Project Manager, Maneuver Ammunition Systems

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12-15 MAY 2014

Where do we see Funding… Small Caliber

Present: Small Caliber

- High volume products in relatively good position
  - Enjoying benefits of high commercial demand
- Boutique Items – CCMCK, SRTA etc. are more dependent on other service buys – Risk Reduction strategy: Working with vendors and customers to keep buys steady

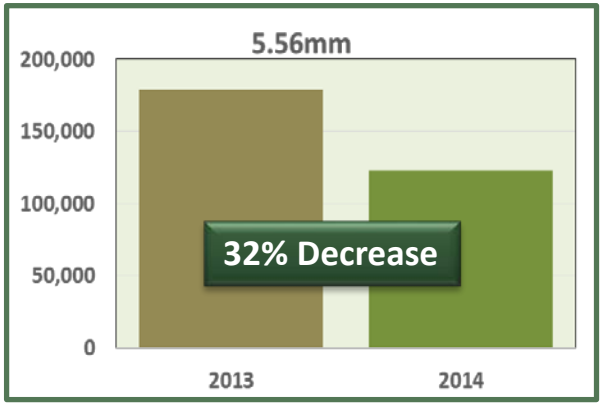
Future: Small Caliber

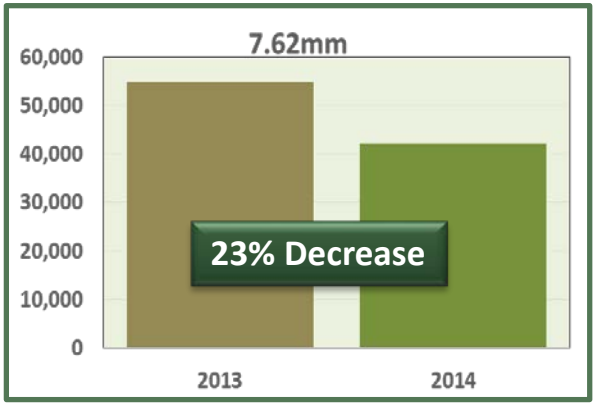
- Steady then decreasing by 10-20% by 2020
- New requirements under development:

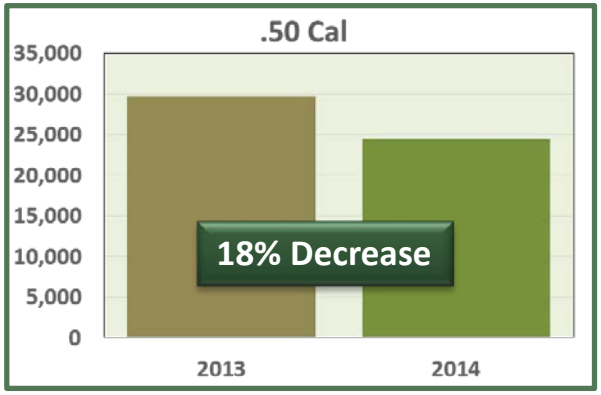
Better Tracers	*Lightweight Ammo*
Improved Sniper	*Reduce SDZ*

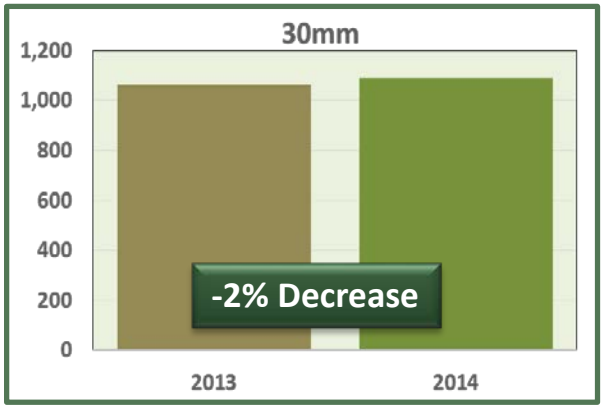
Direct Fire

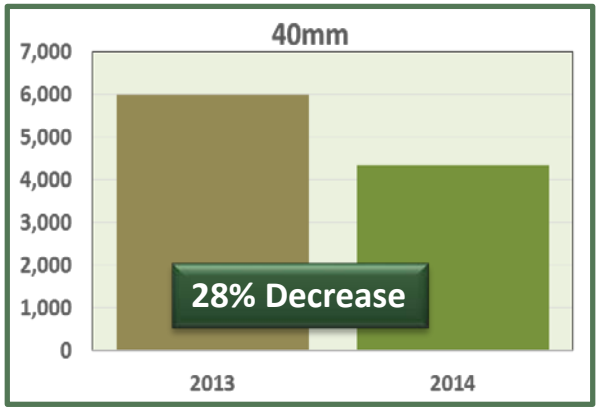
How Training Expectations have changed from last year to this year

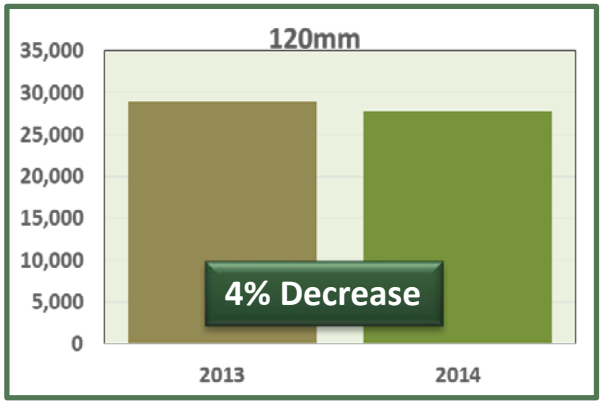












Small Caliber / 40mm shrinking in training
30mm/120mm holding steady

Small Caliber Ammunition
"Investing in the Future"

Small Caliber Ammunition

5.56mm, 7.62mm, .50 CAL., Pistol, Shotshell, .22 Long Rifle, DDI, CCMCK, GREM

BLUF

- **Enhanced capabilities**
  - **Close capability gaps**
  - **Achieve overmatch**
- **Maneuver Center of Excellence is developing/staffing Family of Ammunition Capability Development Documents**
- **Technology development & demonstration underway**

Future of Small Caliber Ammunition taking shape NOW!

Small Caliber Ammo R&D Projects

5.56MM, 7.62MM, .50 CAL, SNIPER, HANDGUN & FUTURE SYSTEMS

5.56MM

FoA CDD - FY15

- One Way Luminescence (OWL)
- Lightweight Small Caliber Ammunition (LSCA)
- Reduced Range Training Ammunition (RRTA)

7.62MM

FoA CDD FY14

- OWL
- LSCA
- RRTA

.50 Cal.

FoA CDD - FY16

- OWL
- LSCA
- All Purpose Tactical Ctg.*
- RRTA

Precision (PSR)

FoA CDD - FY16

- PSR: Improved Performance Round (IPR), Anti-Materiel & Subsonic
- 7.62mm: IPR & Subsonic
- .300 WM: IPR & Subsonic

Handgun (MHS)

FoA CDD - FY17

- Improved Performance Round

Future Systems Ammo

- Small Arms Ammunition Configuration Study
- Next Generation Squad Weapon
- Lightweight Dismounted Automatic Machinegun
- Externally Powered Weapon

*= Will include OWL and LSCA

Influx of Many New R&D Programs Expected in Future

Small Caliber Ammunition Roadmap

	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22
7.62mm	M62 Tracer				M62A1 Tracer					
	One Way Luminescence (OWL) Tracer				MS B			MS C	Ball w/OWL	
	M80 Ball				M80A1 Ball					
		Lightweight Cartridge Case								
					MS B	Reduced Range Training		MS C	Ammunition (RRTA)	
5.56mm	M1037 Short Range Training Ammunition (SRTA) & M1042/M1071 Close Combat Marking (CCMCK)									
	M856A1 Tracer									
	MK301 Dim Trace				MS B	OWL Tracer		MS C	Ball w/OWL	
	M855A1 Ball									
					MS B	RRTA		MS C		
.50 CAL.	M33 Ball & M17 Trace									
					MS B	All-Purpose Tactical Cartridge (APTC)			MS C	
					MS B	RRTA			MS C	

Production | R&D/Potential Future Reqt.

RELIABLE - PRECISE - LETHAL

Small Caliber Ammunition Roadmap

	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22
Sniper		7.62mm M118 Long Range Ammo								
		.300 WM MK248 Ammo								
				COTS Ball & Anti-Materiel (AM) Ammo for PSR						
					PSR IPR Capability					
						PSR Advanced Anti-Materiel Capability				
							PSR Subsonic Capability			
Pistol		9mm M882 Ball & 9mm JHP								
		.38 SPL & .45 ACP								
		9mm CCMCK Ammunition (will also be used for MHS)								
				MHS COTS Ball, JHP, Dummy & HPT Ammunition						
						MHS IPR, Tracer & Specialized Training Ammunition				

PSR = Precision Sniper Rifle
WM = Winchester Magnum
LM = Lapua Magnum
COTS = Commercial Off The Shelf
IPR = Improved Performance Round
AM = Anti-Materiel

JHP = Jacketed Hollow Point
SPL = Special
ACP = Automatic Colt Pistol
CCMCK = Close Combat Mission Capability Kit

MHS = Modular Handgun System
COTS = Commercial Off The Shelf
HPT = High Pressure Test
IPR = Improved Performance Round

Production | R&D/Potential Future Reqt.

One Way Luminescence (OWL)

Program Description

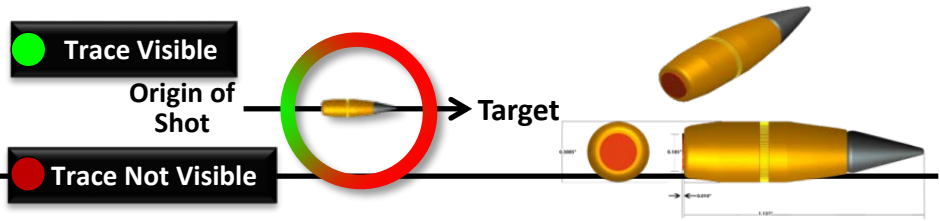
- **Objectives:**
  - Develop and demonstrate non-pyrotechnic tracer technology that eliminates shortcomings of current tracers
  - Full Day/Night trace capability
- **Strategy: Competitive Prototyping**
  - Industry tracer concepts via Defense Ordnance Technology Consortium (DOTC) effort
  - USG concept development

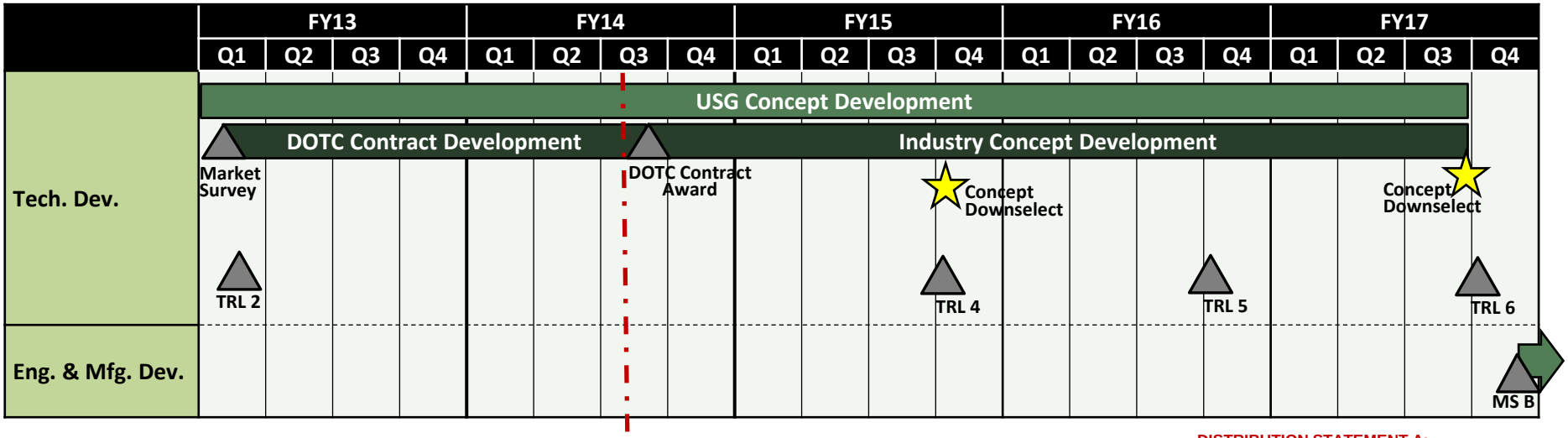
Status

- Development and testing of Government concepts ongoing
- Preparing to award two DOTC contracts for industry concepts

Challenges

- Achieving visibility out to required ranges under all light (bright sunshine) & background (snow) conditions
- Must also be visible through vision devices





Lightweight Small Caliber Ammunition (LSCA)

Program Description

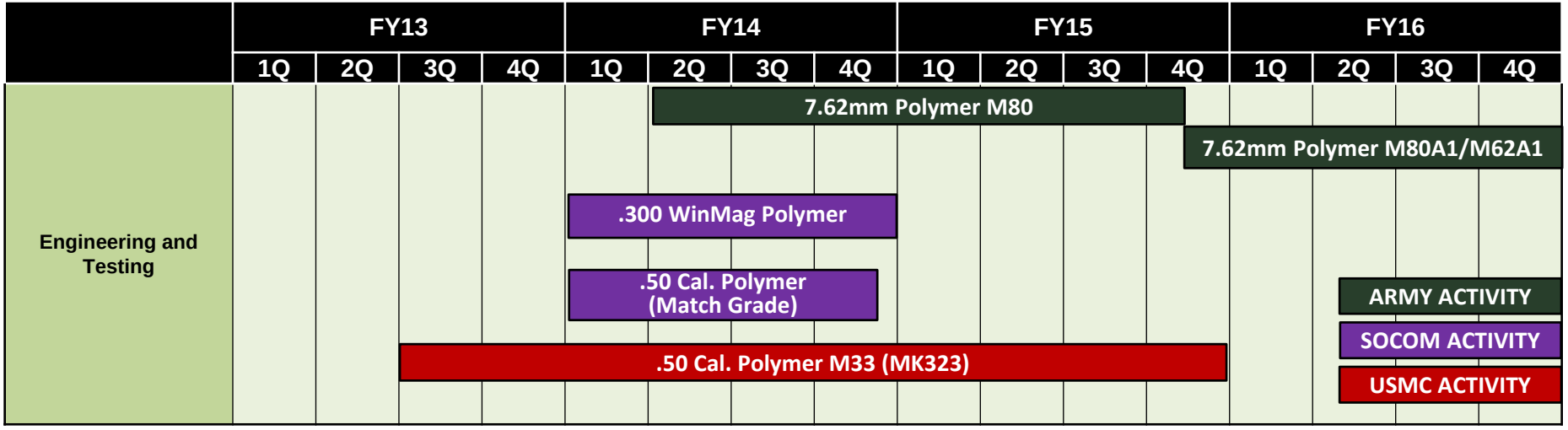
- **Objectives:**
  - Demonstrate and qualify lightweight cartridge case technology
  - Draft Requirement (Cartridge Weight Savings): 10% (Threshold), 50% (Objective)
- **Strategy: Joint Service Cooperative**
  - Army DOTC effort to demonstrate 7.62mm polymer cased ammunition
  - Monitor other service efforts for possible adoption
  - Joint Service IPT synchronizes case efforts

Status

- Army awarded DOTC contract for development & demonstration of 7.62mm polymer cased M80
- USMC continuing toward qualification of .50 cal. MK323 polymer cased cartridge
- USSOCOM .300 WinMag and .50 Cal. polymer cased ammunition efforts ongoing

Challenges

- Achieving full functionality in multiple weapons
- Cost comparable to (preferably less than) brass cases



Reduced Range Training Ammunition (RRTA)

Program Description

- **Objectives:**
  - Develop and qualify training ammunition that has trajectory match to combat ammunition for qualification ranges with significantly shorter surface danger zones (SDZ)
  - Provide effective solution for 360° collective training
- **Strategy:**
  - Envision competitive prototyping of Government and Industry concepts

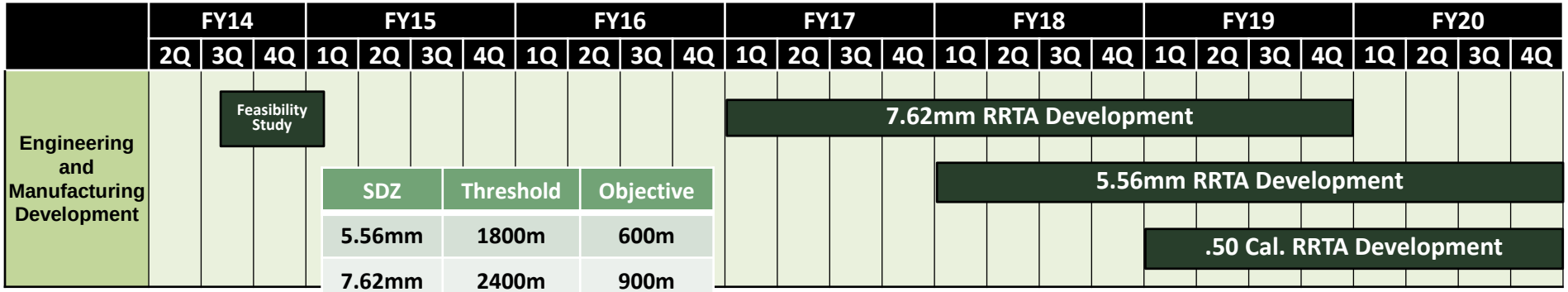
Status

- Preparing to initiate Feasibility Study
  - Develop Initial concept designs
  - Perform initial performance verification simulations

Challenges

- Performance goals (max range/effective range) may be difficult to attain simultaneously with geometric modifications (fins, etc.) to projectiles
- May require non-conventional technologies to achieve goals

Notional Schedule



SDZ	Threshold	Objective
5.56mm	1800m	600m
7.62mm	2400m	900m
.50 Cal	3600m	2400m

.50 Caliber All-Purpose Tactical Cartridge (APTC)

Program Description

- **Objectives:**
  - Develop a multi-purpose tactical cartridge capable of defeating the full spectrum of target sets typically engaged with .50 cal. machineguns
  - Replace all current .50 cal. tactical ammunition
- **Strategy: Competitive Prototyping**
  - Compete Government and Industry concepts

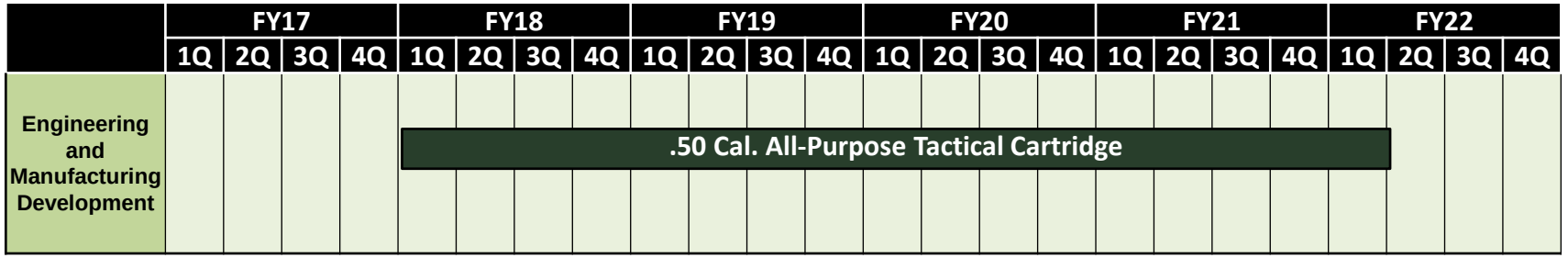
Status

- Awaiting approval of .50 Cal. Family of Ammunition Capability Development Document to proceed with program of record

Challenges

- Achieving robust capability against a broad spectrum of target types
- Cost

Notional Schedule



Future Ammunition for Precision Sniper Rifle (PSR)

Program Description

- **Objectives:**
  - Develop advanced capability ammunition to replace cartridges fielded with PSR
    - Improved Performance Rounds
    - Advanced Anti-Materiel Cartridge
  - Introduce additional capability - Subsonic Ammunition
- **Strategy: Competitive Prototyping**
  - Compete Government and Industry concepts

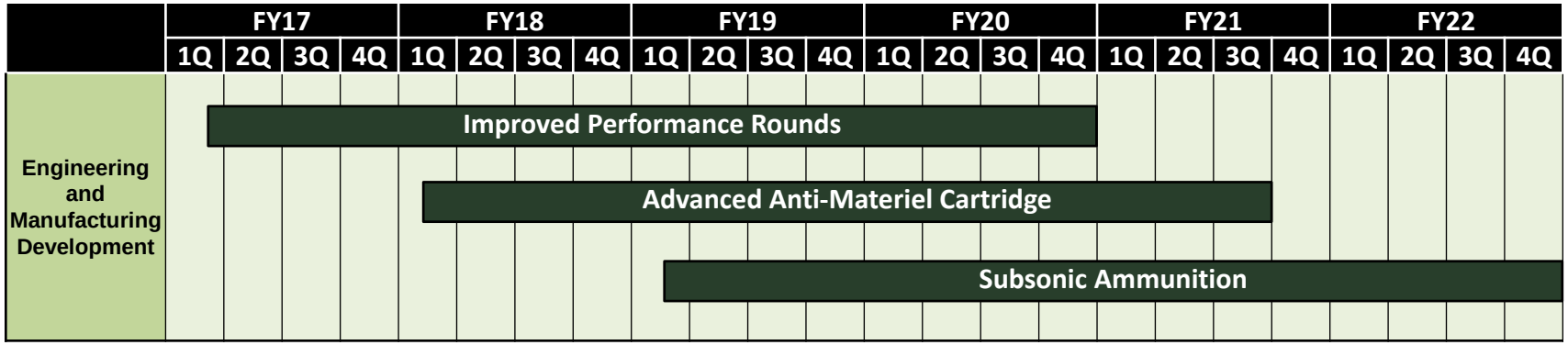
Status

- Government concepts being tested
- Awaiting approval of Precision Family of Ammunition Capability Development Document to proceed with programs of record

Challenges

- Achieving anti-materiel performance comparable or better than current .50 Cal. capability in a smaller caliber
- Improving both precision and terminal effects at extended ranges

Notional Schedule



Ammunition for Next Generation Small Arms

- **Projected Timeframe: Post FY25**
- **Potential Weapon Systems**
  - **Next Generation Squad Weapons**
    - **Automatic Rifle**
    - **Carbine**
    - **Squad Designated Marksman's Weapon**
  - **Lightweight Dismounted Automatic Machinegun**
  - **Externally Powered Weapon**
- **Guided sniper ammunition**
- **Calibers/Configuration: TBD**

Non Standard Ammunition (NSA)

Non-Standard Ammunition (NSA) Mission

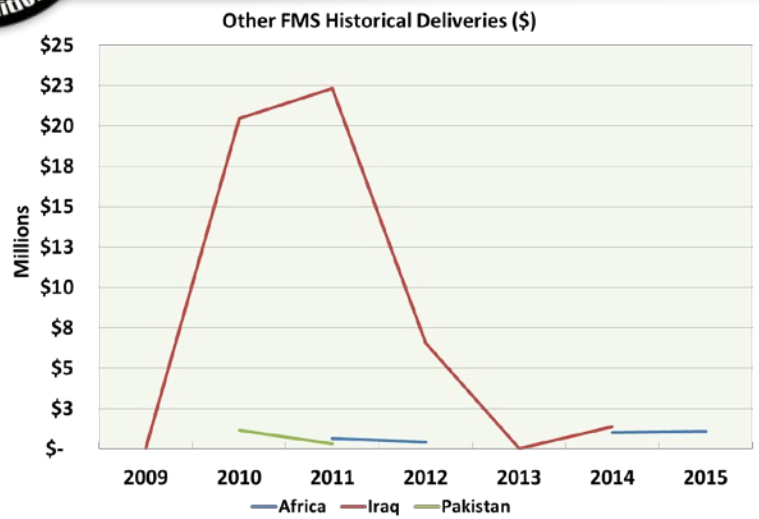
Definition – Non-Standard Ammunition

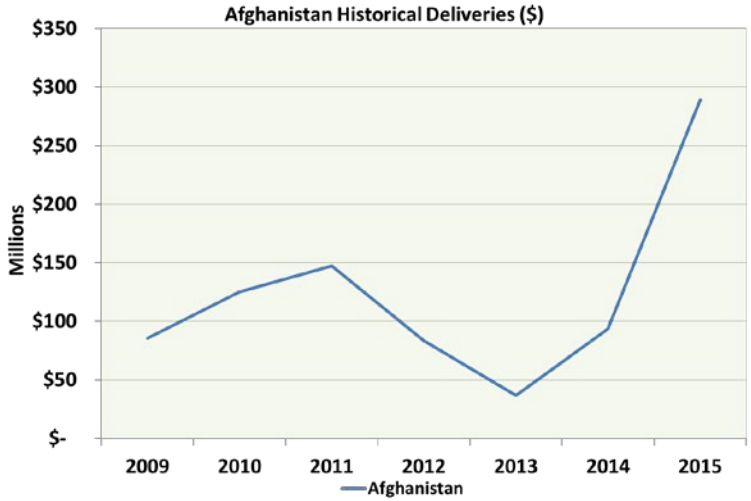
Not in US Army supply base

Not type classified or safety certified for use by US Army

Not produced using technical data packages managed by US Army

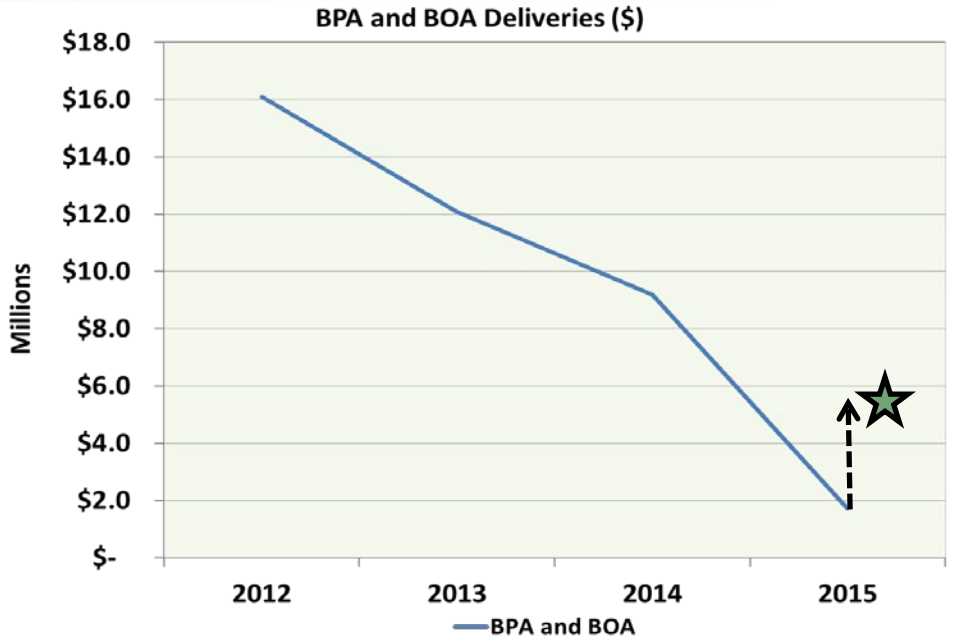
PD NSA FMS Dollars and FMS Quantity History





Qty	2009	2010	2011	2012	2013	2014	2015
Aircraft Munitions	13,299	7,350	92,903		19,123	60,660	39,606
Artillery		7,000	8,793	5,474		28,063	55,870
Launched and Hand Grenades	463,335	430,516	303,782	74,390	70,000	50,000	350,000
Medium		10,000	565,000	3,737,174	374,336		3,240
Mortars	200	240,606	227,173	113,280	96,924	97,129	269,990
Other	293						
Rocket Propelled & Recoiless Rifles	281,727	123,600	227,465	198,618	5,000	457,148	370,748
Small	94,687,958	187,571,067	219,607,471	49,633,532	5,383,061	4,170,401	262,290,711
Tank		250					
Grand Total	95,446,812	188,390,389	221,032,587	53,762,468	5,948,444	4,863,401	263,380,165

PD NSA Other Customer Dollars and Quantity History



★ New RFP Just Issued

Qty	2012	2013	2014	2015
Aircraft Munitions		304		
Artillery		20	50	
Launched and Hand Grenades			250	
Medium		15,691	896	
Mortars	6,525	2,580	2,550	1,992
Other			5	
Rocket Propelled & Recoiless Rifles		6,092	380	220
Small	10,765,554	1,785,067	5,874,300	480,000
Tank	2,143	1,949	9	
Grand Total	10,774,222	1,811,703	5,878,440	482,212

Summary

- **Summary**
  - **Training projections for the future go down or hold steady**
  - **A lot of potential new R&D programs in the next few years**
  - **Non-Standard demand is increasing in the near term**
  - **More R&D efforts than we've seen in the past 30 years**

- **Points to Ponder**
  - **Strategic positioning of the small caliber base for the long term – How do we keep the multiple source base?**
  - **How will these R&D programs affect the IB?**