

Multi-Purpose Warhead Manufacturing

PROBLEM / OBJECTIVE

Innovative warhead designs have demonstrated increased capabilities and performance for missile systems. However, the cost of warhead production was high due to process variability, material loss, machining time, labor costs, tool wear and reliability.

The objective of this Army ManTech project was to demonstrate manufacturing processes for multi-purpose warheads to decrease labor time, wasted material, and life cycle costs for current and next generation small precision munitions.

ACCOMPLISHMENTS / PAYOFF

Process Improvement: This project demonstrated forging process for the liner into a near net shape preform. Manufacturing improvements included:

- Liner billet fabrication
- Liner preforms
- Finished liners
- Warhead case fabrication and component fabrication
- Liner explosive assembly pressing/finishing
- Warhead assembly
- Heat treatment of assemblies

The overall result was forged near net shape billets with 40% less material by weight than existing production methods.

Implementation and Technology Transfer:

The Multi-Purpose Warhead Manufacturing Improvements project transitioned manufacturing improvements to Close Combat Weapon Systems (CCWS) at the end of FY12 for subsequent Javelin multi-purpose warhead system qualification testing.



Near Net Shape Warhead Preform vs. Normal Preform

Expected Benefits and Warfighter Impact:

Provides affordable Multi-Purpose Warheads needed to enable current and future tactical missile systems with the capability of defeating Explosive Reactive Armor Protected Tanks, Soft Targets, Military Operations on Urban Terrain Targets. The warheads also increase lethality due to reductions in process variability.

Cost Benefit was \$16.3M with Return on Investment (ROI) of 3.8:1.

TIME LINE / MILESTONE

Start Date	March 2010
End Date	July 2013

FUNDING

U.S. Army ManTech	\$4.3M
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PARTICIPANTS

U.S. Army RDECOM Aviation and Missile Research, Development and Engineering Center (AMRDEC)
 National Center for Defense Manufacturing and Machining Latrobe, PA
 General Dynamics Ordnance and Tactical Systems (GD-OTS) Niceville, FL

**IMX-104 Explosive
 Flake
 81mm High Explos**

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