

5.56MM REDUCED RICOCHET LIMITED PENETRATION (RRLP), MK 255 Mod 0

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Harnessing the Power of Technology for the Warfighter

Distribution Statement A: "Approved for public release; distribution unlimited"



- BACKGROUND/HISTORY
- CARTRIDGE DESCRIPTION
- CARTRIDGE SALIENT
 CHARACTERISTICS
- CURRENT STATUS





BACKGROUND/HISTORY

- SPECWARCOM Finalized Joint Operational Requirements Document (JORD) for Frangible Ammunition (April 98)
 - Based on existing frangible technology and operational requirements
- JORD was reviewed by other USSOCOM activities
- USSOCOM Approved JORD (Aug 98)





BACKGROUND/HISTORY (cont)

- One round, two missions
 - ➤ Training
 - Operational
- Be used for
 - Close Quarter Battle (CQB)
 - > Military operation in Urban Terrain (MOUT)
 - Visit Board Search and Seizure (VBSS)
 - Counter-Narcotics (CN) Operation





BACKGROUND/HISTORY (cont)

- Initial Specification
 - > Minimal damage to training facility
 - Eliminate lead/toxic accumulation within the training facility
 - Eliminate lead/toxic emission from projectile and primer
 - > Reduce ricochet hazard/No reverse splatter
 - Must be lethal
 - > Be accurate (100Meters)
 - > Must be waterproofed
 - Ballistic match to the M855





BACKGROUND/HISTORY (cont)

- NSWC, Crane evaluated production samples to determine if any commercially available cartridges could meet the JORD requirements
 - None of the cartridge types met all Operational Requirements
 - Acceptable function and reliability
 - Deficiencies:
 - Over penetration on hard target
 - Accuracy
 - Primer sensitivity
 - Waterproof
 - Lethality





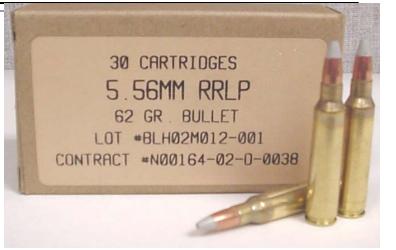
BACKGROUND/HISTORY (cont)

- SPECWARCOM funded Crane Navy to develop cartridge
 - Changed nomenclature from "frangible" to "Reduced Ricochet Limited Penetration"
 - Modified Initial Specification
 - Emphasized waterproof, accuracy, lethality and no backstop penetration (3/8" AR500 steel plate)
 - Included 10 inch barreled M4A1 carbine requirement
 - Dropped lead-free primer requirement
 - Awarded 5 Year IDIQ Contract to Black Hills Ammunition



CARTRIDGE DESCRIPTION

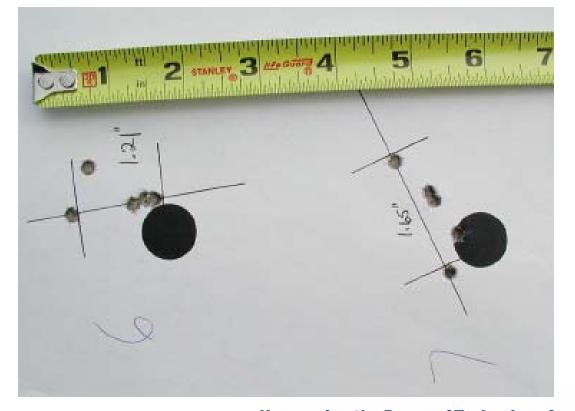
- 62 grain jacketed frangible projectile – Copper/polymer composite core
- Winchester cartridge case that meets M855 specification
- Standard military No. 41 primer
- Western C1700 propellant





Cartridge Salient Characteristics

- Chamber & Port pressures meet that of M855
- Accuracy less than 2 in. ES at 100 yards.







Cartridge Salient Characteristics

- Waterproof
 - No water intrusion after the cartridge was subjected to 28-31 psig water pressure for 115-125 minutes.
- Ricochet Fragments
 - No fragments penetrated deeper than 2.5" into 10% (by weight) Ballistic Gelatin after 45° impact on AR500 steel plate located 15 ft. from the muzzle
- Reverse Splatter
 - No reverse splatter toward the shooter position from AR500 steel plate 15 ft. away from the muzzle





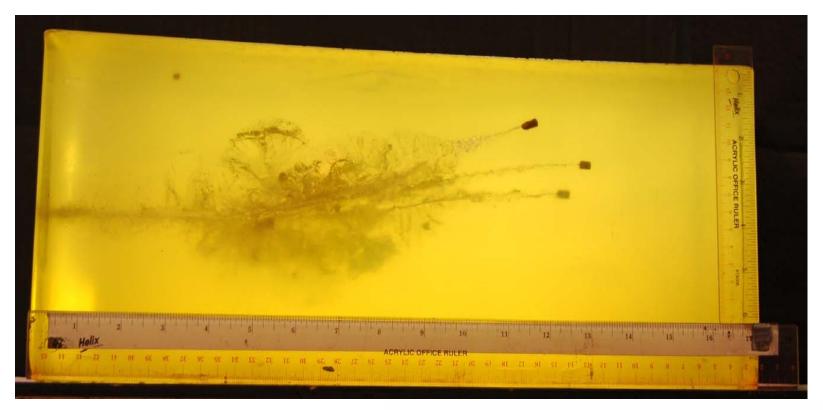
Cartridge Salient Characteristics (cont)

- Lethality @ 15 ft.
 - > 10% Ordnance Ballistic Gelatin
 - Initial yaw; 2 in. max.
 - > Temporary cavity length; 6 in. min.
 - > Temporary cavity diameter; 3 in. min.
 - Temporary cavity diameter location; 3 to 6 in.
 - Number of fragments weighing 1 grain or more; 5 min.
 - > At least 50% of the fragments should be 7 in. or deeper
 - Maximum penetration depth should be 13 in. or deeper





Cartridge Salient Characteristics (cont) 10% Ordnance Ballistic Gelatin Penetration





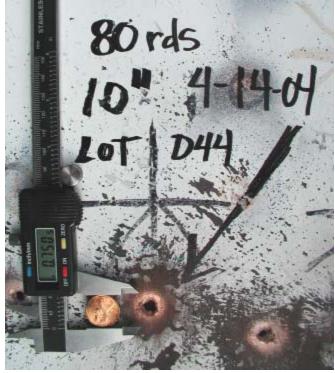
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Cartridge Salient Characteristics (cont)

- AR500 Steel Plate Penetration
 - Muzzle to impact was maintained at 3 feet
 - Multiple shots within a
 0.75 in. diameter area
 - No penetration occurred after 50 rounds using Mk 18 Mod 0
 - Penetration occurred from 25 rounds to 50+ rounds using M4A1 Carbine







CURRENT STATUS

- JAG approved for training and operation, CONUS/OCONUS
- Completed WSESRB testing and requirement (2005)
- Received WSESRB IOC (Nov 2005)

