



U.S. Army Research, Development and Engineering Command



TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

Lightweight Small Arms Technologies
"The Epilogue"

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ep-i-logue *noun* \ 'e -pə-, lɒg, -, ləg \

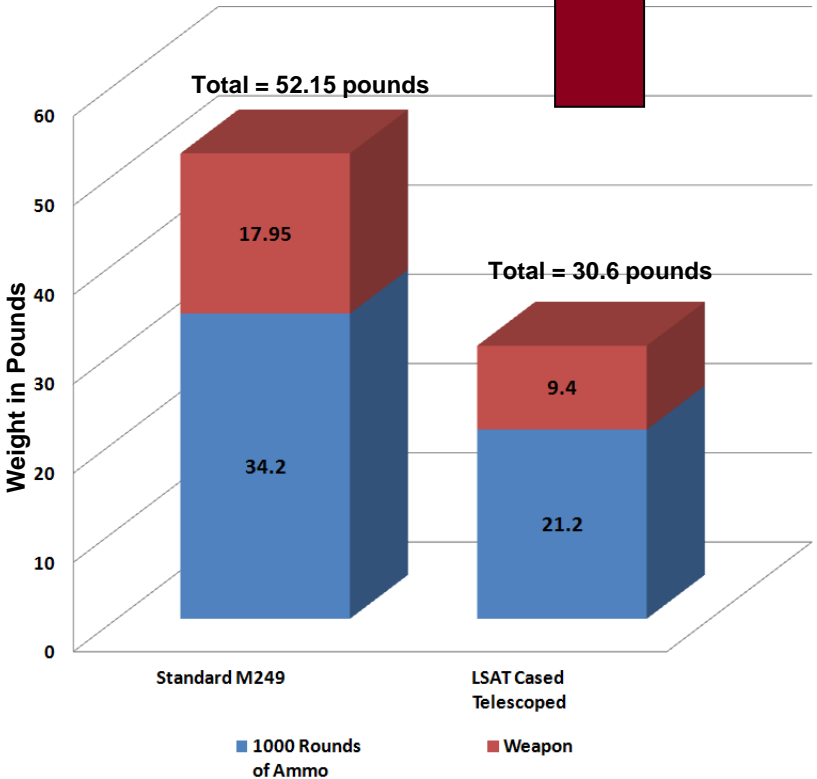
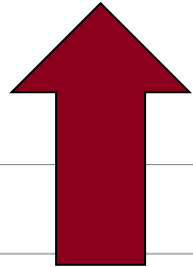
1 : a concluding section that rounds out the design of a literary work

2a : a speech often in verse addressed to the audience by an actor at the end of a play; *also* : the actor speaking such an epilogue

b : the final scene of a play that comments on or summarizes the main action



21.5 pounds of weight savings for the SAW Gunner



TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

A Revolutionary, Next Generation Weapon System

Cased Telescoped (CT) Light Machine Gun:

- LMG and CT Ammo TRL 7 testing ongoing
- 37% ammo weight reduction / 12% volume reduction
- Light Machine Gun provides 48% weight reduction over M249 SAW (8.5 pounds)
- Over 45,000 rounds of CT ammo fired to date
- Pilot production facility for ammunition is operational



**Cased Telescoped
Light Machine Gun
and Ammunition**



Cased Telescoped (CT) Carbine:

- Carbine action - TRL 5 completed in August 2011
- Approximately 250 rounds of CT ammo fired
- M4 size & weight, with 1" longer barrel
- With buttstock folded, weapon < 25" long
- Use of CT Ammo saves 2.5 lbs per combat load



Cased Telescoped Carbine Action



- CT Caliber Study
 - Determine weight/size savings potential for calibers larger than 5.56mm
 - Included 6.5mm, 7.62mm, .338 and .50 cal
 - Designed to have same muzzle velocity and approximate chamber pressure as baseline brass cartridge
 - Results: Weight savings ranged from 29.4% (.50 cal) to 42.8% (6.5mm); CT cartridges are between 20% and 30% shorter than their brass case counterparts
- M855A1 EPR/Cased Telescoped Integration
 - Preliminary analysis to determine if EPR projectile in the CT configuration is feasible
 - Tested small quantities of CT EPR, measure velocity, pressure and dispersion in test barrel (not weapon)
 - Goal was to achieve required muzzle velocity and dispersion
 - Results: Initial testing of 130 rounds achieved the goals
 - Follow up tests will be conducted in weapon, and at hot/cold temperatures

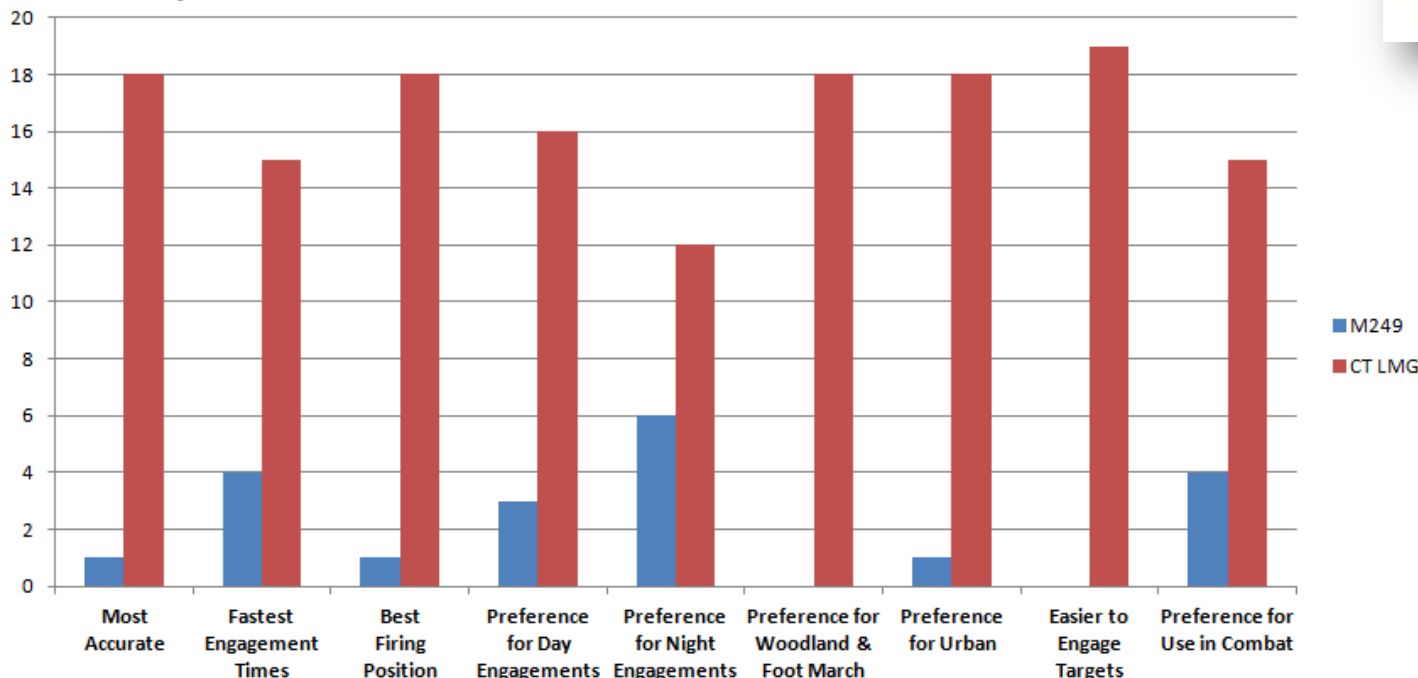


- CT LMG & Ammunition TRL 7 Assessment:
 - Tests based on qualification criteria (TOPs) for small arms & ammo
 - TOP 4-2-016 Ammunition, Small Arms
 - TOP 3-2-045 Small Arms – Hand, Shoulder Weapons, & Machineguns
 - Approximately 30,000 rounds of ammo tested
 - Assessing reliability, durability, environmental resilience, and safety
 - Testing nearly complete, remaining tests:
 - Weapon: Adverse conditions, high and low temperature
 - Ammunition: Thermal shock; Extreme temperature storage
 - Two tests require additional analysis and retest:
 - Weapon static dust
 - Weapon water spray
 - All others successfully passed TRL 7 criteria

- Conducted September 2011 at Ft. Benning by Maneuver Center Battle Lab, in coordination with ARL HRED
 - 19 soldiers (9 Infantry & 10 MP's), plus 2 from 3/75th Rangers in a separate event
 - 2+ weeks, 8 CT LMGs under test, approximately 23,000 rounds fired
 - Comparative analysis of CT LMG against baseline M249 SAW
 - User surveys done after every event, and After Action Report at close out

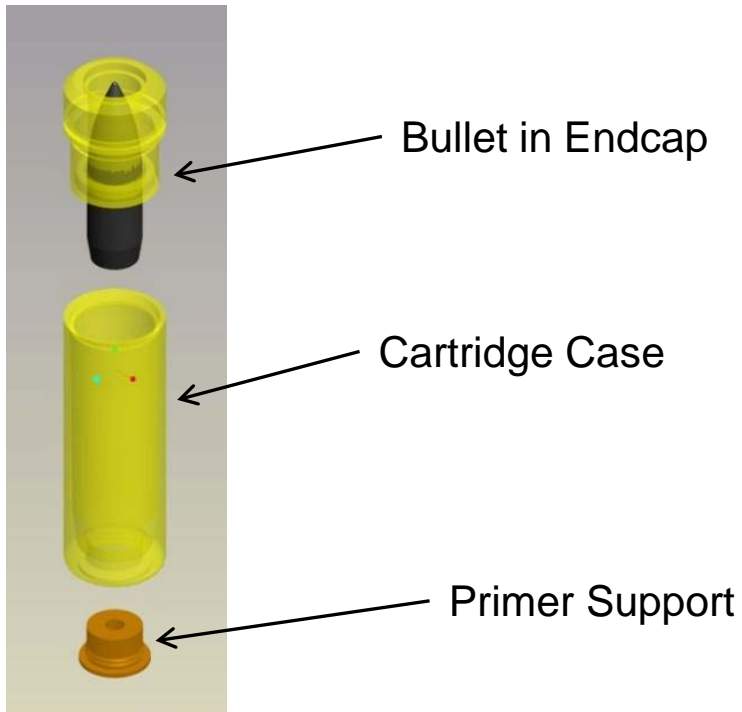


- Sample Findings:





- Ammunition Pilot Plant:
 - Facility established at MAST Technology in Warrensburg, MO
 - Output for pilot plant: 15,000 rounds per day
 - Produced 65,000 rounds to date, additional 22,000 underway
 - Provided baseline information for facilitization study

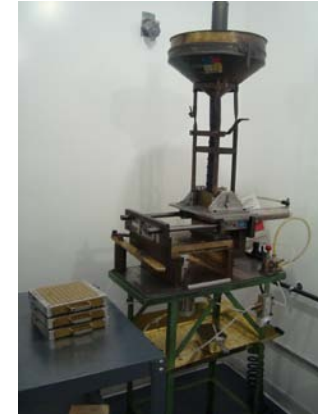




Loading Plates Readied



End Caps w/Bullets, Primed Case Positioned in Plates (Vibratory)



Propellant Drop (Volumetric)



Link and Pack



Cartridges Removed from Plates



Propellant Compaction & End Cap Installation



- Between May 2011 and May 2012:
 - Nine live fire demos
 - Numerous briefings, from Specialist E-4 to Command Sergeant Major E-9, AMC Commander and the Army Acquisition Executive





- US & Canada joint efforts:
 - Canadians purchased cased telescoped ammunition and a quantity of ammunition components from AAI
 - Canada developing an assault rifle that uses CT Ammo
 - US-CA drafting a cooperative development program to include:
 - Weapons and Ammunition
 - Fire Control
 - Grenade Launched Munitions
 - Lethality





- **LSAT Addresses Critical Capabilities:**
 - Individual Soldier load reduced by 21.5 pounds for Automatic Rifleman
 - Selective fire increases mission versatility
- **Increases Effectiveness:**
 - Increased accuracy
 - Ability to carry more ammunition
 - Reduced probability of cook-off
- **CT System Maturity Increasing:**
 - TRL 7 assessment nearly complete
 - Ammunition pilot production shows feasibility of manufacturing process
 - User assessments and demos provide hands on feedback



A U.S. Army soldier with the 101st Airborne Division returns fire with a M249 light machine gun during combat operations in the valley of Barawala Kalet, Kunar province, Afghanistan, on March 29, 2011.
DoD photo by PFC Cameron Boyd, U.S. Army.