camera and has the potential to accept targeting coordinates from airborne platforms using Global Positioning System data.

An advantage to using a laser to neutralize munitions is its large magazine (it uses diesel fuel to create the laser beam), ultra precision, assured neutralization, safe stand off range for personnel, and controllable effects with reduced collateral damage.



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