OBJECTIVE: To develop a process for packaging and aerosolizing particulate obscurant materials from a high speed munition. The scenario is that the munition will be traveling at Mach 1 when the obscurant payload is quickly released to create an aerosol cloud at a specific location. Modeling could better define the required dissemination time and the resulting cloud geometry. Phase I will focus on modeling and defining concept parameters. Phase II will expand the effort to include fabricating hardware and testing to demonstrate the concept.

DESCRIPTION: Smoke and obscurants play a crucial role in protecting the Warfighter by decreasing the electromagnetic signature that is detectable by various sensors, seekers, trackers, optical enhancement devices and the human eye. The proliferation of threats to combat vehicles including ATGM's and RPG's, raises the stakes for the Warfighter. A low-cost, precision countermeasure to these threats will be critical in increasing the survivability of the Next Generation Combat Vehicle (NGCV).

Since this is a relatively new area of research for the Army, very little work has been performed so far. One of the difficult issues will be testing and evaluation of a fast moving munition; creative ideas are needed in the demonstration of the capability. Another issue may be a fast release of the obscurant to avoid a long, narrow cloud.

PHASE I: Develop a concept for packaging and disseminating a particulate obscurant material. Demonstrate with modeling what the resultant cloud would look like when released from a munition traveling at Mach 1. Assume an 80-mm diameter munition with a 1-kilogram payload of graphite flakes (Asbury Micro 850 or equivalent). Demonstrate with modeling how a cloud at least 5 meters in diameter and 10 meters long could be produced. If the concept will allow other obscurant materials, it will improve its utility.

PHASE II: Demonstrate the capability in the field. Provide 5 prototypes that will allow field evaluation of the resulting aerosol cloud. In addition, in Phase II, a design of a manufacturing process to commercialize the concept should be developed.

PHASE III DUAL-USE APPLICATIONS: Integrate the design into a munition specified by the Army. Fast moving munitions would include rockets, missiles and grenades. This technology is probably specific to the Department of Defense, but there are other applications there.

With the emergence of the Army Chief of Staff’s Modernization Priorities, this obscuration technology supports the NGCV. Other Army Modernization Priorities that could benefit from this technology effort include Long-Range Precision Fires, Future Vertical Lift Platforms, Air and Missile Defense Capabilities, and Soldier Lethality

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