Advanced Lethality and Accuracy System for Medium Caliber (ALAS-MC)

US ARMY RDECOM

U.S. Army Research, Development and Engineering Command

TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

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14 May 2014

ALAS-MC Agenda

- Purpose
- Deliverables
- Targets
- ALAS-MC Weapon Comparison
- XM813 30mm Weapon
- XM813 Performance Verification Testing
- Unmanned Turret Integration
- Future System Integration Efforts
- Planned Activities

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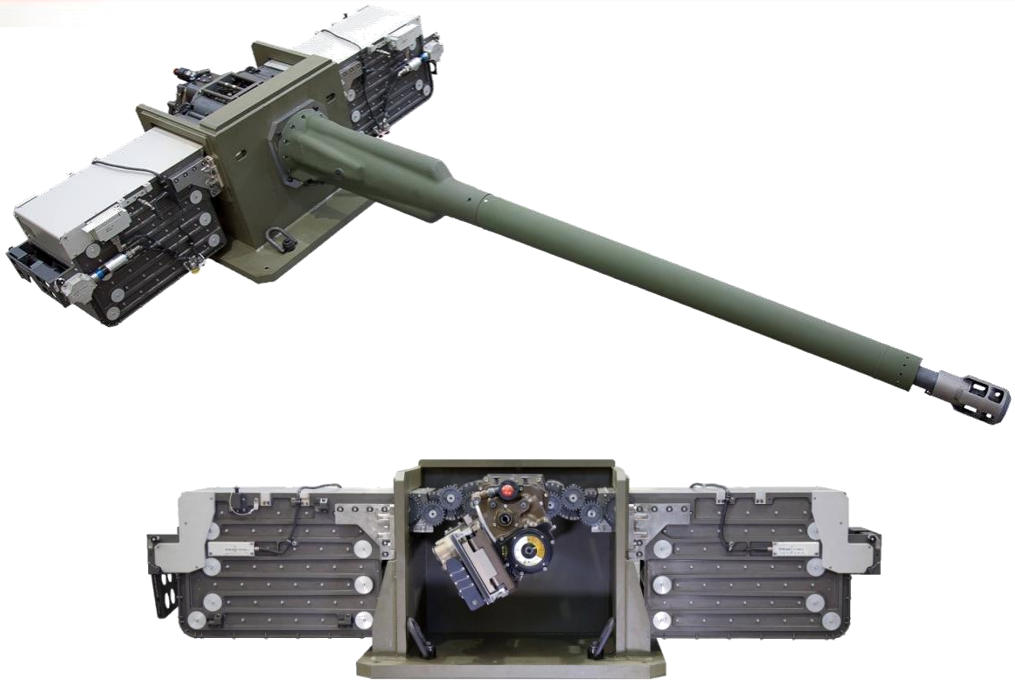
Project Purpose



XM813 – 30mm Weapon

Purpose

- Achieve enhanced accuracy and lethality in Medium Caliber armament system technologies
- Develop a weapon system to meet current threats
- Develop an integrated system employing leap ahead technologies to meet projected future threats

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Project Deliverables

Deliverables

• Accurate Medium Caliber Armament system for stationary and fire on the move capability with turret/vehicle integration

• Programmable Air Bursting Munition (PABM): Optimized effects against Personnel targets (behind walls and in the open)

• Armor Piercing munition (APFSDS-T): Optimized effects against Materiel targets

• Integrated Fire Control Enhancements: Scenario Based Fire Control System (SBFCS), Graphical User Interface (GUI), dynamic MET Sensor, down range wind sensor and enhanced laser rangefinder

SuperShot 50mm PABM-T

SuperShot 50mm APFSDS-T

Fire Control Display / GUI

Down Range Wind Sensor

Dynamic MET Sensor

1m Laser Rangefinder

Enhanced Bushmaster III – 50mm

Malcolm Baldrige National Quality Award 2007 Award Recipient

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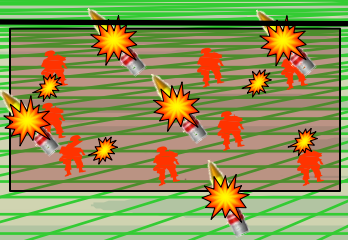
ALAS-MC Targets

Personnel Targets

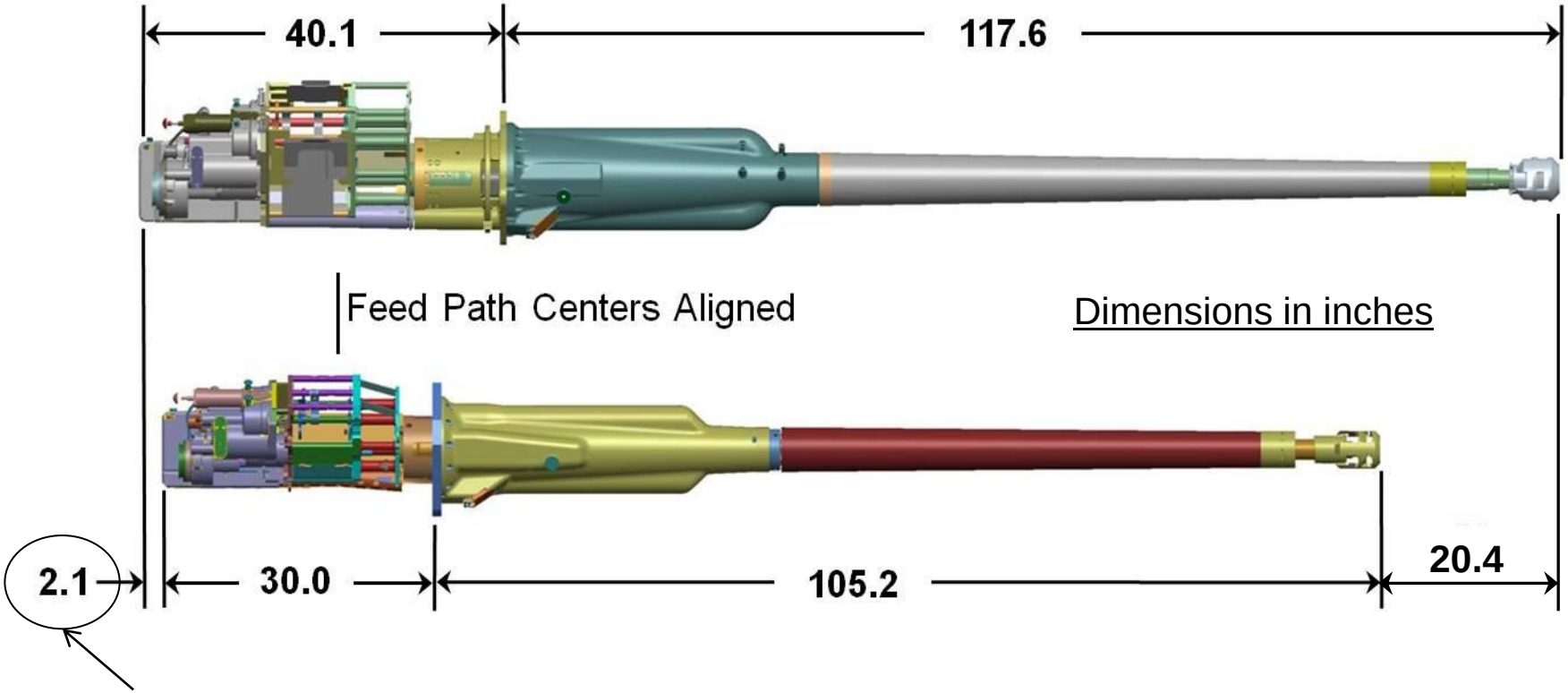


Materiel Targets

Urban targets

Enhanced Bushmaster III 50mm

~660 lbs



XM813 30mm

443 lbs

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XM813 30mm Weapon

Designed and manufactured by ATK
4500+ rounds fired to date
TRL 6

XM813 with 2x 90-round magazines

Features and benefits include:

- Semi-automatic; up to 200 rounds per minute
- Computer controlled and electrically driven
- Closed bolt operation
  - First round select
- Dual feed
- Link-less
- Optimized barrel
- Integral Mount configuration
- Dual Recoil System
- Semi-closed Bolt firing mode
- Fires the complete family of 30mm x 173mm ammunition
  - PABM-T, APFSDS-T, HEI-T, TP-T
- Provides a growth path to fire SuperShot 40mm ammunition

Malcolm Baldrige National Quality Award 2007 Award Recipient

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XM813 Performance Verification

XM813 Performance Verification Testing

- Timeframe: 28 October 2013 – 28 February 2014
- Purpose: Conduct functional check-out of a pre-production weapon (XM813), evaluate ammunition compatibility, system durability, and assess the system's ability to meet lethality requirements
- Location: APG
- Comments: 3554 rounds fired
  - PGU15 (1635), Mk258 APFSDS (480), Mk310 PABM (899), Mk239 TP (340), Mk238 HEPD (100) and Mk317 TPDS (100)

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System Integration – Unmanned Turret

ARDEC Partnership with Industry

- Summary: Collaborative effort to integrate an Unmanned Turret with ARDEC's XM813 on a Bradley Fighting Vehicle (BFV)
- Purpose: Evaluate 30mm weapon system performance in a relevant environment

Future System Integration Efforts

PHASIR Turret

- System level integration
  - XM813
  - Link-less Ammunition Handling System
  - ARDEC developed Fire Control
  - Enhanced Fire Control sensors
  - PHASIR Turret
  - Bradley Fighting Vehicle
- Evaluate ARDEC developed Scenario Based Fire Control System (SBFCS) and Graphical User Interface (GUI)

ARDEC Objective Turret

- ALAS-MC final demonstration of 30mm to 50mm growth path development
- Full system test and demonstration of primary armament requirements
- System integration of 50mm Enhanced Bushmaster III, SBFCS, link-less AHS, and Bradley Fighting Vehicle

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Planned Activities

- Obtain 35mm Bushmaster III and ammunition from the Dutch government to evaluate the Kinetic Energy Timed Fuze (KETF) performance
- Design and develop 50mm Enhanced Bushmaster III weapon and Ammunition Handling System
- Design and develop 50mm PABM and APFSDS munitions
- Refine fire control system and enhanced sensors
    - Downrange wind sensor and dynamic metrology sensors
    - Graphical user interface with programmed target selection
    - Enhanced laser rangefinder
- Improve burst point accuracy and PD reliability of fuze technology for 50mm PABM
- Validate and refine existing 30mm Error Budget model for use in 50mm system projections
- Develop turret to demonstrate growth from 30mm XM813 to 50mm Enhanced Bushmaster III
- Perform platform integration of turret for 50mm system level test and evaluation