

Delivering New Capabilities to the Warfighter at Speed and Scale: Solving Contested Logistics Challenges with Energetics

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30 August 2023

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Solving Contested Logistics Challenges with Energetics

We are starting from a major disadvantage, even with the strength of our current fleet:
Theatre is 6,000+ miles from the west coast and adversary has impressive anti-ship capabilities

This impacts our ability to:

- Deter aggression through presence
- Offer effective long-range and defensive fires

Lessons learned from Ukraine:

- War consumes large amounts of munitions early in the fight
- Resupply in a contested environment is extremely challenging
- Logistics barriers to expedient resupply weakens our ability to win

Challenges in a conflict with a peer adversary:

- Fleet will lack air dominance
- Every shot counts
- Distance compounds resupply; especially at sea



Energetics solutions can solve complex contested logistics challenges



Solving Contested Logistics Challenges with Energetics

Trans Pacific travel time is measured in days to weeks

We will not be afforded luxury of time to deter adversaries when it comes to munition resupply

Adversary is not limited by our constraints, and has the following advantages:

- Minimal transit time and shipping logistics
- Size of land-based launchers provide greater lethality and range capabilities
- Magazine depth (quantity brought to the fight)



What if performance of munitions played more of a role in addressing these challenges?



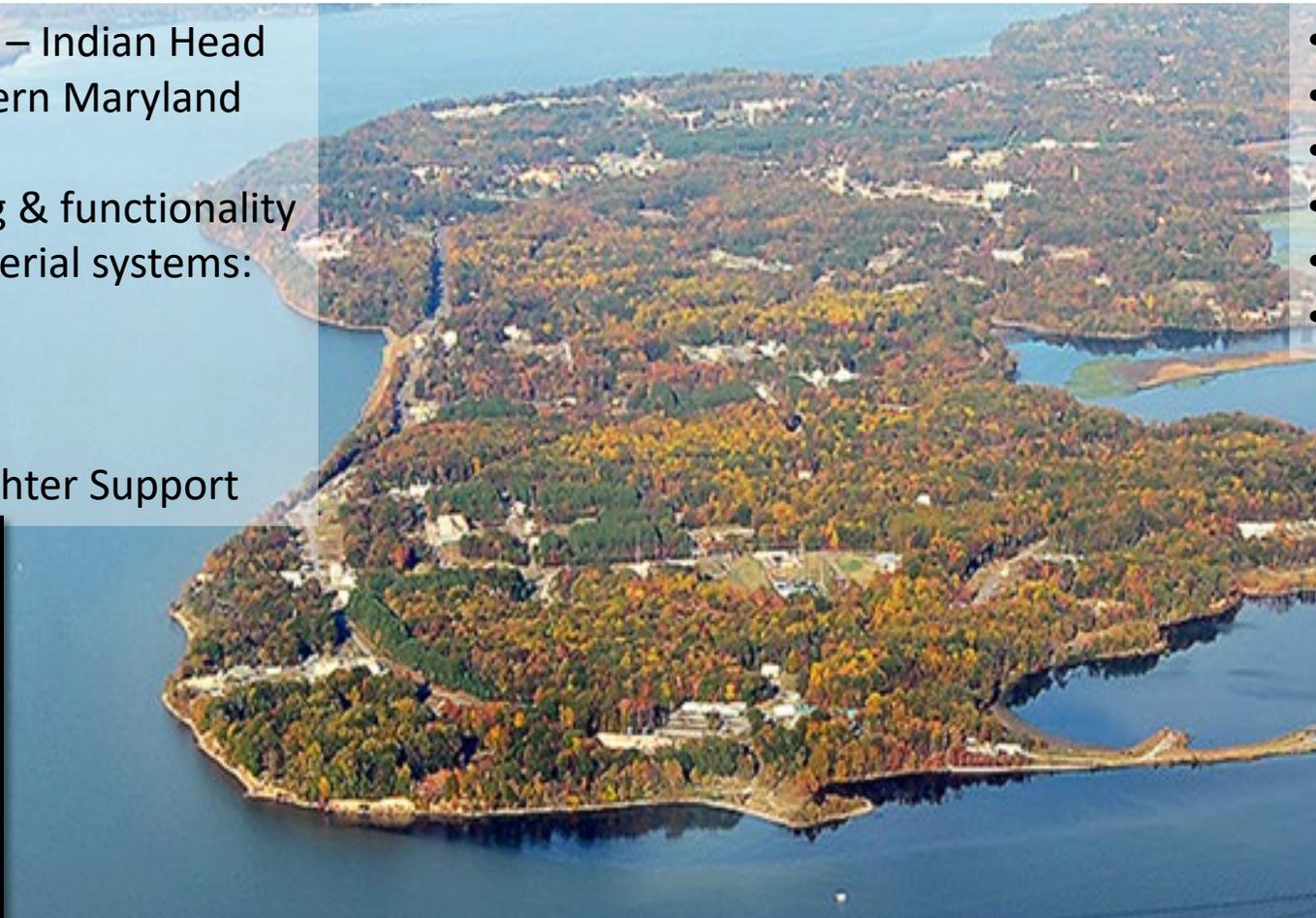
Solving Contested Logistics Challenges with Energetics

Naval Surface Warfare Center – Indian Head Division (NSWC IHD) in southern Maryland

Cradle to grave understanding & functionality of energetics & energetic material systems:

- Science and Technology
- Research & Development
- Testing & Evaluation
- Product Delivery & Warfighter Support

- Purpose built in 1890
- Navy's public arsenal
- Government owned
- Required for surge
- Leader in innovation
- Navy's trusted experts



IHD is the Navy's only Government owned & operated surge energetics manufacturing site with the capabilities & expertise for wartime mobilization



Solving Contested Logistics Challenges with Energetics

Energetics define munition performance:

- Range, Speed, Lethality, Signature, Safety, Logistics

Energetics include:

- Ingredients → Formulations → Energetic material systems
- Munitions rely on energetic material systems for their effect

Energetics are essential to every warfighting domain:

- Undersea, Surface, Air, Space, Expeditionary, Ground

Development in advanced energetics will improve the range, speed, lethality, and signatures of our legacy and future, state of the art munitions





Solving Contested Logistics Challenges with Energetics

Lethality

Development of novel explosives

- More lethal warheads can decrease the required salvo sizes to prosecute high value targets
 - Allows forces to remain in the fight longer, and/or prosecute greater numbers of targets
 - Reduces the burden of high quantities of munitions for resupply during a protracted conflict

Range & Speed

Development of novel propellants & state of the art propulsion technology

- Rocket motors that fly faster and/or faster increase range and decrease time-to-target
 - Increase sortie rates via reduction in distance air platforms need to fly to deliver strike packages
 - Increase naval platform standoff & survivability

Signature

Development of minimum smoke propellants

- Platforms remain harder to detect and target after weapon launch
- Decreases risk to forces and promotes EABO/DMO



Energetics themes to combat contested logistics challenges, providing (or promoting) greater chances of successful resupply



Solving Contested Logistics Challenges with Energetics

Lethality Concepts

Undersea warfare technologies for deterrence options:

- Kinetic effects
- Confusion leads to tactical/strategical pauses
- Inability for the enemy to triage will promote continued deterrence

Advanced ingredients = lethality multiplier

- Fire-starting and over-pressure effects for anti-air or anti-surface

Weaponized and attritable unmanned systems

- Enemy must address every target



Range & Speed Concepts

Air breathing propulsion that adapt a missile body to a variety of flight regimes (subsonic, sonic, supersonic)

- Greater operational/tactical use with reduced losses in efficiencies at various speeds
- Greater maneuverability or end-game terminal speed

Novel applications of energetics and energetic materials systems can be used to combat contested logistics challenges



Solving Contested Logistics Challenges with Energetics

Investment in energetics enables our forces to:

- Deliver a stronger punch
- Prosecute additional targets
- Lengthen our reach
- Keep our platforms more survivable
- Remain in the fight for as long as possible



We should prepare for a fight burdened by contested logistics

Energetics provide the means to a more capable, powerful joint force