IM Melt-Cast Explosive Production Facility

Insensitive Munitions & Energetic Materials Technology Symposium 2013

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# Acknowledgements

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Abstract # 16244
2013 Insensitive Munitions and Energetic Materials Technology Symposium
San Diego, CA

Outline

• Objective
• Background
• Design
• Process Flow Diagram
• Schedule
• Major Accomplishments / Status
Objective

- Build a new melt-cast explosive production facility at Holston Army Ammunition Plant (HSAAP) to manufacture insensitive munitions (IM) explosives more effectively and efficiently.
Background

- HSAAP, a Government-owned, contractor-operated (GOCO) facility, is the qualified NTIB source of IM melt-cast explosive formulations.
- Since the 1940’s, RDX or HMX is blended with molten TNT to produce various classes of melt-cast explosives known as Cyclotol and Octol, respectively.
- A new generation of melt-cast explosives has been developed and fielded to comply with DOD 5000.2-R, which requires munitions to withstand unplanned stimuli to improve the warfighter survivability.
- To maintain consistent IM quality, these explosives, IMX-101 and IMX-104, have much tighter tolerances than their predecessors.
- The modernization effort is needed to manufacture IM explosives more effectively and efficiently.
- Additionally, this effort will provide HSAAP with the capability to meet future production requirements.
Design (1/2)

- Agitated Melt Kettles
  - Reduce cycle time
- Volumetric Feeders
  - Consistent feed rate for dry components
- Modified Hold-Up Kettle Discharge Valve
  - Pneumatic slide gate valve provides better flow control of molten product onto casting belt
  - Steam jacketed to keep product molten
Design (2/2)

- **New Casting Belt System**
  - Variable-speed belt controls cooling rate
  - Water and air cooling capability
  - Enclosed casting belt eliminates water exposure
  - Chiller system controls cooling water temperature
  - Recycle cooling water to reduce waste
- **Improved Ventilation System**
  - Reduce operators exposure
  - Consistent room temperature
- **Plastic Sheeting**
  - Cover walls and ceiling to prevent contamination
Equipment
Major Accomplishments / Status

- Completed Tasks
  - Engineering & design
  - Facility modification
  - Equipment procurement & installation
  - Mechanical, electrical & interlock check-out
  - Inert trials
  - Operator training

- Planned Activities
  - First article production & testing