

MEDUSA 66MM LAUNCHER SYSTEM

**Aggressor Suppression
via the use of Non-lethal
Projectiles and Launchers**



GENERAL DYNAMICS
Ordnance and Tactical Systems



Presentation Overview

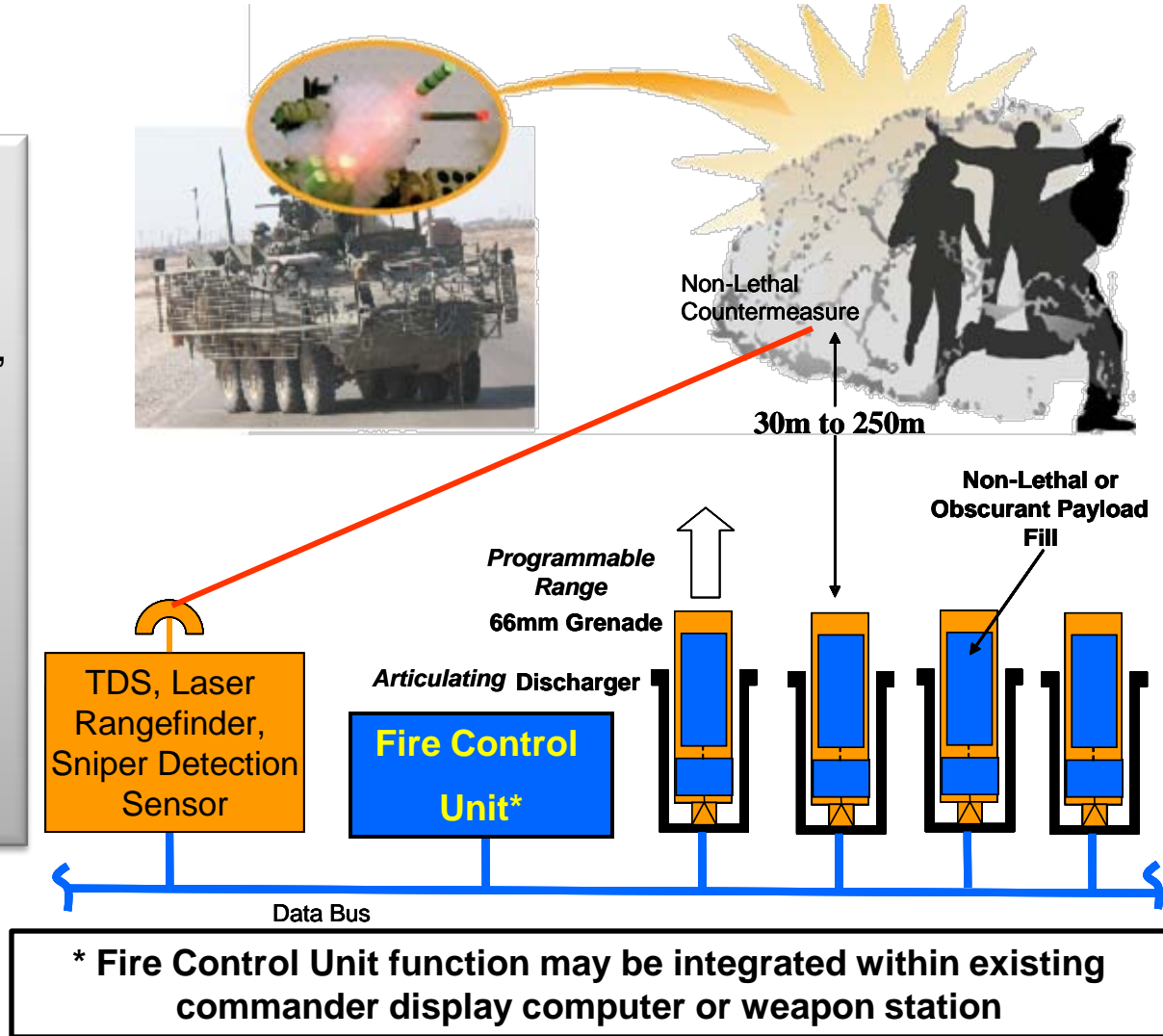
- Review the warfighter's "Escalation of Force" (EoF) needs and non-lethal, EoF requirements
- **MEDUSA: a vehicle-mounted, digital, grenade launcher system**
 - 66mm Articulating Grenade Launchers
 - Fire Control Unit
 - Programmable, Electronically-Fuzed Grenades
 - Demonstration Videos
- **Points for Discussion**



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.



GD-OTS' MEDUSA System

- MEDUSA supports a full range of 66mm combat effects grenades including; nonlethal human temporary incapacitation, obscuration and sensor defeat, illumination, marking and combat countermeasures.
- 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) for the Full Spectrum Effects Platform (FSEP Stryker) fleet
- 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.



Non-lethal Weapon System Requirements

- Capable of being easily installed on any tactical; B-kit architecture
- The non-lethal effect must be capable of suppressing the aggressors for an extended period of time without risk of significant or permanent injury
- The non-lethal effect must be capable of being delivered with precision anywhere between 30 to 250 meters
- The NLWS must have the capability to support urban patrolling, convoy operations, crowd control and area denial operations (of approx 250 m²)





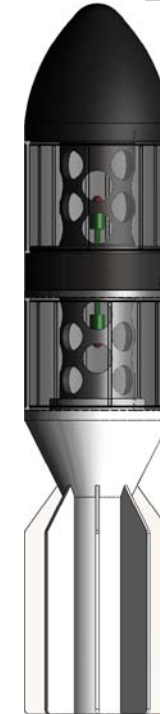
Medusa: USMC MPM-NLWS TD Phase

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 effects placement accuracy.



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

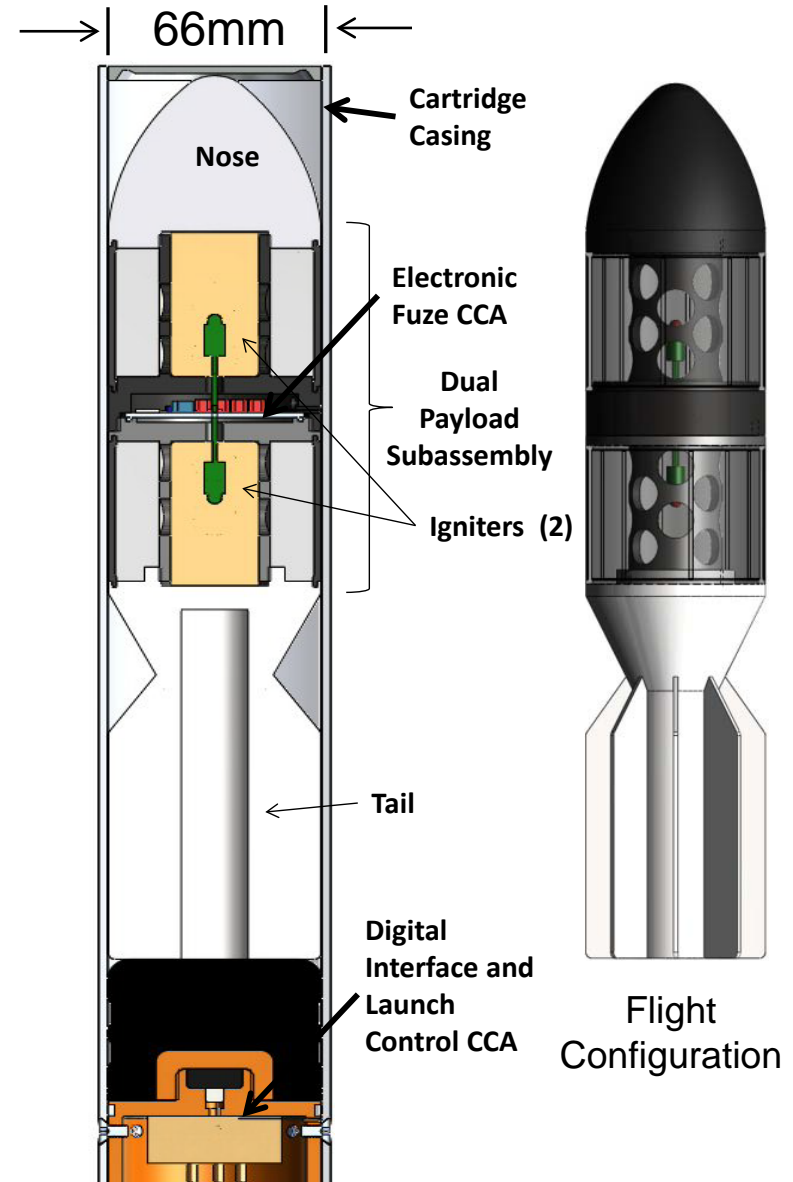


66mm Thermobaric Grenade

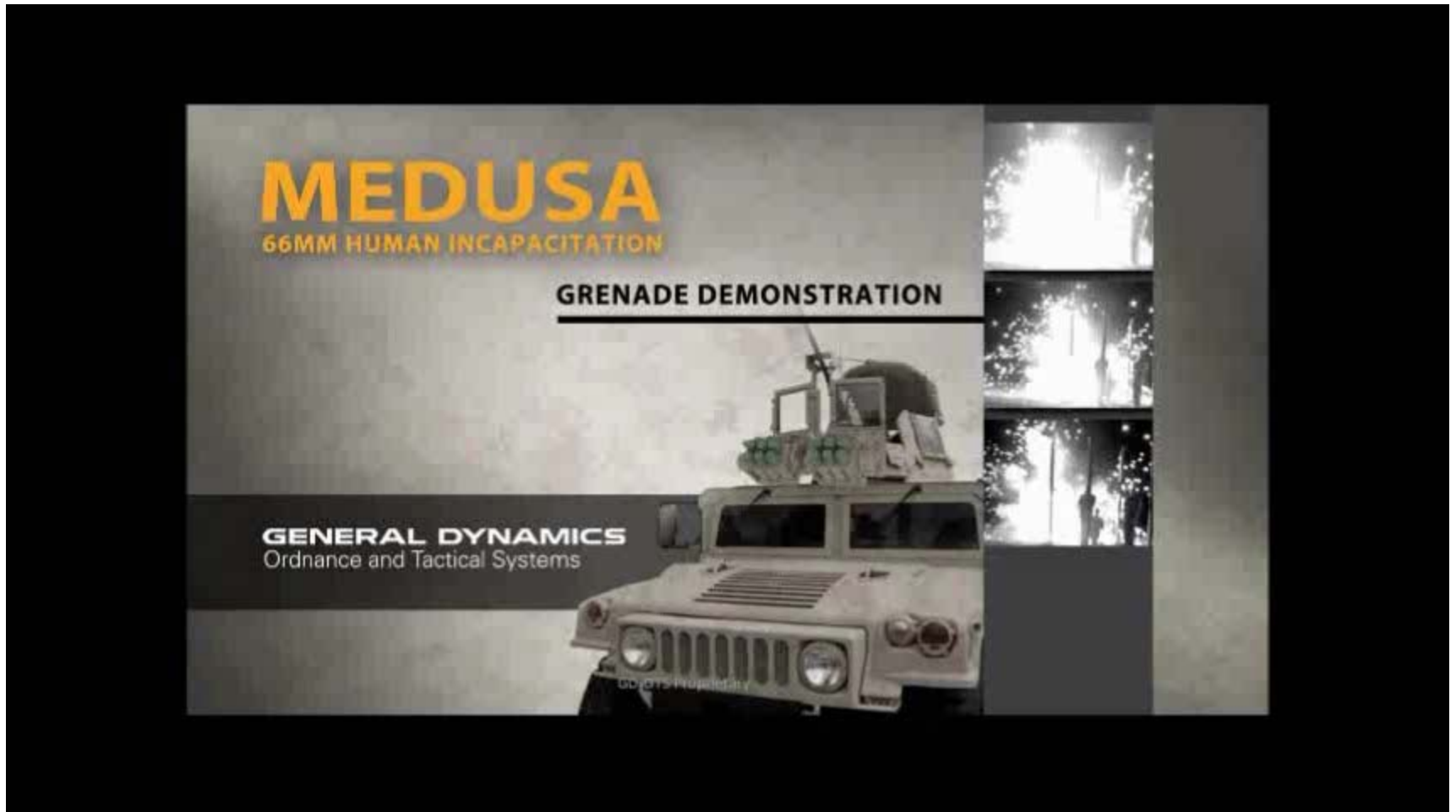


Grenade Overview

- 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:** 25 k-lux/s with a fireball diameter of approx 3 meters. Intense light emitted by the grenade will temporarily blind aggressors. This light can be seen several miles away.
- **Sound stimuli:** 146 dBA measured 1 meter from the burst. Intense sound will affect hearing so that an aggressor will not be able to hear (i.e., take or give commands) for several minutes
- **Pressure stimuli:** Approx 5.2 psi measured 1 meter from the burst to disorient an aggressor when he is within several meters of the burst
- **Psychological effects:** harder to quantify, but seeing is believing.



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.



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