

SIG Arms P220 Sport



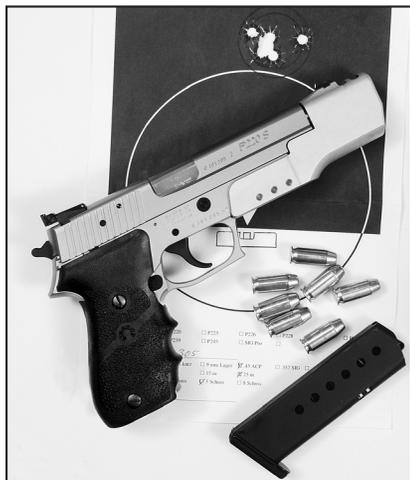
SIG's new P220 Sport is more than simply a beefed-up P229 Sport chambered in .45 ACP. The P220 Sport has an improved design and a simplified means of attaching the compensator.

Like SIG Arms' P229 Sport pistol (April 1998, p. 42), the new P220 Sport offers longer service life, low perceived recoil, improved ergonomics and minimal maintenance requirements—but in .45 ACP caliber. Rather than simply beef-up the existing P229 Sport, SIG Arms improved the design and simplified the means of attaching the compensator.

Where the P229 Sport we tested previously had a compensator that needed to be threaded on and secured with a set screw, the new P220 Sport's larger compensator slides onto a dovetail machined in the dust cover and is secured by three screws. Also changed is the grip that, while still a one-piece, wrap-around Hogue unit, now has finger grooves at the front in lieu of cut checkering on the grip's front strap.

Retained are the extended magazine release button and blued steel control levers

Retained from the P229 Sport are the extended magazine release button and control levers in the familiar positions.



Accuracy of the P220 Sport is spectacular, and fast follow-up shots come easily.

SHOOTING RESULTS

.45 ACP Cartridge	Vel. @ 15' (f.p.s.)	Energy (ft.-lbs.)	Recoil (ft.-lbs.)	Smallest (inches)	Largest (inches)	Average (inches)
Black Hills 230-gr JHP	819 Avg. 12 Sd	342	4.2	1.20	1.78	1.41
Cor-Bon RC1074 200-gr. JHP	1035 Avg. 18 Sd	476	5.3	1.33	2.03	1.59
Federal 45A 230-gr. FMJ	823 Avg. 13 Sd	346	4.5	1.55	2.39	2.02
Average Extreme Spread:						1.67
Measured average velocity for 10 rounds from a 5" barrel. Range temperature: 64° F. Humidity: 32%. Accuracy for five consecutive, five-shot groups at 25 yds. from a Ransom Rest. Abbreviations: FMJ (full metal jacket), JHP (jacketed hollow-point), Sd (standard deviation)						

The *American Rifleman* has used the phrase "Dope Bag" at least since 1921, when Col. Townsend Whelen first titled his column with it. Even then, it had been in use for years, referring to a sack used by target shooters to hold ammunition and accessories on the firing line. "Sight dope" also was a traditional marksman's term for sight adjustment information, while judging wind speed and direction was called "doping the wind."

WARNING: Technical data and information contained herein are intended to provide information based on the limited experience of individuals under specific conditions and circumstances. They do not detail the comprehensive training procedures, techniques and safety precautions absolutely necessary to properly carry on similar activity. Read the notice and disclaimer on the contents page. Always consult comprehensive reference manuals and bulletins for details of proper training requirements, procedures, techniques and safety precautions before attempting any similar activity.

SIG ARMS P220

MANUFACTURER: Swiss Industrial Co.,
CH-8212 Neuhausen am Rhine Falls,
Switzerland

IMPORTER: SIG Arms, Inc. (Dept. AR),
Corporate Park, Exeter, NH 03833;
(603) 772-2302; www.sigarms.com

CALIBER: .45 ACP

ACTION TYPE: recoil-operated, semi-
automatic pistol

CONSTRUCTION: stainless steel

FINISH: natural stainless steel

OVERALL LENGTH: 9 1/2"

BARREL: 5"

RIFLING: conventional, 1:16" RH twist

WIDTH: 1 1/2"

HEIGHT: 6"

WEIGHT EMPTY: 48 ozs.

MAGAZINE: stainless steel, single-
column, seven-round

SIGHTS: LPA rear screw-adjustable for
windage and elevation with two white
dots; Patridge front blade with single
white dot

TRIGGER: single stage, non-adjustable,
double-action, 9 1/2-lb. pull; single
action, 4-lb. pull

STOCKS: Hogue, black, rubber with fin-
ger grooves

ACCESSORIES: carrying case, spare
magazine, trigger lock

SUGGESTED RETAIL PRICE: \$1,320

We mounted the SIG Arms P220 Sport in a Ransom Rest and fired it for accuracy with the results shown in the accompanying table. Extensive function firing was conducted with Black Hills, Cor-Bon, Federal, Hornady and Remington ammunition with



The P220 Sport's larger compensator slides onto a dovetail machined in the dust cover and is secured by three screws. The weight of the gun combined with the compensator readily mitigates felt recoil.



bullet weights and styles ranging from 185-gr. semi-wadcutters to 230-gr. ball. We had the same problems with the magazine release on the P220 Sport as we did on the P229 Sport. Namely, right-handers had difficulty placing the thumbs of their shooting hands while southpaws had their trigger fingers resting on the release when shooting. There were, however, no malfunctions of any kind. Like most compensated guns, the hotter the load, the better the compensator

works. Accuracy of the P220 Sport is spectacular, and fast follow-up shots come easily.

The high-quality, stainless steel parts will clearly add to the longevity of this firearm and decrease the level of maintenance required. Further, the weight of the gun combined with the compensator readily mitigates felt recoil. While a costly handgun, the .45 ACP-caliber Sport will appeal to those who view the purchase of a firearm as a lifetime investment.



in the familiar positions. Sights remain an LPA rear unit screw-adjustable for windage and elevation with two white dots combined with a Patridge front blade with a single white dot. The rear sight is dovetailed into the top of the slide in the conventional manner, but the front sight is dovetailed into the ported muzzle compensator.

Verona Gold Hunter Shotgun



Demand for Verona shotguns has been very high. Our sample shotgun exhibited better than average workmanship, desirable features and an affordable price.

At the 1999 SHOT Show, PMC had at its booth a new line of Verona shotguns from Italy it was importing under the B.C. Outdoors name. Demand has been so high that we were only recently able to obtain a sample for test and evaluation. When a Verona Gold Hunter 12-ga. arrived, it was clear why demand had been so high. At first look, Verona shotguns exhibit better than average workmanship, desirable features and affordable prices. Cosmetic blemishes on our sample were few and relatively mild, and overall the Verona Gold Hunter appears to be a good value.

The basic box-lock action has a minimal number of parts and locks by a Browning-type lug the width of and at the bottom of the action body. Square hammers are powered by coil main springs and are held cocked by sears pinned in the top of the action. Rebounding firing pins are held back by coil springs, and the single, selective, gold-



Gold versions of the Verona Hunting line have silver-finished receivers and false sideplates embellished with scroll engraving and gold-inlaid game birds.



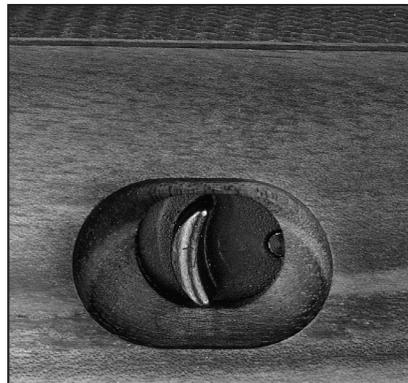
Square hammers are powered by coil main springs and are held cocked by sears pinned in the top of the action. Rebounding firing pins are held back by coil springs.

plated trigger resets to the other barrel by an inertial block. The top tang-mounted safety button is manual and incorporates the barrel selector. Gold versions of the Verona Hunting line have silver-finished receivers and false sideplates embellished with scroll engraving and gold-inlaid game birds. While the degree of ornamentation is heavy, it is not overdone or pretentious. Standard Hunting models have engraved, blued receivers and no sideplates or gold inlays.

Barrels are attached to a jeweled monobloc and joined by solid side ribs. The top rib is ventilated, .27" wide, cross-grooved to reduce glare and has a single, gold front bead. Bores and chambers are chrome-lined and the muzzles are threaded to accept choke tubes. Both 12- and 20-ga. Gold Hunter shotguns come with five choke tubes: F, IM, M, IC and C, while the standard Hunter comes with F, M and IC tubes.

Barrels and tubes are rated for steel shot through modified constrictor. Firing steel shot through the IM or tighter choke may cause damage, and voids the warranty. Regardless of grade, 28-ga. and .410-bore Hunters come with fixed full and modified chokes. Ejectors are selective, automatic and not readily converted to extractors.

Wood-to-metal fit on our sample was excellent with only a little bit of proud wood around the trigger and fore-end iron. Both the fore-end and buttstock are cut from the same stock blank, so match up is perfect. Checkering is in a bordered point pattern of 22 lines per inch. Gold versions are supposed to be hand-checked, but our sample



Attachment of the fore-end is by a latch that functions like an Anson push rod but is located like a Deeley. Pressing back on the semi-circular button unlatches the fore-end.

SHOOTING RESULTS

AVERAGE OF 10 PATTERNS AT 40 YDS.



Improved Modified

Full

■=Point of Hold
Federal P128 6

12-ga. 2 $\frac{3}{4}$ "—1 $\frac{1}{4}$ oz.—No. 6 lead

Average Pellet count—253

Measured Velocity @3-ft.—1278 f.p.s.

Remaining Energy Per Pellet @40 yds.: 2 ft.-lbs.

Recoil: 24.9 ft.-lbs.

Total Hits	159 (63%)	Total Hits	180 (71%)
21" Inner Circle	95 (37%)	21" Inner Circle	111 (44%)
30" Outer Ring	64 (26%)	30" Outer Ring	69 (27%)



Barrels are attached to a jeweled monobloc. Lock-up is by a single Browning-like lug the width of the receiver that locks into a single under lump.

appeared primarily machine checked with the border hand-cut over the top of the wrist. That said, this is one of the best machine checking jobs we've ever seen. Standard Hunting models are machine-checked.

Attachment of the fore-end is by a latch that functions like an Anson push rod but is located like a Deeley. Here, a semi-circular button housed in a round cut-out in the fore-end is pushed straight back to unlatch the fore-end. Buttstock attachment is by a stock through bolt accessible under the solid rubber butt pad.

We patterned the Verona with the results shown in the accompanying table and function fired it with PMC and Remington ammunition. There were no malfunctions of any kind, and the Verona shoots even, dense patterns well centered on the point of hold. Ejection was positive and all controls functioned reliably.

The Verona, then, is a well-made and attractive line of shotguns. Add to that the guns' affordable prices compared with similar shotguns and it's easy to see why sales have been so brisk.



VERONA GOLD

MANUFACTURER: Rizzini, Via Gitti, 41-25060, Brescia, Italy

IMPORTER: B.C. Outdoors (Dept. AR), 12801 U.S. Hwy. 95 South, Boulder City, NV 89005; (702) 294-6226; BC_Outdoors@MSN.com

GAUGE: 12-ga., 3" (tested) 20-ga., 3", 28-ga. and .410-bore available

ACTION TYPE: box-lock over-under shotgun

RECEIVER: engraved and silver-finished with false sideplates

FINISH: silver-finished action, jeweled mono-bloc, blued barrels

OVERALL LENGTH: 45 $\frac{1}{2}$ "

BARRELS: 28"

WEIGHT: 7 $\frac{3}{4}$ lbs.

CHOKE SYSTEM: Verona Interchoke or optional Briley

TRIGGER: single, selective, 4-lb. pull

STOCK: matte-finished walnut with schnabel fore-end and hand-cut checkering: length of pull, 14 $\frac{1}{2}$ "; drop at heel, 2 $\frac{3}{8}$ "; drop at comb, 1 $\frac{1}{2}$ "

ACCESSORIES: five choke tubes: F, IM, M, IC, C; choke tube wrench

SUGGESTED RETAIL PRICE: \$1,295

T/C Fire Storm Flintlock

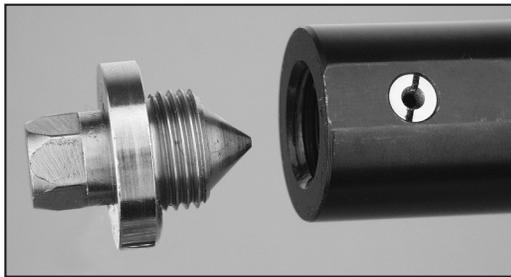
Thompson/Center's new Fire Storm flintlock muzzleloader takes charges of up to three 50/50 Pyrodex Pellets. That level of power and performance further blurs the line between "traditional" and "modern" blackpowder rifles.

"Traditionalist" blackpowder rifle hunters have eschewed the "modern" in-line muzzleloader for a variety of reasons. And even though they can still balk at the styling of such guns, they now have the option of achieving the same level of power with Thompson/Center's new Fire Storm. An outside hammer flintlock muzzleloader, the Fire Storm takes charges of up to 150-grs. blackpowder equivalent or three 50/50 Pyrodex pellets (.50-cal./150-grs. blackpowder equivalent).

At first blush, the Fire Storm looks like T/C's Pennsylvania Hunter rifle but with a rugged, black Rynite synthetic stock and round barrel. Looking deeper, we find more subtle differences. Most noticeable is the breech plug arrangement. The Fire Storm uses a new "Pyrodex Pyramid" breech plug. Design of the plug directs heat from the priming charge 360 degrees around the base of the rearmost Pyrodex Pellet. As the pellets are consumed, heat is theoretically drawn up through the center of the pellets creating a "fire storm" of ignition—hence the gun's name.

Another interesting feature of the breech plug is that it is easily removable. By using a 7/16" wrench, it is simply turned out for cleaning the bore or removing a fouled charge. Finally, the hex-shaped head of the plug anchors the barrel in the tang, eliminating the typical hooked breech.

Another important feature is the removable, stainless steel touchhole liner. The liner is coned inside and out forming an internal hourglass profile for faster and more reliable igni-

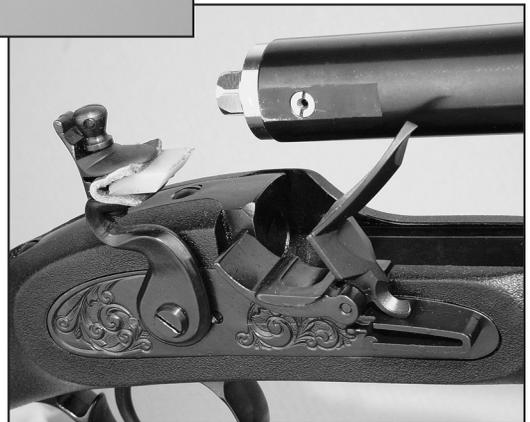


Design of the new "Pyrodex Pyramid" breech plug directs heat from the priming charge 360 degrees around the base of pelletized charges. With Pyrodex Pellets, some of the heat is drawn up through the center of the pellet creating a "fire storm" of ignition in the breech.

tion. A screwdriver slot cut across the face of the liner facilitates its removal and installation.

Sights on the Fire Storm are improved over the plastic-bodied fiber-optic units we've seen on recent T/C products. While they retain the green rear and red front fiber-optic elements, the bodies are now steel, with the rear being click-adjustable for windage and elevation. Also upgraded is the ramrod, which is now solid aluminum and threaded on each end to accept accessory tips.

The remainder of the Fire Storm is typical T/C, having a quality, coil-spring-powered hammer; single, non-adjustable



Instead of a familiar hooked breech, the Fire Storm uses a new breech plug with a 7/16" hex head that seats in the tang. The breech plug is easily removed for bore cleaning or clearing a fouled charge.

T/C FIRE STORM

MANUFACTURER: Thompson/Center Arms Co., Inc. (Dept. AR), P.O. Box 5002, Rochester, NH 03866; (603) 332-2333; www.tcarms.com

CALIBER: .50

ACTION TYPE: outside hammer, flintlock muzzleloader

FINISH: satin blue

OVERALL LENGTH: 45"

BARREL: 26", straight, round contour

RIFLING: conventional, eight-groove

1:48" RH twist

WEIGHT: 7 lbs.

SIGHTS: steel, square blade rear with green fiber optic elements, click adjustable for windage and elevation; steel front with red fiber optic element

TRIGGER: single, non-adjustable, 7-lb. pull

STOCK: black Rynite; length of pull, 13 3/4"; drop at heel, 2 3/4"; drop at comb, 1 1/4"

ACCESSORIES: aluminum ramrod, jag, takedown tools

SUGGESTED RETAIL PRICE: \$376

trigger; generous trigger guard for easy firing with gloved hands; steel, QD sling swivel studs and 1" -thick, solid rubber recoil pad. We did note, however, that the usual single tenon now is U-shaped with two slots so the wedge pin passes through it twice for more rigid barrel attachment.

Many flintlock shooters, being traditionalists or constrained by hunting regulations, shoot patched roundballs. But the power potential of a 150-gr. charge in the Fire Storm lends itself more to the use of sabot bullets. Roundballs typically shoot more accurately with a slow rifling twist while conicals and bullets in sabots tend to be more accurate with a faster twist. Perhaps for this reason, T/C rifled the Fire Storm's 26" barrel with a 1:48" twist, which many see as a good compromise. The muzzle features T/C's QLA system, which is a smooth "false muzzle" for easy loading and precise bullet alignment.

This being a rather unconventional flintlock, we chose to include some uncon-

ventional loads in our accuracy and velocity testing. Most unconventional was a load of three 50/50 Pyrodex Pellets and a patched roundball. That heavy load will chew up and spit out the best patches, which wrecks accuracy, so we turned to noted blackpowder authority Dr. Sam Fadala for guidance. He suggested we use



This being an unconventional flintlock, we chose to include some unconventional loads in our testing—including one consisting of three 50/50 Pyrodex Pellets and a patched roundball.

a small wad of hornet nest material between the charge and the patched roundball as an insulator. The arrangement that worked best for us was to seat the hornet nest material on top of the pellets, followed by a lubricated, .50-cal. Ox-Yoke Wonder Wad and a .490" roundball patched with a .010" Ox-Yoke Wonder Patch. We also tested the Fire Storm using Hornady's "Hard Ball" roundballs in special plastic sabots with a more conservative load of two Quick

SHOOTING RESULTS

.50 Caliber	Vel. @ 15' (f.p.s.)	Energy (ft.-lbs.)	Recoil (ft.-lbs.)	Smallest (inches)	Largest (inches)	Average (inches)
.490" roundball, .010" Wonder Patch three 50/50 Pyrodex pellets* Goex FFFFg priming powder	2145 Avg. 71 Sd	1789	20.6	4.34	7.66	6.17
Hornady Hard Ball in sabot two Quick Shots** Goex FFFFg priming powder	2200 Avg. 29 Sd	1881	15.5	2.96	5.86	4.24
T/C 470-gr. Maxi-Ball 90-grs. Pyrodex RS Goex FFFFg priming powder	1128 Avg. 35 Sd	1328	22.8	4.42	7.04	5.72
Average Extreme Spread:						5.38

Measured average velocity for 10 rounds from a 26" barrel. Range temperature: 67° F. Humidity: 72%. Accuracy for five consecutive, five-shot groups at 100 yds. from a sandbag rest. Abbreviations: Sd (standard deviation), * (150-grs. blackpowder equivalent), ** (100-grs. blackpowder equivalent)

Shots (100-gr. blackpowder equivalent), and T/C's Maxi-Hunter conical bullets with loose Pyrodex RS.

As a rule, flintlocks—like housecats—can be finicky creatures. Despite the quality of the Fire Storm, it was no exception to this rule. Ignition time on some of our first shots could be measured with a calendar, and it took about 20 shots to familiarize ourselves with what worked best with the gun.

We found the best procedure, when loading the charge, was to take care not to crush the pellet when pelletized charges were used. With the Fire Storm loaded and pointed safely downrange, the frizzen was opened, the hammer put at half cock, the touch hole cleared with a pick and the pan filled one-third full with Goex FFFFg blackpowder. After closing the frizzen, the Fire Storm needed to be tipped briefly so the lock was pointing down to ensure priming powder was not piled up against the touch hole. Using this procedure, the Fire Storm fired with reliability and speed that would rival some expensive, custom-made flintlocks. Accuracy and power were excellent as well.



The usual single tenon is now U-shaped with two slots so the wedge pin passes through it twice for more rigid barrel attachment.

We must admit to initially having doubts about this rifle, but the Fire Storm proved our doubts unfounded. While the Fire Storm will probably not end any of the controversy of "traditional" vs. "modern" muzzleloaders, it does blur the line. Further, the Fire Storm is a powerful and accurate flintlock muzzleloader that offers excellent reliability to those who take the time to learn how to make it shoot.

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Bushmaster XM15 E2S Shorty AK



Bushmaster's new rifle is an AR-15 variant with a 1:9"-twist, chrome-lined, 14½" heavy barrel and AK-style muzzle brake permanently attached to meet legal requirements.

Bushmaster, our country's second largest producer of AR-15/M16-type rifles, has a new, special model called the XM15 E2S, or "Shorty AK," carbine. The new rifle is an AR-15 variant with a 1:9"-twist, chrome-lined, 14½" long, heavy barrel with an AK-style muzzle brake

permanently attached to meet legal requirements. Receiver construction is of forged, 7075T6 aircraft-quality aluminum with a tough, matte black manganese phosphate finish that offers resistance to corrosion.

Sights are styled after the M16A2 type with two flip-up rear sight apertures. The

XM15 E2S "SHORTY"

MANUFACTURER: Bushmaster Firearms, Inc. (Dept. AR), P.O. Box 1479, 999 Roosevelt Trail, Windham, ME 04062; (800) 883-6229; www.bushmaster.com

CALIBER: .223 Rem.

ACTION TYPE: gas-impingement operated, semi-automatic rifle

RECEIVER: forged, 7075T6 aluminum, flat top or carry handle types

FINISH: matte black, manganese phosphate

OVERALL LENGTH: 34 $\frac{3}{4}$ "

BARREL: chrome-lined, 14 $\frac{1}{2}$ " (16" with permanently attached AK-style muzzle brake)

RIFLING: conventional, six-groove, 1:9" RH twist

WEIGHT: 7 $\frac{1}{2}$ lbs.

MAGAZINE: detachable box, double-column, 10-round capacity

TRIGGER: two-stage, non-adjustable; 6 $\frac{1}{2}$ -lb. pull

SIGHTS: windage and elevation adjustable aperture rear, post front

STOCK: molded, black, thermoset polymer composite with heat shield inside of handguard: length of pull, 13"; drop at heel, 1/4"; drop at comb, 1/4"

ACCESSORIES: carrying strap

SUGGESTED RETAIL PRICE: \$938

safer and more effective for self-defense and law enforcement work than those chambered for typical pistol calibers. With that in mind, we used the Bushmaster Shorty AK in Gunsite's Law Enforcement Carbine school, which was conducted at NRA Headquarters. The week-long class involved firing more than 1,000 rounds from several different positions at ranges to 200 yds. Of all the rounds fired, there was only one malfunction attributed to the Shorty AK, which occurred around the 500th round.

In that instance, the fired case was extracted, but not ejected from the gun. A simple "tap, pull, rack and roll" maneuver immediately cleared the carbine. Other malfunctions were caused by aftermarket, high-capacity magazines that went bad during the course of fire and, in one case, by a cartridge with a frangible bullet that



The XM15 E2S Shorty's AK-style muzzle brake proved effective in limiting muzzle rise during rapid-fire exercises, which helped us get back on target for follow-up shots.

large aperture is .20" in diameter for short-range or snap shooting while the finer aperture is .07" for more precise aiming at longer ranges. Both windage and elevation are adjustable via the rear sight, by an elevation knob graduated from 300 to 800 meters. The front sight is a standard square post configuration adjustable for elevation with four stops per rotation.

Standard features of the Shorty AK include: a two-piece, ribbed, synthetic handguard with internal heat shield and six vent holes in each section to facilitate barrel cooling; a front sling swivel attached to the front sight housing; a finger-groove A2-style pistol grip; an M16A2-style shell deflector; a forward assist; a trapdoor buttstock and a "fence" that protects the magazine button.

Available options include a V-Match "flat-top" upper receiver, a removable A3-type carry handle and barrel fluting.

Bushmaster's Shorty AK accepts all AR-15/M16-type magazines of any capacity, but comes with a politically correct 10-rounder, as well as a black nylon carry sling.

Recent studies suggest that carbines like the Shorty AK chambered for 5.56 mm are



Standard features of the Shorty AK include a finger-groove A2-style pistol grip, M16A2-style shell deflector, a forward assist and a "fence" that protects the magazine button.

wound up becoming stuck on the feed ramp.

Accuracy was excellent. The large-aperture sight was utilized for close-in targets that required speed over precision, while the small-aperture sight aided us in achieving groups of less than 5" at 200 yds. fired from the prone position. Ammunition used in the Gunsite class was exclusively Black Hills' 69-gr. HPBT Heavy Match load, while accuracy testing was with ammunition summarized in the accompanying table. The AK-style muzzle brake proved effective in limiting muzzle rise during rapid-fire exercises, which helped us get back on target for follow-up shots.

Weight of the gun, complete with a loaded, 20-round magazine and SureFire Tactical Light was a little more than 9 lbs. While not a handicap, that weight did start to wear on us as the class progressed, especially during extended periods of holding the Shorty AK in the ready position.

Overall, the Bushmaster XM15 E2S "Shorty AK" is a handy carbine with familiar features and an effective muzzle brake. Whether envisioned for home-defense, law-enforcement or recreational shooting, the Shorty AK is a package that attracted a lot of positive attention from other participants at the Gunsite class and is one the consumer should consider. 

SHOOTING RESULTS

.223 Rem. Cartridge	Vel. @ 15' (f.p.s.)	Energy (ft.-lbs.)	Recoil (ft.-lbs.)	Smallest (inches)	Largest (inches)	Average (inches)
Federal GM223M 69-gr. BTHP	2510 Avg. 24 Sd	965	3.1	1.20	2.26	1.78
PMC 223VB 55-gr. BTHP	2770 Avg. 44 Sd	938	2.7	0.80	1.88	1.28
Remington R223R6 62-gr. BTHP	2591 Avg. 31 Sd	925	2.8	1.76	2.98	2.06
Average Extreme Spread:						1.71
Measured average velocity for 10 rounds from a 14.5" barrel. Range temperature: 68° F. Humidity: 80%. Accuracy for five consecutive, five-shot groups at 100 yds. from a sandbag. Abbreviations: BTHP (boattail hollow-point), Sd (standard deviation)						