Abstract Submitted
for the SHOCK15 Meeting of
The American Physical Society

Subscale Testing of Prompt Agent Defeat Formulations CHRISTOPHER MILBY, DEMITRIOS STAMATIS, AMBER DANIELS, FORREST SVINGALA, JIM LIGHTSTONE, Naval Surface Warfare Center Indian Head EOD Technical Division, KENDRA MILLER, MISTY BENSMAN, MATTHEW BOHMKE, Naval Surface Warfare Center Dahgren Technical Division — There is a need to improve the current bioagent defeat systems with formulations that produce lower peak pressure, impulse, sustained high temperatures, and release of biocidal species for prompt defeat applications. In this work, explosive charge configurations similar to fuel-air explosives were detonated in a semi-enclosed chamber configuration. Binder type and fuel-to-oxidizer ratios were varied to observe the effects on combustion performance. Thermocouple measurements and high-speed video were used to monitor the combustion of the dispersed formulation. The down-selected formulations were then tested in a sub-scale vented agent defeat system developed to evaluate performance of formulations against aerosolized Bacillus thuringiensis (BT) spores. Diagnostics such as thermocouples, piezoelectric pressure gauges, and pyrometry were utilized to characterize the detonation event. Biological sampling with surface coupons, liquid impingement, and filters of the post detonation environment were utilized to determine spore survivability and rank the relative effectiveness of each formulation. Distribution Statement A: Approved for Public Release; Distribution is Unlimited

Christopher Milby
Naval Surface Warfare Center Indian Head EOD Technical Division

Date submitted: 30 Jan 2015 Electronic form version 1.4