

# The 6.8 SPC



The light weight and compact size of the 6.8 SPC carbine, opposed to a .308 battle rifle, is appreciated when carrying the rifle afield and employing it quickly.

## Is it All That?

It's gotten plenty of attention and ink in the last couple of years. What can it do for your AR?

By Zak Smith

**S**ince the M16's introduction, soldiers, sailors, airmen, Marines and civilians have criticized it for being under-powered, more suited for shooting prairie dogs than fighting wars. Although ammunition has improved, the .22 caliber ultimately limits the amount of lead that can be slung down-range.

In spite of this, the M16 and M4 have become the standard by which assault rifles are judged, and the AR-15 has become the ubiquitous American Sport-Utility Rifle.

Just as the War On Terror was getting underway, the U.S. Army Special Operations Command (USASOC) created the Special Purpose Rifle—Variant (SPR-V) program to fill the need for a modular assault rifle capable of shooting 5.56 in addition to 7.62x39mm.

With barrel and bolt switched, it was to fire 7.62x39mm from indigenous AK-47 magazines. It needed to retain the characteristics of the M4 and remain compatible with the Special Operations Peculiar Modification (SOPMOD) accessories.

Robinson Armament produced the RAV02 and Knight's Armament Corp produced the SR-47 in response to the USASOC SPR-V solicitation.

Ultimately, the SPR-V program was rolled into the U.S. Special Operations Command (USSOCOM) Special Forces Combat Assault Rifle (SCAR) project, and fell victim to politics. Even though the project was canceled, Special Forces soldiers had come to realize 7.62x39mm provided increased lethality over 5.56, especially when penetrating barriers.



**The light weight and compact size of the 6.8 SPC carbine, opposed to a .308 battle rifle, is appreciated when carrying the rifle afield and employing it quickly.**

Troubling reports about 5.56 performance were coming back from the field. Several soldiers had been killed or wounded by Taliban fighters who had already been shot multiple times by the Americans' 5.56 M4 carbines. These failures to incapacitate spurred the 5th Special Forces Group (SFG) to design an "Enhanced Rifle Cartridge" (ERC) to outperform 5.45x39mm, 5.56, 5.8x42mm and 7.62x39mm.

M/Sgt. Steve Holland (5th SFG (A)) and Cris Murray, service rifle and R&D gunsmith of the U.S. Army Marksmanship Unit (USAMU) led the ERC project to provide optimum terminal performance from an M4 with minimal changes to the weapon. Troy Lawton (Chief Ballistics Technician) and Cris Murray of the USAMU assisted in developing loads and built the rifles for the ERC project.

Cartridge assessment began with the 6mm PPC case, necked up to 6.5mm. The 5th SFG soon discarded the fat PPC case because of poor magazine capacity and insufficient reliability in the M4. Their attention then turned to the .30 Rem. case, which is essentially a rimless .30-30 Win. Its body diameter is larger than 5.56 at .378", but smaller than 7.62x39mm's .445".

This thoroughly obsolete cartridge was chosen as the parent case because its smaller rim diameter of .422" required less

metal to be cut from the bolt head compared to the PPC or 7.62x39mm cases, which improves bolt service life.

Several rebated-rim prototypes were created with an SPC body but 5.56's rim (.378") to utilize unmodified M4 bolts. After trials, it was clear the full-diameter rim helped extraction as compared to the rebated rim design.

Once the case dimensions were tweaked to fit and work in M4-compatible magazines, the project team quickly turned its attention to bore size. Derivative wildcats from 5.56mm up to 7.62mm diameter, shooting bullets from 90 to 140 grains, were subjected to a battery of tests, and a sweet spot emerged.

The 6.5mm bullets showed the best accuracy and the 7mm bullets were the most destructive, but the .277" bullets showed almost the same accuracy and trajectory as the 6.5mm and almost the terminal performance of the 7mm. When necked down to .277" and shooting 115-grain bullets, the .30 Rem.-based cartridge provided the best combination of combat accuracy, reliability and terminal performance for up to 500-meter engagements.

This cartridge was designated 6.8 Remington Special Purpose Cartridge (SPC), because .277" is 6.8mm in the metric system and the .30 Rem. provided the parent case.

**The relatively new 6.8 SPC cartridge (center) is similar in size to 5.56 (right), but provides terminal performance closer to .308 (left). Emily Fortier photo.**



**The 6.8 SPC is shown with other innovative fighting rifle cartridges: .276 Pedersen, .280 British, 6.8 SPC, 7.62x39mm, 7.92x33K. Photo courtesy Emily K. Fortier.**



**The PRI 6.8 SPC Special Purpose Rifle (SPR) is shown with a Leupold 3-9x36mm M/RT scope, a SureFire M3 and an MSTN Q.C. muzzle compensator. Emily Fortier photo.**

# Hornady Tames the 6.8 SPC

Hornady Manufacturing Corporation has been involved with the 6.8 SPC project from the beginning, when M/Sgt. Steve Holland (5th SFG (A)) approached them to develop a bullet specifically for the new cartridge. The bullet needed to provide a high ballistic coefficient (BC) for long-range trajectory and to carry more energy to the target, and it needed to be legal for land warfare.

Shooters are accustomed to hearing that "hollow-points are illegal" for military use. This dates back to the 1899 and 1907 Hague Conventions, which outlawed the use of bullets "calculated to cause unnecessary suffering." In 1990, U.S. Military lawyers published a Memorandum of Law which determined that "open-tip match" (OTM) bullets such as the 175-grain Sierra MatchKing are legal under the law of war because they are designed for long-range accuracy, not for bullet fragmentation.



Barrett introduced a line of 6.8 SPC rifles at the 2004 SHOT Show. Here Chris and Ronnie Barrett show off a short barreled carbine. Photo courtesy of Emily Fortier.

Hornady built its 6.8 SPC ammunition from the ground up, manufacturing its own brass and designing a new 110-grain bullet for better trajectory and barrier penetration.

The open-tip jacket design is a consequence of manufacturing a bullet with a very uniform base, aiding accuracy. Legal arguments aside, the result is that before a bullet can be used in war by the U.S. Military, the JAG Corps must review and approve it. This is a critical step in getting new ammunition into the hands of U.S. forces.

At Holland's request, Hornady developed a 115-grain OTM bullet. It had a cannelure ring so the rounds could be crimped, to prevent bullet set-back in recoil or while feeding. Since its introduction, Hornady has been selling these bullets to Remington for use in their factory ammunition. The 115-grain Hornady OTM was the first bullet for 6.8 SPC approved by JAG for use in war.

Hornady continued providing the 115-grain OTM bullet to Remington for several years, with no other involvement in 6.8 SPC. Known for doing exemplary product development, Hornady received many requests for 6.8 SPC ammunition. In late 2004, the firm made a decision to go ahead, and Hornady's ballisticians started to look at all



The Hornady 110-grain OTM ammunition uses small rifle primers, and has crimped primer pockets for reliability in autoloaders. The headstamp reads "HORNADY 6.8mm REM SPC."

Numerous articles and Internet rumors have suggested that the SPC designation means 6.8 is good only for Close Quarters Battle (CQB), but not distant targets. This is incorrect, and contrary to the intent of the project and capabilities of the cartridge. The SPC designation was assigned based on the intended integration into the Mk12 Special Purpose Rifle (SPR).

The SPC was designed from the ground up to provide increased energy, barrier penetration and incapacitation from the Mk12 SPR, from contact distance to 500 meters.

Based on their experience with 7.62x39mm, the project team set a velocity goal of 200 fps faster than the AK-47 ammunition from the same barrel length, with a projectile that provided a bet-

ter ballistic coefficient (BC) and terminal performance. This was achieved very soon into the project using Sierra 115-grain and Hornady 110-grain Open-Tip Match (OTM) bullets.

The team used Ramshot 1660 powder for initial development, and easily exceeded the 200 fps goal. Shooting from an 18-inch SPR barrel, these loads shot 2635 to 2650 fps, 300 fps faster than the AK-47.

Unlike military-industrial-complex programs such as the XM-8, the ERC project was driven directly by Special Forces shooters at the spear's tip—men who had been on the giving and receiving ends of fire. The 6.8 SPC was developed with less than \$5,000 initial investment of government funds; later development costs were paid for by industry. This is in stark contrast to top-down "next generation" programs costing the taxpayers millions and rarely producing usable weapon systems.

Following its commercial debut at the 2004 SHOT show, the 6.8 SPC had a slow start in the civilian market because Remington did not deliver ammunition quickly. Producing a load meeting velocity goals without unsafe pressure proved difficult for Remington. Inconsistent brass quality and powder clumping problems caused further delays. They sorted it out and shipped ammo in mid-2005, but the velocity was very slow at less than 2500 fps.

Although these supply problems caused a lot of "fear, uncertainty, and doubt" about the future of the cartridge, there was a silver lining. The strong interest in an intermediate cartridge with substantially more power than 5.56 spurred several ammunition manufacturers to produce their own brass and ammunition. By early 2006, three separate factories were making 6.8 SPC brass: Silver State Armory, Hornady and Remington; and five manufacturers were shipping loaded ammunition: HSM, Load-X, Remington, Hornady and Silver State Armory (SSA).

The future of 6.8 SPC in the military is clouded by high-level politics and big money. Many in the military-industrial complex have been trying to figure out how to profit from this grassroots



Smith's rifle is built on a standard lower with a Magpul M93B stock, 18-inch Douglas barrel, TA11 ACOG, Troy back-up sights, PRI float tube and Vortex flash hider.



Shown here fitted with a lightweight titanium JET sound suppressor, the 18-inch 6.8 SPC rifle provides all the capability of the SPR, but superior terminal performance.



**To wring out the ammunition, Smith and some helpers fired the 110-grain OTM load through three 6.8 SPC uppers, both in bench testing and in practical shooting drills.**

Holt also points out that handloaders should avoid slow-burning powders with the 6.8; excessive port pressures can result.

Hornady then used its expertise in computer modeling to find the best bullet design. The result was a 110-grain OTM bullet with a very sharp ogive; it appears almost as a spire point instead of a rounded curve to the bullet tip.

The bullet was designed for improved terminal performance after passing through intermediate barriers, such as interior walls or car doors. This bullet is not designed for pure target-shooting performance; it sacrifices a slight edge in accuracy to designs like the Sierra MatchKing in favor of increased lethality.

The BC of the new 110-grain OTM is 0.360.

Moving to the powder mixture, 6.8 SPC presents the challenge of limited case capacity. To achieve maximum velocity in a given pressure envelope, a slower-burning powder must be used, but doing so can run up against the case capacity limit. Furthermore, the powder must present a pressure profile such that enough gas pressure and dwell time are produced to run the various different configurations offered by rifle manufacturers.

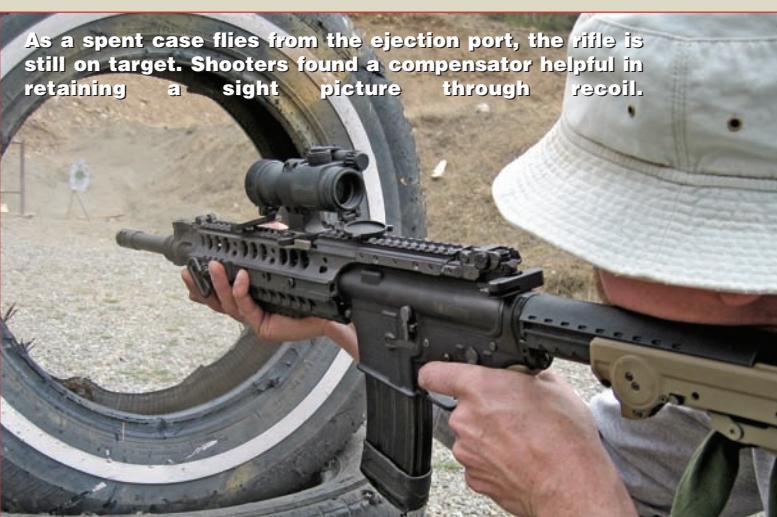
Besides maximum pressure, the ammunition must not generate excess bolt thrust, which can cause receiver failure over time. Hornady is also using a powder formulated for low muzzle flash, which is especially important for short-barreled rifles.

The end result is a load designed to work in any 6.8 SPC rifle, from 10-inch full-auto entry carbine to a 16-inch semi-auto for home defense, ranch use, or law-enforcement patrol. To verify function in the wide variety of 6.8 SPC weapons available, Hornady ran their ammunition through samples of every 6.8 SPC AR-15 upper they could get their hands on.

These uppers differ primarily in gas port location and diameter, as well as chamber dimensions. Besides the new 110-grain OTM load, Hornady also offers a load using the 110-grain V-MAX bullet. This bullet is much more frangible than the OTM, and would make a good choice for small to medium game or for defense use when over-penetration is a concern.

I had a look at Hornady's 110-grain OTM loading. From the box, the cartridges were clean and consistent. The primers are crimped, and the case mouths are crimped into the bullets' cannelure to ensure reliable function in semi and full-auto arms. The other striking feature is that the bullets taper sharply with almost a spire point shape.

I tested the Hornady ammunition in three 6.8 SPC rifles: the Stag Model 5, the Barrett M468, and a custom MSTN upper. To determine the baseline performance, I shot it through an Oehler model 35P chronograph. The ammunition clocked at 2518-2564 fps. The



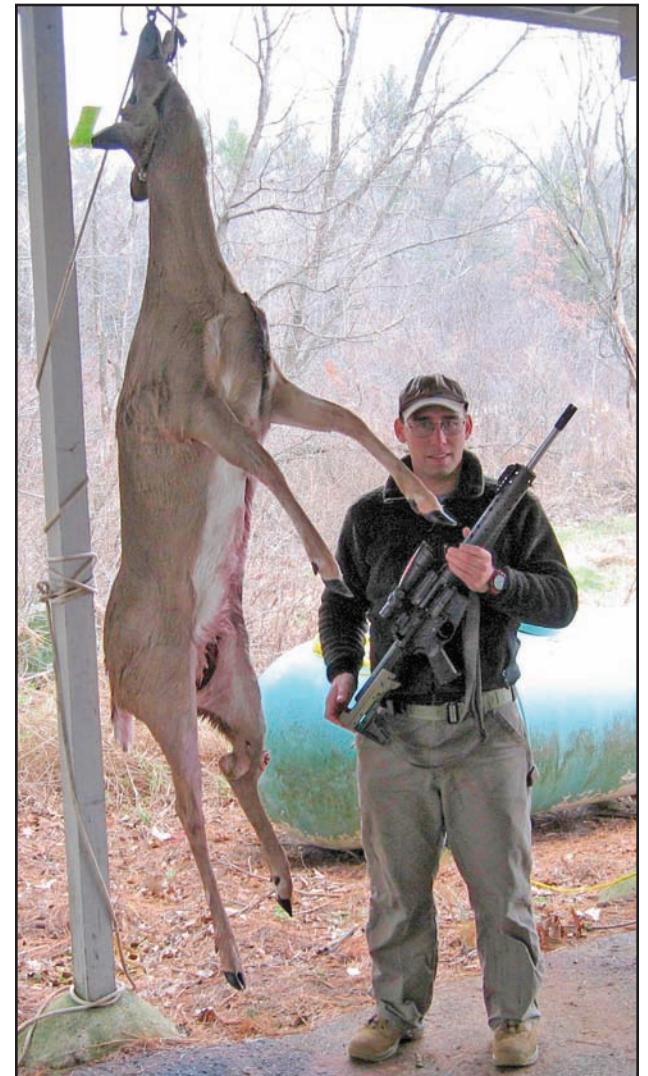
**As a spent case flies from the ejection port, the rifle is still on target. Shooters found a compensator helpful in retaining a sight picture through recoil.**



**A shooter engages four targets with the 18-inch MSTN upper, shown here with an Aimpoint M2 optic in a LaRue Tactical mount. The muzzle device is the MSTN QC compensator.**

aspects of the cartridge. Their goal was to produce ammunition that would work reliably in all 6.8 SPC weapons, from 10-inch full-auto "entry" carbines up to 20-inch rifles.

Starting with the case and primer, Hornady determined a small rifle primer is a better choice for 6.8 SPC. It makes the case head stronger, and as Wayne Holt, vice president of sales and marketing, put it, the large rifle primer is an ignition source too strong for the relatively small 6.8 case. It makes it too sensitive to temperature variations. Since nobody else made brass with small primer pockets, Hornady went ahead and toolled up to make it. Obviously, this means it's important to segregate brass when handloading.



**In a region where conventional rifle choices rule, Smith bagged this healthy Wisconsin doe at 30 yards with his 6.8 SPC carbine shooting the 110-grain Sierra Pro-Hunter.**

epiphany. In just a few months, soldiers and technicians revolutionized the capabilities of the M4 and AR-15, drawing from their thorough understanding of ballistics, marksmanship, weapons platform and real-life combat performance of 5.56 and 7.62x39mm.

Various units throughout the U.S. military are testing it now-officially or not. Even if the "Big Army" isn't sure if it wants 6.8 SPC, the shooters already know they do. On the civilian side, several large federal, state and local law-enforcement agencies are interested and are currently testing it.

The 6.8 SPC shoots minute of angle or better at both 100 and 600 yards, similar in accuracy to the 77-grain Mk262 5.56 from the SPR. Converting the M4 or M16 is easy, and can be done at the armorer level by switching out only the barrel and bolt and replacing the user's magazines.

Furthermore, any weapons system chambered in 5.56 can be converted in a similar fashion, including the current SOF 5.56



**Five-, 10-, 15- and 25-round magazines are available from PRI, with a choice of regular USGI-type floorplates or the wide 6.8 SPC floorplates at the buyer's option.**



**At the end of the day, the three 6.8 rifles ran flawlessly on Hornady ammunition. Starting properly lubed, none of them required cleaning throughout the exercise.**



**The Stag Model 5 carbine loaded with the Hornady 110-grain OTM makes an economical and powerful combination for law enforcement patrol or for home defense.**



**A Remington LTR with a Nikon 4-16x50mm scope and an SRT 6.8mm suppressor, was accurate with the Hornady 110-grain OTM ammunition. Photos courtesy of Dave Goodwin.**

### Hornady 110-grain OTM

Gun	Average group size (moa)	Best group (moa)	Velocity (fps)	SD (fps)
Barrett M468*	1.39	.98	2518	8
MSTN 18-inch	1.68	1.09	2564	10
Stag Model 5	1.61	1.02	2535	8
Remington LTR	n/a	0.88	2612	11

\* Testing of the M468 upper and the Remington LTR were done in different environmental conditions than the other two rifles.

standard deviation was less than 10 in each case, an indicator of consistent ammunition, though no guarantor of accuracy.

To test the accuracy of the Hornady ammunition, I shot a series of five-shot groups through each upper, from bags on a cement bench at 100 meters. The wind was five to 15 miles per hour, and unfortunately the Barrett upper had to be tested in different conditions from the other two uppers. The accuracy across the different uppers was consistent, with the best group from each about 1.0 moa. The average group size was about a minute and a half across.

A compact bolt-action chambered in 6.8 SPC can make a good hunting or short-range precision rifle for law enforcement. I had a friend of mine shoot the Hornady ammunition through his Remington LTR. Its 20-inch barrel gained approximately 50 fps over the 18-inch upper.

Accuracy through the Nikon Tactical 4-16x50mm scope was slightly better than the AR-15 uppers at 0.88 moa center to center.

To determine the reliability of the Hornady 110-grain OTM, several other shooters and I ran the remaining ammunition through the three 6.8 SPC uppers in some practical exercises. The Hornady ammunition performed flawlessly in all three uppers. Examination of the fired brass revealed no overpressure indicators.

Though it took Hornady just over a year to bring 6.8 SPC ammunition to market, that development time was well-spent. The 110-grain OTM ammunition was designed around the end-users' requests for a consistent load that would function with 100% percent reliability in all rifles and provide improved terminal performance.

When asked if any new loadings are in the works, Holt said that Hornady is willing to develop them if there is market demand.

My final thoughts? Hornady has built an excellent round for the 6.8 SPC cartridge. Although its suggested price of \$22 a box is not ideal for plinking, anyone who is looking for a defensive or duty loading for a 6.8 SPC carbine should consider the Hornady ammunition.



**Flanked by USGI M16 magazines (l. and r.), the 25- and 15-round PRI AR magazines are made of steel and have narrow ribs to accommodate the 6.8 SPC's larger diameter.**

rifles: M4, M16, Mk12 SPR, Mk18 and HK416; and future systems like the Mk16 SCAR-L and the XM-8. The 6.8 SPC is the clear upgrade path of these weapons to provide increased lethality. Sierra, Hornady, and X-Treme provide land-warfare legal projectiles which show nearly ideal terminal performance.

Silver State Armory has developed two armor piercing projectiles specifically for the 6.8 SPC: one has a tungsten core similar to the M995 and meets the M995 military spec for armor penetration at 100 meters; the other has a steel core similar to the old .30-'06 M2 A.P. "black tip".

With the current emphasis on urban warfare and in particular shooting from vehicles, short-barreled weapons are necessary. Because wrestling a 30-inch M4 is impractical inside a vehicle, short 10- and 12-inch carbines have become popular. Unfortunately, these short barrels simply cannot deliver the velocity required for 5.56 fragmentation; they produce little more than .22 cal. "ice pick" holes.

If converted to 6.8 SPC, these same 10- to 12-inch carbines would produce dramatically better terminal performance, especially at longer distances. 6.8 SPC is a natural match for CQB where immediate stopping power is needed in short and maneuverable weapons.

For police departments, 6.8 SPC provides substantially more "stopping power" per good hit than 5.56, reducing the number of rounds required to end the fight. This is an important consideration when each errant round is a legal liability. It also offers much better intermediate barrier penetration than 5.56, which allows an officer to shoot through glass, car doors and other light cover.

One potential downside in a law-enforcement "entry" scenario is that 6.8 SPC will penetrate more interior walls than 5.56, which might put building occupants in adjacent rooms at increased risk. With its sub-minute accuracy and superior terminal performance even from short barrels, an officer can use the same platform for entry, sniper, over-watch and patrol.

My experience shooting 6.8 SPC has been with a custom upper built by Mid-South Tactical Network (MSTN), configured with an 18-inch Douglas barrel, a mid-length gas system and a GenIII PRI float tube. The muzzle device is a Vortex flash hider, but any attachment with a .277" hole and the standard 5/8-24 threads may be used, such as a sound suppressor. The primary optic is a Trijicon TA11 ACOG on a LaRue Tactical mount, but Troy back-up iron sights are installed "just in case".

With a trajectory similar to 75 or 77-grain .223, the same holds are used for distant targets as a 16 or 18-inch .223 shooting heavy

*Cont. to page 10*



**At the request of the U.S. military, PRI produced a wider floorplate (r.) that could easily be differentiated from the standard 5.56 magazines by feel in the dark.**

### Source

**Hornady Manufacturing Corp**  
(800) 338-3220 • [www.hornady.com](http://www.hornady.com)

**The shooter uses his Kifaru Express pack in an improvised prone position, to make hits on silhouette targets out to 600 yards using the 3.5X Trijicon ACOG scope.**



*Cont. from page 8*

ammunition. The 18-inch 6.8 SPC is reliable and accurate. The recoil impulse is similar to 5.56 with a healthier push into the shoulder. With the upper swapped onto a Colt M4 lower, 6.8 SPC is controllable in full-auto, though it requires a good stance and grip.

AR-15 uppers and complete rifles are available from many sources. Barrett was first to announce a complete 6.8 SPC rifle, while PRI was offering complete uppers. Model 1 Sales, DPMS, Ameeteec, Olympic Arms and Stag Arms followed. Custom uppers are available from low-volume, high-quality (and high price) vendors like MSTN and Noveske Rifleworks.

Remington has a version of its bolt-action Light Tactical Rifle (LTR) in 6.8 SPC, Browning offers its A-Bolt and Thompson/Center has 6.8 SPC barrels available for their G2 Contender and Encore.

The 6.8 SPC case is 43mm long, has a .020" taper over its length and a 23° shoulder. The bullet diameter, .277", is identical to the popular .270 Win. Commercial cartridges are loaded to 2.260 inches, to assure feeding through a variety of rifles.

Factory loads shoot 110 or 115-grain bullets at 2550 to 2650 fps from 16- to 18-inch barrels. Ballistic trajectory is very similar to 75 or 77-grain .223, or 150-grain .308 loads from 18 to 20-inch barrels. Silver State Armory developed a load with a new 115-grain copper-plated lead flat-point bullet engineered specifically for 6.8 SPC by X-Treme bullet. Instead of a costly copper jacket, the lead projectile is plated with copper, producing a bullet that appears like a TMJ, but has terminal performance similar to the best OTMs.

The SSA 115-grain X-Treme load shoots 2625 fps from a 16-inch barrel, and the 115-grain Sierra MatchKing (SMK) load shoots 2640 fps from the same barrel length. The Hornady 110-grain V-MAX shoots 2550 fps from a 16-inch barrel. Remington 115-grain OTM ammunition chronographed at 2500 fps from my 18-inch barrel in late 2005.

The cost of ammunition has been a point of contention, with people stating that they won't buy a 6.8 SPC upper until they can find ammunition as cheap as 5.56 surplus at their local gun shop. Until economies of scale drive down the cost of production, shooters will not see dirt-cheap blasting ammunition, however, 6.8 SPC can already be found at many local gun shops around the country—even at some Wal-Marts.

Silver State Armory's 115-grain TMJ loaded ammunition is about \$12 per 20, or 25% cheaper than .308 match ammunition.

Reloaders have an easy time with 6.8 SPC. Excellent bullet choices include the Hornady 115-grain OTM and 110-grain V-MAX, the Sierra 115-grain SMK and 110-grain Pro-Hunter JSP and the 110-grain Barnes TSX, but any .277" bullet may be used. Brass is available from Silver State Armory and Remington, both of which use large primer pockets.

The Hornady brass, currently only available in loaded ammunition, uses small primer pockets, which should provide more case head strength. The developers of 6.8 SPC originally chose small primer pockets, however Remington suggested using large primers for absolute reliability in extreme cold. Later testing showed that small primers were almost as reliable.

Powder selection for maximum velocity is more difficult than .223 or .308 because the 6.8 SPC has less case volume compared

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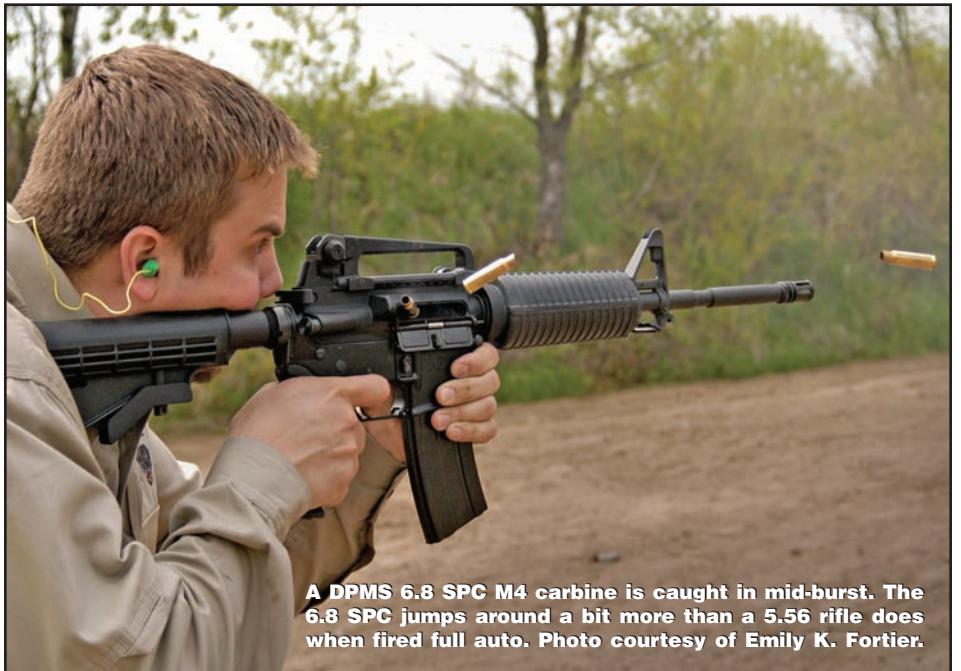
**In open country where targets often appear beyond 200 yards, the 6.8 SPC extends the shooter's ballistic advantage and delivers more power on target than any 5.56.**



**Outfitted with a Harris bipod, Magpul PRS adjustable stock, and suppressor, this 18-inch 6.8 SPC is capable of delivering rapid and accurate fire on distant targets.**



**The 6.8 SPC rifle (above) has a trajectory nearly identical to the 5.56 (below), but offers superior terminal performance in the same package with little extra recoil.**



**A DPMS 6.8 SPC M4 carbine is caught in mid-burst. The 6.8 SPC jumps around a bit more than a 5.56 rifle does when fired full auto. Photo courtesy of Emily K. Fortier.**

### Caliber Comparison Chart

Load	Muzzle Velocity	200 yards		400 yards	
		drop (ins.)	velocity (fps)	drop (ins.)	velocity (fps)
.223 55-grain M193	3070	2.2	2353	27.8	1743
.223 77-grain OTM	2670	3.3	2216	32.7	1810
6.8 SPC 115gr SMK	2650	3.5	2143	35.4	1677
6.8 SPC 110gr V-MAX	2650	3.3	2208	33.1	1811
7.62x39mm	2300	5.9	1787	53.8	1368
.308 168gr SMK	2600	3.4	2235	32.3	1891

Typical trajectory information from carbines with drop and velocity calculated at sea level with a 100 yard zero.

Cont. from page 10

to its bore area. Hodgdon H322 and Alliant Reloder 10X produced the best combination of accuracy and velocity in my barrel with the V-MAX bullet. Other notable powder choices include Vihtavuori N130 and N133, AA 2230 and Winchester 748. Any large rifle primers will work in the Remington and SSA brass.

Sub-minute accuracy was easy to achieve with neither elaborate brass preparation nor a lot of load "tweaking." In short, it is a forgiving cartridge.

While 6.8 SPC can be chambered in almost any 7.62x39mm or 5.56 rifle, or Contender pistols, the most compelling platform is the

AR-15 because of the SPC's heritage. An AR-15 chambered for 6.8 SPC requires only a new barrel, a new bolt cut to accept the larger case head diameter and new magazines.

Standard complete AR-15 lowers require no modifications, and 6.8 SPC uppers are built on standard stripped upper receivers.

Just after 6.8 SPC's announcement, rumors flew that USGI M16 magazines would feed 6.8 SPC with little or no modification. This unfortunately turned out to be false. After five or six 6.8 SPC cartridges are loaded into a USGI magazine, they begin

to bind up; after seven or eight, the magazine walls will bow out wider than the receiver's magazine well will allow.

Precision Reflex Inc (PRI) solved the problem by designing a magazine specifically for the new cartridge. Their magazines have narrower ribs than USGI magazines to accept the larger body diameter of 6.8 SPC cases, while keeping the same external dimensions for weapon compatibility. The PRI design uses steel thinner than the aluminum used for USGI magazines and flat-ground welds to join the two halves in manufacture, instead of the overlapping spot welds found in USGI magazines.

As a result, the maximum possible cartridge over-all length is increased to about 2.310 inches from about 2.245 inches in USGI magazines. A 6.8 SPC magazine of about the same dimensions as the 30-round USGI magazine holds 25 rounds, while a smaller version holds 15. PRI offers five- and ten-round magazines to satisfy some local legal requirements. C Products LLC has just developed a 6.8 SPC magazine, which should ship April 2006.

Most civilian shooters won't be doing urban CQB or 600 yard engagements in the Afghan mountains, however the 6.8 SPC is perfectly suited to more mundane uses. Intermediate-power cartridges like .257 Roberts, .250/3000, .300 Savage and most notably .30-30 have been used for more than 100 years to harvest deer and other North-American game. The 6.8 SPC fits right in with these venerable choices.

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## Stag Arms: Southpaw ARs and Much More

Anticipating the 2004 sunset of the Federal Assault Weapons Ban, shooters put off buying AR-15s. This caused a stall in business for one of the largest manufacturers of AR-15 parts, leaving personnel and machines idle.

Stag Arms President Mark Malkowski took the opportunity to spin off a subsidiary from the precision manufacturing firm which had been making aerospace and small arms parts for over 30 years. A left-handed shooter himself, he saw an opportunity in the market for a true left-handed AR-15, with left-handed controls and ejection.

With a forging made and tools set up to build the left-handed parts, Malkowski had a couple prototypes assembled. The employees of Stag Arms "tested the hell out of" the left-handed rifles, and worked all the bugs out using the first two prototypes. A run of 1,000 rifles was made, and sales were fantastic.

After this dramatic entry into the commercial AR-15 market, Stag Arms then turned its attention to more conventional rifle

configurations, as well as some new ideas. Based in New Britain, Conn., Stag Arms offers a full line of 16 and 20-inch AR-15 rifles in both left-handed and right-handed configurations, along with AR-15 parts.

Eighty-percent of the parts in each rifle are manufactured by Stag Arms in New Britain. They primarily serve the commercial market, however, they do have law-enforcement and international customers.

Stag Arms sent me a right-handed version of their Model 5 carbine. It is built around an A3 flat-top receiver, and has a 16-inch M4-profile chrome-lined barrel, chambered in 6.8 Remington SPC. The rifling twist is 1:10 to stabilize 90 to 130-grain bullets. The muzzle is covered by an A2 flash hider.

Stag Arms uses a one-half inch by 36 thread pattern, which is a standard for 9mm, to prevent 5.56 muzzle devices from being used on the larger caliber.



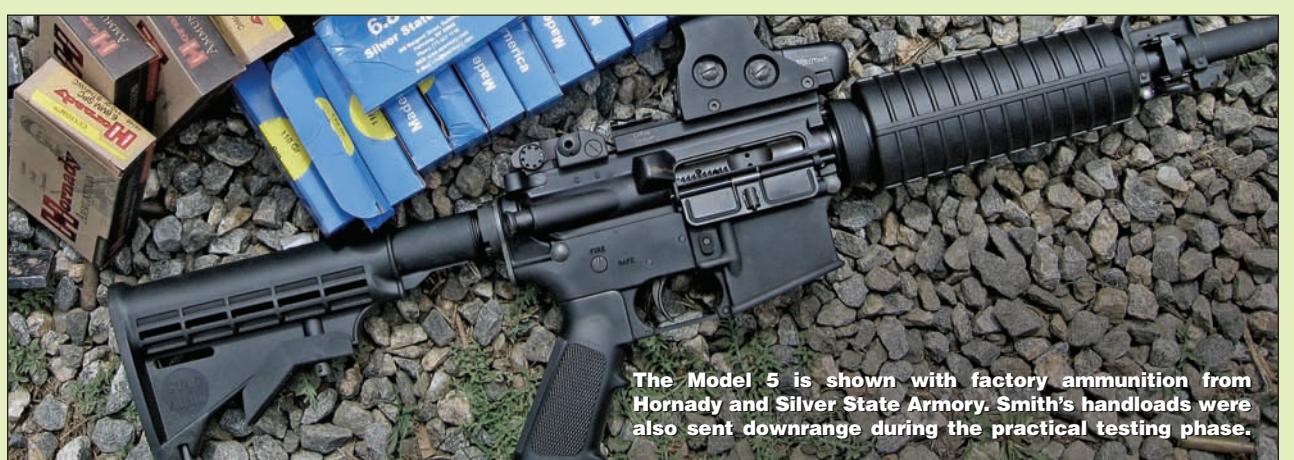
Even though the lower is identical to a 5.56 lower receiver, the rollmark, "MODEL STAG-6.8 CAL 6.8 MM" sets this new variant apart from most AR-15 rifles.



The Stag Arms Model 5 6.8 SPC carbine, shown here in factory configuration, provides a compact and lightweight platform for the hard-hitting 6.8 SPC cartridge.



The Model 5 comes with a removable A2-style detachable carry handle, adjustable for windage and elevation. The included PRI magazine has a capacity of 25 rounds.



The Model 5 is shown with factory ammunition from Hornady and Silver State Ammunition. Smith's handloads were also sent downrange during the practical testing phase.

The Model 5 has carbine-length M4-style handguards with heat shields, and a fixed A2 front sight tower. The rear sight is a detachable carry handle. Stag provided a simple and innovative side-sling swivel inside the front sight tower, for modern sling usage. The lower is a standard AR-15 lower receiver manufactured by Stag Arms, however, it is marked "MODEL STAG-6.8 CAL 6.8 MM".

A six-position telescoping stock finishes out the carbine. One 25-round PRI 6.8 SPC magazine was included.

The Stag carbine exhibits good fit and finish. There is no play between upper and lower, yet the takedown pins are removable without tools. The black finish is consistent and durable over the entire rifle. The trigger is a standard military

## Sources

**6.8 SPC FAQ**  
www.68spc.com • (6.8 SPC resources)

**Ameetec Arms**  
(480) 633-2767 • www.ameetecarms.com

**Barnes**  
(800) 574-9200 • www.barnesbullets.com

**Barrett**  
(615) 896-2938 • www.barretttrifles.com

**Browning**  
(800) 333-3288 • www.browning.com

**C Products, LLC**  
(866) 274-0247 • www.cproductsllc.com

**DPMS Inc.**  
(800) 578-3767 • www.dpmsinc.com

**Hornady**  
(800) 338-3220 • www.hornady.com

**HSM**  
(406) 777-2106 • www.thehuntingshack.com

**Load-X Ammunition**  
(707) 579-0990 • www.loadxammo.com

**Model 1 Sales**  
(903) 546-2087 • www.model1sales.com

**Mid-South Tactical Network (MSTN)**  
(901) 847-9019 • www.mstn.biz

**Noveske Rifleworks LLC**  
(541) 479-6117 • www.noveskerifleworks.com

**Olympic Arms, Inc.**  
(360) 456-3471 • www.olyarms.com

**Precision Reflex, Inc.**  
(419) 629-2603 • www.pri-mounts.com

**Remington Arms Company**  
(800) 243-9700 • www.remington.com

**Sierra Bullets**  
(800) 223-8799 • www.sierrabullets.com

**Silver State Armory**  
(775) 537-1118 • www.silverstatearmory.com

**Stag Arms**  
(860) 229-9994 • www.stagarms.com

**Thompson/Center Arms**  
(603) 332-2333 • www.tcarms.com

*Cont. from page 12*

While an anti-personnel round should have dramatic fragmentation and 12-inch minimum penetration, most big-game hunters want a bullet which will penetrate the muscle and bone of a deer's shoulder and still produce an exit wound for tracking. This suggests that a good choice for deer would be a stoutly-constructed bullet, such as the new 110-grain Barnes TSX, made entirely of a copper alloy.

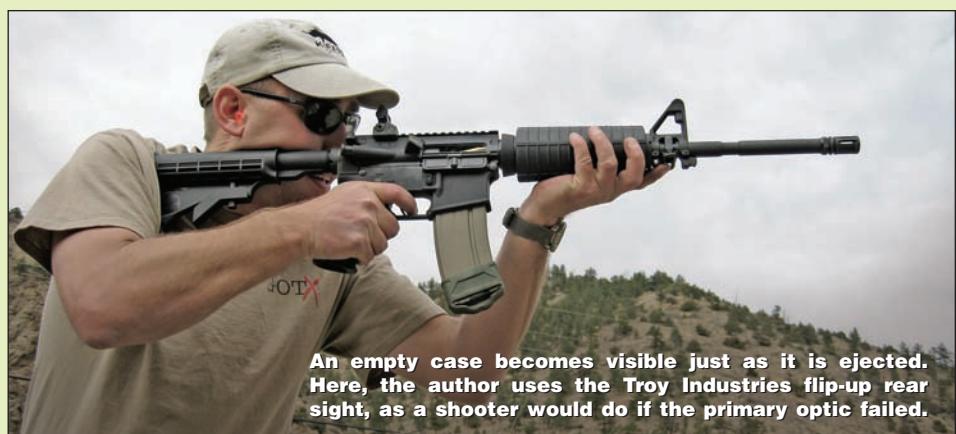
Bucking conventional choices, an AR-15 chambered in 6.8 SPC makes an excellent hunting rifle. Legal even in states with a .243 minimum caliber, it provides a compact and lightweight package. A 16-inch carbine with a collapsible stock and iron sights or a compact optic is a good recipe for the stalking or stand hunting typical of the East and Midwest where average shots are often 50 yards.

6.8 SPC carbines have successfully harvested deer for the last several years, at distances as far as 300 yards. Many American rifle hunters are sending the gun makers photos and stories of their accomplishments with 6.8 SPC on mule deer, pronghorn, antelope, caribou, hogs, coyotes, and wild dog packs.

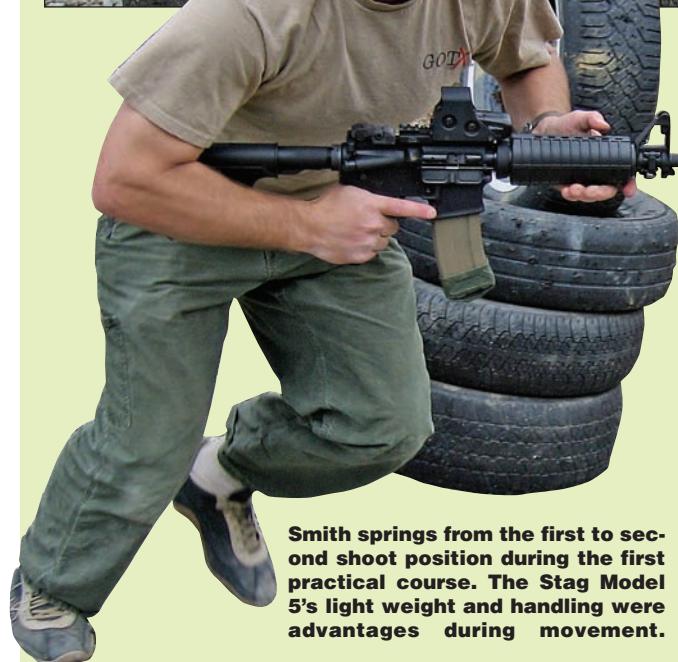
For years, shooters chatting at the range or on the Internet have discussed what they "wished the AR-15 could do" and decried its

*Cont. to page 16*

**A shooter engages four targets through the low port. To speed target acquisition, the Stag carbine was fitted with an EOTech Holosight on a LaRue mount.**



**Handguards are easy to grasp, and their metal heat-shields are welcome during rapid-fire drills. The carbine proved reliable even when its barrel was too hot to touch.**



**Smith springs from the first to second shoot position during the first practical course. The Stag Model 5's light weight and handling were advantages during movement.**

single-stage with a clean break, all other controls operate freely. In short, it's put together exactly right.

I took a twofold approach to evaluating the carbine. First, I established its reliability and accuracy with various types of ammunition; second, I had several experienced shooters run the carbine through a variety of practical shooting problems.

This is no bench or competition rifle, it is set up like a military M4. Accuracy testing was done at 100 meters, shooting from bags on a cement bench, using a 3.5X Trijicon ACOG. The ACOG was switched out in favor of an EOTech Holosight for the "practical" portion of the testing, a natural match for the lightweight Stag carbine.

While some contend that an AR-15 should be afforded a "break in" period, I believe an AR-15 should run properly when taken from its box and lubed. Malfunctions in the first 20 rounds may indicate problems that will return in the future, when the gun is subjected to abnormal operating conditions. This turned out to be moot as the Stag carbine ran like a champ from the start.

Accuracy testing was conducted with a series of five to 10 five-shot groups. Ammo types were Hornady 110-grain OTM, Silver State 115-grain SMK and Silver State 110-grain Pro-Hunter. I also used my own reloads. The Stag carbine had no problem shooting consistent 0.75 to 1.75 minute of angle groups at 100 meters.

The winds during the accuracy testing were pretty typical for my high-plains locale, variable five to 15 mph. I did notice that as the chrome-lined barrel had more rounds fired, it seemed to settle down and provide better groups on average than when new.

### Stag Model 5 Specifications

<b>Weight:</b>	7.1 pounds
<b>Barrel:</b>	16 inches
<b>Twist:</b>	1:10
<b>Caliber:</b>	6.8 Remington SPC
<b>Upper:</b>	A3 Forged 7075 T6 Aluminum
<b>Buttstock:</b>	Collapsible six-position
<b>Rear Sight:</b>	Removable carry handle



**6.8 SPC takes full advantage of the modularity of the AR-15 design; a 6.8 SPC upper can be used on any standard complete lower, offering fast, easy power upgrades.**

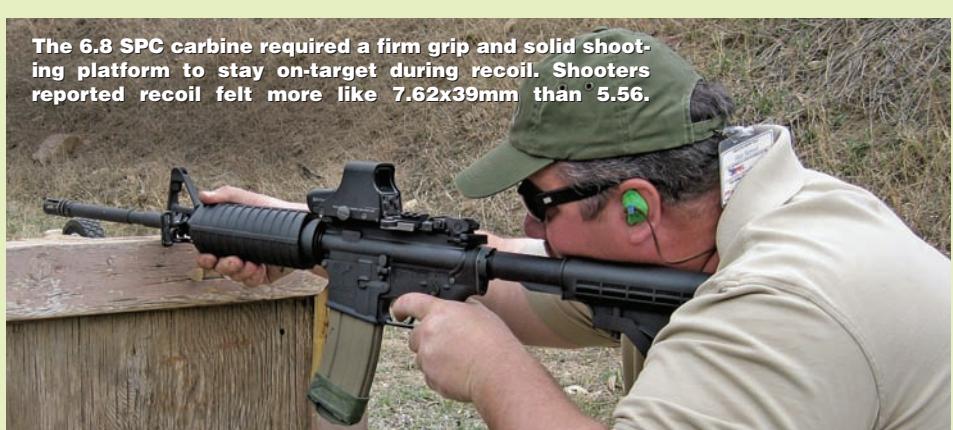
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diminutive 5.56 cartridge. With the advent of 6.8 SPC, fans of the "Black Rifle" are realizing it is now in a new category—a real game- and man-stopper. The soldiers of the Special Forces and the USAMU have opened the door to revolutionary capability in the AR-15; all shooters need to do is step through and start lighting primers.

SGN

## ON THE COVER

This Stag 6.8 rifle wears a new Leupold LR/T M2 3.5-10X scope, and the ensemble is covered in Lauer Dura-Coat as applied by GunCoat Northwest of West Linn, Oreg. ([www.guncoat.com](http://www.guncoat.com)) Hornady TAP ammo makes the 6.8 an effective defensive rifle. Photo by Jade Synhorst.



The 6.8 SPC carbine required a firm grip and solid shooting platform to stay on-target during recoil. Shooters reported recoil felt more like 7.62x39mm than 5.56.

### Stag Model 5 Test Results

Load	Average Accuracy (MOA)	Best Accuracy (MOA)	Velocity (fps)	Standard Deviation
Hornady 110-grain OTM	1.61	1.01	2535	8
<b>SSA 110-grain Pro-Hunter 1.72</b>	<b>1.45</b>	<b>2558</b>	<b>23</b>	
SSA 115-grain SMK	1.49	0.74	2523	14

Static accuracy and reliability tests serve their purpose, but the M4-style Stag carbine is designed for light weight and maneuverability in practical applications like defense and sport. To get a feeling for how the Stag carbine performs in its natural setting, three other competitive shooters and I shot the Stag carbine side by side with other rifles in a practical shooting course requiring speed, accuracy and movement.

The comparison rifles were: a 20-inch AR-15A2 in .223 set up with iron sights and a JP Enterprises BC muzzle compensator; a 16-inch AK-47 in 7.62x39mm; a 16-inch Barrett M468 in 6.8 SPC; and a 18-inch MSTN in 6.8 SPC with a MSTN QC muzzle compensator.

The first course of fire comprised four steel silhouette targets arranged at 40 yards, which the shooter engaged once each from three positions: through a low port, touching a barricade, and over a tire.

The positions were about five yards apart, so the shooters had to move. The Stag 6.8 SPC carbine was very handy for this course of fire. Its light weight, natural pointing, and short length were advantages that helped shooters transition to the next target after each shot and move quickly to the next position.

After shooting the first drill, we decided to use another test to focus more on the specific handling characteristics of the rifles.

Starting with the muzzle touching the barricade, the shooter was to double-tap each steel target once, for a total of eight shots on the four targets. This drill exposed the recoil characteristics of the different rifles, how much the sight picture was disturbed, and target transition handling.

Here, the Stag carbine's light weight and A2 flash hider worked against it, bouncing us around noticeably more than the other rifles. We had to deliberately slow down and man-handle the gun to stay on target for the second shots, compared to the other rifles which generally stayed on target and didn't push the shooter around in recoil.

The Stag carbine provided no surprises for shooters familiar with the AR-15, and that's exactly what we wanted to see. Build quality is high, and everything is put together right. It runs reliably and makes hits easily. This is no benchrest gun, it is a lightweight carbine designed to be handy in the field and provide substantially more performance than 5.56.

We found the Stag carbine quick to maneuver during the practical exercises. Its reliability was excellent, with no malfunctions shooting the Hornady and Silver State Armory ammunition. It should be noted that the Stag carbine was only lubed at the beginning and not cleaned throughout the day.

If pressed for a complaint, it would be that the muzzle threads are 1/2-36, which prevents the use of some muzzle

devices such as the MSTN QC compensator and standard .30 caliber sound suppressors. With the increased recoil of 6.8 SPC, shooters may prefer a brake or compensator instead of a standard A2 style flash hider. Stag Arms reports they are looking into a standard thread pattern to address this issue.

While the Stag carbine lagged behind the other rifles in the second course of fire due to recoil handling, it should be noted that the other three rifles all had muzzle compensators instead of flash-hiders and were also more than twice as expensive. The Model 5 6.8 SPC carbine has a MSRP of \$1,220 with the detachable carry handle.

Although the Stag carbine is relatively new, they are backed by more than 30 years of precision manufacturing experience in both aerospace and small arms components, and this attention to detail shows in the rifles. The Stag Model 5 carbine is well-built and reliable, and would make a good choice for home defense, a ranch rifle, hunting or law-enforcement patrol.

### Source

**Stag Arms**

(860) 229-9994 • [www.stagarms.com](http://www.stagarms.com)