

300 AAC Blackout Low Visibility Carbine

Robert S Silvers, S.M.
Advanced Armament Corp.

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Concept MP5/MP7 replacement “Honey Badger” Low-Visibility Carbine.

The LVC is a 30 caliber weapon that is as quiet as an MP5-SD, but with 3x the range. It has more penetration and better terminal effects than an MP7. It is effective for CQB but has the ability to engage and eliminate threats beyond 100 meters.



Low Visibility Carbine

LVC uses 300 AAC Blackout ammunition

OBJECTIVES:

- Create a reliable compact 30-cal solution for AR platform
- Utilize existing inventory magazines while retaining their full capacity
- Create the optimal platform for sound and flash suppressed fire
- Create compatible full power ammunition that matches 7.62x39 ballistics
- Work with subsonic and full power ammunition without requiring adjustable gas.
- Provide the ability to penetrate barriers with high-mass projectiles
- Provide all capabilities in a lightweight, durable, low recoiling package

WHY NOT 7.62x39mm?

7.62x39mm was eliminated from consideration because:

- Extreme Cartridge Taper
 - Reduces reliability of feeding in AR Magazines
 - Reduces Magazine capacity
 - Exacerbates the AR Bolt's weaknesses
 - Requires a larger Bolt Face which reduces Bolt Locking Lug strength and induces higher bolt thrust.
- Limited Projectile Selection
 - 0.311" not a common option in most modern bullets
- Subsonic Compatibility
 - Case too large for subsonic/supersonic that will cycle AR with one gas setting.

WHY 300 AAC Blackout?

300 AAC Blackout, a 7.62x35mm sized cartridge (300 BLK for short) is better because:

- Standard 5.56mm Case Head and Cartridge Taper
 - AR Magazines were designed to feed this taper
 - Maintains Full Magazine capacity
 - Only change from 5.56mm is the barrel
 - Minimizes strain on AR Bolt's weaknesses
 - Utilizes a standard AR Bolt Face, to retain Bolt Locking Lug strength
- Wide Projectile Selection
 - 0.308" possibly the most popular center fire rifle bullet in history
 - Wide Projectile Selection
- Proven Track Record
 - Pioneering work by JD Jones with the 300 Whisper[®], and others with 300 Fireball and 300-221, have proven the concept.

ANCESTOR

7.62x28mm, circa 1969, was a predecessor designed for the Colt IMP / GUU-4P Individual Multi-Purpose Weapon

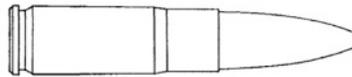


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NOMENCLATURE : 7.62 x 28mm Type 3

OVERALL LENGTH : 1.823"

TOTAL WEIGHT : 264.1 gr

BULLET

Same as Type 2

CARTRIDGE CASE

Headstamp: RA 66 and LC 70
Material : Brass
Length : 1.096"
Rim Diameter : .375"
Shoulder Diameter : .361"
Neck Diameter : .335"
Weight : 81.7 gr (primed)

PRIMER

Type : Small rifle
Material : Brass
Sealing Lacquer : Red (RA 66)
or Purple (LC 70)

PROPELLANT

Type : Rolled ball
Weight : 7.7 gr

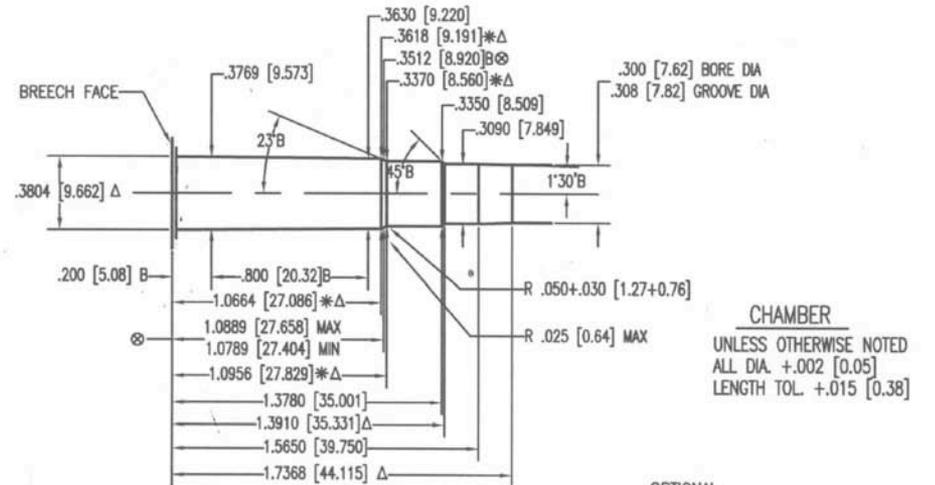
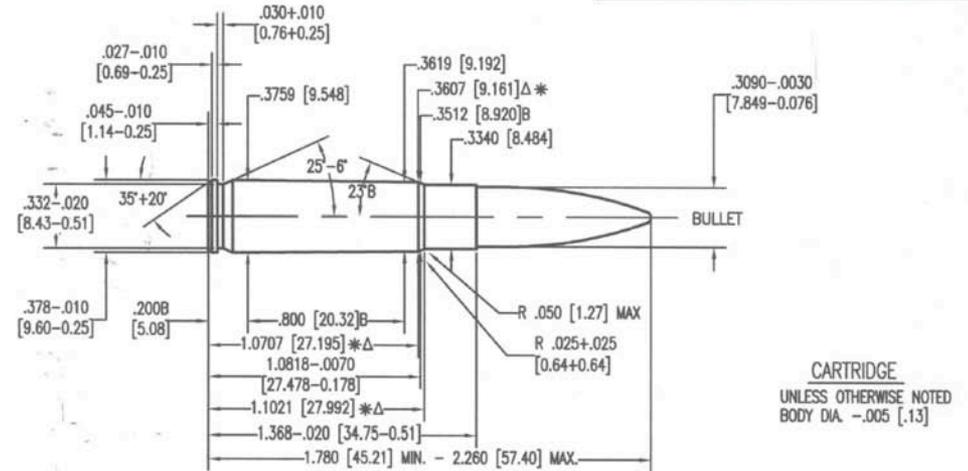


Low Visibility Carbine

300 AAC BLACKOUT

Accepted by SAAMI in
 January 2011.

Over 100 companies
 are now making
 300 AAC Blackout
 products.



OPTIONAL:
 Δ 5 GROOVES
 Δ .146+.002 [3.71+0.05] WIDE
 TWIST: 8 [203.2] R.H.

MIN. BORE & GROOVE
 AREA: .0737 SQ. IN. [47.548 mm²]

Drawing used with permission.

AMMUNITION SIZE COMPARISON



300 BLK 125 Match, 300 BLK 220 Subsonic, 5.56mm, 7.62x39mm

Low Visibility Carbine

SIZE COMPARISON



APPROX 28.5"
STOCK EXTENDED, WITH SILENCER



APPROX 28"
STOCK EXTENDED, WITH SILENCER



APPROX 31"
STOCK EXTENDED, WITH SILENCER

COMPARED TO MP5-SD3

MP5-SD3

300 BLK PDW

LVC/HONEY BADGER

	MP5-SD3	300 BLK PDW	LVC/HONEY BADGER
WEIGHT	7.9 lb.	7.0 lb. *	6.0 - 6.8 lb. **
OAL	26.4 / 31.7" ***	25.75 / 34.25" ****	24.25 / 28.5" *****
BULLET	115 grain at 900 fps	220 grain at 965 fps	220 grain at 900 fps
ACCURACY	6 – 9 MOA at 100M	1 – 3 MOA at 100M	1 – 3 MOA at 100M

300 BLK has over two times the energy at the muzzle and even more down range.

* With lower + CTR stock + H2 buffer + 762-SDN-6 suppressor, but no magazine or sights). 5.9 lb. without suppressor.

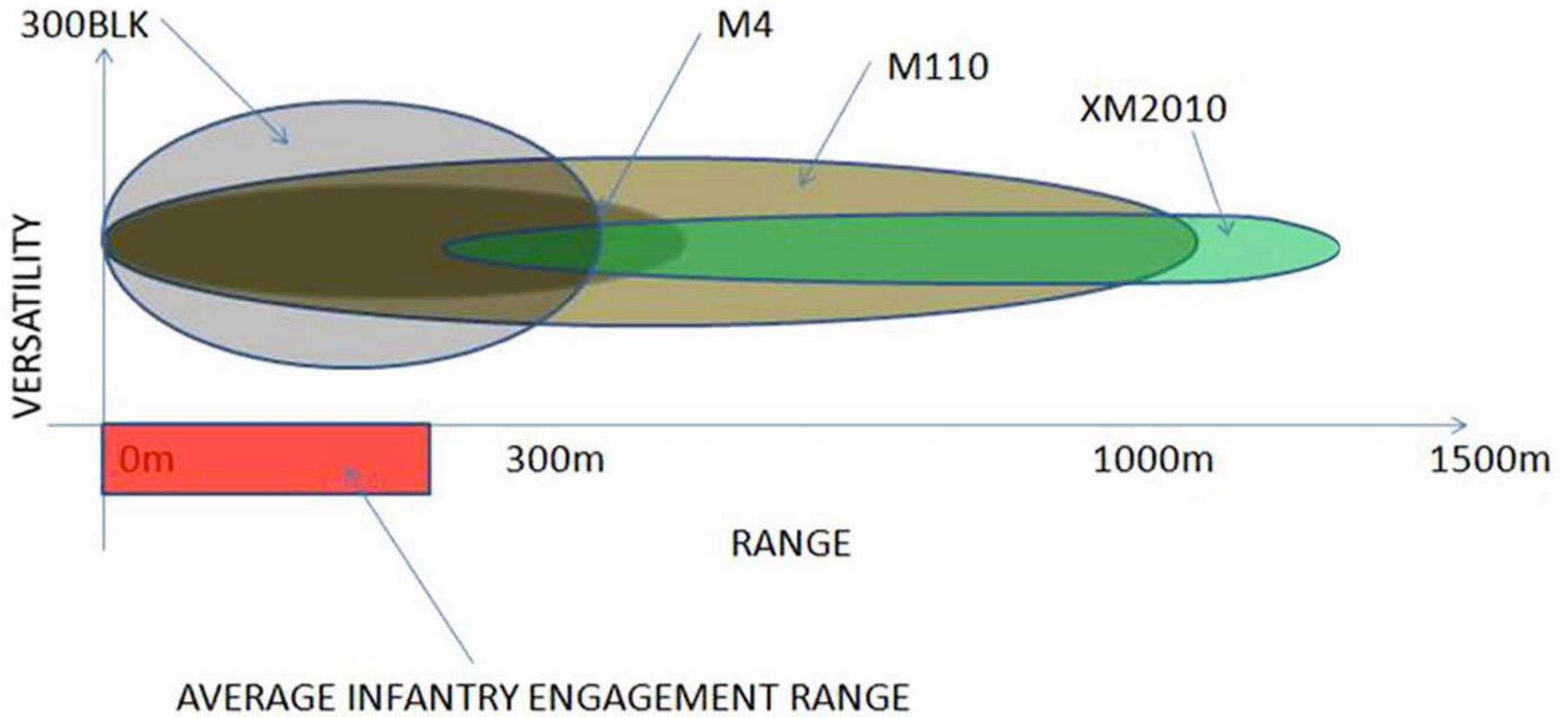
** depending on which sound suppressor and forearm length.

*** stock collapsed / stock extended.

**** M4 stock collapsed and no can / CTR stock extended.

***** Compact suppressor.

VERSATILITY vs. RANGE



Conventional AR configuration



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MAX EFFECTIVE RANGE

- The US Military rates the Max Effective Range of the M4 as 500 meters for a point target.
- If the max effective range of the M4 with M855 at 2900 fps is 500 meters, that has 100 inches of drop, 41 inches drift, and 291 ft-lbs of energy at that distance:
- A 16 inch 300 AAC BLACKOUT 125 grain at 2220 fps has:
 - 100 inches drop at 440 meters
 - 41 inches drift at 484 meters
 - 291 ft-lbs of energy at 700 meters.
- While the 300 AAC Blackout has far more energy, the military goes by hit probability. If we consider that the drift and drop range is correlated with hit probability, and discount the energy advantage of 300 BLK, we get 462 meters for equal hit probability.
- Using M4 military standards, the max effective range of 300 AAC Blackout from a 16 inch barrel is **460 meters**.
- From a 9 inch barrel (2050 fps):
 - 100 inches drop at 410 meters
 - 41 inches drift at 470 meters
 - 291 ft-lbs of energy at 625 meters, so **440 meter max effective range for a 9 inch**.
- 300 BLK from a 9 inch barrel has the same energy at the muzzle as a 14.5 inch barrel M4, and about 5% more energy at 440 meters.

123 grain AK-style bullet vs. 125 grain 300 BLK bullet
300 BLK bullet has less drag and fills out AR magazine for optimal feeding.
BC goes from 0.265 to 0.320

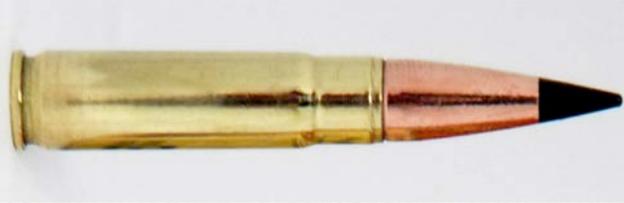


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More Down Range Energy than 7.62x39

- Lapua 123 grain 7.62x39mm -0.280 BC - 712 Joules at 300 meters (16.5 inch barrel).
- UMC 115 grain 300 AAC Blackout - 755 Joules at 300 meters (16.0 inch barrel (0.300 BC, 2250 fps muzzle velocity)).
- Advantage – 300 BLK by 5.8%, even with slightly shorter barrel.
- Match 125 grain 300 BLK- 842 Joules at 300 meters (16.0 inch barrel (0.320 BC, 2220 fps muzzle velocity)).
- Advantage – 300 BLK by 16.7%, even with slightly shorter barrel.

BARRIER BLIND



Barnes 300 AAC BLK 110gr TTSX

Penetration **Avg. dia.** **Rtd. Wt.**
 20.5" 0.585" 98%

Bare Gel



Penetration **Avg. dia.** **Rtd. Wt.**
 18.6" 0.595" 86.9%

Plywood



Penetration **Avg. dia.** **Rtd. Wt.**
 21.1" 0.594" 98.7%

Heavy Clothing



Penetration **Avg. dia.** **Rtd. Wt.**
 16.6" 0.498" 77.5%

Glass (windshield)



Penetration **Avg. dia.** **Rtd. Wt.**
 18" 0.663" 98%

Steel (car door)



Penetration **Avg. dia.** **Rtd. Wt.**
 19.7" 0.581" 98.3%

Bare Gel @ 100 yards



Penetration **Avg. dia.** **Rtd. Wt.**
 19.0" 0.586" 93.4%

Wallboard



Bullet: Barnes 300 AAC 110gr TTSX
 Average muzzle velocity: 2186 ft/s
 Test Weapon: 9" 300 AAC BLK
 Average for three shots on each test

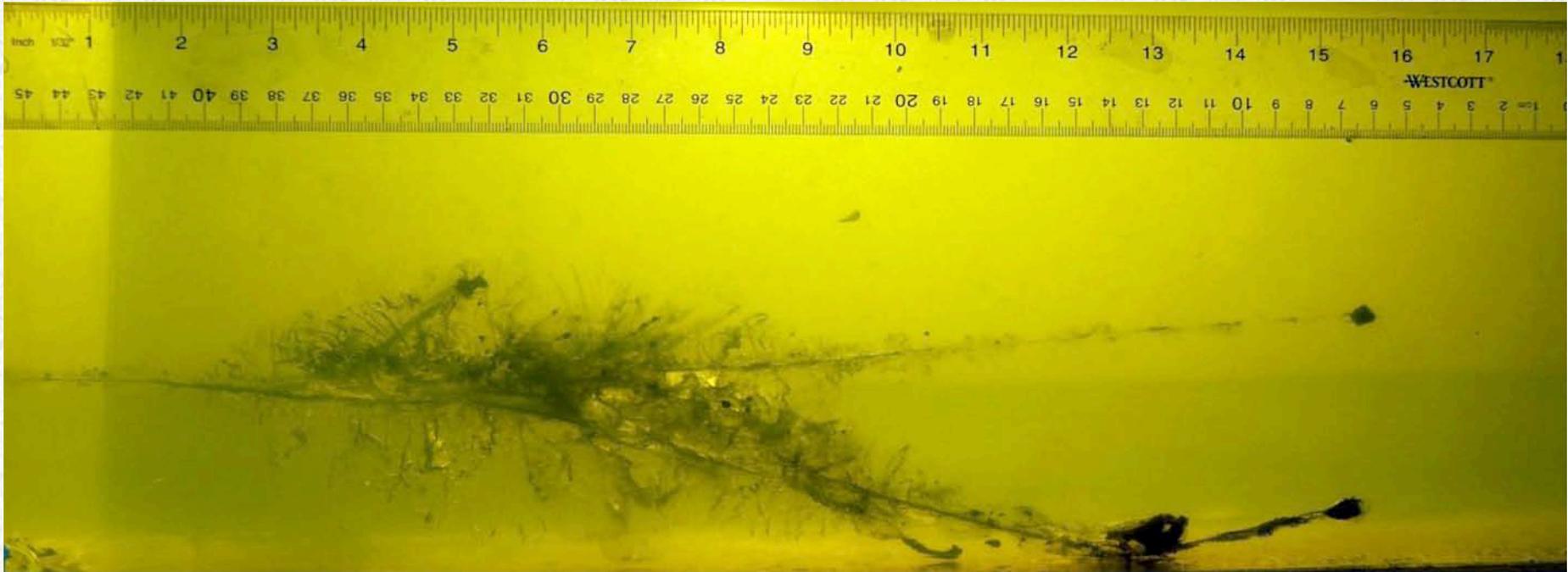
DOWNRANGE PERFORMANCE



20 inches of penetration at 300 yards (275 meters) from 9 inch barrel

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110 grain TAC-RRLP



Muzzle velocity 2400 fps 16", 2190 fps 9", 1940 fps 6"

Impact at 1810 fps (200 meters 16" barrel, 130 meters 9", 50 meters 6")

Neck Length to Initial Yaw: 1.75"

Temporary Cavity Length: 7.0"

Temporary Cavity Diameter: 4.5"

Maximum Penetration: 16.25"



BULLET FRONTAL AREA

The difference in frontal area between 300 BLK and 5.56mm is much greater than the difference between 45 Auto and 9mm.

For example, going from 9mm up to 45 Auto is a 60.7% gain in area.

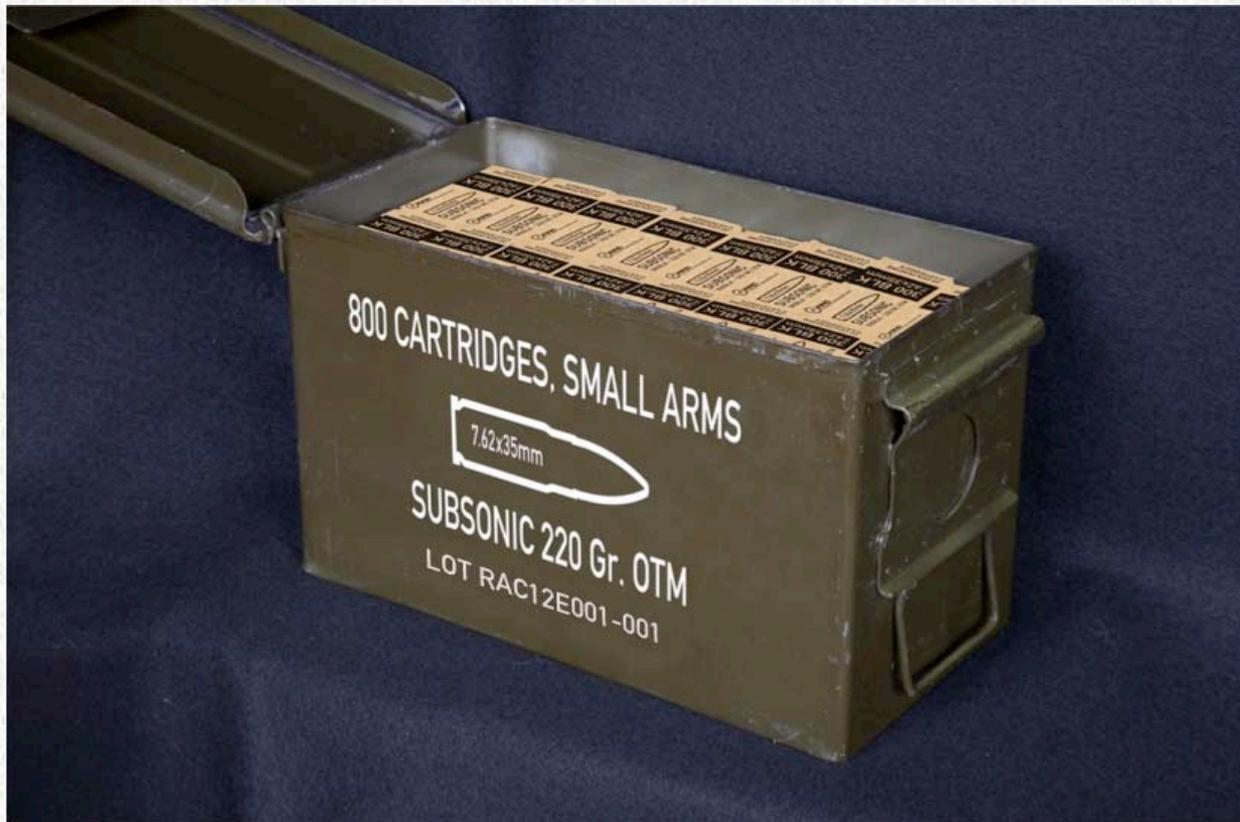
Going from 5.56mm to 30 cal is an 89.1% gain in area.

CARTRIDGE VARIATIONS

- 115 OTM– General Purpose
- 125 OTM – Match
- 220 Subsonic – Low Sound Signature
- 220 Subsonic flat base w/cannelure (late 2012)
- 125 polymer tipped – LE/self defense/anti-terrorism
- 110 grain solid copper – tipped - LE/self defense/anti-terrorism
- Frangible RRLP (jacketed, suppressor compatible, mid 2012)
- Subsonic – penetration limited to 18 inches (early 2013)
- SAAMI Proof – Production Testing
- SAAMI Reference – For Ballistic Instrumentation Calibration
- Dummy – Action Proving

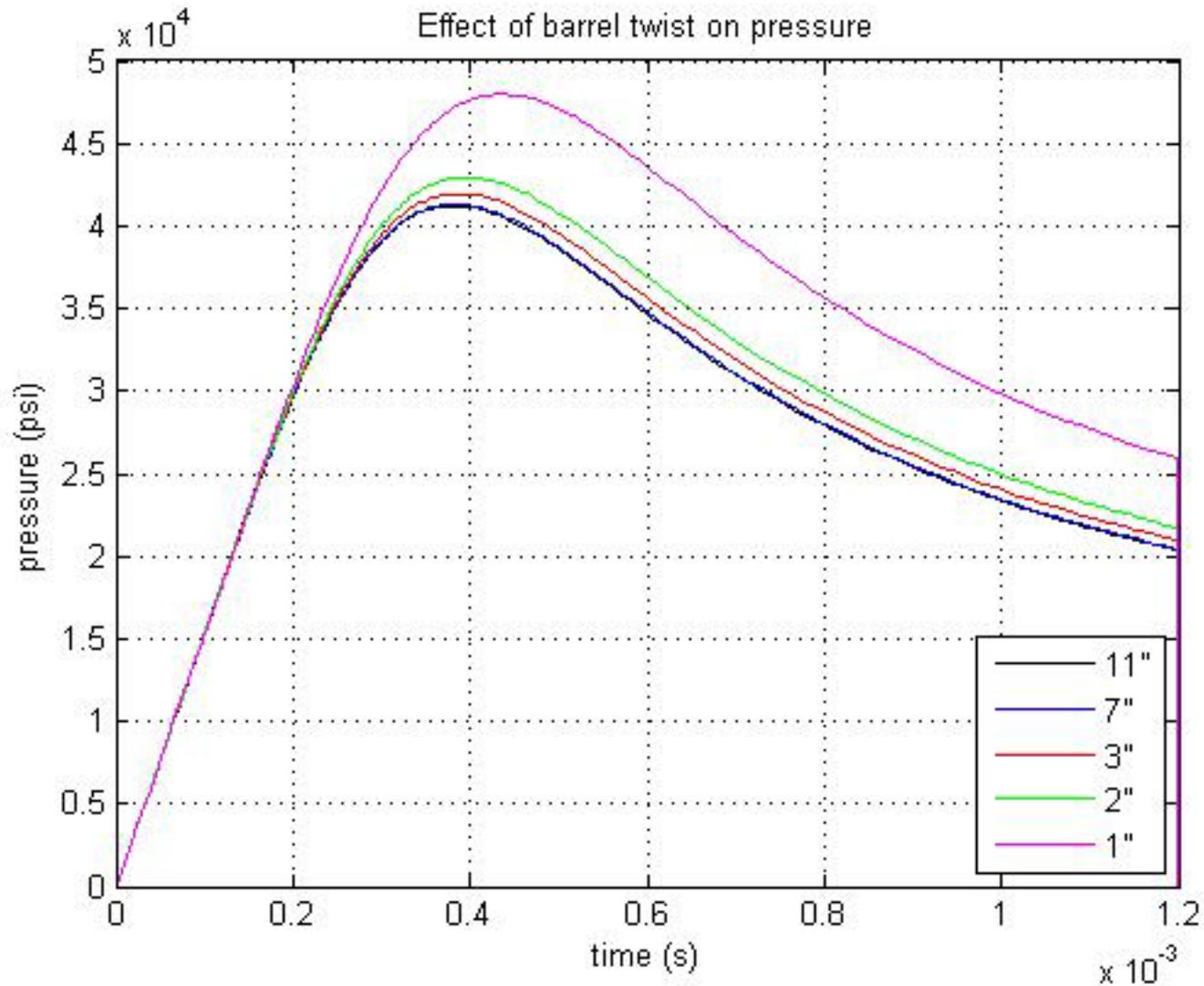
MILITARY PACKAGING

- M2A1 metal cans hold 800 rounds.
- Two cans per wire-bound plywood crate.
- 36 Crates per pallet.



Low Visibility Carbine

Fast twists – no reason for concern



BARREL LENGTH COMPARISONS

More efficient in short barrels than 5.56mm

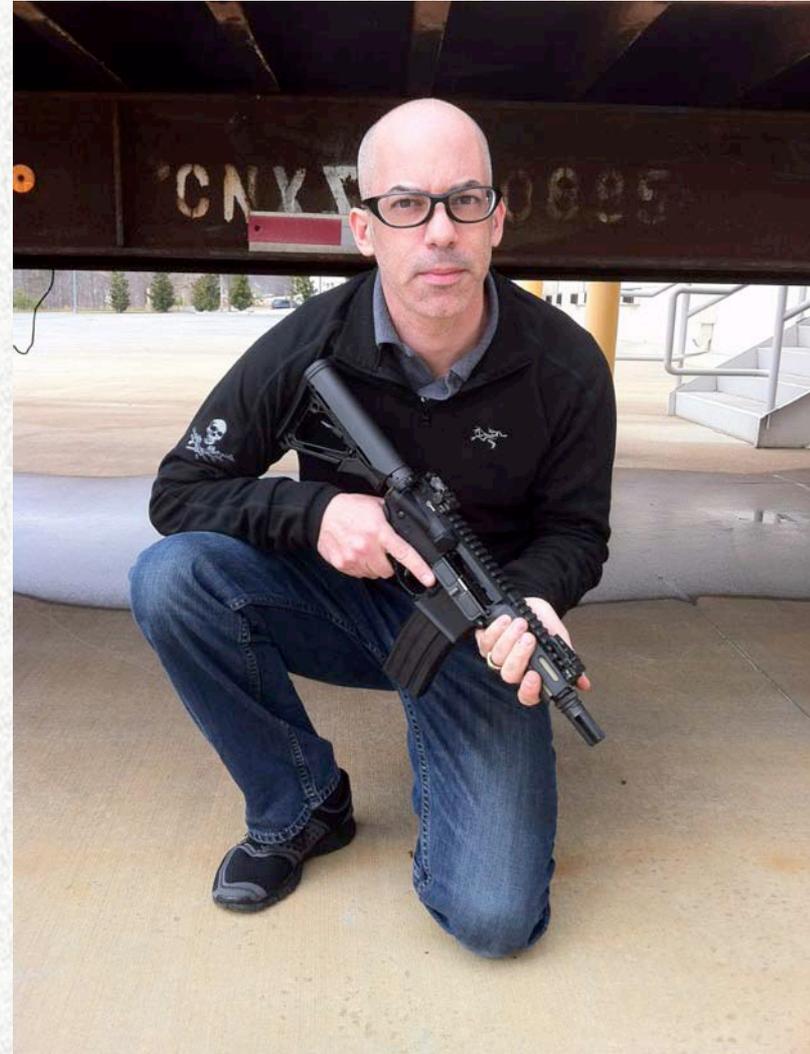
	5.56mm M193				300 BLK 110 Barnes			
Barrel Length	fps	ft-lbs	Delta fps	Delta ft-lbs	fps	ft-lbs	Delta fps	Delta ft-lbs
4	1683	346	N/A	N/A	1516	561	N/A	N/A
5	1962	470	279.0	124.2	1701	707	185.0	145.4
6	2172	576	210.0	106.0	1877	860	176.0	153.8
7	2339	668	167.0	92.0	1973	951	96.0	90.3
8	2476	749	137.0	80.6	2051	1027	78.0	76.7
9	2591	820	115.0	71.2	2116	1094	65.0	66.2
10	2689	883	98.0	63.2	2173	1153	57.0	59.7
11	2775	940	86.0	57.4	2221	1205	48.0	51.5
12	2851	993	76.0	52.2	2264	1252	43.0	47.1
13	2918	1040	67.0	47.2	2303	1295	39.0	43.5
14	2978	1083	60.0	43.2	2337	1334	34.0	38.5
15	3033	1123	55.0	40.4	2369	1371	32.0	36.8
16	3083	1161	50.0	37.3	2397	1403	28.0	32.6
17	3129	1196	46.0	34.9	2423	1434	26.0	30.6
18	3172	1229	43.0	33.1	2448	1464	25.0	29.7
19	3211	1259	39.0	30.4	2470	1490	22.0	26.4
20	3247	1287	36.0	28.4	2491	1515	21.0	25.4
21	3281	1315	34.0	27.1	2511	1540	20.0	24.4
22	3318	1344	37.0	29.8	2529	1562	18.0	22.2
23	3343	1365	25.0	20.3	2546	1583	17.0	21.1
24	3371	1388	28.0	23.0	2563	1604	17.0	21.2

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VERY SHORT BARRELS ARE PRACTICAL



Barrels 4.5 inches or longer are reliable on the M4 platform.



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COMPARATIVE SOUND SIGNATURES (DRY)

300 BLK 9" AR, 220gr

128 dB 762-SDN-6

300 BLK Honey Badger, 220 gr

124 dB full size HB



MP5-SD w/ HK Silencer

126 dB

M4 w/ KAC SOPMOD Silencer

138 dB

Mk23

139 dB

9" 300 BLK COMPARISON TO 10.3" 5.56mm AR

For cyclic rate gain – more compatible with suppressors than 5.56mm.

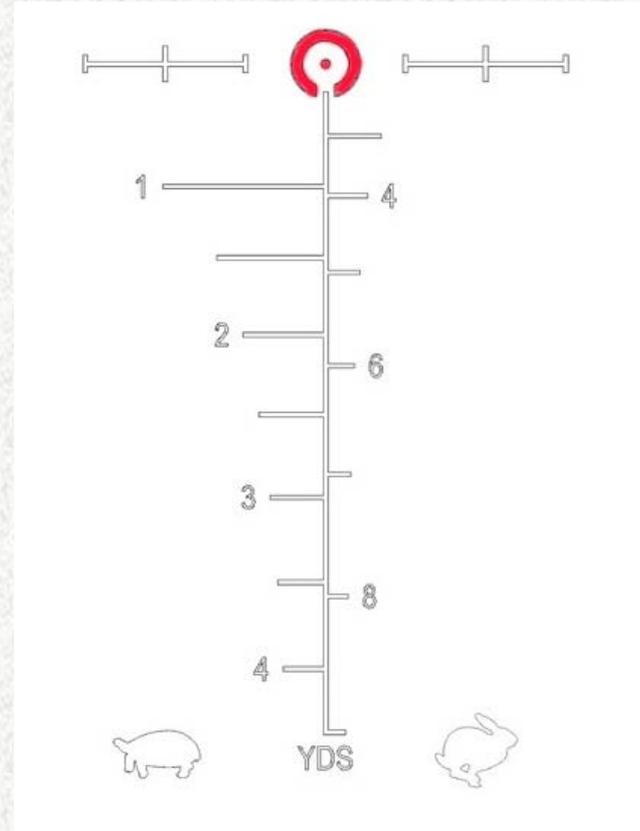
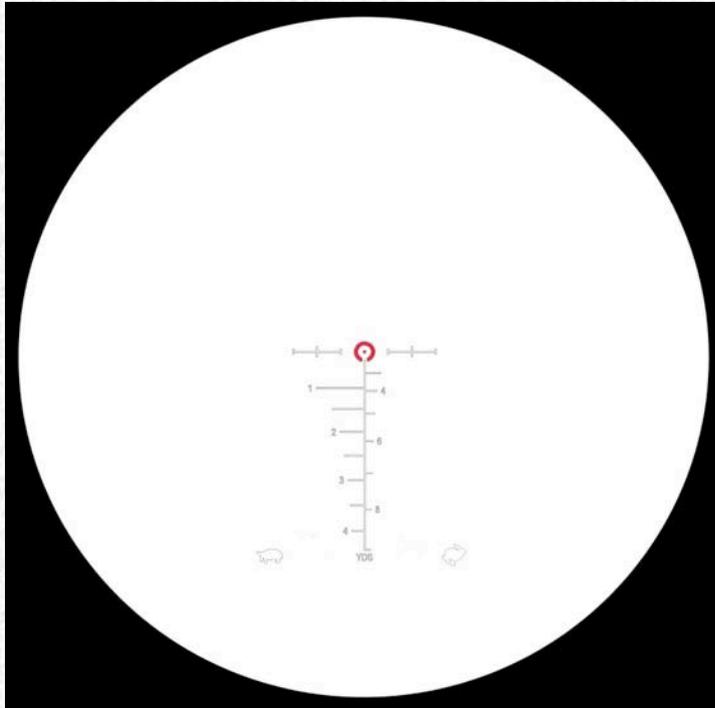


Average Rate of Fire

	<u>Unsuppressed/Suppressed</u>	<u>Percent Increase Suppressed</u>
5.56mm CQBR	737/985	34%
300 BLK Subsonic	746/780	5%
300 BLK Supersonic	821/970	18%

CUSTOM SCOPE/RETICLE WITH FFP OPTICS

1.5-5x, front focal plane



Bullet drop reference for subsonic and supersonic loads.



Robert Silvers
Advanced Armament Corp.
robert@advanced-armament.com

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