



# M855A1 Enhanced Performance Round (EPR) Media Day

May 4, 2011  
Aberdeen Proving Ground, MD

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# Plan for today

- Provide information on the new M855A1 EPR
- Soldiers firing ammunition to demonstrate capabilities of the EPR
- Will provide you an opportunity to shoot the round for yourself
- Opportunity for hands on inspection of targets
- Clearly demonstrate the performance differences

Special Thanks to Army Research Laboratory, Army Research Development Engineering Center, Joint Munitions Command, Alliant Tech Systems





# M855 - Background

- **US Army Infantry Center questioned effectiveness of primary 5.56mm ball munition**
  - Basis was field reports from operations in Somalia, Afghanistan, and Iraq
  - Reports were mixed with some units claiming issues, others were not
- **After studying problem PM MAS/ARL/ARDEC Agreed**
  - M855 was well designed and is good general purpose round. However, some inconsistencies were found inherent in the design
  - There were physical explanations for field reports of performance issues
  - There were opportunities to improve performance of these munitions
  - Army developed improved methods and tools to evaluate performance of small arms systems
- **Research Showed:**
  - Physical explanations for field issues
  - Opportunities to improve performance
- **Goal of the program was to incorporate the science used in other ammunition such as Large Caliber into Small Caliber Ammunition**





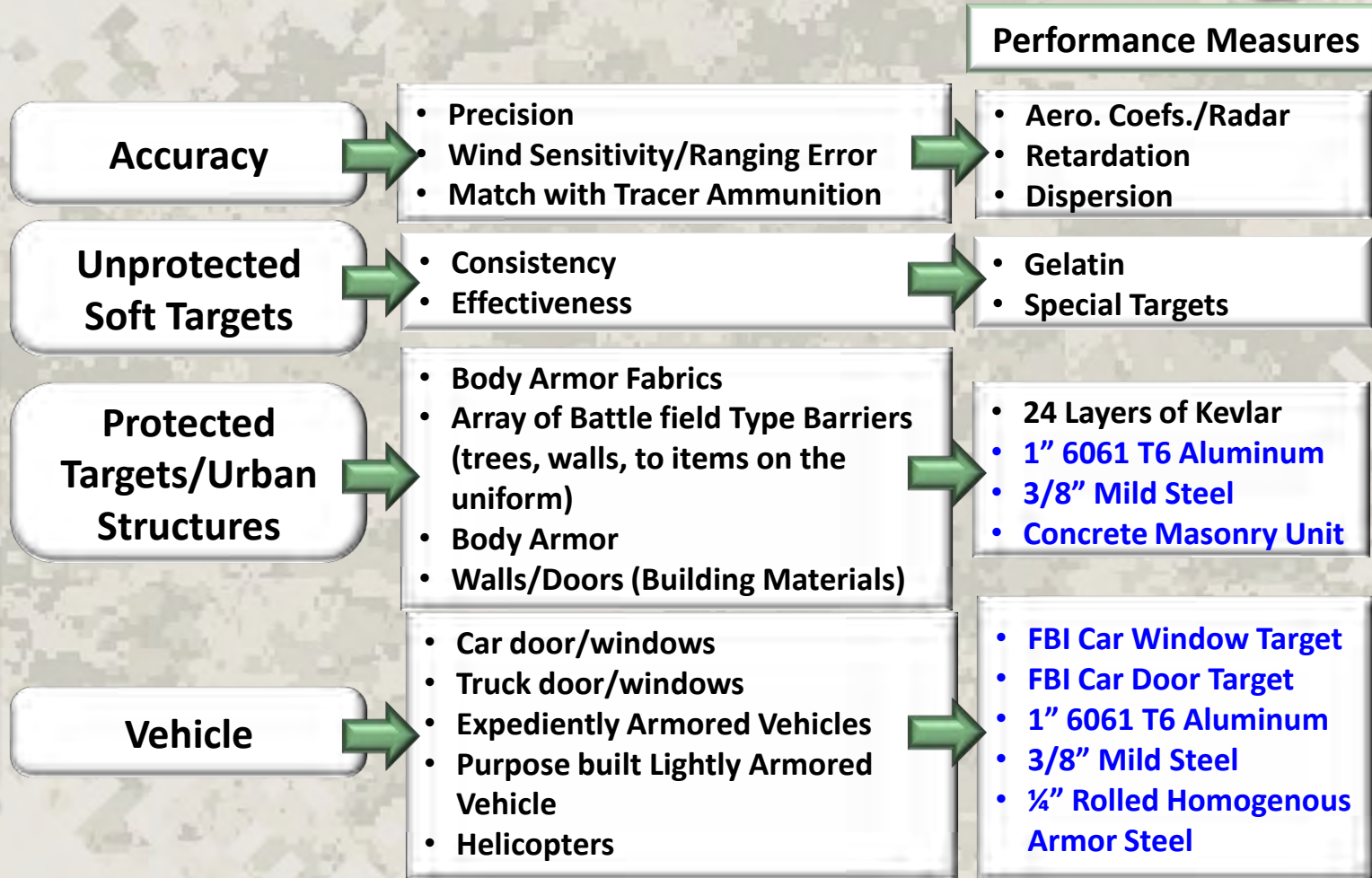
# M855A1 EPR Benefits

## Performance Benefits

- Dramatically improves hard target performance
- Provides improved, consistent effects against soft targets and CQB performance
- Significantly increases range of consistent effects against soft targets
- “Match” like accuracy – VERY ACCURATE
- No weight increase, improved propellant, reduced flash
- Trajectory Match but confirm zero
- Significant performance improvements in a 5.56mm
  - Superior than 7.62mm ball against soft targets
  - Hard target performance (steel) superior than 7.62mm ball
- Extremely effective against ALL target sets (a true, general purpose round)
- Lead free projectile



# Army Requirements for General Purpose Ammunition



**Must be Able to Engage a Wide Array of Targets**

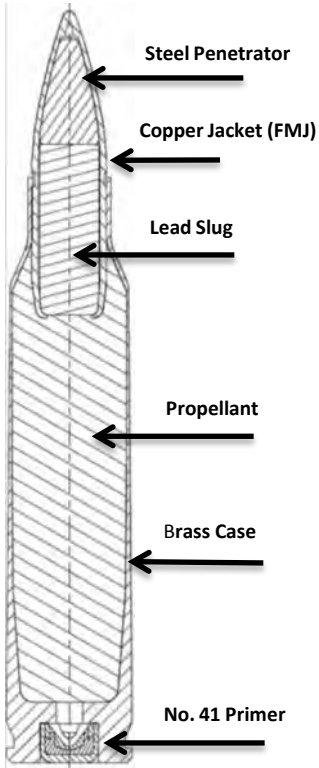




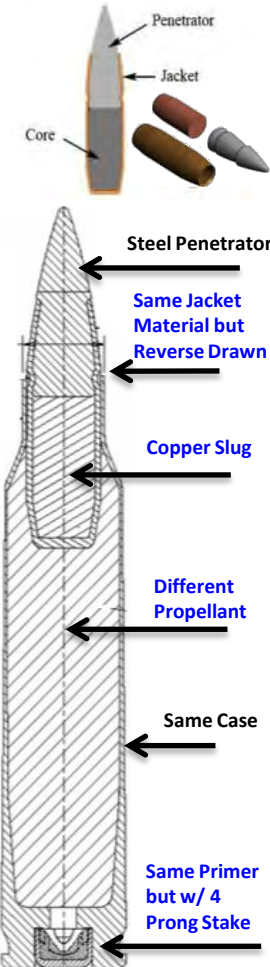
# Comparison of Changes



Characteristic	M855	EPR
Cartridge Length	2.248 in	No Change
Bullet Weight	62gr	No Change
Tip ID	Green	Bronze from Corrosion Protection
Slug	Lead	Copper
Cup/Jacket	Copper	No Change
Penetrator	Steel	Steel Arrow Head
Corrosion Resistance	None	Yes
Propellant	WC-844	SMP-842
Flash Suppressant	No	Yes
De-Coppering Agent	No	Yes
Muzzle Velocity (M16)	3113 ft/s	3150 ft/s
Muzzle Velocity (M4)	2916 ft/s	2970 ft/s
Chamber Pressure	M855 Spec	Increased
Penetration	3/8" Mild Steel @ 160m	3/8" Mild Steel @ 350m
Soft Target	Not Specified	Improved Consistency and Range



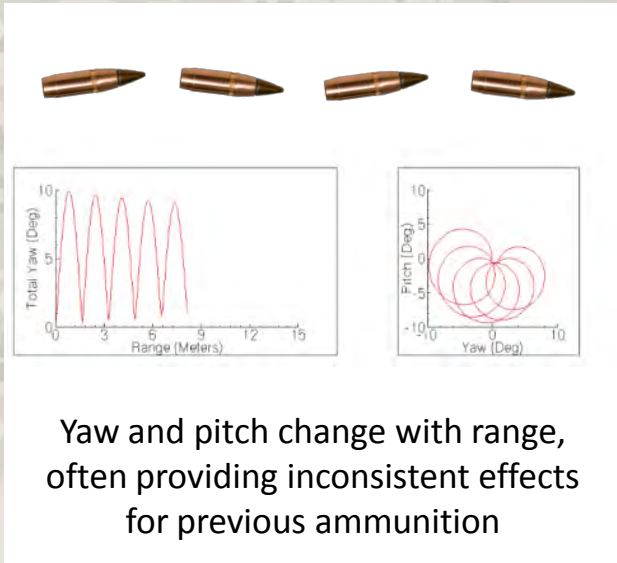
## M855A1



# Improved Consistent Effects



**M855A1 does NOT rely on yaw for its effects**



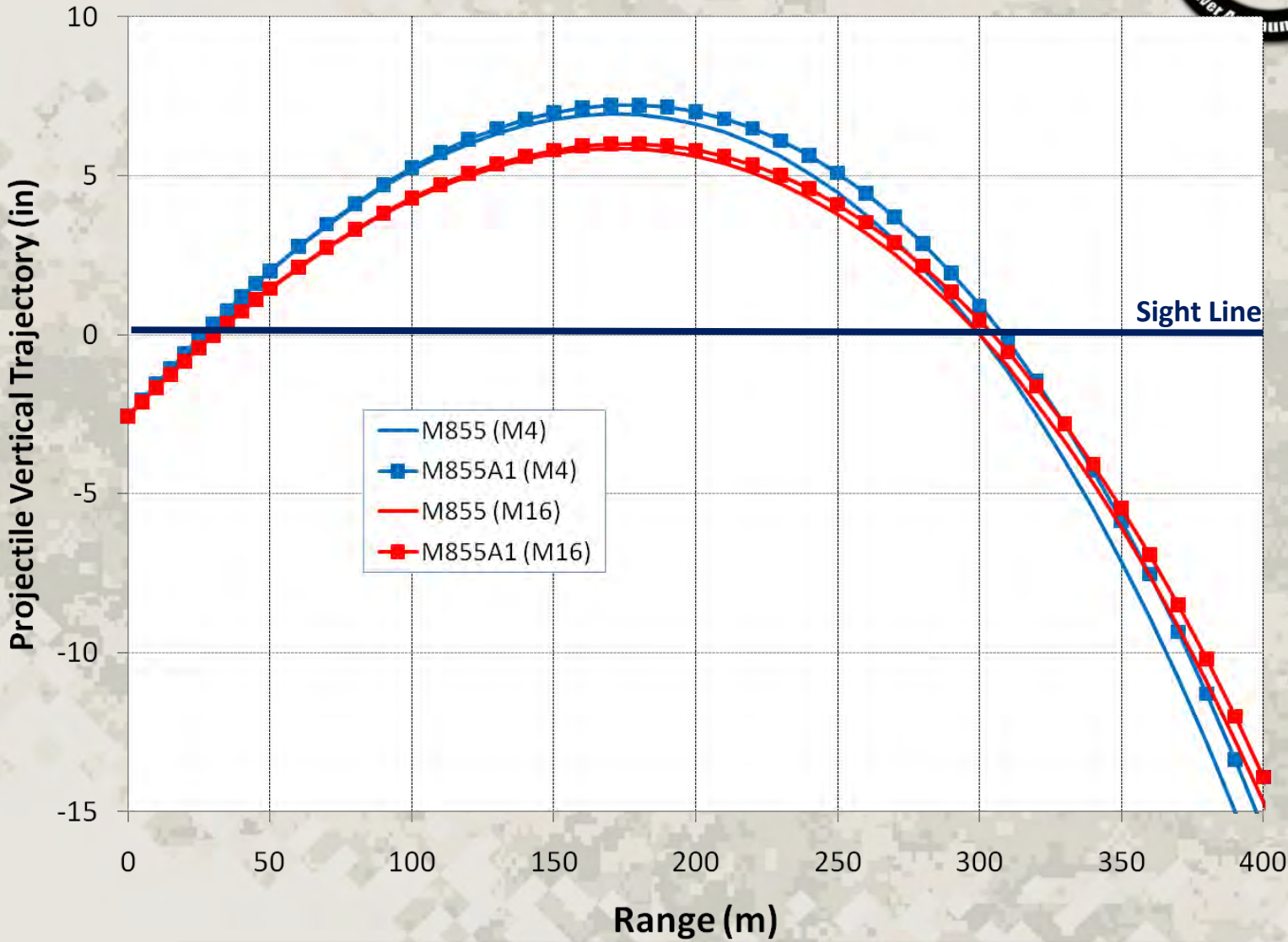
- M855A1 is NOT yaw dependant
- Regardless of angle of yaw or pitch, M855A1 provides same consistent performance against soft targets
- This performance remains consistent for the Soldier, whether firing in close quarters or long range engagements
- M855A1 greatly increases maximum range at which a Soldier armed with M4 or M16 can generate these consistent effects
- Army Research Lab live fire test results against soft targets showed that on average, the EPR surpassed the 7.62mm ball round

**M855A1 Provides Consistent Performance, Every Time!**





# M855 and M855A1 Trajectories



**Trajectory Match-No additional training required**

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# M855A1 Intermediate Barrier Performance



## Car Door

M855A1



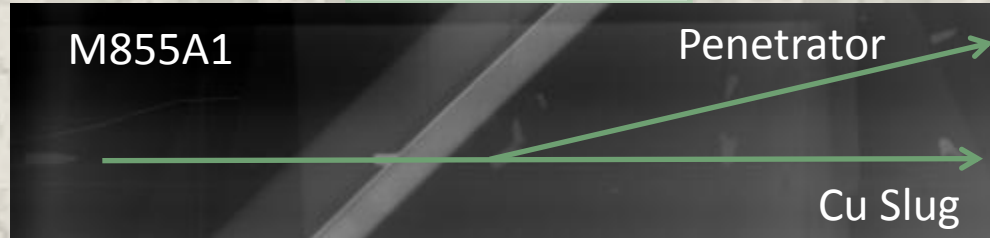
Provides Desired Effects Against Targets Behind Intermediate Barriers

## Windshield

M855A1

Penetrator

Cu Slug



M855A1 Hits Target Behind Windshields with Steel Penetrator and/or Copper Slug, Increasing Probability of a Hit

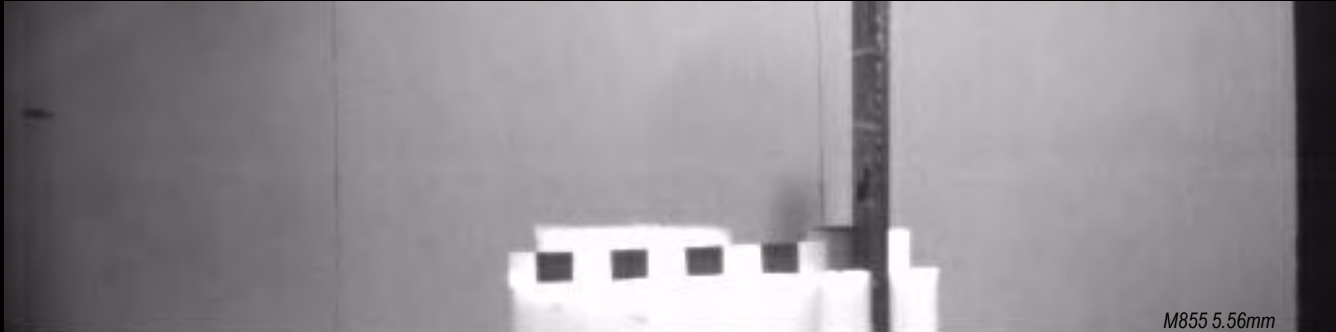




# M855A1 Enhanced Performance Round (EPR)



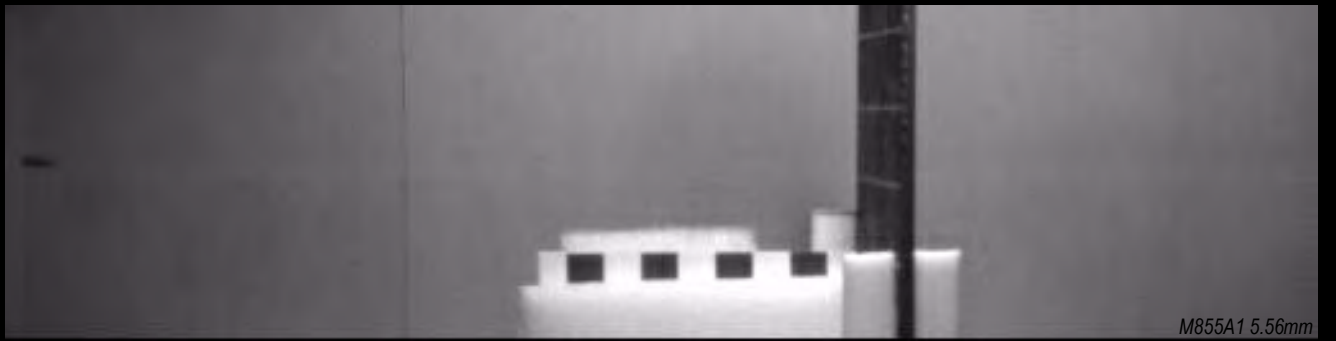
## Hard Target Penetration 3/8" Mild Steel Plate @ 300m



[Click picture to replay video](#)



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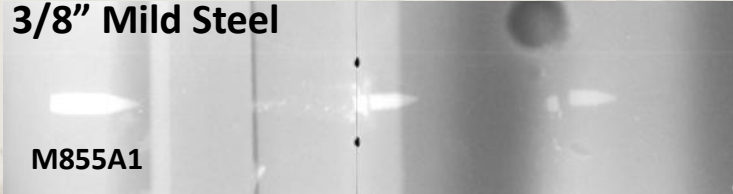


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# M855A1 Penetration



3/8" Mild Steel



M855A1



Shot with the M4



M80, 7.62mm  
can't penetrate  
at these ranges



Kevlar Fabric

M855A1

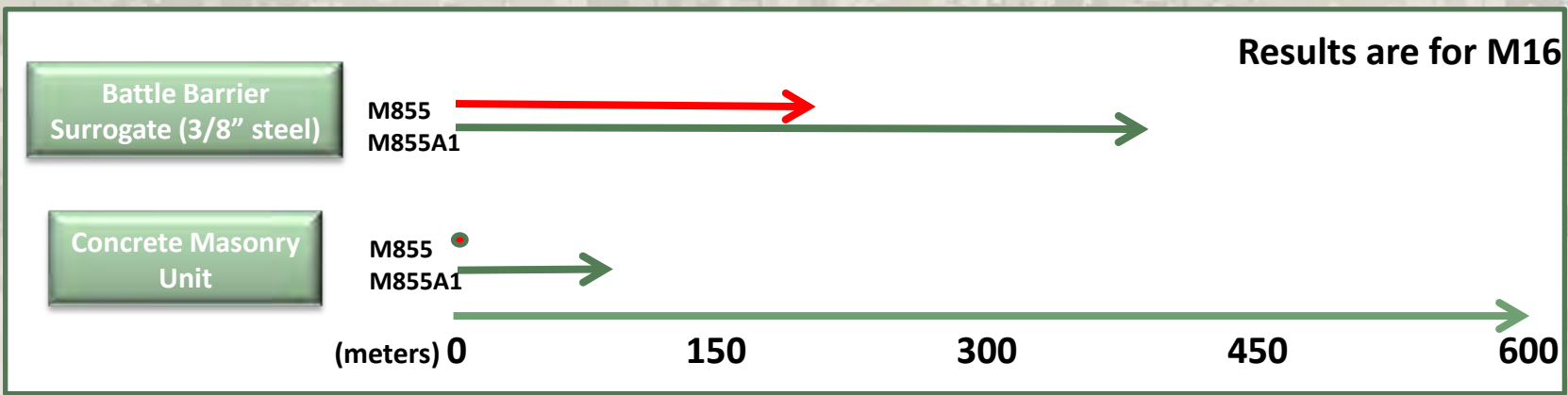
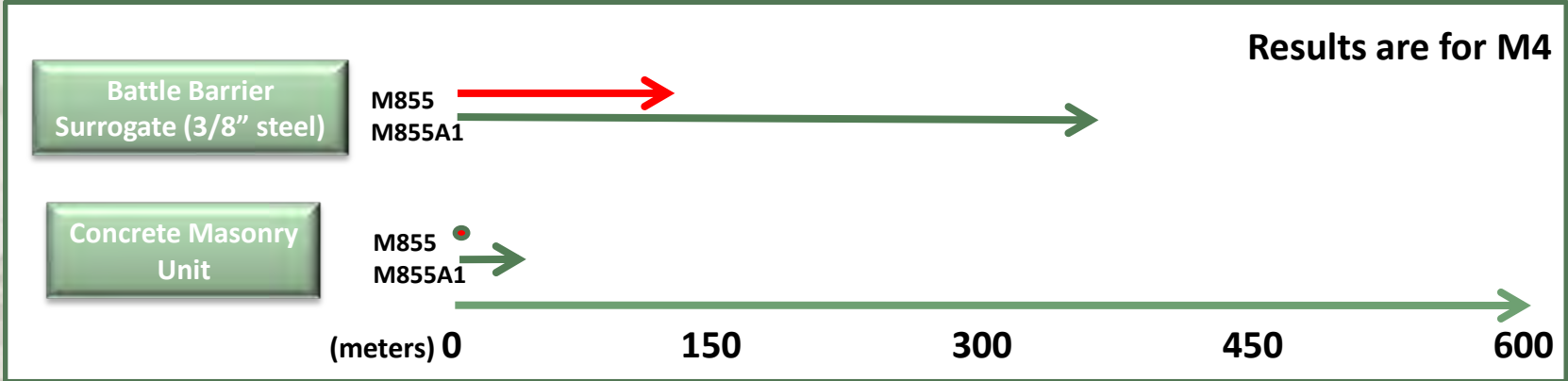
M855A1 was tested out to 1000m  
and was never stopped.

**M855A1 EPR WILL Penetrate some types of Body Armor  
Designed to Stop 7.62mm Ball**

**WILL NOT Penetrate Government Approved and Issued Body Armor**



# M855A1 EPR Hard Target Performance



**M855A1 Significantly Improves Hard Target Performance**



# M855A1 EPR Accuracy



White Dots are M855  
Black Dots are M855A1

SFC Dave Steinbach  
USAMU

SGT Joel Turner  
USAMU

While ammunition accuracy is important, Nothing replaces good marksmanship training. Shot Placement is still the most important factor!



# Comments from TF Bastogne (1st BCT, 101st ABN)



- **M855A1 Enhanced Performance Round (EPR)**
  - Many Soldiers were skeptical of new 5.56mm round before being issued. Soldiers read that this was Army's attempt to be more environmentally friendly and immediately dismissed the possibility that it would be more lethal than the much loathed "green tip" ammunition
  - After being issued the round, testing it on ranges and finally taking it into combat, not a single negative review has followed
  - Soldiers rave about it - Its "stopping power" is amazing say most Soldiers
  - I have spoken to TF Bastogne snipers that say they have killed enemy combatants at 700m with this new round
  - I have personally hit targets on known distance ranges at 600m
  - There is no question that this round has increased accuracy at greater distances and much improved through and through issues



*-AAR Comments attributed from CW2 Daigle (101<sup>st</sup> ABN)*



# Future Efforts

- M855A1 Enhanced Performance Round (EPR) Linked version will begin fielding to OEF in Aug 11
- Fielding goal for M856A1 End of CY11
- 7.62mm version to replace the M80 Ball (Using similar technology, goal end of CY12)





# Take-a-ways



- **M855A1 Enhanced Performance Round (EPR)**
  - Represents significant performance improvement in a 5.56mm bullet
    - Hard target performance (steel) superior than 7.62mm ball
    - Superior than 7.62mm ball against soft targets
  - A true general purpose round optimized to a wide array of targets
  - Significantly improved hard target performance at longer distances
  - Provides consistent performance against soft targets (Yaw sensitivity)
  - Significantly increases range of consistent effects against soft targets
  - Lead free projectile
  - Planned to replace M855 for the Army
  - Currently Fielding in Operation Enduring Freedom (OEF)



**Continuing to Provide Improved Capabilities for our Warfighters!**