Cutting Edge Bullets

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Daniel Smitchko operates Cutting Edge Machining Solutions in Drifting, Pennsylvania, and he is also obsessed with shooting big game at long range, the best arrangement for someone who sells a line of target and hunting bullets from .22 to .60 caliber. His copper and brass bullets are machined to incorporate several innovative features, such as grooves to reduce pressures and fouling, a gas sealing band and very high ballistic coefficients. Each bullet Cutting Edge produces is a machined little jewel.

Above, some Cutting Edge bullets can be shot with or without a plastic tip. Right, bundles of dry newspaper were used to check penetration and expansion.

Cutting Edge's extensive line of all-copper bullets includes hunting bullets and very low drag target bullets with a long nose and boat-tail. The Cutting Edge website states some of its copper hunting bullets ". . . do come apart as intended when only flesh or organs are hit." That may or may not be a good thing for a big game bullet. All I can say is an unbroken bullet equals more than the sum of its parts.

What interests me are Cutting Edge's Dangerous Game Brass solid and hollowpoint bullets in calibers from .338 to .600 and Enhanced System Projectile Raptor bullets also turned from brass in .22 to .50 caliber. I recently shot some of the Dangerous Game Brass Hollow Point (DGBR-HP) bullets in a .45-70 lever action and 6.5mm Raptor bullets from a 6.5x55 Swedish Mauser, and they pretty much did what Cutting Edge states they would.

The Enhanced System Projectile (ESP) Raptor is an extremely long bullet for its weight because it's made of relatively lightweight brass, constructed with a deep, hollow cavity and a sharp polymer tip. The 6.5mm 100-grain Raptor measures 1.106 inches long without a tip and 1.40 inches long with a Talon tip installed. The tip brings bullet weight up to slightly over 102 grains. In comparison, the Berger 6.5mm 140-grain VLD Match bullet is 1.405 inches long.

This long bullet length requires seating the bases of the bullets deep into cases to obtain a cartridge length that fits in a rifle's magazine and sets the bullets short of contacting the rifling. That deep bullet seating significantly reduces powder capacity. To compensate, Smitchko suggests using relatively faster burning pow-

A New Twist on Penetration

ders that occupy less space in cases. I loaded comparatively fast burning IMR-3031 and 4064 powders in my 6.5x55 Swedish Mauser with the 100-grain Raptor, and the powder charges were still compressed by the long bullet.

Smitchko suggests using close to the maximum powder weight listed in the Sierra reloading manual for an equal weight Raptor bullet. "You can then work up and will almost certainly never reach dangerous pressures quicker with this type of bullet before you would with a cup and [lead] core bullet," he wrote in a letter.

The Raptor actually has short bearing surfaces to help reduce pressure during firing of such a long bullet. The bullet has a front and rear body that is narrow enough in diameter to ride on the tops of the rifling lands and three raised bands in the middle of the body that bear against the rifling grooves. The 6.5 100-grain Raptor body diameter is .256 inch, while the front and rear bands are .264 inch. The middle band is raised approximately .0005 inch. This SealTite Band, according to Cutting Edge, "ensures there will be no pressure escaping around the bullet when fired." Cutting Edge will modify the position of the SealTite Band on custom-ordered bullets of different bullet lengths. A Material Displacement Groove, behind the band, provides a place for material to go that is sheared off the band by the rifling lands.

The Raptor bullet can be shot as a solid, hollowpoint or with the hollowpoint capped with a Talon polymer tip. Merely loading the bullet base first turns the bullet into a solid. Raptor bullets come with a hollow point and can be shot that way. A 50-count box of Raptors, though, comes with 25 polymer tips that snap into the hollow nose. That tip nearly doubles the bullet's ballistic coefficient and enables it to easily slide from a rifle's magazine into the chamber.

Long bullet length requires seating the bases of the bullets deep into cases.

The hollowpoint comprises pretty much the front half of the Raptor. It is designed to expand on contact with game. Its six petals expand and then after 2 inches of penetration break off "and move away from the main wound channel in a star pattern creating a massive amount of trauma, while the main body continues to penetrate," according to Cutting Edge.

The DGBR-HP is also a long bullet for its weight. The .45-caliber, 295-grain DGBR-HP is 1.042 inches long compared to a length of .967 inch for the Speer .45-caliber, 400-grain flatnose softpoint. In the .45-70 I loaded a couple of grains below maximum of Reloder 7 and H-4198 listed in the Sierra reloading manual, and the 295-grain DGBR-HP bullets heavily compressed the powders with the bullets seated deeply enough for

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case mouths to crimp in the crimping grooves.

The DGBR-HP also has a narrow body and raised rings of groove diameter. The thin body sections at the front and rear of the bullet measure .440 inch in diameter. Three bands in the middle of the bullet and one on the heel have diameters of .457 inch. Polymer tips, which lock in the hollow point, are available for shooting the bullets in single-shot and bolt-action rifles.

Like the Raptor, when the DGBR-HP strikes game, its cavity is designed to explode six petals off in a star pattern after 2 inches of penetration, creating massive amounts of trauma, while the solid base continues in a straight line for deep penetration.

The Raptor and Dangerous Game bullets shot pretty well at targets at 100 yards. The accuracy column in the table lists the average size of two, three-shot groups for each bullet.

Velocities of the Raptor 100-grain 6.5 bullet were right in line with those listed in the Sierra reloading manual for 100-grain bullets shot with similar amounts of IMR-4064 and 3031. However, the Sierra manual results were recorded from a barrel 9.5 inches longer than the 20-inch barrel on my 6.5x55. Perhaps the SealTite Band worked to close off the bore to prevent powder gases from slipping past the bullets.

Left, Cutting Edge Dangerous Game bullets are available in a variety of weights in .45 caliber. Above, 6.5mm ESP 100-grain Raptor bullets come 50 to a box; Talon tips snap into the hollow point.

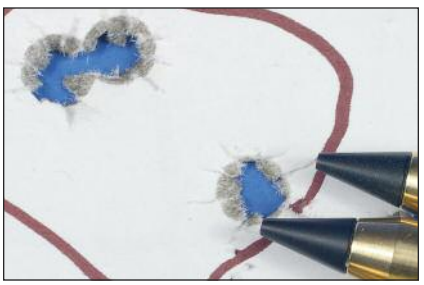
Left, the 6.5mm 100-grain Raptor bullet (left) is about the same length as a Berger 6.5mm 140-grain bullet. Right, the SealTite Band on some bullets is approximately .0005 inch wider in diameter than the bullet body to seal off powder gases in the bore.

The 295-grain DGBR-HP bullet fired from the .45-70 also turned in velocities comparable to the 300-grain bullet listed in Sierra's manual with equivalent amounts of powder, but from a 5.5 inch shorter barrel. But the Dangerous Game bullet does not wear a SealTite Band. So maybe these brass bullets with their narrow bodies develop higher velocities than copper jacketed bullets with a lead core.

The real test of these bullets is how well they expand when they strike something solid. Big game seasons were closed where I live when I shot the Cutting Edge bul-

Below, the 295-grain DGBR-HP penetrated 14 inches into dry newspaper. Right, the 100-grain Raptor plowed through 10 inches of dry newspaper. The petals on both broke off after penetrating a few inches.

Above, this three-shot group was fired with 295-grain DGBR-HPs and H-4198 through a Marlin .45-70 1895 Guide Gun. Below, a three shot group with 6.5mm 100-grain Raptor bullets and IMR-3031 was shot from a 6.5x55.



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bullet (*grains*)	powder	charge (*grains*)	velocity (*fps*)	group (*inches*)
.45-70:				
295 DGBR-HP	RL-7	52.0	2,074	1.18
|	H-4198	52.0	2,146	.77
6.5x55 Swedish Mauser:				
100 Raptor with Talon tip installed	IMR-4064	43.0	3,120	1.32
|	IMR-3031	40.0	2,956	1.30

Notes: The .45-70 loads were fired from a Marlin Model 1895 Guide Gun with an 18.5-inch barrel and a Nikon 1.5-4.5x scope. The 6.5x55 Swede loads were fired from a Mauser Model 1895 with a 20-inch barrel and a Redfield 3-9x scope. Velocities were recorded with an RCBS AmmoMaster chronograph set 10 feet in front of the muzzles on a 60-degree day. The .45-70 loads were assembled with Remington cases and Winchester Large Rifle primers. The .45-70 cartridges had a length of 2.505 inches to seat the 295-grain DGBR-HP bullets with the case mouth crimped in the forward crimping groove. The 6.5x55 cartridges were loaded with Norma cases and Winchester Large Rifle primers. Cartridge length was 3.03 inches.

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lets, so I used bundles of dry newspapers instead.

The Raptor 100-grain bullets had an impact velocity of approximately 2,850 fps from the 6.5x55 when they hit the bundles. Two of the bullets penetrated 10 inches straight into the papers. The recovered bullets had shed their nose petals while the back half of the bullets remained intact. They weighed 70 and 72 grains. The first 4 inches of the bullet holes were about one inch wide, then narrowed down to about .5 inch for the remainder of the path. At 3 and 5 inches in, I found a couple of the petals in the bullets' paths of pulverized paper. Try as I might, I found no sign any petals had flown off to the side from the channels.

I also shot a couple of Nosler

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100-grain Partition bullets from the 6.5x55 at about the same velocity into the bundles. They also penetrated 10 inches. The bullets had peeled back to their partition dividing wall with most of the front cores sheared off. They weighed 67 and 60 grains. They made a similar-sized path as the Raptor bullets through the paper.

The Cutting Edge 295-grain DGBR-HP bullets hit the papers at about 2,000 fps and ripped 2-inch wide holes the first 4 inches or so through the papers. The holes narrowed to about an inch in width until the bullets stopped after 14 inches. The nose petals were broken off, and the recovered bullets each weighed 192 grains. I found one petal in the bullet's path 4 inches in from the start. There was no sign any of the other petals had peeled off to the sides.

While I was at it, I shot Kodiak 350-grain bonded core bullets and bullets that weighed 420 grains cast of wheelweights from an RCBS 45-405-FN mould into the stacks. With an impact speed of 1,900 fps the Kodiak bullets ripped a huge hole for 7 inches through the paper. They penetrated 10 and 13 inches and were pretty well mashed flat with retained weights of 193 and 214 grains. The cast bullets tore holes that I could wiggle four fingers in the first 5 inches. They stopped after 11 and 13 inches and had lost a bit more than half their original weight.

These evaluations of the Cutting Edge bullets show the Raptor equals the performance of the Nosler Partition, which means the Raptor should be a good hunting bullet, as the Partition is the yardstick to measure hunting bullet performance against. Anything big or of tooth and claw is in serious danger of demise if it stands in the path of the Cutting Edge 295-grain DGBR-HP bullets.

Cutting Edge 295-grain DGBR-HP bullets cost $32.31 for 18 bullets, and Raptor 6.5 100-grain bullets with Talon polymer tips cost $62.23 for 50. For more information, contact Cutting Edge Bullets, 75 Basin Run Rd., PO Box 248, Drifting PA 16834; or www.cuttingedgebullets.com.