

# 18277 - Illumination Warning For Individual Soldiers and Vehicles

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## Introduction:

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Dangerous Things Almost Always Try To Warn You Before They Kill You;  
They Spill Stray Beams From Their Lights And Lasers Before They Center You,  
The Things They Shine Them On Reflect When They Miss You And The Enemy  
Uses Active Illumination You Can See Miles Away...

So Perhaps It Is Time For Illumination Warning For The Individual?

# We See Them Even Though Their Lights And Lasers Are Not Pointed At Us...



Clockwise From Above Left: Times London Egyptian Protester Laser Pointers; DoD MFAL Illuminators & Designators, IR Lights, IR Image Headlights.

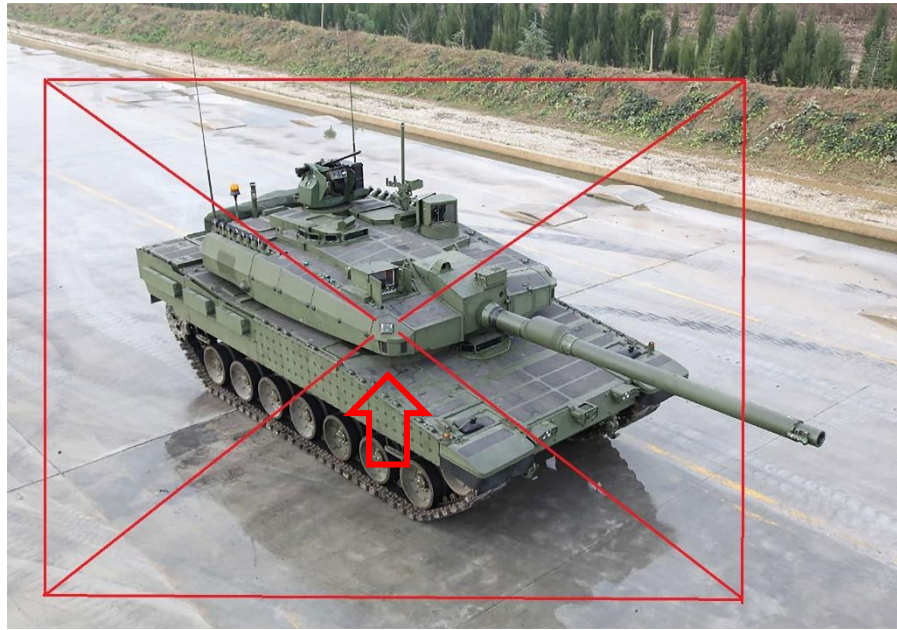
# Threat Systems Equipped With Laser Designators Or Rangefinders:



Above: Russian Kornet Missiles; Mi-24 & Electro-Optics; Chinese MBT & Electro-Optics, GLRF-D, Red Arrow LG-ATGM, Chinese AH Type.



# Threat Systems Equipped With Laser Warning Receivers:



Above: LeClerc Tank LWR; Chinese AH Type LWR; Rafale LWR; Eurofighter LWR; EH-101 LWR

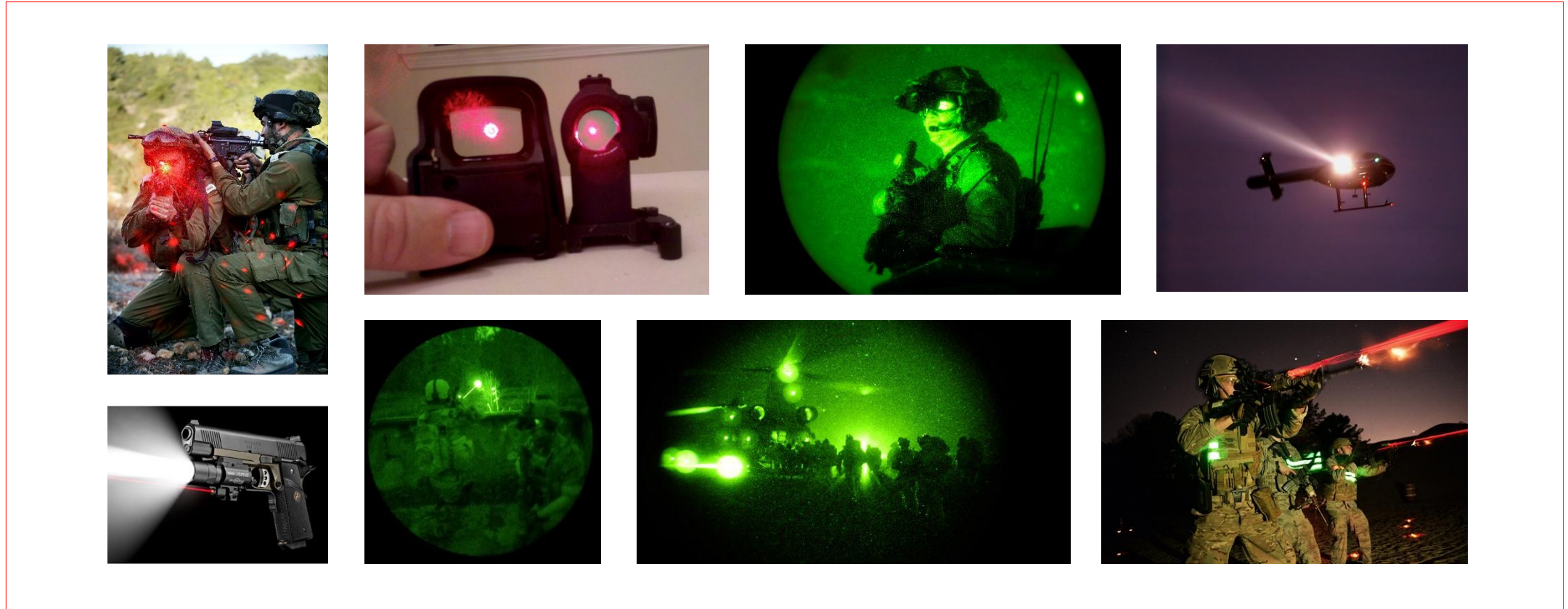
# Illustrating The Concept Of Illumination Warning For Individuals:

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The First Thing To Do Is To State:

There Is Currently No Form Of Illumination Warning For Individuals...

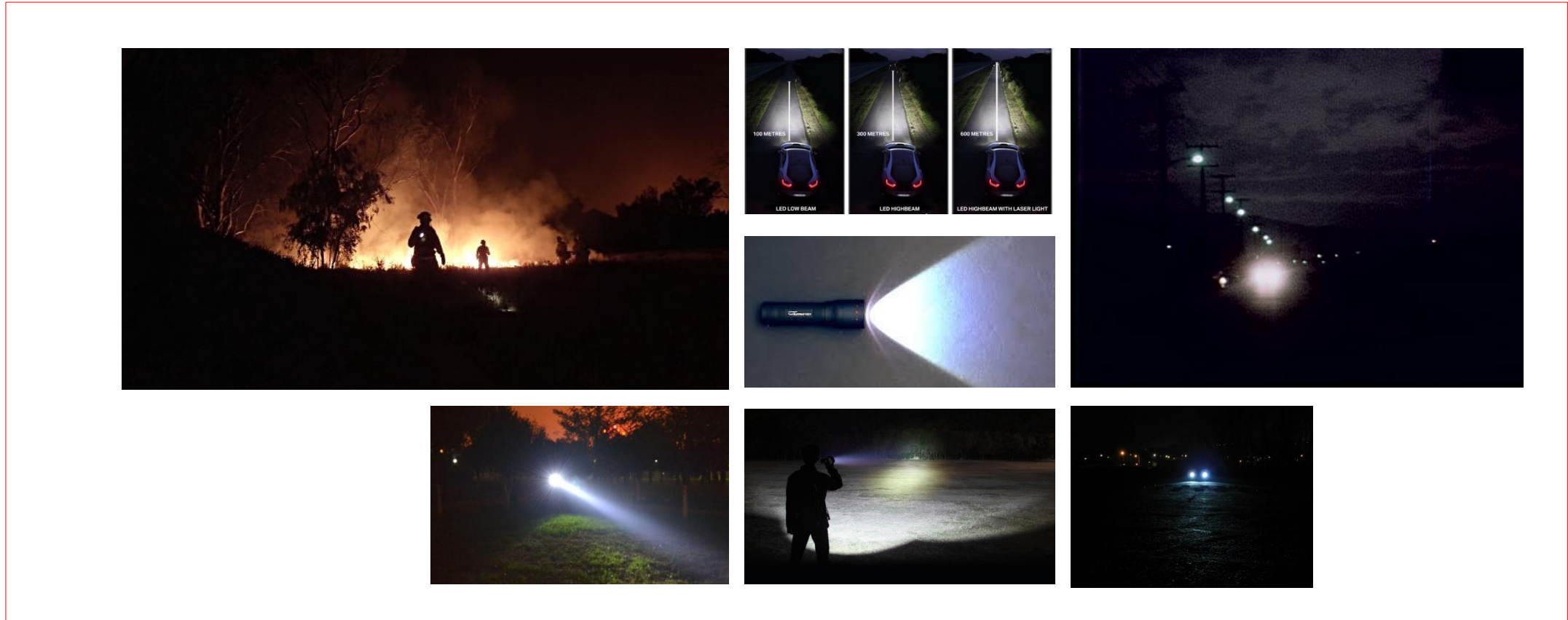
# Light Emission Signatures Of Various Battlefield Sources:



Clockwise From Above Left: IDF Photo Red Laser Speckle; Aimpoint & EOTech Reticles Rearward; DoD NVG Display Reflection; White Searchlight; Red Lasers And Orange Muzzle Flash; IR CH-47 Illumination & Backlighting; Source, Beam & Target Of MFAL; SureFire X-400 Red Laser/White LED Illuminator.

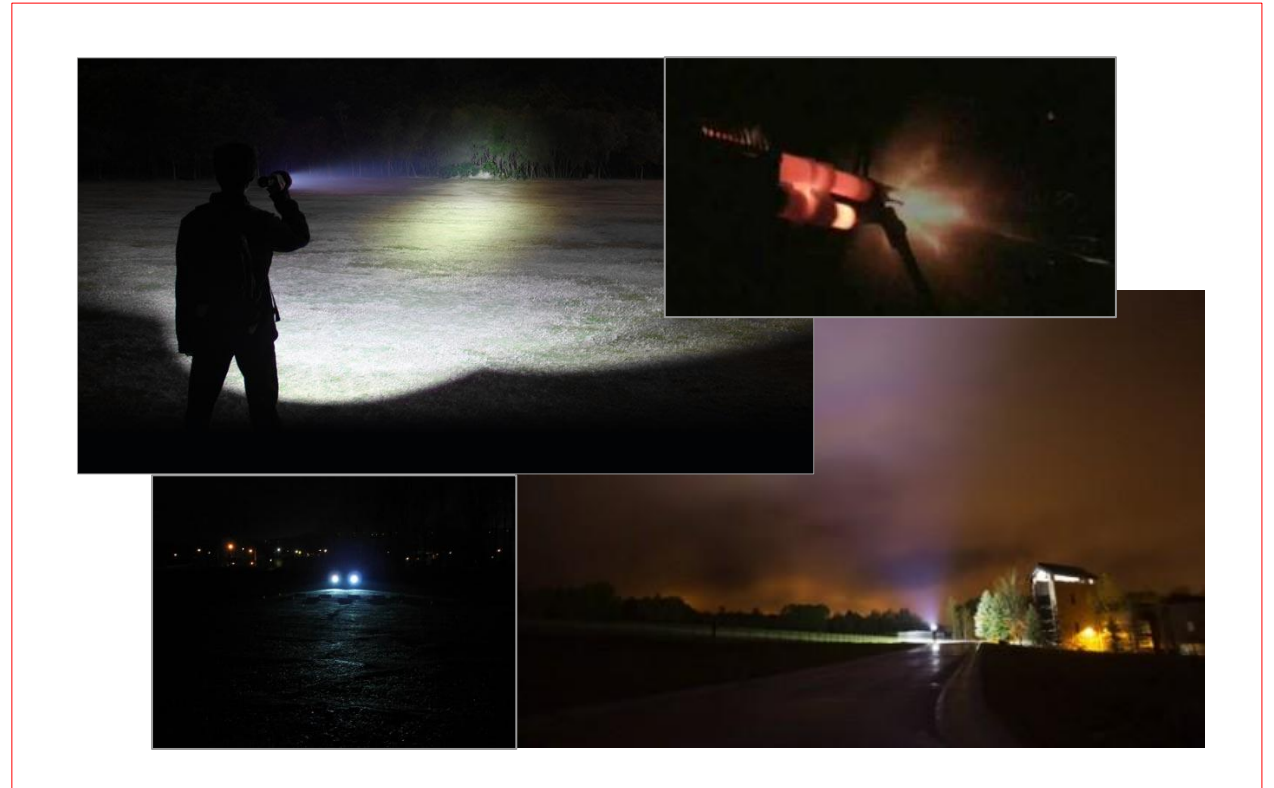
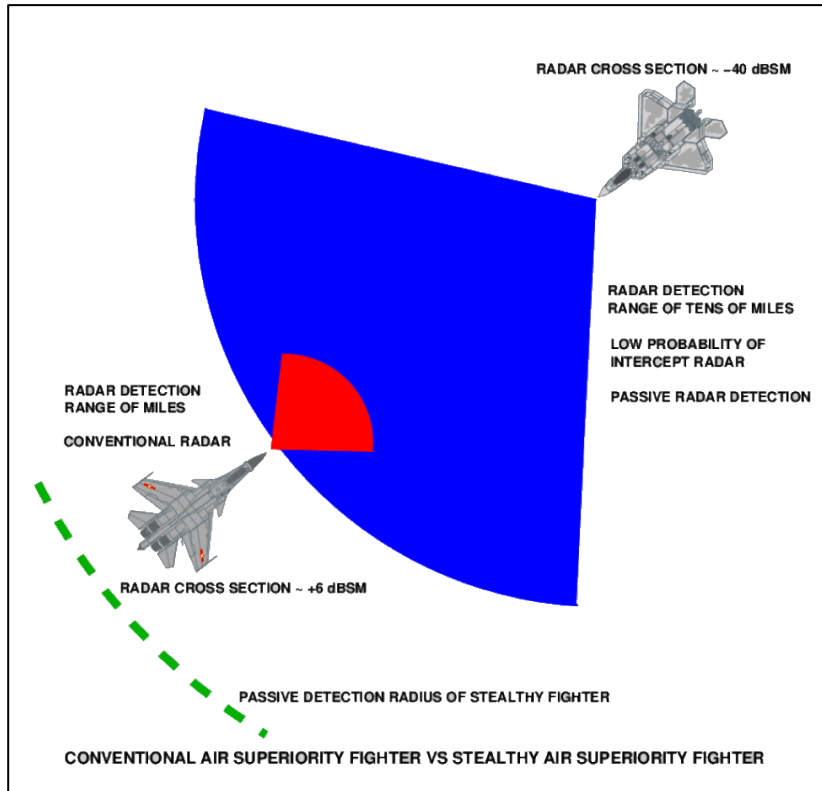


# Light Emission Signatures Of Various Battlefield Sources:



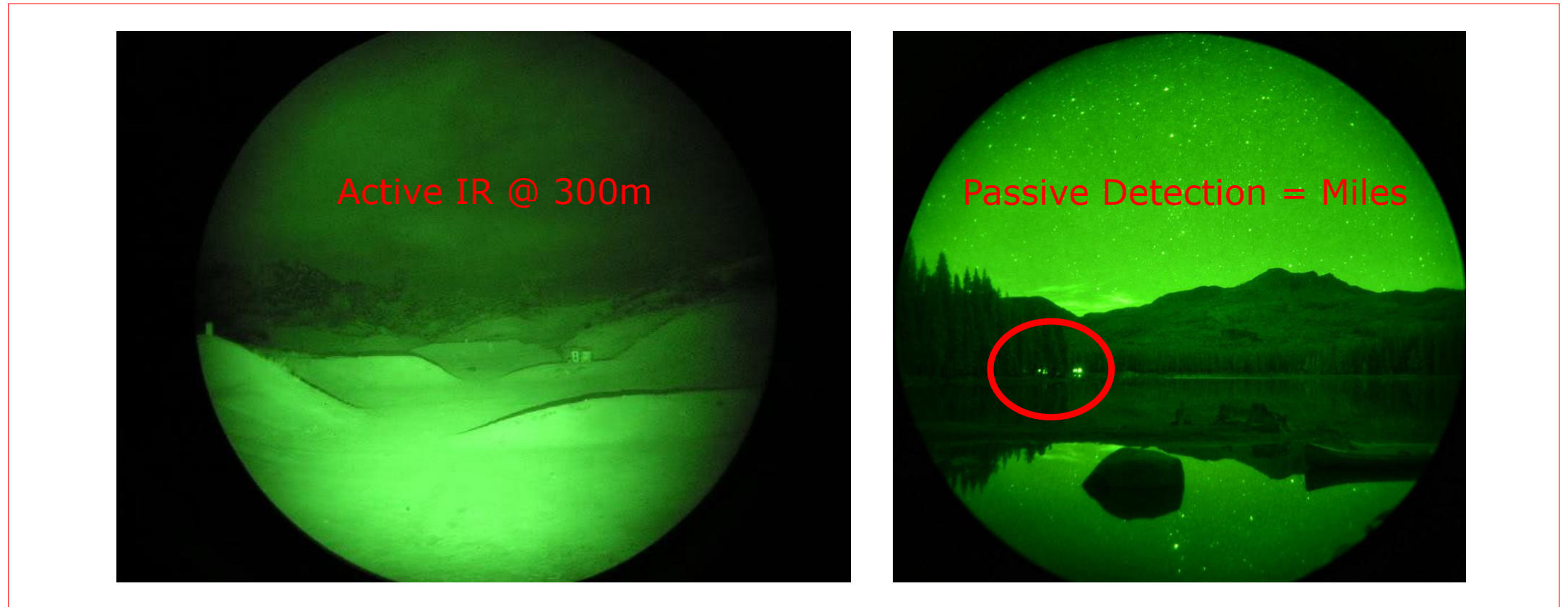
Clockwise From Above Left: USFS SAR Flashlights; BMW Headlights; FENIX Flashlight; Approaching Headlights & Streetlights; Fenix Flashlight; SureFire Flashlight.

# Emitters Can Be Detected Much Farther Away Than They Can See:



From Left Above: Passive Detection F-22 vs. Flanker; Fenix Flashlight, M-240 Heat & Flash Signatures; Searchlight From Side, Headlights At Night.

## Image Intensifier Active vs. Passive:



Above: TNVC Photos With Added Text And Graphics.

# Commercial And Automotive IR Laser Warning Receivers:



Clockwise From Left Above: Diffuse Laser Sensor; Avago 635nm SMD; DIY Laser Tag Parts; DIY Laser Detector; Wikipedia Traditional Laser Sensor; SolidWorks Image Of Infrared Under Hood Speed Gun Laser Detector; Alibaba IR Proximity Switch Device Sender Receiver Assemblies.



# Fortunately An Existing Laser Receiver System Exists: MILES/TESS



Left Above: TESS Laser Based Training System, Right Above; MILES Laser Based Training System, Vest, Detectors.

## Introducing the PixelSensor Multi-Band Light Detector:

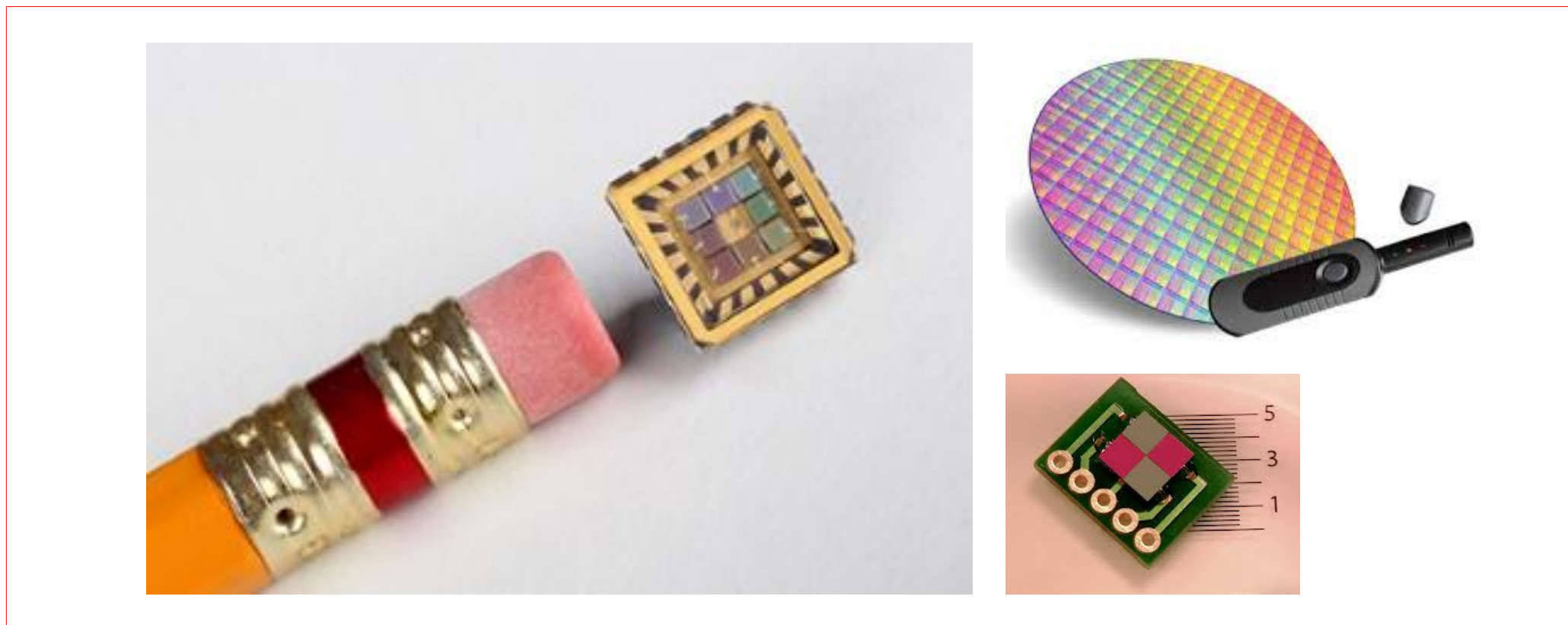
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Aerospace & Defense: Multi-Spectral Cameras, Color SWIR Imaging, OEM Optics, Enhanced Display Systems

# The **PixelSensor**: The World's Smallest Multi-Band Light Detector



Above: **PixelTeq** Photos

# What Could A **PixelSensor** Based Illumination Receiver Do?

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- ALERT: Notify Operator Of Presence Of Illumination; "Warning"
- BAND ALERT: Notify Operator Frequency Of Illumination; "1064nm"
- CHARACTERIZATION: Notify Operator Threat Type; "1064nm PRF"

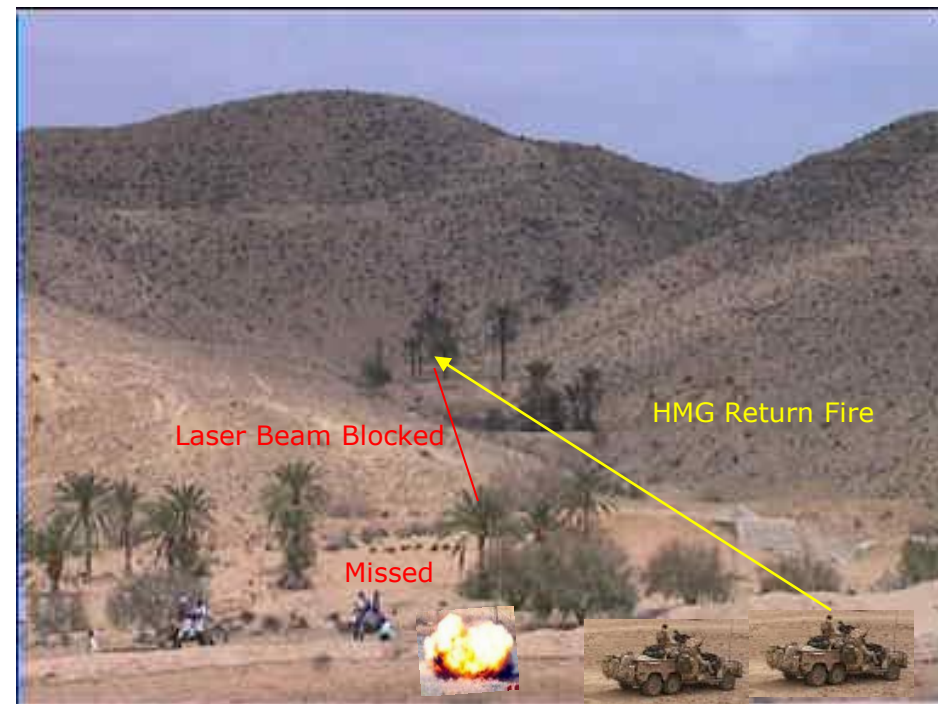


# Scenario: Laser Guided Anti-Tank Missile

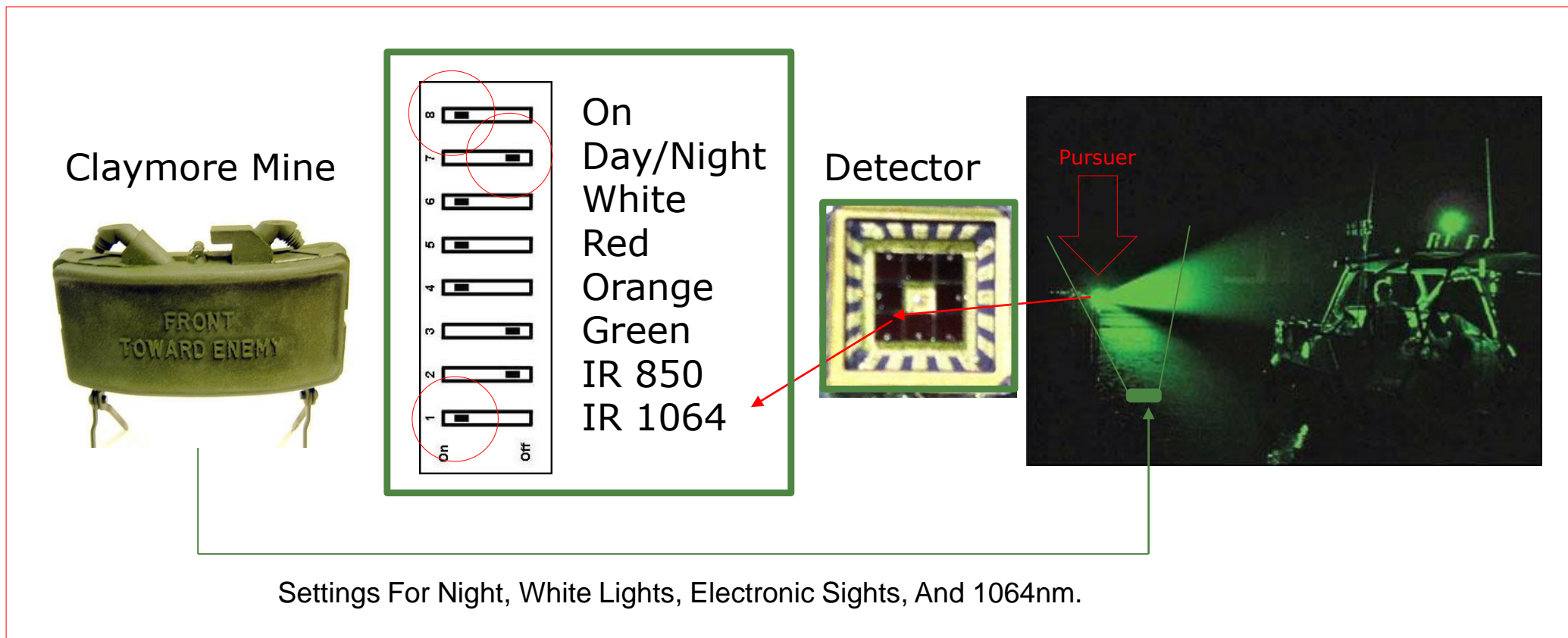
Illumination Alert...



Avoid & Return Fire!!!

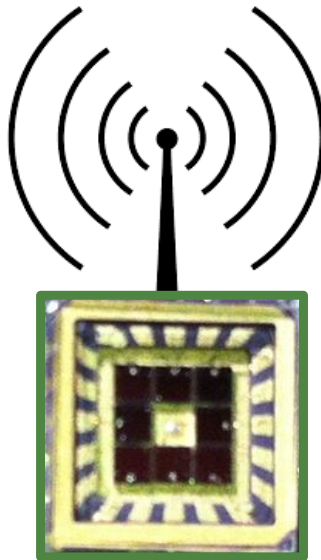


# Scenario: Boolean Logic Sensor Based Fuse



# Scenario: Remote Surveillance Detector

Illumination Alert...



43°27'53.59" N  
80°31'28.71" W

Detector

Weapon Deployment



Above: Vitaly Kuzmin Parade Photo; PixelTeq Photo; GD-Saab Ground Launched Small Diameter Bomb

## Conclusions:

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- Unlike In The Past, The Battlefield Is Covered With Light Signatures Day And Night...
- Miniaturization Of Electronics Makes Small Warning Devices For Individuals Practical...
- Active Light Sources May Be Detected Passively At Much Greater Ranges...
- Multiple Light Detectors May Be Used To Discriminate Targets From Non-Combatants...
- Existing Infrastructure For Laser Based Training May Be Utilized For Warning Systems...

So Now Is The Time To Use These Facts To Our Advantage!



Credits:



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