

**GENERAL DYNAMICS**  
Ordnance and Tactical Systems



# Long Range Advanced Cannon Artillery Ammunition

25 Mar 2003



# Agenda

- **Advanced Cannon Artillery Ammunition Program (ACA<sup>2</sup>P)**
- **ACA<sup>2</sup>P Technologies for Full Spectrum Operations**



# PM CAS Artillery Ammunition Strategy

- **Field Advanced Cannon Artillery Ammunition for the Objective Force:**
  - **Full spectrum effects**
  - **30 Km Range (threshold)**
  - **Ballistic Similitude**
  - **Improved Accuracy**
  - **Reduced logistics burden**
  - **Affordable**

# Advanced Cannon Artillery Ammunition Program (ACA<sup>2</sup>P)



- US Army program to . . . .
  - Achieve Army Artillery Transformation requirements
  - Field a complete “family” of non-developmental (NDI) conventional 105mm & 155mm artillery ammunition
  - Recapitalize older stocks and improve inventory
  - Reinvigorate U.S. ammo production base
  - Alleviate strain on stockpile readiness



**105 & 155mm Denel**

*Denel & GD-OTS  
Teamed in N. America*

# Denel 155 Ammunition Suite



## UNASSISTED



M2000  
High Explosive



M2001  
DPICM



M2002  
Smoke



M2003  
Illumination



M2004  
Red Phosphorus



M1999  
Practice

## ASSISTED WITH BASE BLEED



M2000  
High Explosive



M2001  
DPICM



M2002  
Smoke



M2003  
Illumination



M2004  
Red Phosphorus



M1999  
Practice

## EXTENDED RANGE HE



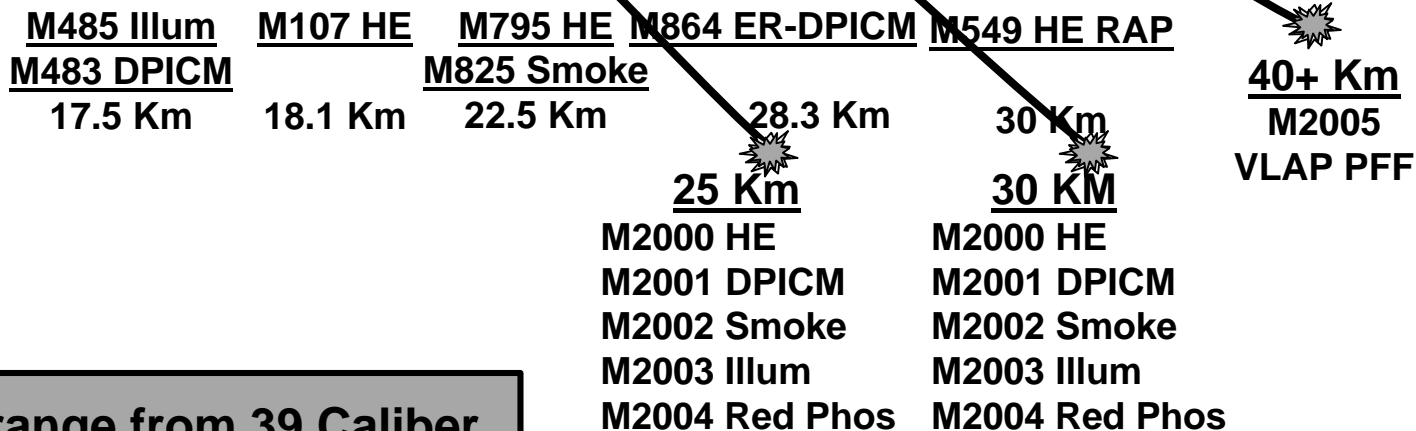
M2005  
VLAP

P 5/02 7238

# Increased Operational Range (U.S. 155mm compared with GD/Denel)



**NLOS-C**



**33% increase in range from 39 Caliber**

*BT = Boat Tail*  
*BB = Base Bleed*

# Increased Operational Reach

## U.S. and Denel 105mm Range Comparison



**M119**

M1 HE	M760 HE	M2020 BT	M2020 BB	M913 HERA
11.5 Km	14 Km	HE 15 Km	HE 18.4 Km	19.5 Km

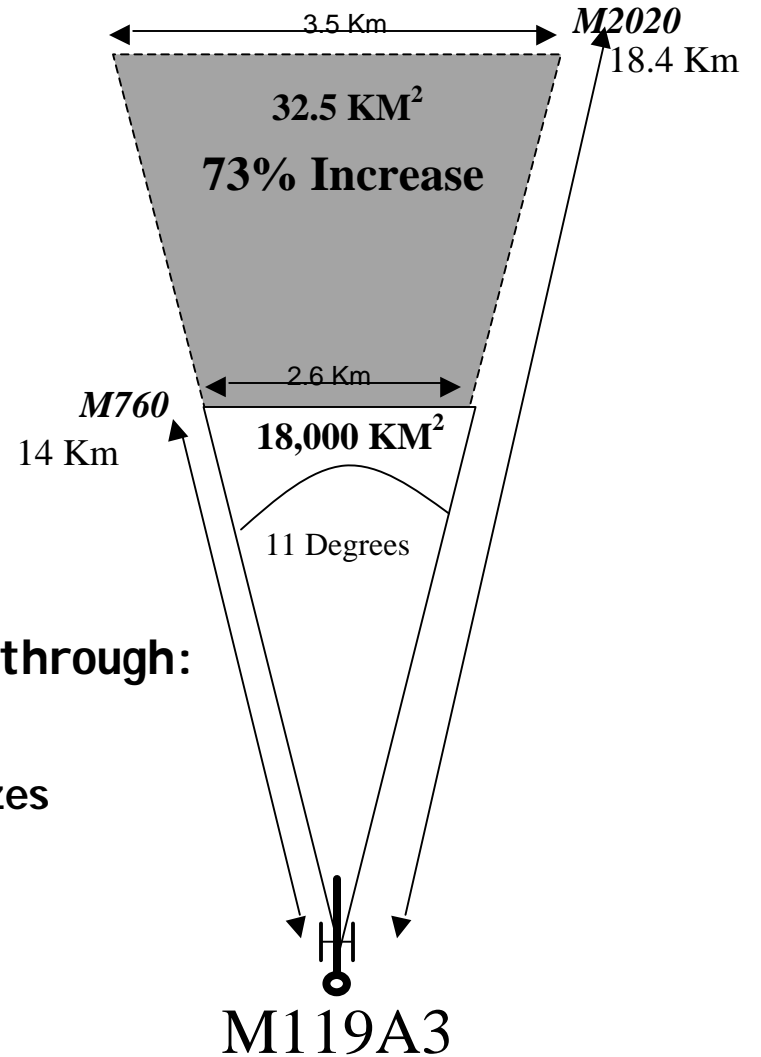
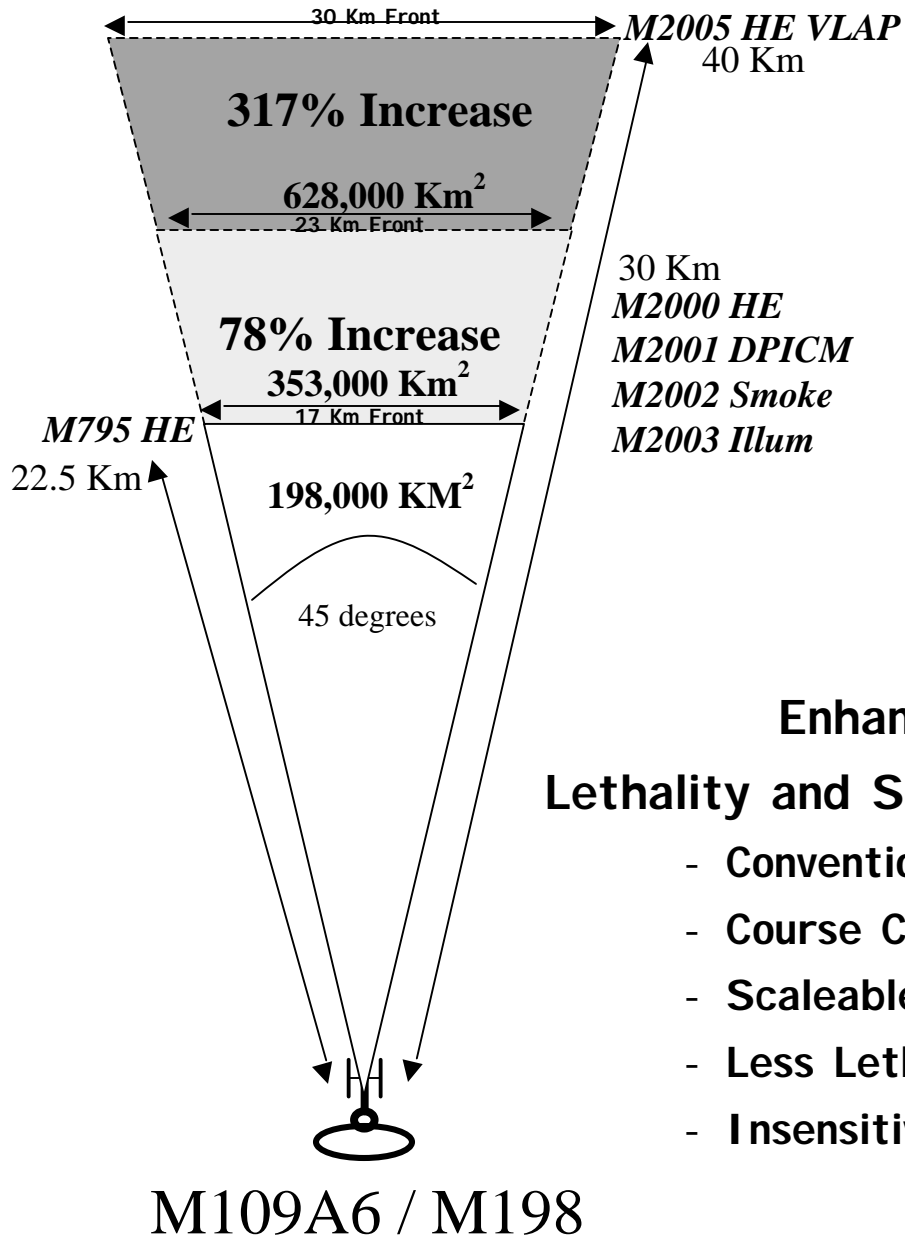


**LEO**

24 Km	30 Km
M 2020 Pff HE	M 2020 Pff
M 2019 HE	M 2019 HE
M 0101 Smoke	M 0101 Smoke
M 0102 ILLUM	M 0102 ILL
M 0102 Prac	M 0102 Prac

*BT = Boat Tail*  
*BB = Base Bleed*

# Increased Operational Reach



**Enhanced Force  
Lethality and Survivability through:**

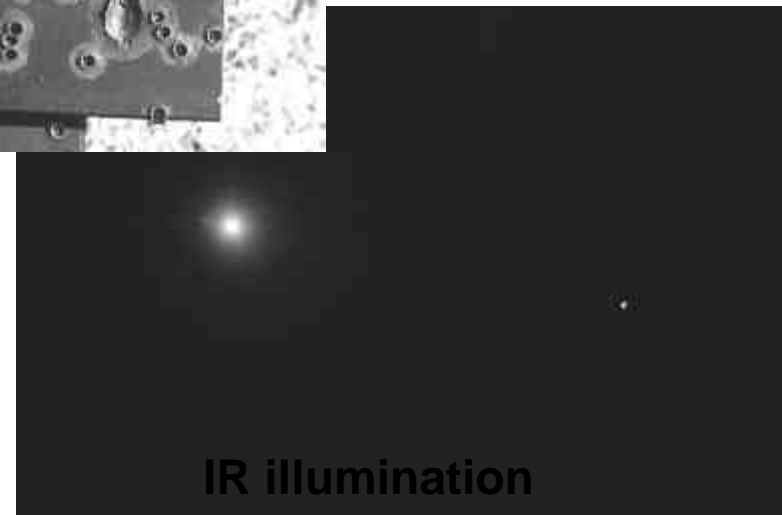
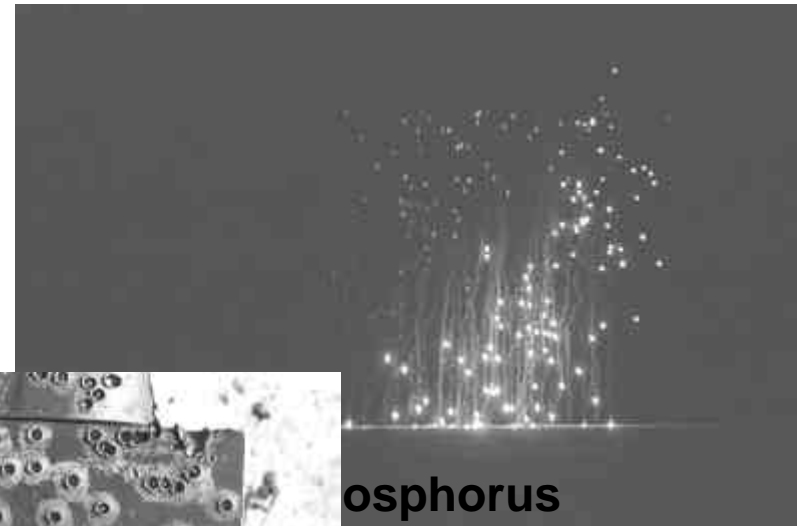
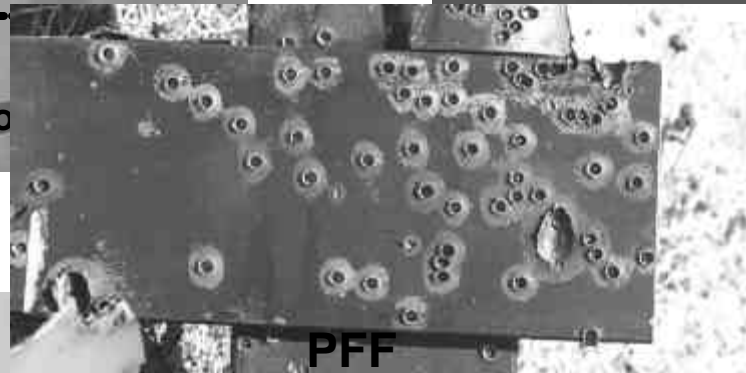
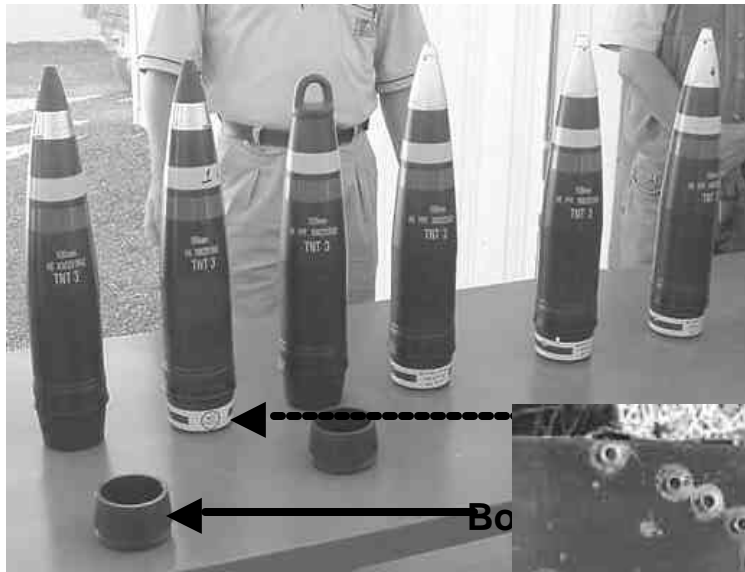
- Conventional payloads
- Course Correcting Fuzes
- Scaleable effects
- Less Lethal Munitions
- Insensitive Munitions



# ACA<sup>2</sup>P Technologies

- Ranges exceeding 30 km from 39 caliber gun; M2005 V-LAP achieves +40 km, thus achieving NLOS-C requirements
- Aerodynamic profile aids in achieving long range accuracy requirement
- Lethality using Pre-formed Fragmentation (PFF)
- Ballistically Matched Ammunition Family; requires only one ballistic firing table.
- Infra-red Illumination
- Environmentally friendly, cool burning Bi-spectral smoke
- Field interchangeable Base-bleed & Boat-tail units reduce logistics

# Technology Demonstrated - 29 Jan 2003 in RSA



# Joint ACA<sup>2</sup>P Users

Artillery Platforms for Objective,  
SBCT, and Legacy Forces



M119



M198



XM777



M109A6



*Other Service  
Platforms*



USAF AC-130



USN DD(X) AGS

# Cannon Artillery Program Strategy

- Type classify 105mm and 155mm HE by FY05
- Conduct Engineering Assessment of IR Illumination and Bi-spectral smoke in FY03
- Continue Operational Analyses
- Production of artillery will remain in N. America using existing ammunition industrial base
- PM Combat Ammunition Systems (PM CAS) has program management responsibility