

MEDUSA 66MM GRENADE & LAUNCHER SYSTEM

Threat Suppression
via the use of Non-lethal
Projectiles and Launchers



GENERAL DYNAMICS
Ordnance and Tactical Systems



Presentation Overview

- Review the warfighter's "Escalation of Force" (EoF) needs in regards to convoy security and crowd control
- What is a digital, multirole grenade launcher system?
- MEDUSA: a vehicle-mounted, non-lethal, grenade launcher system
 - 66mm Grenade Launchers
 - Fire Control Unit
 - "Smart" NL Grenades
 - Demonstration Videos
- Issues for Discussion



Warfighter Needs

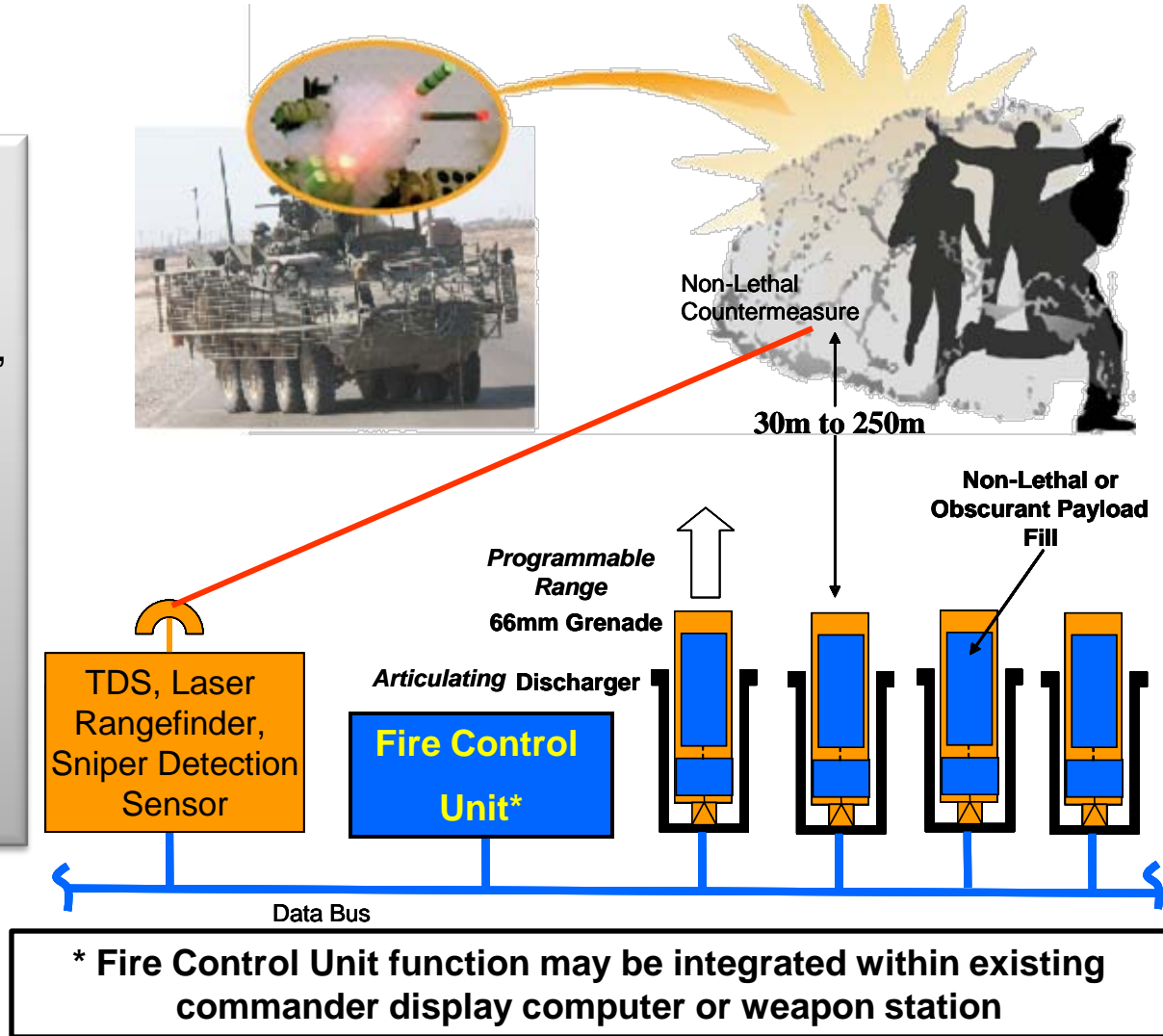
- In this asymmetric environment, the enemy attempts to **blend in with the civilian population**, while attacking through direct and/or indirect means without regard to inflicting civilian casualties
- The warfighter will need the ability to **employ graduated series of capabilities** that protect the force from complicated asymmetric enemy tactics
- Operational and tactical challenges require **providing Operating Forces broader capabilities** to respond using both lethal and non-lethal force
- It is essential to provide these small unit leaders a **greater range of options** when faced with the complex warfighting environments of today and the foreseeable future
- **Escalation of Force (or EoF) is designed** to identify key enabling capabilities to **support small unit leaders** in escalation of force tactical situations



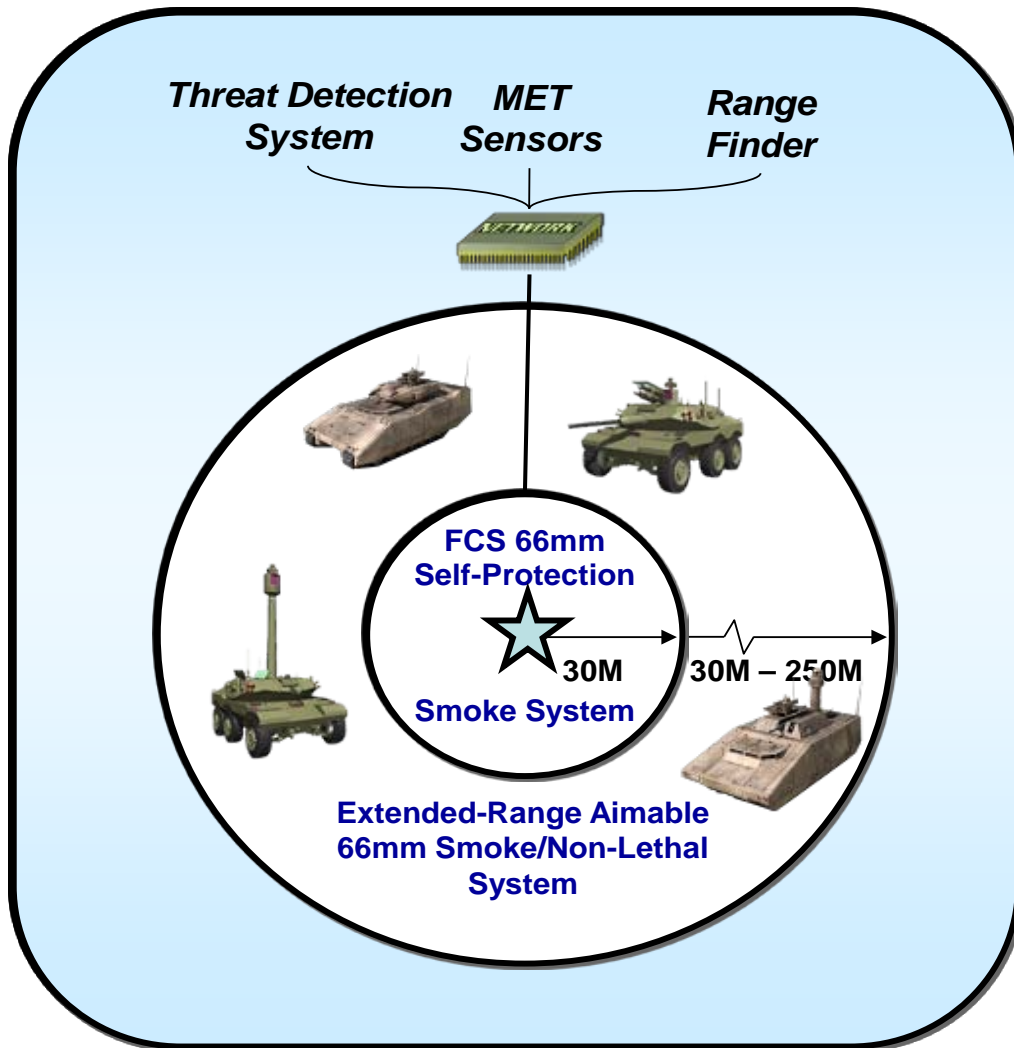
What is a Digital Grenade Launcher System ?

OBJECTIVES:

- Multirole, networked countermeasures delivery including sensors, fire control, launchers and electronically-fuzed ammunition.
- Integrate countermeasure response delivery to platform sensors for rapid, automated or man-in-the-loop response to detected threats with precision placement of countermeasure effects.



Full-Spectrum, Full-Scale Capability



Spiral 0: 66mm Self-Protection Smoke System

- ◆ Rapid deploying vehicle self-protection obscurant system
- ◆ Network-ready dischargers and grenades
- ◆ Network with threat detection system
- ◆ Multi-spectral obscuration at 30m
- ◆ Required for all FCS vehicles

Spiral 1: Extended-Range Aimable 66mm Smoke / Non-Lethal System

- ◆ Network-ready dischargers and grenades
- ◆ Network with threat detection system
- ◆ Multi-spectral obscuration at 30m – 250m
- ◆ Variable range
- ◆ Azimuth and elevation control

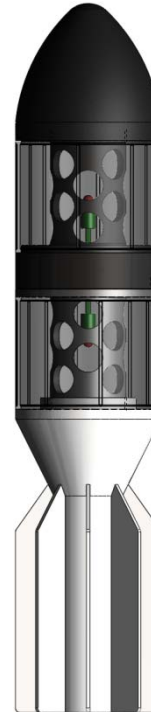
Medusa: GD-OTS Solution for USMC MPM-NLWS TD Phase

Program Objectives: MPM-NLWS is a new weapon system that launches non-lethal payloads to greater ranges with broader area coverage, greater duration of effects, and volume of fire.

Hardware Overview: Lightweight, dual articulating launchers, fire control and LRF integrated on MC-TAGS. Grenade ammunition incorporates thermobaric NL temporary incapacitation payload.

Results Significance:

- HECO validation of human incapacitation effectiveness and acceptable levels of injury risk.
- Mortar grenade projectile with programmable fuzing provides extended range and precision effects placement .



GD-OTS' MEDUSA System

- In response to the US Government's non-lethal EoF needs, GD-OTS Orlando is developing the MEDUSA 66mm grenade launcher system
- MEDUSA supports high performance, non-lethal, ocular and audio incapacitation flash-bang (thermobaric) grenades
- The MEDUSA Launchers and Fire Control Unit are a next-generation spin-off of a system developed for the US Army's Escalating Response System (ERS)
- The thermobaric formulation was developed by ATK and integrated into GD-OTS' 66mm grenade payload
- MEDUSA provides longer range, greater coverage area, extended effects duration, low risk of permanent injury, better scalability of effects, and supports the government's EoF needs better than any currently fielded non-lethal weapon system



System Overview

- The Medusa kit has six major components:
 - Fire Control Unit
 - Laser Range Finder
 - Left & Right Dischargers
 - Thermobaric Grenades
 - Installation Kit (cables & mounting brackets)

(Note: The system is very modular and installs readily on most tactical vehicles)



Fire Control Unit

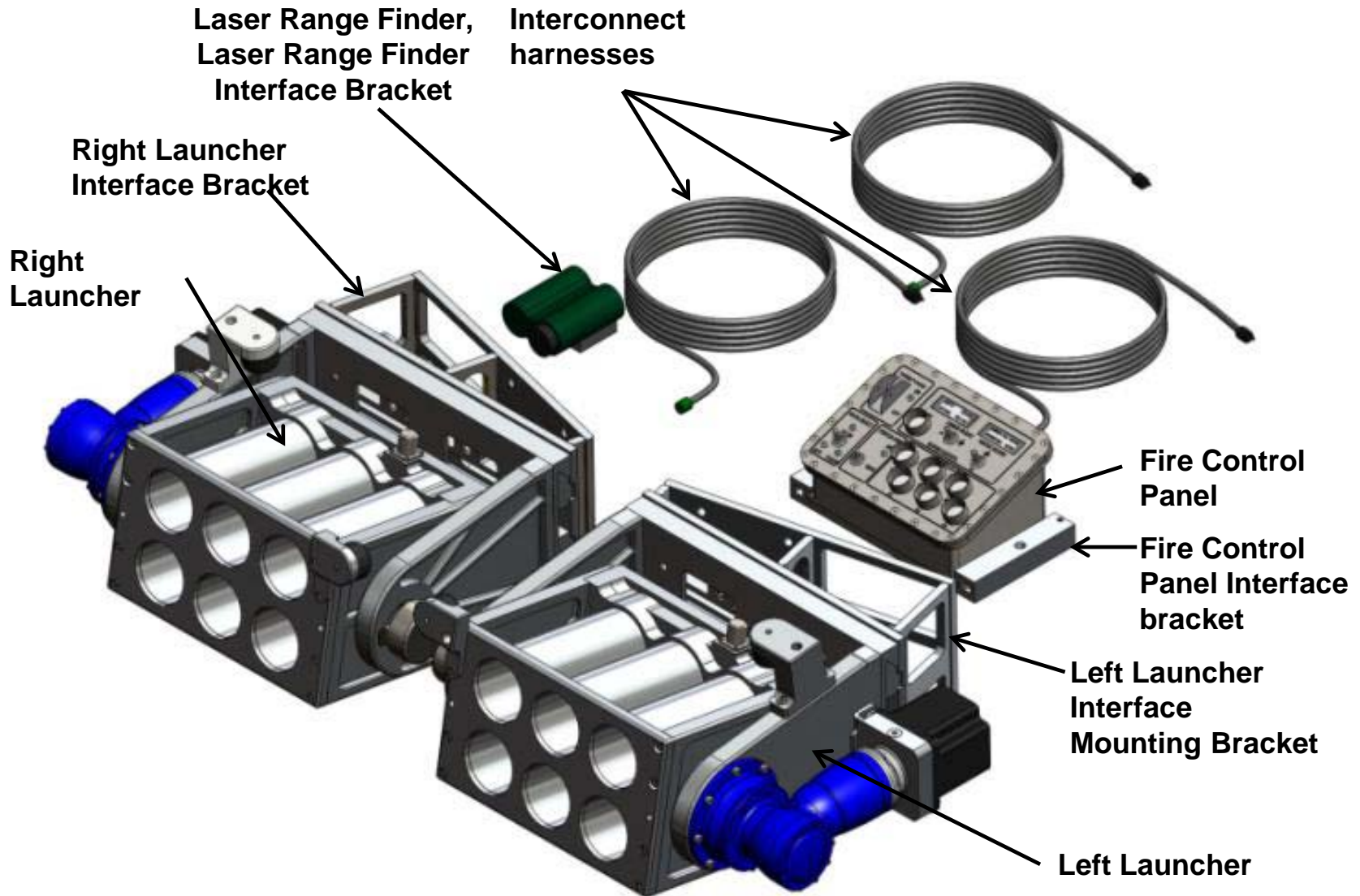


Left & Right Launchers



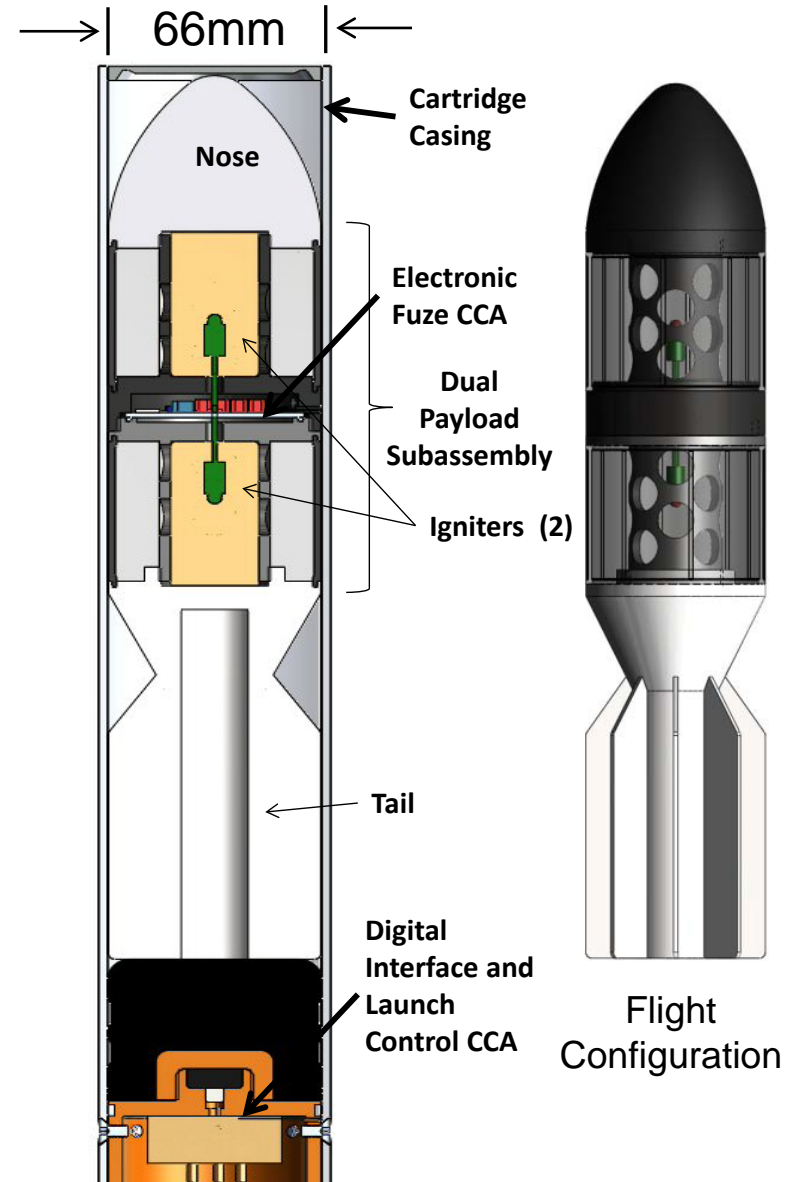
66mm Thermobaric Grenade

Medusa Installation Kit

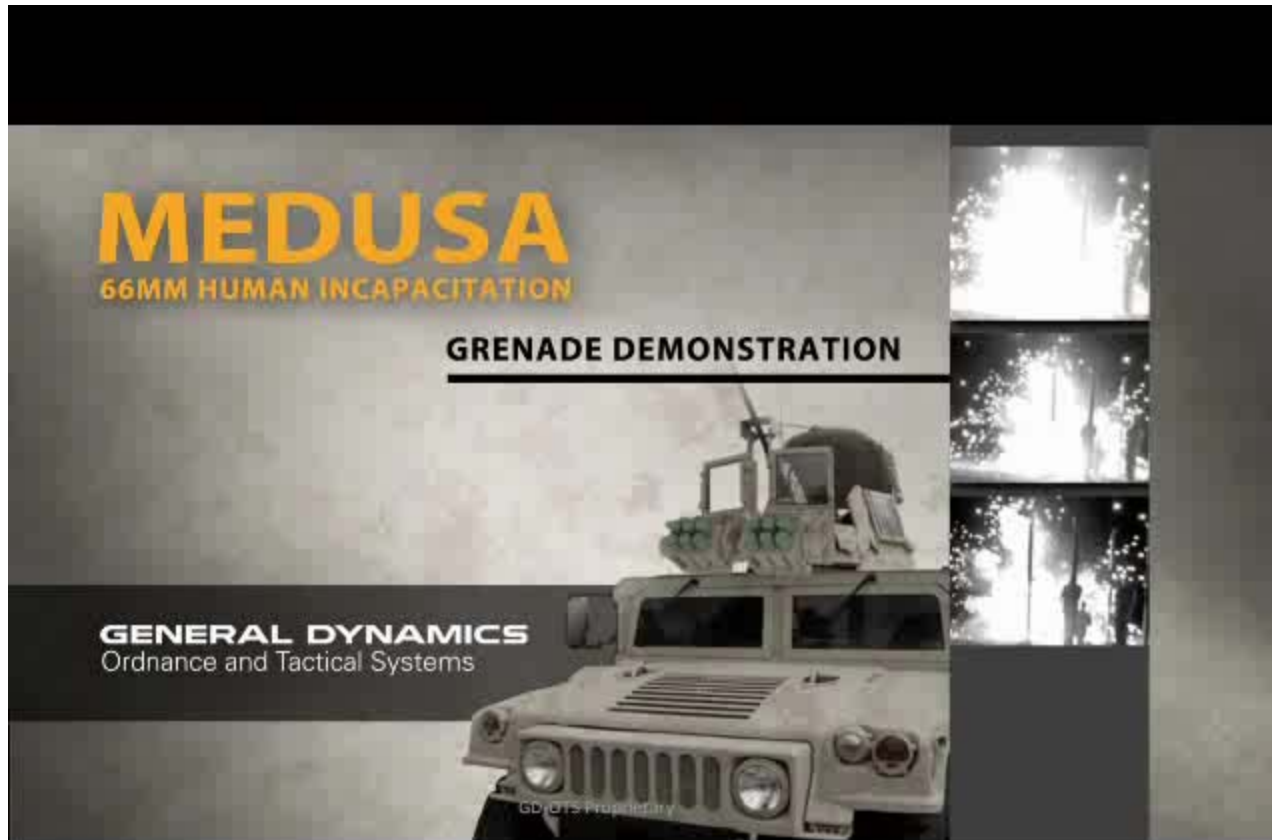


Grenade Overview

- Large, dual payload capacity; 7.5 in³ each, 15 in³ (246 cm³) total
- Independent payload initiation control; simultaneous or separate function
- “Smart” capabilities include:
 - Self type identification
 - In-tube BIT
 - Each payload individually programmable for range-time of activation
- Range accuracy – Spherical Error Probability (SEP)
 - 0.8m at 30m range
 - 2.5m at 90m range
 - 4.0m at 150m range
- Max range to 300m
- Low fragmentation hazard



Medusa Demonstration Video



How is suppression achieved?

- The grenade payload temporarily incapacitates targeted personnel through the use of **intense physiological (auditory/visual) human effects**
- **Light stimuli**: the intense light (approx. 25,000 lux-sec with a fireball diameter of approx 3 meters) emitted by the grenade will temporarily blind threat individuals for several minutes. This light can be seen several miles away.
- **Sound stimuli**: the intense sound (approx 146 dBA measured 1 meter from the burst) will affect hearing so that an individual will not be able to hear (i.e., take or give commands) for several minutes
- **Pressure stimuli**: the intense pressure (approx 5.2 psi measured 1 meter from the burst) will disorient an individual within several meters of the burst
- **Psychological effects**: the burst will segregate instigators from bystanders. Non-motivated individuals will almost certainly leave the area after the effects wear down; those who don't leave are more likely to be true threats who will have to be dealt with by application of escalating force.



Issues for Further Discussion

- Backward and forward compatibility with legacy and digital discharger/launcher and grenade ammunition.
- Standardization of networked fire control, launcher and ammunition interfaces.
- Single System Multirole Functionality; vehicle self-protection and sensor-defeating obscuration and decoys, NL counter-personnel and EOF, hard-kill APS, illumination, marking, lethal (?), other effects.



Questions

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