High Energy Laser Technology Demonstrator (HEL TD)
Weapon System Capability

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“Secure the High Ground”
Directed Energy/Laser Systems

• HEL TD Is a Prominent Program In the Army's Emerging Technologies

• Emerging Technology from the HEL TD Weapon System Program
  – Will Confirm the Unique Solid State Laser (SSL) Capabilities for the “Warfighter”

• Focus Efforts on “Developmental Areas” Across DoD Will Result in Significant Advancements Toward a Fielded High Energy Laser (HEL) Weapons System
Bridge To The Warfighter And Future Force

- **Mobile Solid State Laser Weapon System Capability**
  - Deployable, Mobile, More Self Sustaining Lethal Capability Capable of Operating in a Full Spectrum, Networked / Information Based Battlefield Environment
  - System Modular Approach Allows for Future Technology Growth

- **Provides Joint Service Force Protection and Weapons Capability**
  - Forward Operating Bases (Army, Marine Corp), Port Installations (Navy), Air Bases (Air Force)
  - Defense against Counter Rocket, Artillery, and Mortar (C-RAM) Projectiles
  - Potential Secondary Mission: Surveillance / Target Acquisition

- **Modularity Allows for Expansion to Future Force Structure**
  - Solid State Laser Technologies Compatible and Scalable to Future Tactical Vehicles and Operational Environments

"Secure the High Ground"
High Energy Laser Technology Demonstrator

HEL TD Program Objective: Demonstrate in a Relevant Operational Environment at HELSTF that a Mobile Solid State Laser (SSL) Weapon System can Provide an Effective Mission Capability to Counter Rocket, Artillery, And Mortar (C-RAM) Projectiles.

Specific Objectives:

- Support the transition to an Army program of record (Milestone B)
- Competitive FY09 Laser Selection: JHPSSL or Other Industry Candidate SSL
- Road-mobile system, consisting of an SSL, beam control, electrical power supply, thermal management and C3 elements integrated on a tactical truck platform with a towed trailer, as required
- External interfaces with tactical surveillance and acquisition (S&A) sensors and communications with higher echelon command operations
- Potential for providing a limited C-RAM capability if deployed

Competitive Procurement: Phase I Contracts Awarded with Phase II Option(s) to Boeing July 07 and Northrop-Grumman August 07
High Energy Laser Technology Demonstrator (HEL TD) (6.3)

High Energy Laser Technology Demonstrator (HEL TD) (6.3)

HEL JTO
Army, AF, and Navy (6.2)

Prime Power (6.2)

ASARC Pending in FY 08 to determine FY 13 – 15 Demonstration

“Secure the High Ground”
**Lethality:**
Target vulnerability to Solid State Laser (SSL) beam not fully explored.

**Propagation:**
Low visibility atmosphere at SSL wavelength reduces lethal range.

**Beam Control:**
Lethal range with SSL requires advances in pointing the laser.

**Thermal Management:**
Laser beam generation requires large volumes of coolant.

**Power Source:**
Required prime power and conditioning impacts volume and weight.

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**Potential Secondary Mission:**
- Surveillance / Target

**Other Systems Issues:**
- Mobility
- Target Acquisition
- BMC4I
- Supportability
- Survivability

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“Secure the High Ground”
HEL TD Surveillance / Target Acquisition

• HEL TD Residual Surveillance / Target Acquisition Capability
  – Ultra Precise CRAM Engagement Capability Ensures a Ultra Precise Surveillance / Targeting Capability is resident on the HEL TD Weapon System
  – While Performing the Primary CRAM Mission the HEL TD Weapons System will be Emplaced in Locations that Enable a Secondary ISR Mission
  – HEL TD Could Provide Active Force Protection Target Acquisition Capability within Assigned Sectors of Search

• HEL TD Posses Capabilities to Provide the Ground Force Commander Utility Across Multiple Mission Areas
  – 50 CM Laser Optics and Sensor Suite Configuration to Address Low Trajectory CRAM Targets
    • Slow Small Cold Mortar
    • Fast Larger Hot Rocket
  – Surveillance Capability That Enables CRAM Targets Engagements within Assigned Sectors of Search

• “What the HEL TD Program is Missing?”
  – Valid Requirement for Targeting and Ground Surveillance
  – SW For Precise Targeting

“Secure the High Ground”
Evolution of Deployable HEL Weapons Capability

THEL ACTD

HEL TD

Future HEL Weapon

C5 Galaxy

C17 Globemaster

C130 Hercules

“Secure the High Ground”
Summary

• The HEL TD Weapon System Will Confirm Mobile C-RAM SSL Capability and Potentially Expand Envisioned Weapons Applications

• Focused Efforts on “Developmental Areas” Will Result in Significant Advancements Toward a Fielded HEL Weapons System Capability

The Goal:

Demonstrate That An Effective Mobile Solid State HEL Weapon System Can Ultimately Provide The Soldier With A Needed Capability