

Source of HNS Manufacturing Capability

A2776 — Development of HNS Manufacturing Process

Objective

Many of the currently fielded air- and surface-launched Navy missile programs were initially developed 20-30 years ago. As such, these programs may experience material-related issues – from material obsolescence and discontinued products to inconsistent quality or characteristics of material from manufacturers and diminished manufacturing sources.

These issues make it necessary for alternate materials and/or sources to be identified to perform the same or similar function as the material being replaced. In some instances a modification of a formulation may be necessary in order to allow systems to continue to be manufactured without interruption. Any formulation modifications would need to be evaluated in advance so that the necessary changes can be made without program interruption. There currently exists no consistent continental United States (CONUS) source of hexanitrostilbene (HNS) to meet the projected needs, and the cost Outside CONUS sources have risen significantly in recent years. In order to continue supporting programs using HNS, a cost-effective CONUS source of HNS must be established in the production pipeline.

The objective of this Energetics Manufacturing Technology Center (EMTC) project was to develop a scalable, cost-effective process to produce both types of HNS, Type I and Type II, that meets the material specification PEF-WS-5003K, “HNS Explosive.”

Payoff

Successful production at Naval Surface Warfare Center Indian Head Division (NSWC IHD) will provide a readily available, cost effective, and reliable, CONUS source of HNS-I and HNS-II.

Implementation

The successful results of this ManTech project will be used to provide large quantities of HNS-I and HNS-II. These quantities will be required to prove out the material utility in final (type) qualification studies for existing as well as future applications.

The scale-up effort, based on a two-step synthesis, will be conducted by NSWC IHD Chemical Development and Manufacturing Branch. The analytical effort will be conducted by NSWC IHD Material Evaluation Division.



A sample of HNS

PERIOD OF PERFORMANCE:

November 2018 to December 2022

PLATFORM:

Energetics / CAD/PAD Devices

CENTER OF EXCELLENCE:

EMTC

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TOTAL MANTECH INVESTMENT:

\$509,000

