



*U.S. Army Space and Missile Defense Command/  
Army Forces Strategic Command*



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



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*"Secure the High Ground"*



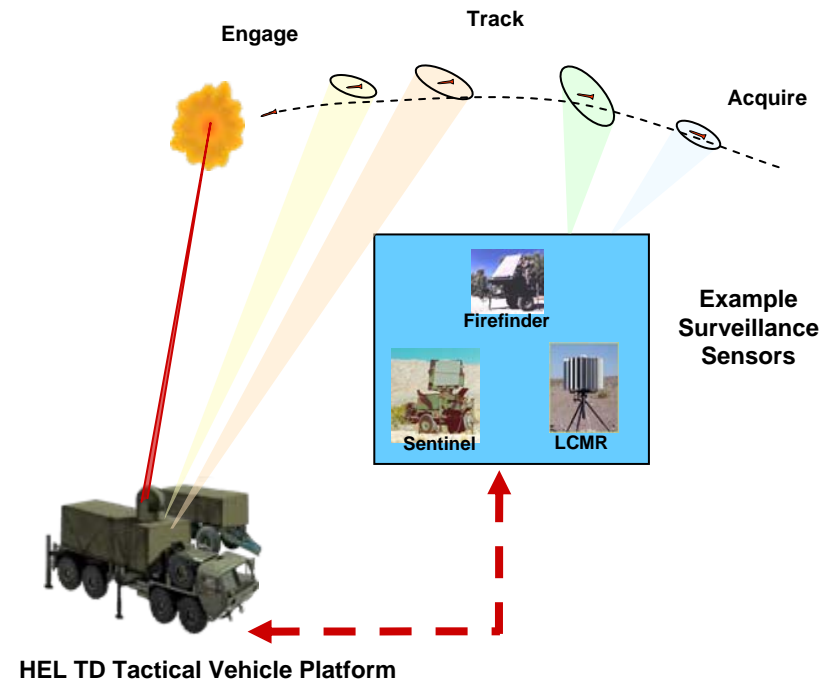
# Directed Energy/Laser Systems

- **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”**
  - **Potentially Expand Envisioned Weapons Applications and Missions for High Energy Laser (HEL) Weapon Systems**
- **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





# 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 Program Schedule (Options)



ASARC Decision ▼

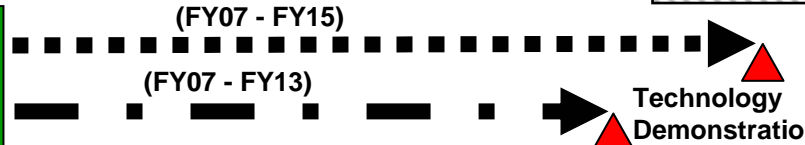
△ CDD

△ CDD

MS B ▼

SDD

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



HEL JTO  
Army, AF, and Navy  
(6.2)

(FY06-08)

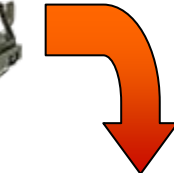
25kW Lab Laser Demo ▲

100kW Lab Laser Demos ▲



HEL TD

Prime Power (6.2)



Future Laser Weapon

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

"Secure the High Ground"



# HEL Weapons System Development Factors

## Lethality:

Target vulnerability to Solid State Laser (SSL) beam not fully explored.

## Propagation:

Low visibility atmosphere at SSL wavelength reduces lethal range.

## Beam Control:

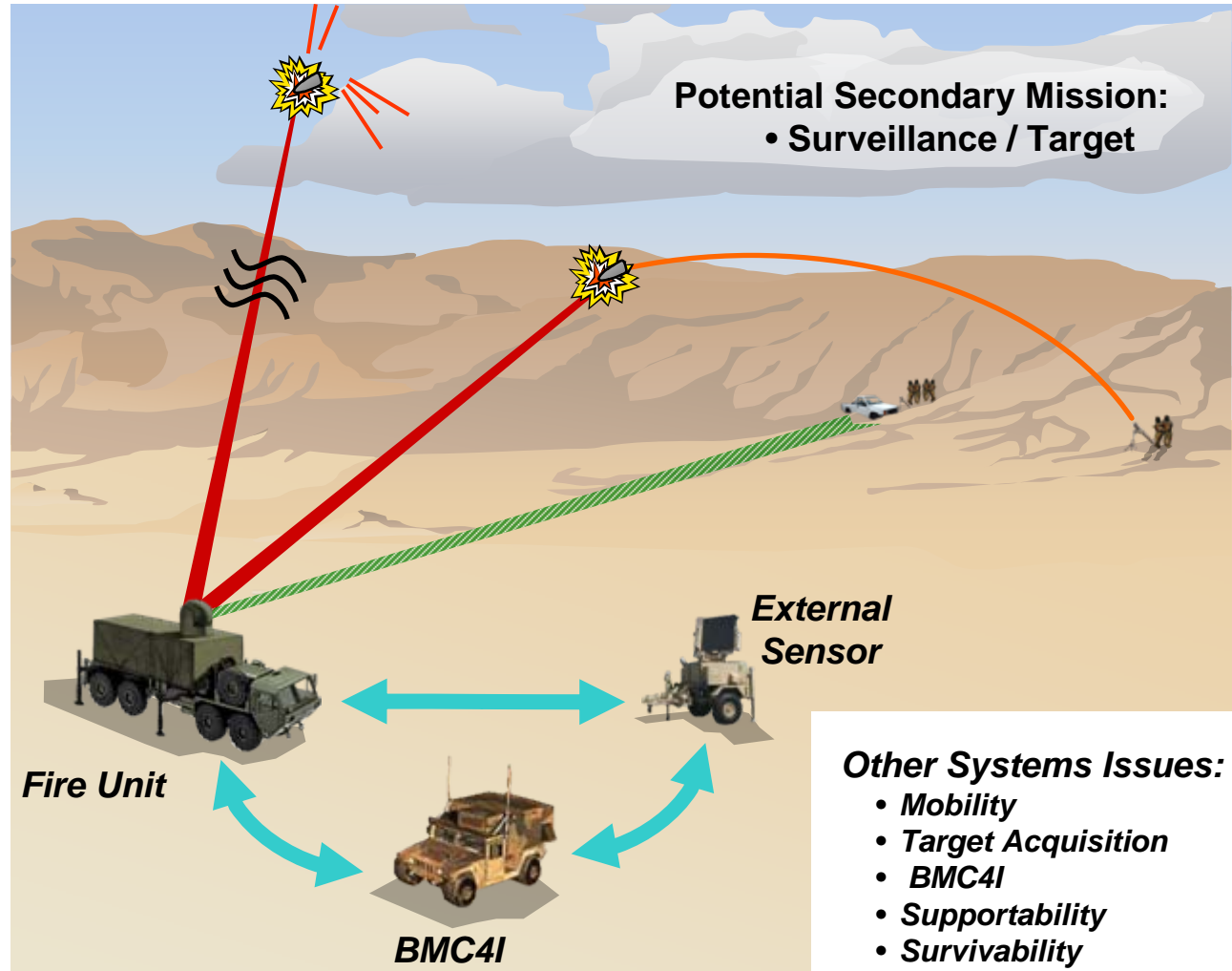
Lethal range with SSL requires advances in pointing the laser.

## Thermal Management:

Laser beam generation requires large volumes of coolant.

## Power Source:

Required prime power and conditioning impacts volume and weight.





# 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



# Evolution of Deployable HEL Weapons Capability

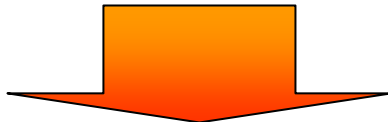
## THEL ACTD



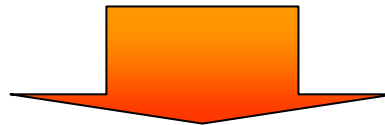
## HEL TD



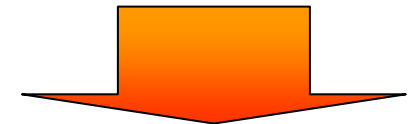
## Future HEL Weapon



C5 Galaxy



C17 Globemaster



C130 Hercules





## 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**