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 ≥50% Advancing Squad w/ 1 Shot
- Defeat ≥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)

Level of Feet
Up two Target Heights (3.16m)
Up one Target Height (1.58m)

Ground Level
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 ¾ 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 ¼ 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