



NDIA Munitions Executive Summit

LTC Masternak, Product Manager
Small Caliber Ammunition Systems

30 – 31 MAR 2016



Small Caliber RDT&E Overview



REQUIREMENTS:

- **Capability Development Document (CDD)**
 - 7.62mm Family of Ammunition (FoA) CDD Approved in 4QFY15
 - 5.56mm FoA CDD Approved 4QFY15
 - .50 Cal Munitions CDD in Staffing
 - Precision Munitions CDD in Staffing
- **Future Capabilities Highlighted in 5.56mm, 7.62mm, and .50 Cal CDDs**
 - Increase Survivability
 - Reduce Warfighter Load
 - Provide Greater Training Flexibility
- **Future Capabilities Highlighted in Precision Munition CDD is**
 - Increased Lethality with Increased Accuracy
 - Reduced Vulnerability

PM-MAS FUNDING:

- **RDT&E Funding Currently Appropriated for Programs in Support of 7.62mm FoA CDD**
- **Additional Funding forecasted in support of 5.56mm FOA CDD, .50 Cal Munition CDD and Precision Munitions CDD in the out years**

OTHER FUNDING:

- **Additional funding available through ARDEC, ARL, and JSSAP Tech Base Efforts**

Increased RDT&E Funding to Support Warfighter Needs!



7.62mm One Way Luminescence (OWL)



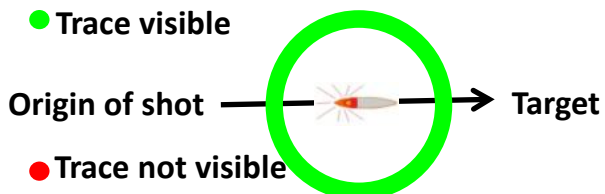
Top Level Strategy:

- Execute DOTC & US GOV Prototype Development through FY17
 - Conduct concept down select based on TRL6
- Full & Open Single Contractor award for EMD FY18

Requirements:

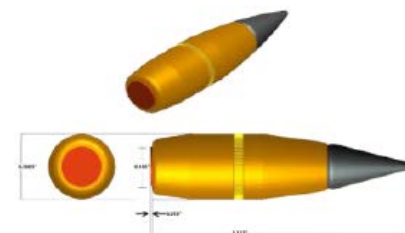
- 7.62mm Family of Ammunition (FoA) CDD, dated 29 JUL 15

Current M62Trace visible

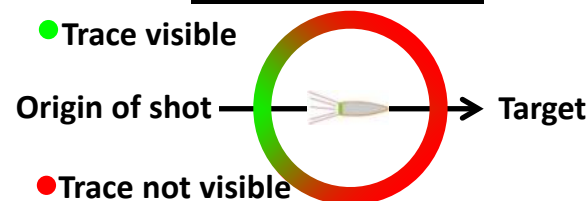


Technology Challenges:

- Trace visibility in all sources of ambient light
- Manufacturability
- Limited visibility angle
- EPR like effects



Desired Trace visible



	FY16				FY17				FY18				FY19				FY20				FY21				FY22			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
MILESTONES/ PHASES	Market Survey				MDD				MSB												MSC							
CONTRACTS					RFP				Contract Award				Phase I				Phase 2				LRIP Option							
ENGINEERING/ TECHNICAL REVIEWS	Govt and Industry Concept Development								TRA/ TRL 6 Tech. Downselect				SRR				PDR				CDR							
TEST	DT				TIWG				BST				DVT				PPQT UA				PQT LFTE							
DELIVERIES (QTYS)									200				5K				50K				500K				5M			

Pre-Decisional



7.62mm Lightweight Small Caliber Ammunition (LSCA) Program



Top Level Strategy:

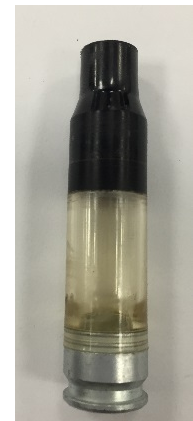
- Execute DOTC to demonstrate TRL 6 Polymer Case Technology in M80 to achieve 25-35% reduction in cartridge weight
- Qualify M80A1 and M62A1 in lightweight case

Requirements:

- 7.62mm Family of Ammunition (FoA) CDD, dated 29 JUL 15
- Meet or exceed M80A1/M62A1 performance
- Reduce weight by 10%(T) 50% (O) over existing brass cased cartridges

Technology Challenges:

- Low Temperature Failures/Case Separation
- Weapon/Ammo Interface
- Proprietary Design and Manufacturing Process



7.62mm M80 Hybrid Metal/Polymer PCP Ammo

	FY16				FY17				FY18				FY19				FY20				FY21				FY22			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
MILESTONES/ PHASES			▲ Industry Day					▲ SRR			▲ PDR				▲ CDR								▲ Fielding Decision					
CONTRACTS			▲ Contract Mod		▲ Contract Award			▲ T.O. Award											▲ ECP		▲ Award							
ENGINEERING/ TECHNICAL REVIEWS	DOTC #1					Phase I		Procurement Lead Time			Phase II				Phase III								▲ LRIP					
TEST			TRL 6 Demo								PPQT								PQT									
DELIVERIES (QTYS)			▲ 35K								▲ 50K								▲ 500K				▲ 750K					

Pre-Decisional



Lead Free (Green) Primers



Top Level Strategy:

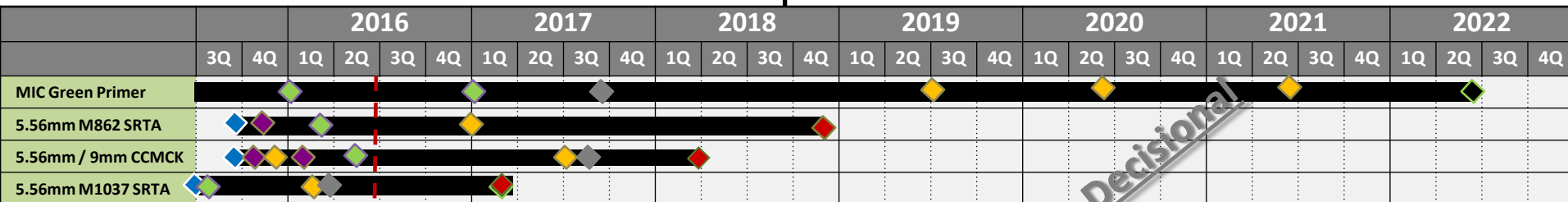
- Replace Lead in without adding other harmful components
 - Training Unique Rounds – USG conducting evaluations of commercial lead free primers
 - Combat Rounds – Multi-Path Approach
 - Developing Metastable Interstitial Composite (MIC) formulation for all calibers. Facilitize LCAAP and providing industry automation/mix TDP
 - Alternatively continue to evaluate commercial green primer capabilities for risk reduction and potential cost savings

Requirements:

- Presidential Executive Order to reduce quantity of toxic and hazardous chemicals and materials acquired

Technology Challenges

- Maintaining performance
 - Maintaining or improving pressures and velocities
 - Cold temperature performance
- Long Term Storage
- Automation (Combat ammunition)



Pre-Decisional



M1037 Short Range Training Ammunition (SRTA)

- Evaluated 5.56mm SRTA cartridges with commercial green primers
- Selected and qualifying green 5.56mm SRTA M1037 cartridge
 - Ongoing DVT and EMQB



M1042/M1071/M1041 Close Combat Mission Capability Kit (CCMCK)

- SOCOM evaluating and qualifying lead free CCMCK ammunition
- Limited User Demo to conduct air sampling/toxic fume evaluation
- PM MAS providing support to SOCOM for Army qualification requirements



Metastable Intermolecular Composite (MIC)

- Develop automated primer mfg. process from mixing to packaging
- Evaluating formulation in primary combat ammunition
- Characterizing primer outputs



Reduced Range Training Ammunition



Top Level Strategy:

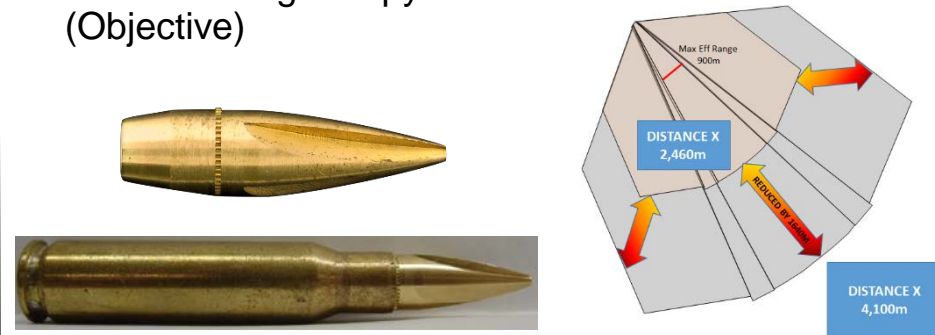
- Develop and qualify training ammunition with a trajectory match to combat ammunition with significantly shorter Surface Danger Zones (SDZ) for use on training ranges

Requirements:

- 7.62mm Family of Ammunition (FoA) CDD, 29 JUL 15
- Terminal Performance: Less Damage to range structures than M80A1

Technology Challenges

- Performance goals (max range/effective range) may be difficult to attain simultaneously with geometric modifications (fins, etc.) to projectiles
- A non-burning/non-pyrotechnic tracer is desired (Objective)



	FY16				FY17				FY18				FY19				FY20				FY21				FY22			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
7.62mm Milestones					▲ MDD								▲ MS B				▲ PDR				▲ CDR	▲ MS C						
CONTRACTS					Prototype Contract								System Development Contract								LRIP & FRP							
Testing			▲		Prototype Testing and Evaluation																							
Caliber .50 Milestones									▲ MDD								▲ MS B				▲ PDR				▲ CDR	▲ MS C		
CONTRACTS									Prototype Contract								System Development Contract				LRIP & FRP							
Testing							▲		Prototype Testing and Evaluation																			

Pre-Decisional