



Development of the M1028, 120mm Anti-Personnel Tank Round

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M1028 Background

- ACAT III Program
- The Canister round was developed to meet a war fighting requirement for 2ID Korea

CHRONOLOGY:

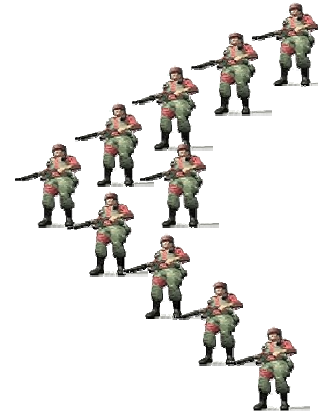
- January 1999 - U.S. CINC in Korea issued a message that the Korean theater needed a short-range (100-300m) tank fired anti-personnel cartridge.
- December 1999 - Urgency of Need Requirement from HQ, United States Forces, Korea was received
- January 1999 to July 2002 – ARDEC development of the XM1028
- July 2002 - PM-MAS competitively awarded the 120mm, XM1028 Canister contract to General Dynamics Ordnance and Tactical Systems (GD-OTS).
- December 2004 - Achieved MILESTONE C (Type Classification – Low Rate Production)



M1028 Requirements



- Defeat $\geq 50\%$ Advancing Squad w/ 1 Shot
- Defeat $\geq 50\%$ Advancing Platoon w/ 2 Shots
- 200-500M (threshold)/100-700M (objective)
- Muzzle Action (i.e. No Fuze)
- No orientation of the projectile
- Vulnerability no worse than current fielded





Cartridge 120mm: Canister

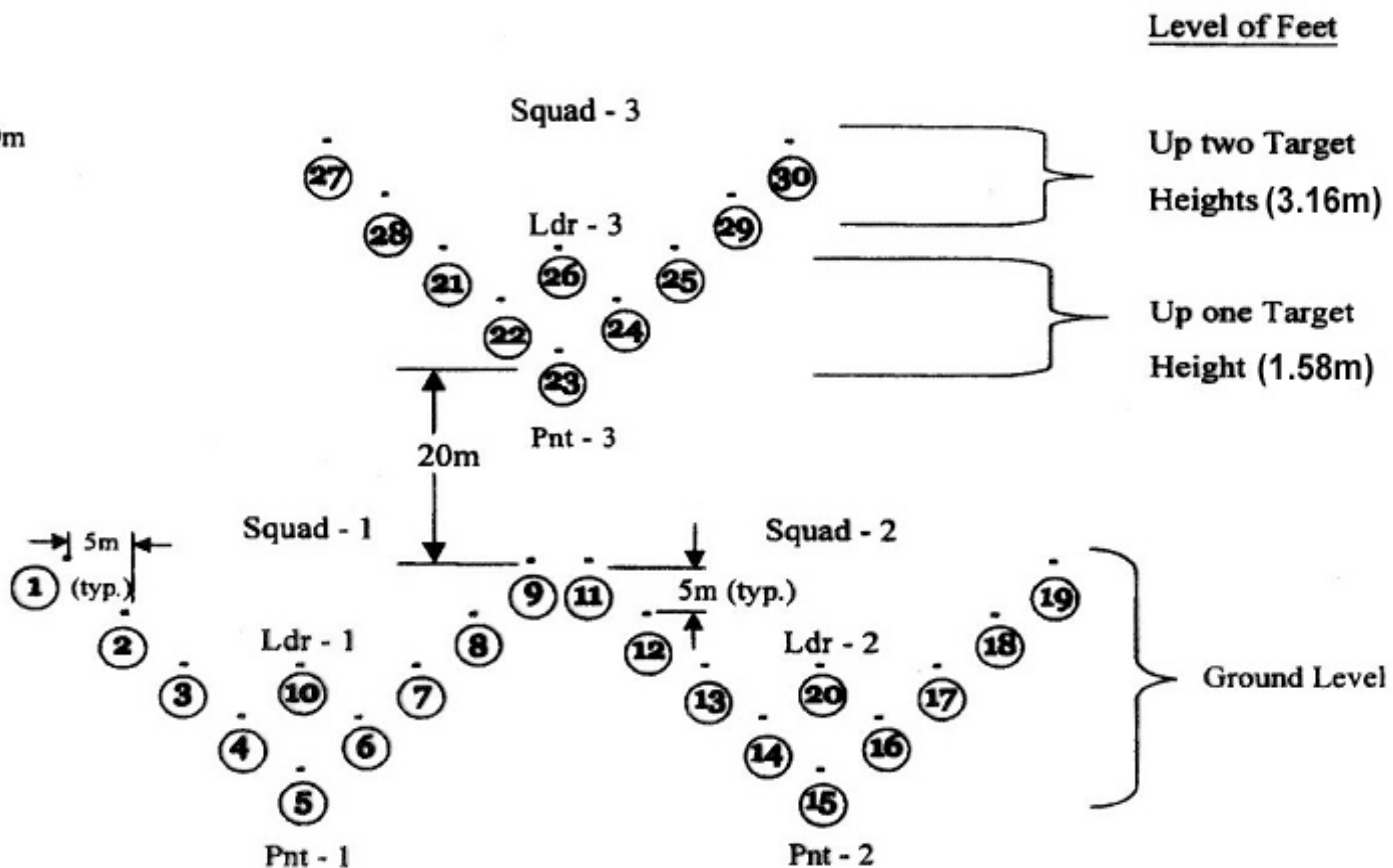
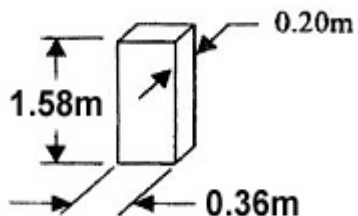
XM1028



Troop Array, Squad in Wedge

2 Up - 1 Back (Top View)

Target (not to scale)





Test Set-up



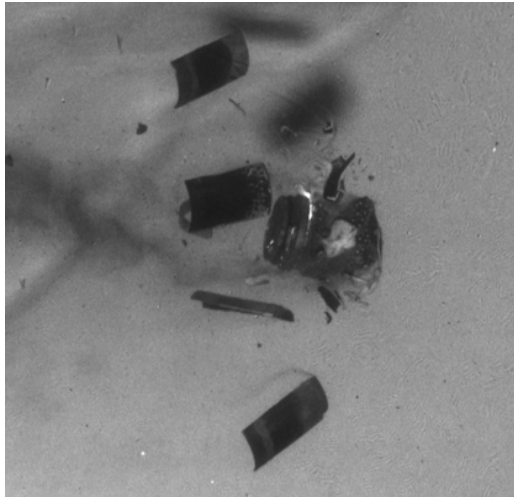
16" by 150' Canvas Target
at 400m





Test Pictures/Video

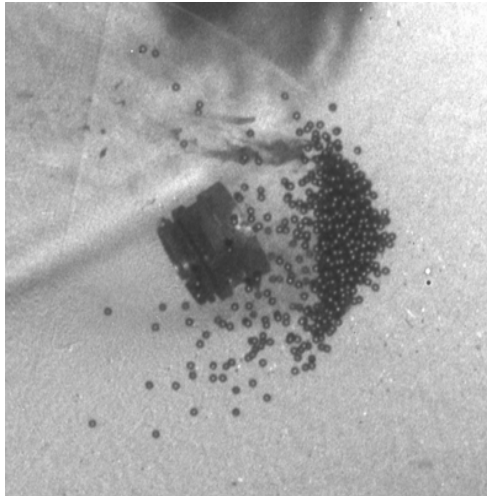
5m Hadland:



Flight Follower Video:



15m Hadland:





Projectile Designs

Plastic ARDEC Design:



Aluminum ARDEC Design:



ARDEC Patent Pending

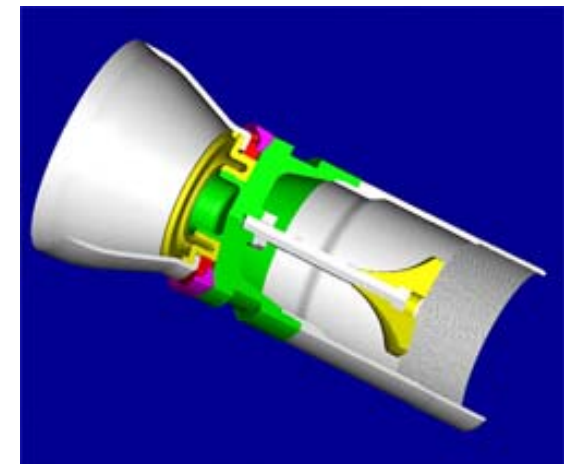
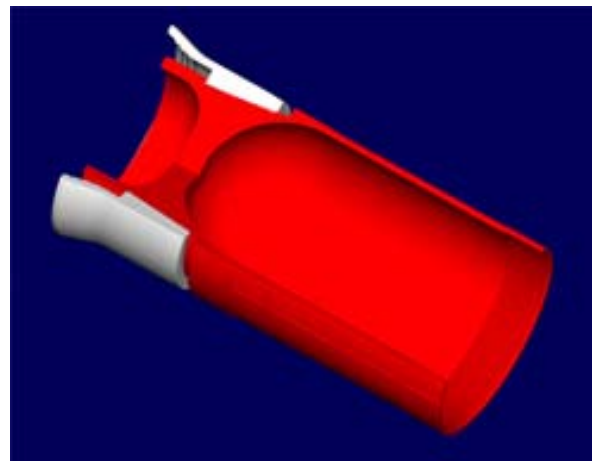
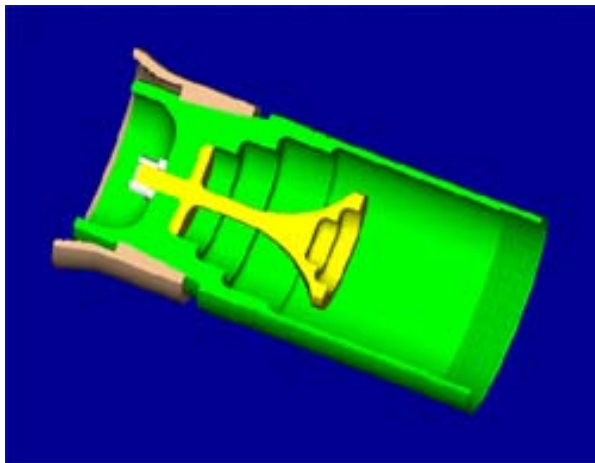
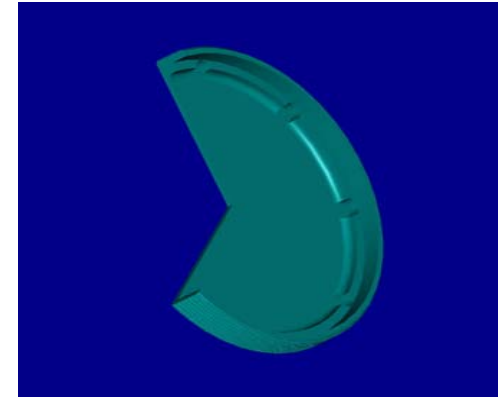


M1028 Design Evolutions

- During the development of the M1028 the following were traded/tested to meet user requirements

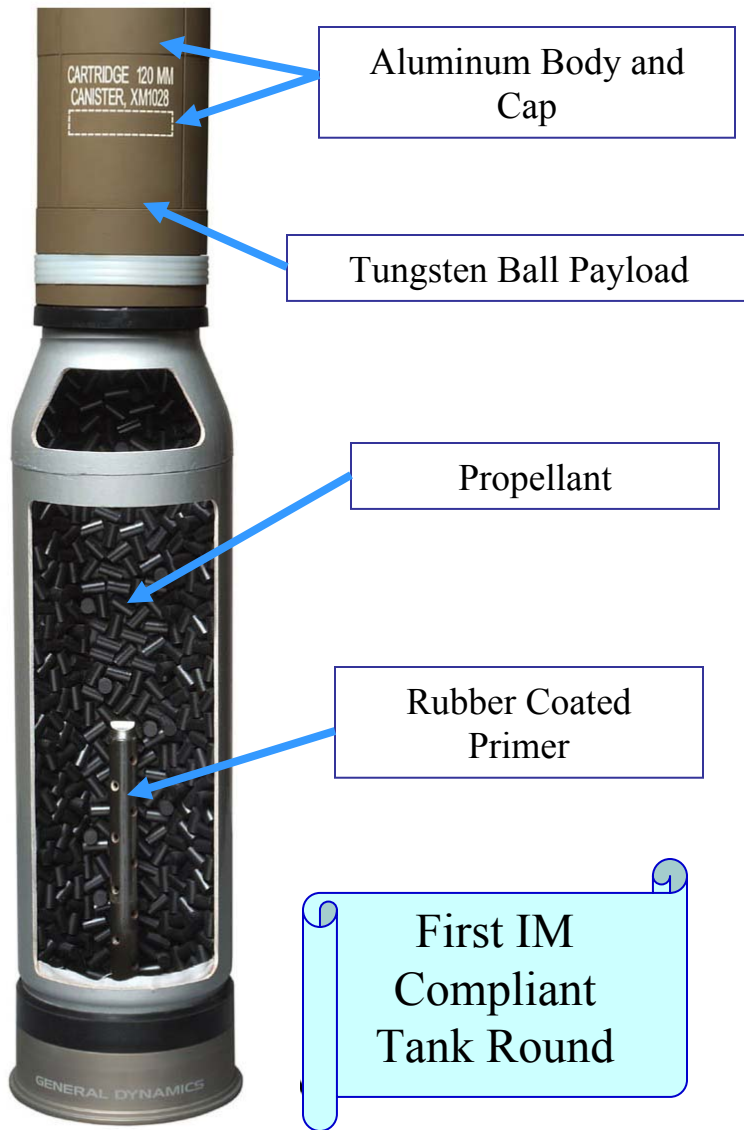


- different shape payloads
- different payload sizes
- different lid designs
- different spreaders to dispense payload
- different projectile designs





M1028 Cartridge Design



- Tungsten Sphere Payload (~1100)
- Frangible Cap, Aluminum
- Improved Spring Disc with Modified Case Base
- Improved Propellant Bag Forward Closure
- Rubber Coated Primer



120mm M1028 Canister Round Alternate Target Demonstration

- User Community Requested Performance of M1028 Against Alternate Targets:
 - Block Wall
 - Triple Strand Concertina
 - Car



Wall Test Set-up

- Wall is 10 ft in height by 20 ft in width
- Set 45 degree's to line of fire within range requirements
- Built with standard construction on concrete footer – no rebar or fill in blocks
- 5 dummies constructed of $\frac{3}{4}$ in plywood set up behind wall





Wall Test - Conclusions

- Wall perforated to the extent that it can no longer support itself and collapses
- All dummies behind target are perforated multiple times
- Two dummies still standing due to debris on base





Concertina Wire Test Set-up

- Triple Strand Concertina set within range requirements
- Pinned at each end

Before



After





Car Test Set-up

- Mid 1990's 4 door sedan selected as target
- 15 degree to line of fire within range requirements
- Car is operational
 - Transmission in Park
 - Engine running
 - Fuel tank $\frac{1}{4}$ full





Car Test After M1028 Shot

- Car is penetrated from front to rear
- Car decimated by M1028 impact and then consumed by ensuing fire
- Fire starts in two places
 - Under hood
 - Back near rear axle



Car Test After M1028 Shot





M1028 Summary

- The M1028 has gone through an intensive design/model/fab and test to meet User requirements
- Achieved Milestone C (TC-LRP) Dec 04
- Scheduled to achieve TC-STD 3rd Qtr 05
- M1028 also proves very effective against alternate targets
 - Normal block walls
 - Concertina wire
 - Cars