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Fat man and little boy: a .50 caliber kick with .22 fun

Dave Anderson

These are great days for big-bore fans. Bolt guns in .458 Lott, .475 revolvers, .50-cal. AR-15s, .450 Marlins ... whoa there, old hoss. Back up. Did you say 50-caliber AR-15s?

You bet. Alexander Arms makes rifles based on the AR-15 design. What sets the company apart is its choice of calibers. Seeing the market already saturated with ARs in .223, Alexander Arms looked for a caliber niche, and found it with the .50 Beowulf.

Alexander Arms put together a special package to demonstrate the versatility of the AR. It combines an Alexander Arms lower with two quickly interchangeable, vastly different upper assemblies. Both uppers are flat-topped with Picatinny rails providing plenty of sight options. The components, along with three magazines, are packaged in a padded, high quality BlackHawk carrying case.

One upper is an accurate, dependable .22 LR manufactured by DPMS. It will handle any chore a .22 rifle is needed for from plinking to pest control or small-game hunting. As a survival tool, a good .22 rifle is hard to beat, except for self-defense or hunting big game.

That's where the second upper assembly takes over. It is chambered for the moose-stomping, grizzly-whomping .50 Beowulf. It fires big, heavy, 50-caliber bullets--eight of them I as fast as the trigger can be polled.

Ballistically, the .50 Beowulf is similar to the .450 Marlin or a heavily-loaded .45-70. Any grizzly that takes eight of those big slugs and still reaches the shooter has earned his dinner. The complete package with both uppers is a bit heavy for a backpacker, but stored in a bush plane, canoe, boat, trailer, or backcountry campsite it would make a superb survival tool.

It took time for the AR-15 design to earn acceptance. The civilian-legal semiauto AR-15 was available in the 1960s but achieved no great popularity. Its cartridge was too light for big game hunting. It wasn't nearly accurate enough for varmint or target shooting, its sights were terrible, it didn't adapt readily to scope use, and it cost half again as much as a Remington 700 or Winchester 70.

But the demands of American shooters and the ingenuity of American gunmakers have wrought a transformation. The ugly duckling has been transformed into ... well, maybe not a beautiful swan, but a pretty good looking duck. An accurate, reliable, versatile and (now) powerful, butt-kicking duck.

All components of the test rifle are finished in DuraCoat in a desert "Mirageflage" pattern, similar to the design of current Marine Corps uniforms. I'm a little conflicted about the wisdom of camouflaging a survival rifle. On one occasion I set it against some rocks for a photo, and if it hadn't been for the scope standing out I might not have found it.

I fitted the DPMS .22 LR upper with a Zeiss 3-9x40 Conquest scope, which is a very fine sight. Quality of materials and workmanship of the DPMS unit is outstanding. The rifle proved completely reliable during the shooting of 800 rounds without a cleaning.

Accuracy for five-shot, 50-yard groups was typically under an inch, down to a half inch with some ammunition types. I have

bolt action spotters and heavy match-barreled autos that will do better, but for a light semiauto I consider this good accuracy.

Removing the DPMS and replacing it with the .50 Beowulf upper takes about 20 seconds. I fitted it with the superb Leupold CQ/T 1-3X sight. At its lowest setting this sight provides amazingly fast acquisition, at 3X it provides all the precision needed. The reticle can be illuminated for low-light use, but the scope itself is not battery dependent.

Shooting the .50 Beowulf is a blast. Just the reaction of other shooters at the range is enough to justify the cartridge's existence. Instead of the high-pitched crack of a .223, there's a deep-throated "ka-Boom!" followed by a reverberating clang as the steel target rocks. Take lots of ammo, because everyone is going to want a shot.

Despite the seven-pound weight the gas-operated design and muzzle brake keep recoil down. Most shooters described it as similar to a 12-gauge shotgun.

Bill Alexander notes, "The brake is manufactured from 4140 steel and is a traditional pepper pot design having five rows of six holes arranged in a spiral pattern. The low operating pressure of the gun is not conducive to the operation of a brake, so the internal design was calculated using super sonic compressible flow dynamics. Hence the divergent design of the internal passage which acts to accelerate the available gas before it hits the ports." So speaks the mechanical engineer.

Alexander Arms provided ammunition loaded with jacketed flat and hollowpoint bullets, both types weighing 334 grains. Ten feet from the muzzle the JFP ammunition averaged 1,909 fps, the JHP rounds clocked 1.924 (average of 20 rounds), from a 16-inch barrel with 1-19-inch twist.

Five-shot groups at 100 yards typically ran from 2 1/2 to three inches. Occasionally three shots would cloverleaf, but then two others would open up the group. That brings me to my one criticism of the rifle its trigger pull. Ten pulls with a Lyman electronic gauge averaged eight pounds, nine ounces, with both creep and overtravel present.

I'm confident a lighter, crisper trigger would have improved accuracy with both upper assemblies. If the rifle were mine, I'd likely drop in a Chip McCormick Super Match trigger pack. That would bring the pull down to a clean 3 3/4 pounds.

Unlikely as it seems, the big .50 Beowulf rounds stack and feed from regular AR magazines. Instead of the regular double-stack feed, the rounds fit in a single stack. To load, use the cartridge base to press down the magazine follower ahead of the feed lips and slide the round beneath the lips. Seven rounds fit the same space as 10.223 cartridges.

Feeding is in a straight line and proved completely reliable. No malfunctions of any kind occurred over the firing of 200 rounds. The ejection port is enlarged slightly and the port cover deleted to ensure smooth cartridge ejection.

In addition to its survival/defensive role, the .50 should make a useful short range hunting cartridge. Bill Alexander comments it is being used by southern-state hog hunters, who fit big low-light scopes and hunt from stands. The rifle makes a most impressive package when fitted with a Zeiss Conquest 3-12X56mm scope.

The .50 Beowulf/.22 DPMS package offers great versatility. Adding an upper in .223 Rem. or .204 Ruger would add long range varmint capability, leaving only a long-range big game cartridge gap. Bill Alexander has plans to fill the gap with his 6.5 Grendel. But that's another story.

AMMUNITION LOADED BY ALEXANDER ARMS

TYPE	VELOCITY (FEET PER SECOND)
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325-grain Speer hollowpoint	1,950
334-grain HP	1,900
334-grain FMJ plated bullet	1,900
400-grain Hawk softpoint	1,800
300-grain Sinterfire frangible	2,000
Mean Operating Chamber Pressure	Max operating pressure
33,000 psi	38,000 psi

ALEXANDER ARMS .50 BEOWULF

MAKER: ALEXANDER ARMS LLC

U.S. Army Radford Arsenal, Radford, VA 24143, (540) 639-8356

www.alexanderarms.com

Barrel: 16 inches, chrome moly steel, 6 grooves, right-hand twist.

Rate of twist: 1:19 inches

Gas Block: 4140 barrel-grade steel

Upper Receiver: Forged aluminum with Picatinny rail, ejection port enlarged and dust cover deleted

Barrel Extension: Central single wide feed lip. Cryogenically treated to ensure a fatigue free life.

Bolt: Manufactured to accept the 0.447-inch rim diameter. Extractor correctly repositioned for the rim. Manufactured from Carpenter grade 158 steel and cryogenically treated.

Extractor: Retains the claw extractor of the AR15, extensively redesigned to suit the larger rim diameter and position. The geometry of the extractor groove is adjusted to ensure reliable operation without the need for extra strength extractor springs and as consequence the fatigue life of the spring is improved even in full auto fire.

Carrier: Bolt carrier is a standard AR15/M16 unit as appropriate.

Lower Receiver: Forged and machined, hard-coat anodized. The .50 Beowulf upper and standard .223 uppers are fully

interchangeable

For More Information Contact: DPMS, Inc., 13983 Industry Avenue. Becker; MN 55306, (763)261-5600, www.dpmsinc.com

BlackHawk Industries, 4850 Brookside Court, Norfolk, VA 23502-2052, (757)436-3101, www.blackhawkindustries.com

DEVELOPMENT OF THE .50 BEOWULF

Bill Alexander is a university-trained mechanical engineer with specialization in armor and defensive aid suits. He has a military background and has worked in many small arms programs. He notes, "For obvious reasons it is difficult to discuss much of this work but during this time I gathered much experience with small arms."

Alexander commented, "The development of the .50 Beowulf started in early 1999 in England. We were engaged in the latter stages of work on a tiny Personal Defense Weapon (PDW) cartridge and weapon.

"A large-caliber black powder enthusiast who was assisting with load development said, 'Why can't you get the M16 to shoot a bullet you can actually bloody see?' The idea was appealing.

"Design calculations for the rifle showed the M16 is well balanced around the 5.56x45 cartridge. To dramatically change the caliber, the balance must be maintained if the unit is to be safe and this is not as easy as it now appears.

"The M16/AR15 is governed by the head thrust it will absorb and by the mechanics of fatigue failure. To fit the largest bullet and to minimize the thrust on the bolt, a cartridge design will always move towards that of a straight case. This also increased the efficiency of the cartridge as the energy in the powder is converted better to projectile energy.

"Back in the workshop, the question was what cartridge we were going to use. We tried a shortened .50-70 carbine case with rebated rim, and while it looked impressive it would not work. We obtained some unfinished .50 AE brass. This reduced the cartridge diameter slightly and immediately solved the feed problems. After a good deal of analysis of the bolt, the rim dimension was set at .447 inch, which is identical to the existing 7.62x39 rim.

"Bolts for this rim diameter are already proven and offered significant increases in strength, life and safety. The case length was then set to fit an existing AR magazine with a 325-grain Speer bullet. We refined the angles at the cartridge base to ensure reliability and the .50 Beowulf was finished."

MAKING THE .50 RIFLE

The AR was designed to function with a small bore, high-pressure cartridge. Making it safe and reliable with a large bore, low pressure round took some thought.

Alexander comments, "The .50 Beowulf runs at a nice, gentle 33,000 psi. This in turn keeps the bolt safe. Using the straight-case design the cartridge has a high expansion ratio so the time pressure curve peaks quickly and then falls away just as quickly.

"Normally, AR-15 port pressure is around 15,000 psi to operate the mechanism, but in the Beowulf this occurs only 3 1/2 inches in front of the cartridge case. Add a port here and you get gun parts as the bullet is still in the bore when the bolt opens. The solution is to balance the pressure with the duration it will act and the time the mechanism takes to move.

"The port must be far enough forward to ensure that the bullet has left the bore and the case pressure has dropped in the time it takes for the pressure impulse to pass to the gas piston in the bolt and accelerate the carrier mass. The reduced pressure at the port is then balanced by the duration that the pressure exists at the port, which is the work done.

"Thus the bore time or the duration of the relatively slow, large-caliber bullet in the barrel must be examined as well as the mechanism time and the port pressure. The port must be placed carefully and uniquely to each different barrel length to ensure a safe and reliable operation.

"With solutions calculated, the first prototypes were constructed and tested. Late 1999 and early 2000 saw the first true large-caliber AR-15 style receivers under test and the results were better than expected. After initial teething problems, the guns ran flawlessly. The straight-wall cases were able to launch heavy projectiles faster than initially predicted but the pressures and safety margins were all as expected."

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