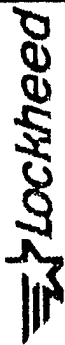


8, 2, 1, 6

# Target Designation from Space



- Target Designation interactively by the Battlefield Commander
- A Constellation of Distributed Imaging and Designating Satellites
  - Can be Directly controlled by the Front Line Commander
  - Give Real Time Viewing beyond the FEBA
- The Battlefield Commander commands a specific area to view
  - The image is presented in both Visible and MWIR (3-5µm) at low resolution
  - The critical are is then selected and the satellite switches to High resolution mode
  - The specific target is identified and a critical are is selected by a cursor on a screen
  - The designation is a laser spot <1 meter in diameter and is modulated with an encoded signal
- This system will enable the soldier to command laser guided weaponry and remotely observe the effects

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Title: Target Designation From Space

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Report Prepared for: Ballistic Missile Defense Organization, DE, Washington, DC

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Abstract: Briefing handout. The target designation is determined by the battlefield commander from a constellation of distributed imaging and designating satellites. The commander can view a specific area at various wavelengths and resolutions and command laser guided weaponry and remotely observe the effects.

Descriptors, Keywords: target designation space battlefield commander constellation image designation satellite visible MWIR laser guided weapon remote target confirmation daytime night damage assessment

Pages: 7

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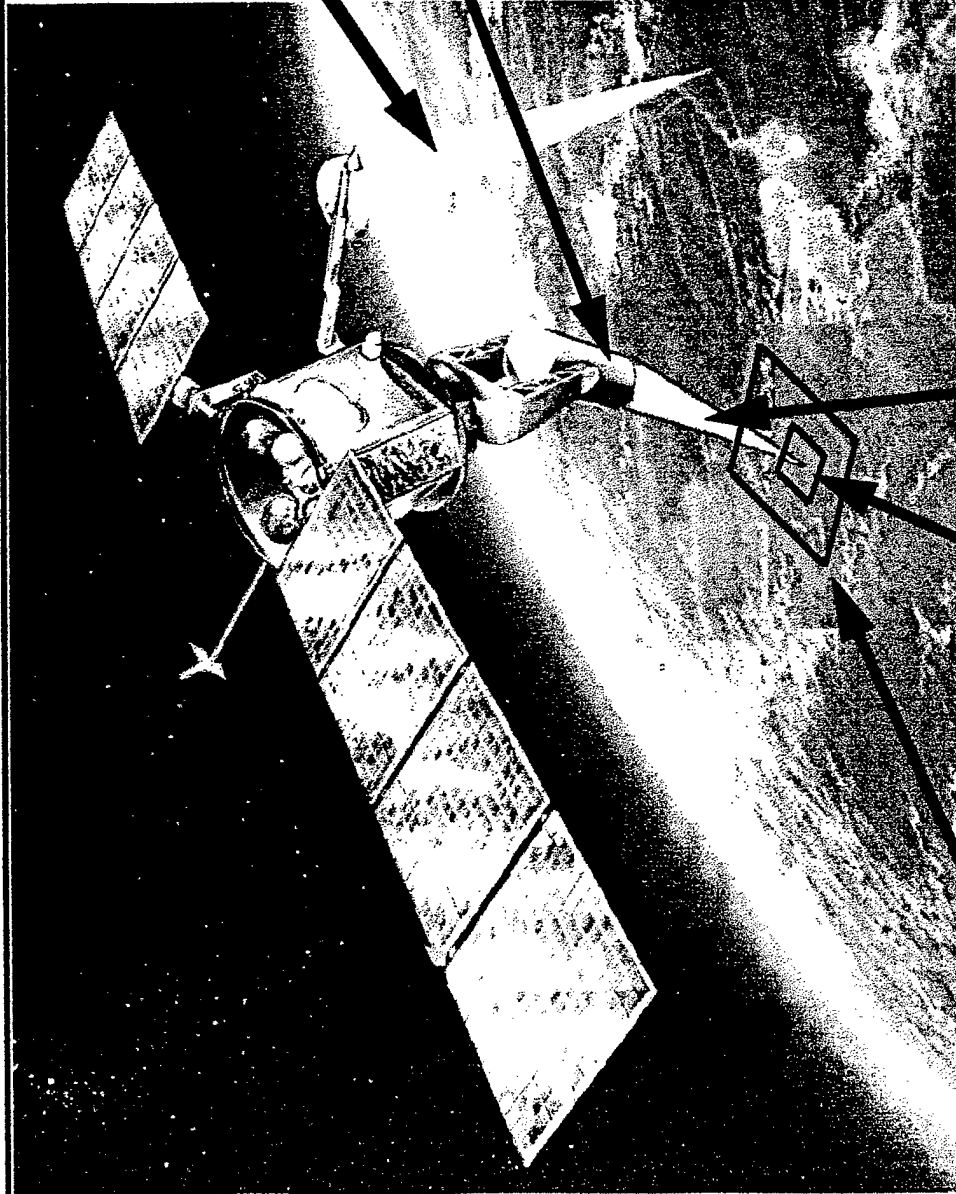
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# Space Based Target Designation Artist Concept



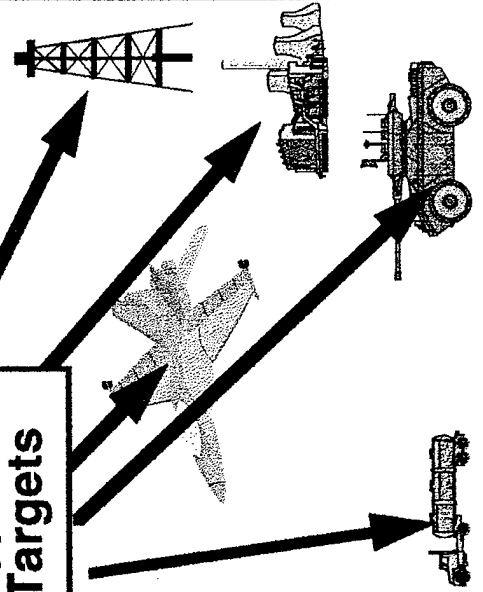
Direct video link to  
Battlefield  
Commander

Gimbaled  
Search Set with  
Designator Laser

Typical  
Targets

Laser Beam  
Stabilized at  
Target Aimpoint

Wide Area Imaging  
Narrow Area Imaging

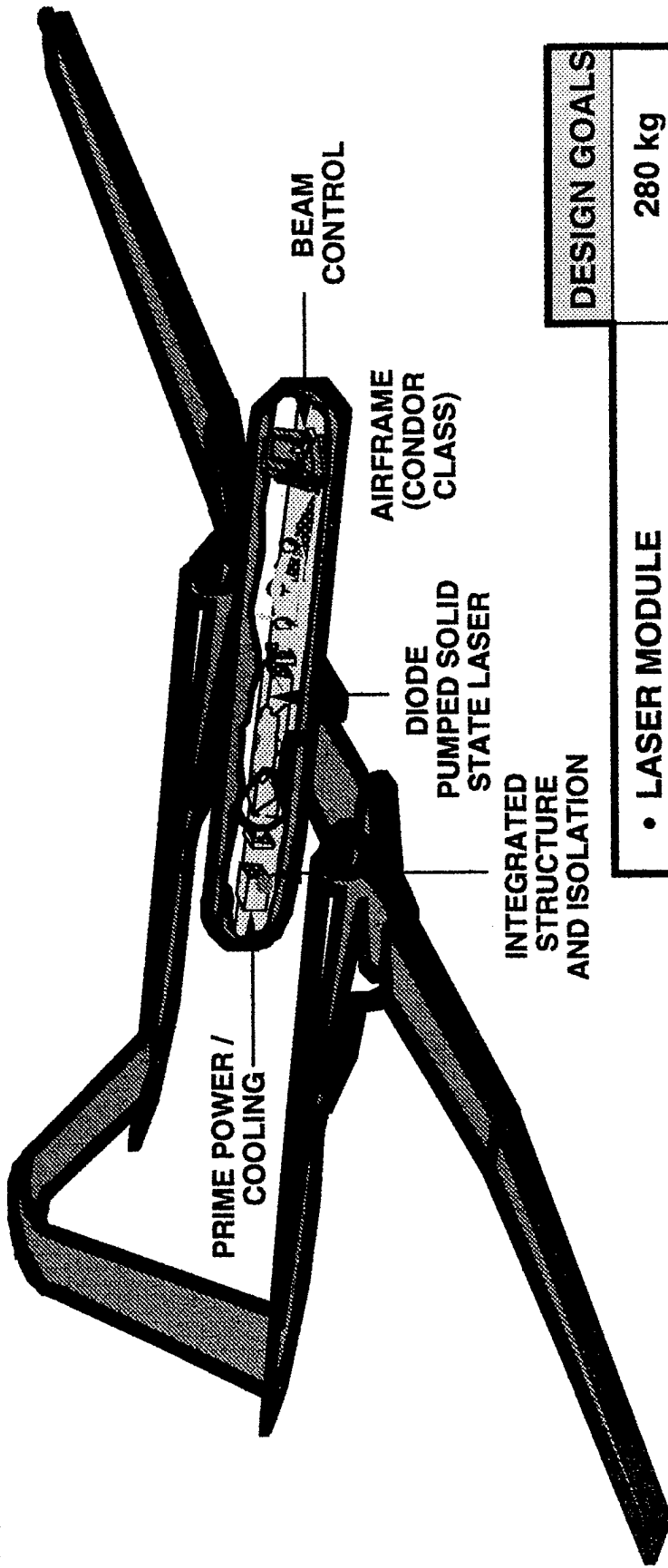


## Paths to “Gunsights in the Sky”



- Use UAV with GLLD type designator (100mJoules @ 20 pps)
- Use UAV for Cruise Missile Detection with Meter Class Optics
- UAV @ 20 Km Altitude would cover ~50 Km Diameter Tactical Area
- Cruise Missile Detection & Handover with precision location ~1M

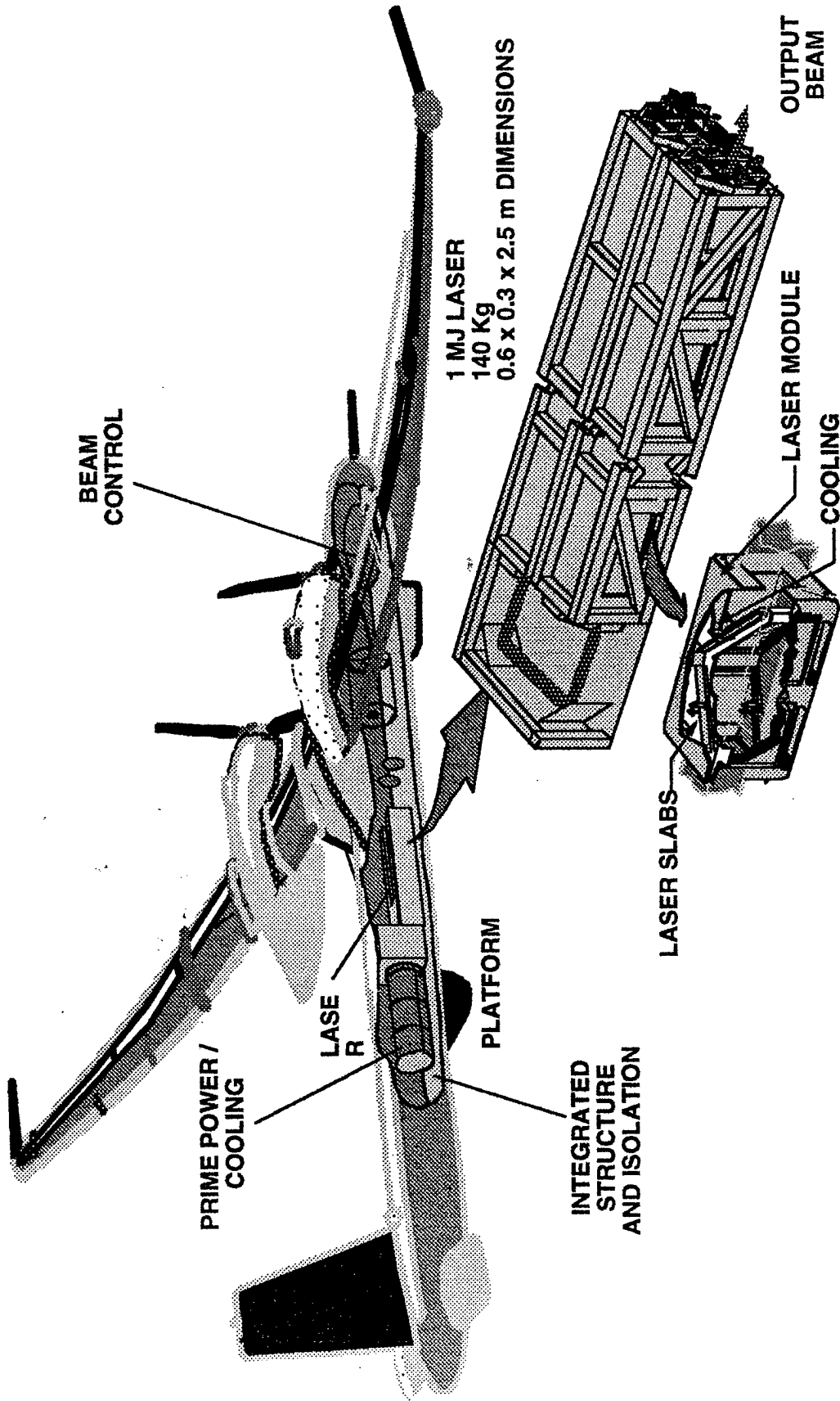
# Defender Weapon Configuration could be also used for Target Detection and Designation



**OPERATES ABOVE TROPOPAUSE  
- NO ADAPTIVE OPTICS/BEACON**

DESIGN GOALS	
• LASER MODULE	280 kg
• ELECTRICAL SYSTEM	700
• COOLING SYSTEM	700
• BEAM CONTROL	280
• TARGET ACQUISITION	20
• BM/C 3	20
	2000 kg

# Defender Weapon Platform is OverKill for High Altitude Target Detection and Designation but is Available

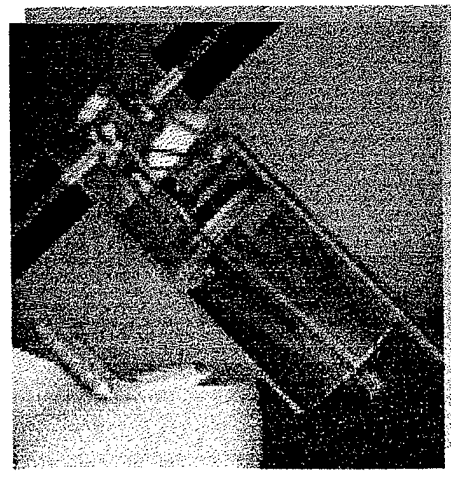


# Approach

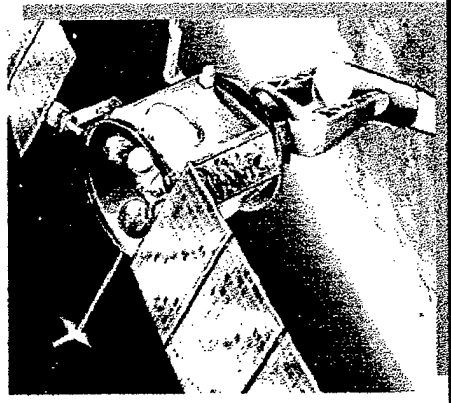


•Integrate BMDO's ATP Technology into developing commercial programs  
•Global communications will provide the capability for real time video links and a constellation of small spacecraft  
•Video compression chip sets are now available to provide reasonable downlink requirements  
•Existing ATP Program is developing

- Optics
- Gimbal Pointing Systems
- Designator Laser Technology
- Tracking and Precision Pointing Control



**High Altitude >1000Km**  
Using BMDO Technology for Large Optics  
Better Resolution & Stabilization that  
Operational Systems Requires  
Develops Requirements for Operational  
System



**Low Altitude ~500 Km**  
Using BMDO Technology  
Resolution & Stabilization that Operational  
Systems Requires  
Validates Operational System Concept  
First Element in System

# Military Relevance



- Space Based Target Designation will help the Soldier in the following ways
  - Remote Targeting
  - Confirmation of Target
  - Day/Night Capability
  - Damage Assessment
  - Constellation has 24 Hour continuous Coverage and some Stereo Capability
  - Integrates Soldier Directly into Space Assets