Vehicle & Vessel Stopping

Non-Lethal Weapons Research and Technology Development

Industry Day

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http://jnlwp.defense.gov

Background

- Non-lethal vehicle and vessel stopping remain high priority capabilities for employment in entry control point, convoy operations, snap checkpoint, maritime interdiction, asset protection, and port security scenarios.

- Fielded capabilities, while effective, are limited in capability.

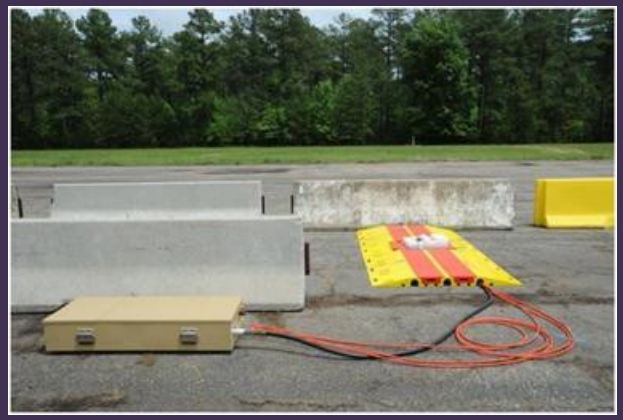
- The JNLWP is focused on developing, prototyping and integrating operationally suitable systems and component technologies capable of stopping a vehicle or vessel at relevant ranges in a variety of employment scenarios.

Technical Objectives

- Develop and demonstrate effective and operationally suitable vehicle stopping technologies that can maintain >100m keep out range and eliminate the need for pre-emplacement.
  - Includes small, medium, and large vehicles
- Develop and demonstrate effective and operationally suitable vessel stopping technologies that extend the range of effects and standoff for employment.
  - Focus is on small (<50ft) to midsize (~125ft) vessels
- Development and integration of systems in stand-alone configurations and onto a variety of delivery platforms depending on mission criteria.

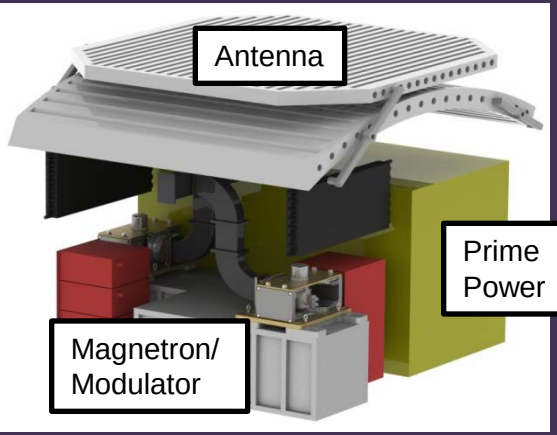
Relevant Work

- Pre-Emplaced Electric Vehicle Stopper (PEVS)
  - Utilizes a pulsed high-voltage waveform to disrupt/damage engine control electronics
  - Performers:
    - NSWC Dahlgren
    - Battelle
    - Miltech
    - Radiance Technologies
  - Focus:
    - Design, build, and test ruggedized prototypes
    - Improve system design
      - Reliability, usability, manufacturability, effectiveness etc.
      - Size/weight/cost reduction
    - Assess system safety
    - Perform prototype demonstrations



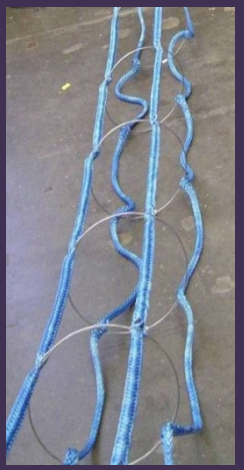
Relevant Work

- Multi-Frequency RF Vehicle Stopper
  - Utilizes a directed beam of high power RF energy to disrupt vehicle engine control electronics causing the engine to shut off.
  - NSWC Dahlgren, L3 Communications EDD
  - Focus:
    - Design, build and integrate prototype system
    - Conduct verification/validation testing of vehicle effects
    - Perform demonstrations
    - System refinement/ruggedization
    - Assess system safety



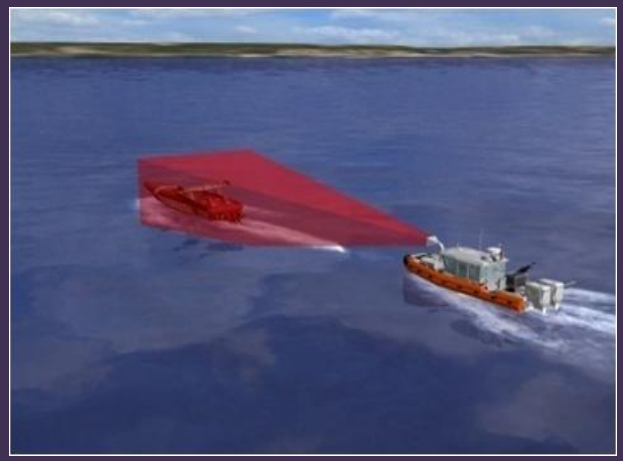
Relevant Work

- Vessel Entanglement
  - Study and development of vessel engine propeller entanglement net and delivery devices
  - NSWC Dahlgren, NSWC Carderock, USCG Research and Development Center
  - Focus:
    - Determine the effectiveness and operational suitability of propeller entanglement to non-lethally stop or slow small (<50 ft) and midsized vessels (<125 ft)
    - Develop a short range, hand held deployment method



Relevant Work

- RF Vessel Stopping
  - Utilizes high power RF energy to target vessel engine electronics to upset and cause the engine to shut off.
  - NSWC Dahlgren
  - Focus:
    - Analyze target effects database to validate effective waveform(s)
    - Conduct modeling & simulation
    - Compile validated user-requirements
    - Develop conceptual designs for priority missions
    - Assess maturity of enabling technologies
    - Assess existing Government and commercial sources/systems



Relevant Work

- Non-Lethal Unmanned Aerial Vehicle (UAV) High Power Microwave (HPM) Payload
  - Aerially delivered HPM payload for vessel stopping
  - NSWC Dahlgren
  - Focus:
    - Conduct vulnerability testing
    - Complete HPM payload specification/documentation package
    - Conduct laboratory source development
    - Assess existing Government and commercial sources/systems
    - Demonstrate payload in simulated UAV-target geometry

Research & Development Tasks

General types of tasks required for vehicle and vessel stopping technology development:

- Feasibility studies and technology assessments
- Comparison of novel approaches with existing technologies
- Target vulnerability assessments and testing to enable specification development
- Design, build, test and demonstration of breadboard and prototype vehicle and vessel stopping systems
- Platform integration

Capabilities

General capabilities and expertise that may be required to execute planned RF/HPM technology tasks:

- Engineers/Scientists with expertise in:
  - Automotive and maritime systems: including engine control electronics and vehicle communications (i.e. telematics)
  - Physics
  - Electrical engineering
  - Mechanical engineering
  - Aerospace engineering
  - Chemical engineering
  - Materials science
  - Statistics (design of experiment, data analysis, linear regression, etc.)
  - Systems integration
  - Systems engineering
- Facilities and equipment to develop, build, and test systems
- Facilities and equipment for target vulnerability assessments and testing

Questions?

Please submit questions by 29 June 2012:

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