

At a Glance

What is it?

- Provides maneuver units a scalable, fuze-independent hard kill capability against current and future buried and surface laid explosive hazard (mines, improvised explosive devices and UXO) threats

How does it work?

- Payload delivery utilizing nonenergetic pneumatic launcher provides desired standoff and accurate delivery without terminal guidance
- Canister containing multiple shaped charge munitions dispensed and initiated upon impact, providing hard kill to operational depth

What will it accomplish?

- Provide fuze-independent kill of surface and buried explosive hazards
- Provide scalable clearing capability that can address multiple types of explosive hazards from point targets (IEDs) to short lanes through hasty protective minefields and longer lanes through deliberate minefields

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Scalable Explosive Neutralization (SEN) is a concept development investigation into technologies which are intended to provide a scalable, fuze-independent explosive hazard (mines, IEDs, and UXO) neutralization capability to the maneuver unit.

To address buried and blast hardened mines, SEN will use shaped charge technology capable of hard kill to operational depth. Specialized safety and arming (S&A) and initiation methods have also been developed to support such a system.

After analysis of several deployment methods, the preferred deployment approach was determined to be a canister-based concept which will deploy multiple shaped charges upon impact. Design finalization, prototyping and demonstration of this canister concept will begin late in fiscal 2010 and continue into fiscal 2011. The flight testing will be performed at ranges of 50m, 100m and 150m. The functional sequences of the prototype projectiles will be demonstrated, including: launch, ballistic flight, energy absorption at impact and deployment of the shaped charges.

Nonenergetic launch technologies were analyzed to provide highly accurate and variable muzzle velocities. Analysis was performed on several possible methods. A pneumatic launch approach was chosen based on simplicity and muzzle velocity accuracy. In fiscal 2009, a demonstration version of the launcher was prototyped and tested at 50m and 150m ranges, which proved very successful. The prototype launcher will be used in fiscal 2011 to test the flight performance of the projectile concept.

SEN will provide a scalable, flexible system with improved effectiveness against a greater range of threats, without increasing the logistical burden on the operators.

Research Challenges and Opportunities:

- Develop specs for system integration with relevant operational vehicles
- Refine launcher design, develop magazine design and define subsystem interfaces
- Integrate S&A and initiation concept with shaped charge bench test

