M855A1 Lead-Free 5.56 mm Cartridge

Executive Summary
- M855A1 completed LFT&E, including an investigation to fully understand and correct problems with the projectile's trajectory observed during FY09 operational testing at high temperatures.
- M855A1 is lethal.
- The Army authorized fielding in June 2010.

System
- The M855 A1 program evolved from an Army Armament Research, Development, and Engineering Center, Picatinny, New Jersey, program titled "Green Ammunition."
- The objectives of the Green Ammunition program are to reduce lead contamination on training ranges and reduce the lead hazard from the manufacturing environment while maintaining the performance of the current M855 cartridge. While the Green Ammunition program will produce other calibers of ammunition, the 5.56 mm projectile was the first to be developed due to its extensive use.
- The M855A1 cartridge is compatible with the M4 and M16 family of weapons, as well as the M249 Squad Automatic Weapon. This new cartridge is intended to be a direct replacement for the currently fielded M855 cartridge.
- The M855A1 is a three-part projectile consisting of a steel penetrator, a copper slug, and a reverse-drawn copper jacket.

Mission
Forces equipped with weapons that fire the M855A1 will engage enemy combatants during tactical operations in accordance with applicable tactics, techniques, and procedures.

1 - Assembled Round (Penetrator, Slug, and Copper Jacket)
2 - Copper Slug
3 - Steel Penetrator
4 - Copper Jacket
5 - Complete Cartridge

Major Contractor
Alliant-Techsystems, Small Caliber Systems – Independence, Missouri

Activity
- During high temperature operational testing in FY09, the Army observed flight stability problems with the M855A1 projectile. The Army attributed the anomaly to the thermal behavior of the projectile's slug (the material used to fill the rear portion of the projectile) at high temperatures.
  - The Army Program Manager for Maneuver Ammunition Systems; the Army Research Laboratory's Weapons and Materials Research Directorate; the Army Armament Research, Development, and Engineering Center's Munitions Systems and Technical Directorate; and the prime manufacturer subsequently developed a material change to the projectile to address the anomaly.
  - The Army conducted additional validation testing in FY10 to verify that the material change adequately addressed the trajectory anomaly and to assure the lethality of the cartridge was maintained.
  - The Army approved fielding of the M855A1 as an Enhanced Performance Round via Engineering Change Proposal to the M855 in June 2010.
- DOT&E published a classified lethality report for the M855A1 in October 2010.

Assessment
The M855A1 demonstrated adequate performance and lethality.

Recommendations
- Status of Previous Recommendations. The Army satisfactorily addressed the FY09 recommendation.
- FY10 Recommendations. None.