

Sustainable and Reliable Production Capability for RSI-007 Molding Powder

A2350 — RSI-007 Scale-up for Manufacture (RSI-007)

Objective

The objective of this project is to develop a sustainable and reliable production capability for RSI-007 molding powder that will significantly reduce the overall cost of the material as well as the environmental impacts and operational hazards during production. RSI-007 is a high energy, CL-20 based explosive that enables miniaturization of and increased output from low energy exploding foil initiators (LEEFIs). The higher performance of RSI-007 also allows for new and innovative initiators to be developed. RSI-007 based LEEFIs are used in multiple weapon systems including AIM-9X, RAM, ESSM, Standard Missile, Spider, FBM ordnance, FMU-139 Product Improvement Program, MEMS Distributed Initiation Systems, and SECAT Advanced Lightweight Torpedo Program.

Payoff

Production capacity will be improved as new production capability will be increased ten-fold. Additionally, the cost of RSI-007 will be decreased from a current price of \$3,930/lb to \$1,140/lb (a 70% decrease). This is also a significant decrease in cost from the legacy explosive, which was most recently purchased for \$15,500/lb. Other benefits include the elimination of a halogenated solvent, a known carcinogen, providing a safer production environment, and the elimination of a non-conductive processing fluid to reduce both cost and static build-up on the final product. Understanding of manufacturing parameters gained through the designed experiments has been used to determine the influence of processing variables on product quality. The new process results in improved product quality and reproducibility. Overall, the production of the high energy output RSI-007 will allow for the miniaturization of fuze systems for various munitions.

Implementation

The Navy's AIM-9X program (PMA-259) will serve as the transition program for the scale-up of RSI-007 as RSI-007 will be used as part of the next generation warhead for AIM-9X, which is currently under development and uses the RSI-309 initiator and RSI-260 detonator. The RSI-007 scaled-up process is planned for implementation at the contractor facility in the third quarter of 2013.

The RSI-007 developed as part of this project will be used in initiators produced by Reynolds Systems. In fact, these initiators are already utilized in several DOD programs, including RAM, Standard Missile, ESSM, and SPIDER. These programs require a larger quantity than the current method is capable of producing. The increased capacity developed under this project will support this increased demand.



PERIOD OF PERFORMANCE:

July 2010 to March 2013

PLATFORM:

Energetics

AFFORDABILITY FOCUS AREA:

Not Applicable

CENTER OF EXCELLENCE:

EMTC

POINT OF CONTACT:

Mr. Charles R. Painter
(301) 744-6772

STAKEHOLDER:

PMA 259

TOTAL MANTECH INVESTMENT:

\$809,000



Please visit the EMTC Web site: <http://www.navsea.navy.mil/nswc/indianhead/codeCA/EMTC/main.aspx>

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