



Precision Guidance Kit (PGK) Program Update

**2015 NDIA Armament Systems Forum
(Reference number:17409)**

Orbital ATK Armament Systems
20 April 2015



Agenda

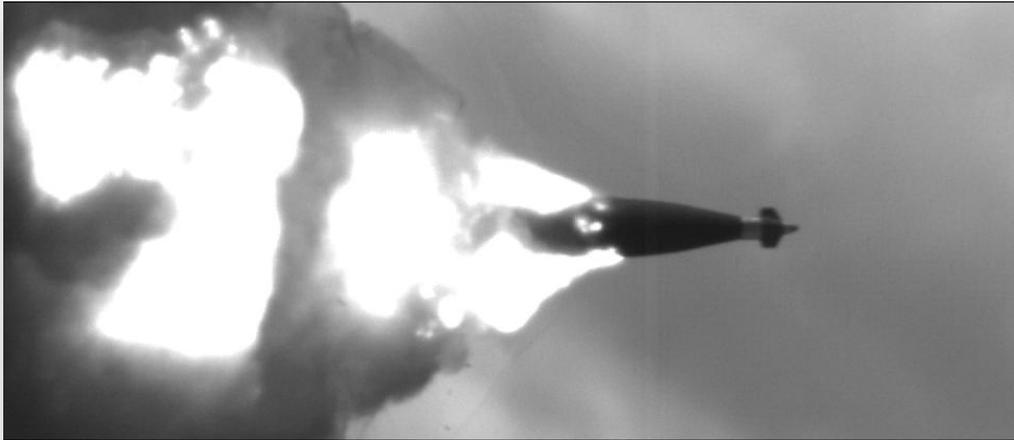


- Orientation
 - PGK Description
 - Performance Predictions
 - Applications
- PGK Production Program
 - FAAT Passed
 - Production Status
- PGK Futures
 - Foreign Initiatives



FAAT – First Article Acceptance Test
GPS – Global positioning System

Orientation: M1156 Precision Guidance Kit (PGK) Overview



PGK is qualified with the U.S. Army

U.S. production is underway

PGK is being used in combat today

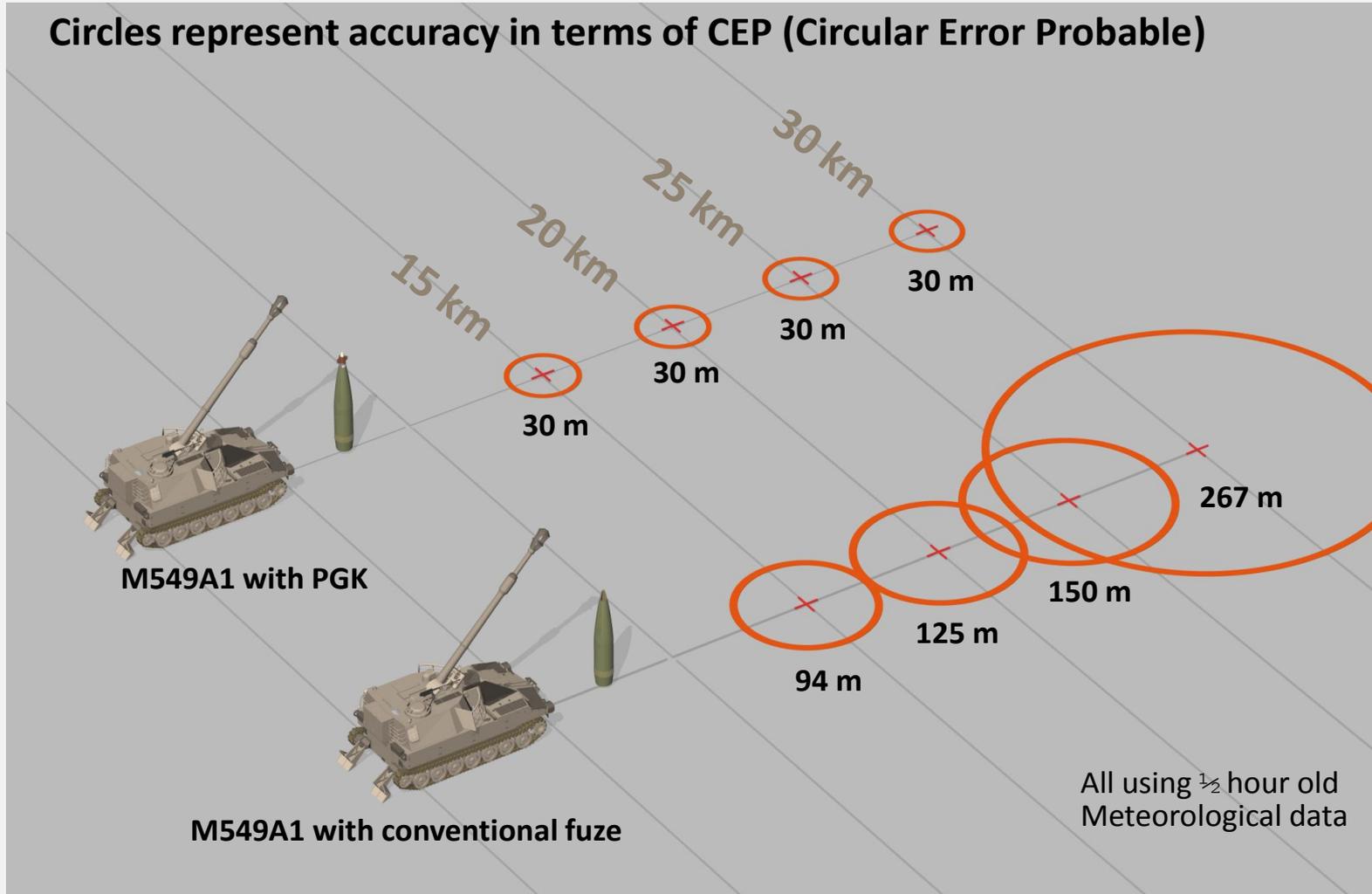
PGK Delivers

- GPS guidance kit with fuzing functions
- Replaces the existing standard 155mm artillery projectile fuze
- PGK guidance greatly improves accuracy of conventional artillery in the inventory
 - *Conventional ammunition with PGK*
 - *30m objective circular error probable (CEP)*
 - *Conventional ammunition with legacy fuzing*
 - *> 200m CEP at max range*
- Maintains > 90% of range capability of conventional all-up round (i.e., projectile & fuze)
- Self generating power (no battery)
- Reliable – one moving part
- Full two dimensional guidance to impact
- Point Detonation & Proximity Fuzing

Revolutionary: Converts Existing Artillery Rounds Into Affordable Precision Weapons



Orientation: Performance Prediction



m – meters
km – kilometers



Improved Accuracy at All Ranges

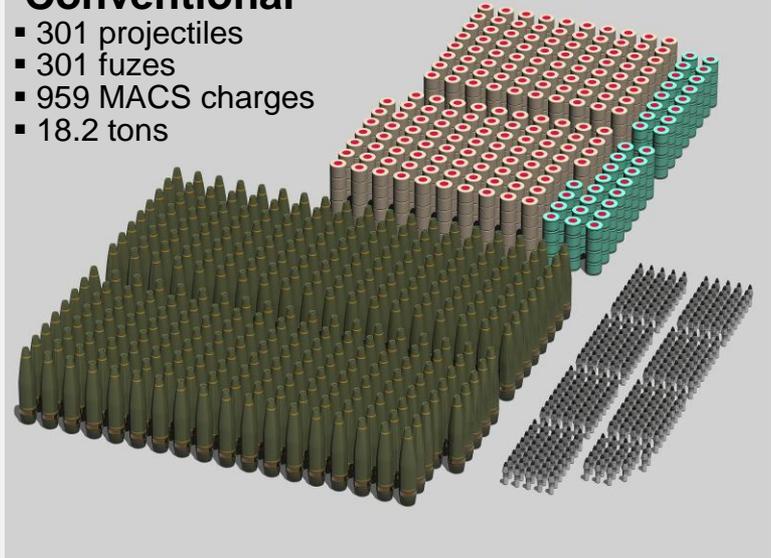
Orientation: Value Proposition



- Warehouse/storage costs
- Transit costs for deployment
- Supply chain costs
- Re-Supply costs
- Artillery fire mission costs
- Air asset support costs
- Unit production costs
- Life-cycle replacement costs
- De-Mil costs

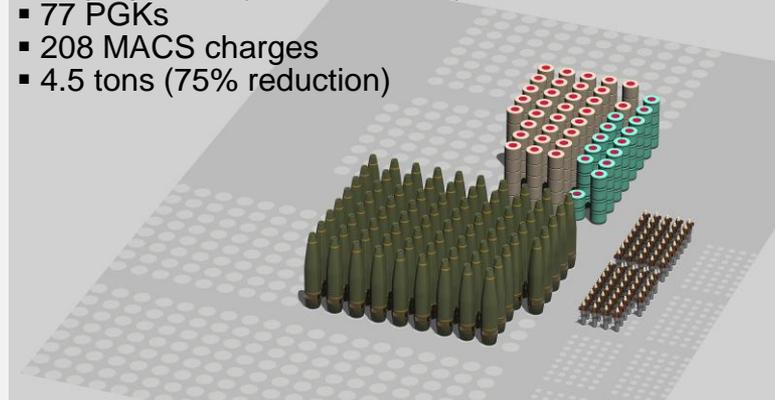
Conventional

- 301 projectiles
- 301 fuzes
- 959 MACS charges
- 18.2 tons



Conventional with PGK

- 77 projectiles (74% reduction)
- 77 PGKs
- 208 MACS charges
- 4.5 tons (75% reduction)



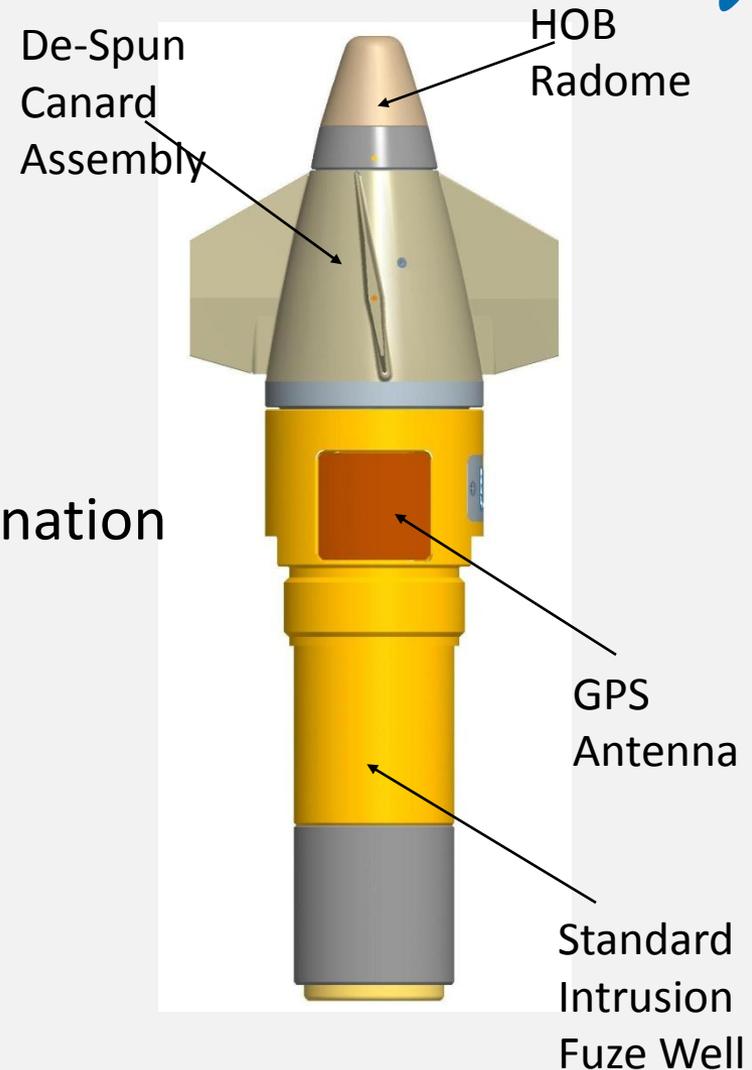
Precision = Significant Cost Savings Over Entire Weapon Life Cycle



Orientation: Key Innovations



- Simple Mechanical Design
 - Fixed Canards
 - No Mechanical Actuators
 - One moving part
 - No Slip Rings
- Reliable Electronic Design
 - GPS with Roll Angle Determination
 - No Inertial Sensors
 - No Battery
- Built-In Tactical Telemetry
 - Development Tests
 - Stockpile Surveillance
 - Lot Acceptance Tests



- Demonstrated on multiple platforms
 - 155 mm Artillery
 - M795
 - M549
 - M107
 - DM111
 - XM1128
 - Mortars
 - APMI
 - PERM



Orientation: Qualified Applications



M109A6

M777A2

M549A1

M795



Qualified on Two Weapons & Two Projectiles

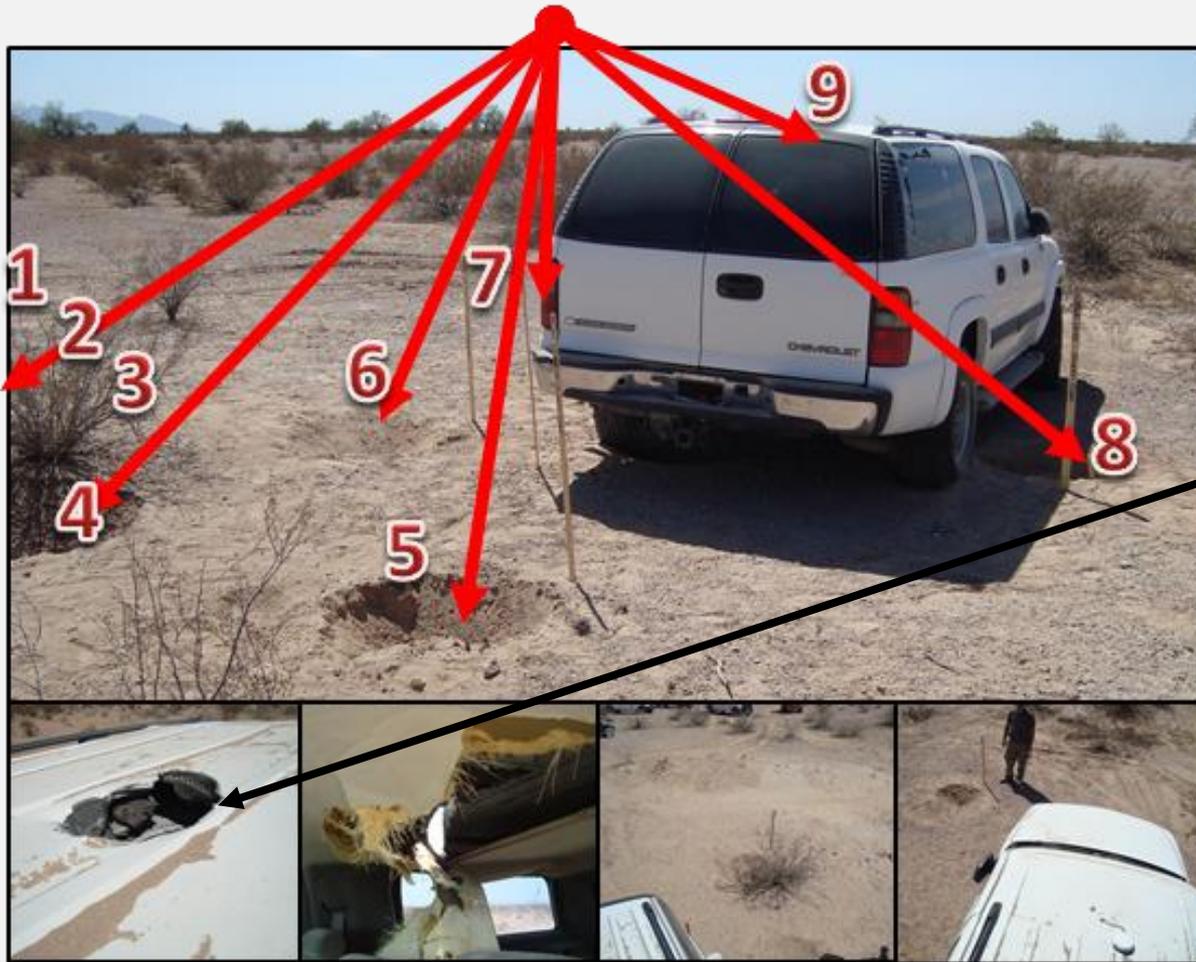
Production Start-Up



- Production initiated at Plymouth MN facility
 - FAAT accepted December 2014
 - Low rate production build started 19 January
 - First assembly with trained technicians
 - Line filled on 26 February
 - First lot delivery (204) planned for May 2015



PGK Futures: Foreign Initiatives



- Howitzer: PzH 2000
- Projectile: DM111
- Charge: Inert
- Range: 27 Km
- Shots: 10
- Note: Hole in roof



On Track to Larger Market

Questions?

