The Los Angeles Silhouette Club

The .480 Ruger, in Perspective

By: Glen E. Fryxell

This article reprinted with permission of
Glen E. Fryxell and Handloads.com

The story goes that a grizzled old gunfighter of the Old West carried a Colt Single Action Army chambered in .45 Colt "'Cause Sam Colt didn't make a .46!". Well, the Ruger clan decided to go one better and made a .47 for us. In the spring of 2001 Sturm Ruger and Co. unveiled a new proprietary cartridge for their Super Redhawk Revolver. It was a slightly shortened version of the .475 Linebaugh, and was christened the .480 Ruger. A great deal of consternation immediately erupted around this cartridge. Many wondered why Ruger didn't go with a 5-shot cylinder, and others wanted lighter, faster bullets and some wanted a .50 caliber cartridge. Generally, the criticism came down to somebody always wanting more, whether pressure, velocity, or bullet diameter. The American mindset, it seems, is if 27 is good then 37 is better, no matter what the units, context or desired goals. Evaluation of a tool based on its own merits and unique abilities commonly gets overlooked, it's always "how does A compare to B?", which one is bigger, faster, or more powerful? (Never mind how the tenuous issue of "power" might be measured). Just load it to the red-line and go make a lot of noise about it.

480 Ruger Super Redhawk 7.5"

There were those that criticized the .480 Ruger as being nothing more than a over-blown, over-priced, over-hyped .44 Magnum since factory ammo delivered a 325 grain bullet at 1325 fps, something .44 Magnums have been doing since SSK introduced their sledgehammer cast bullets back in the 1980s. Arguments were raised that the .480 is of little value since the 454 Casull generates much higher velocities, and hence shoots flatter and hits with more kinetic energy than does the .480. Some wondered why, if Ruger was going to legitimize a new revolver round, why not just go with the known and respected .475 Linebaugh? And some defended the workman-like .45 Colt, which has been delivering a similar level of performance for years in strong, modern guns. Just like Disraeli's view of statistics, it's a question of how you choose to look at the issue. It's a question of perspective.

First, let's look at the gun. The barrel cylinder gap on mine measures between .003" and .004". Factory ammo starts off .502" in diameter and once fired cases come out of my gun at .509", revealing the working tolerances that Ruger has built into the chambers of this revolver. Throats are very uniform and measure .477", well-suited for .476" cast bullets. External cylinder walls are nice and thick at .100", with the locking notches offset so as not to create a weak spot in the chamber. In between the chambers the walls are only .040", clearly revealing that Ruger has worked out some very nifty new metallurgy to make this design work. Specifically,

Ruger turned to Custom 465 stainless from Carpenter Technology, a premium-melted, martensitic, age-hardenable alloy, that was originally developed for aerospace components. This alloy, when appropriately heat-treated and peak aged is capable of 260,000 psi ultimate tensile strength, as well as high fracture toughness and excellent resistance to stress corrosion cracking. In short, this steel and heat treatment make the .480 Ruger possible in the Super Redhawk frame with a 6-shot cylinder. Continuing our examination of the gun, the grey non-reflective finish, though plain and somewhat homely, is a rugged and highly functional finish for big-game hunting. Let's get one thing straight, aesthetically I think the Super Redhawk is an ugly gun, always have, always will. It has all the grace and lines of a tire iron, but "pretty is as pretty shoots", and this revolver shoots very nicely indeed. After all, a tool should be evaluated based on it's performance, not how shiny and pretty it looks laying in its toolbox. The grips and grip frame are excellent, and distribute recoil very well. The .480 Ruger SRH is fitted with high visibility RR-WO sights. The DA trigger pull is heavy, but smooth (I would guess about 11 lbs). The SA trigger pull is typical for a factory gun at about 4 ½ lbs, but breaks with reasonable crispness. All in all, a solidly built, accurate sixgun, made with the big-game hunter in mind.

OK, now let's look at the round: the .480 Ruger has a magnum length case of 1.29" (i.e. the same as the .44 , .41 and .357 Magnums), with a nominal diameter of .504". Ruger, Hornady and SAAMI settled on a peak operating pressure of 48,000 psi. Factory ammo is loaded with a 325 grain .475" diameter bullet leaving a 7 ½" barrel at 1350 fps. At first blush, this bullet might seem a little on the light side for the .475 bore since we're used to thinking in terms of 420-440 grain slugs in the .475 Linebaugh, but keep in mind the standard bullet weight for the .44 is 240 grains, and standard weight for the .45 Colt is 255 grains, so following that progression would lead to a standard weight of 270 grains for the .480. The choice of 325 grains is a compromise weight to keep recoil manageable, while still providing big game capability. A lot of American handgunners have developed a certain level of comfort/mastery with the .44 Magnum, and so Ruger chose to keep factory ammo at roughly the same recoil level.

A lot of the criticism of the .480 Ruger cartridge seems to be aimed at the fact that it's not as powerful as the .475 Linebaugh. It's not, nor was it ever intended to be, nor does it really need to be. I think of this cartridge in a little different light. I view the .480 Ruger as being the .416 Rigby of the revolver world -- a large case, well-suited to moderate pressures, heavy bullets, and moderate velocities; not the absolute maximum that can be squeezed out of a holstered handgun, but rather a highly reliable big-bore sledgehammer. Coupled with 400 grain blunt-nosed bullets, this makes a hunter of the first water. Sure, in strong modern guns the .416 Rigby can be loaded up to modern pressure levels to make a .416 Weatherby, but the .416 Rigby can kill anything on this planet cleanly and it was intentionally loaded to moderate pressures to insure absolute reliability in the heat of the hunt. Likewise, the load data published by Hodgdon indicates that the .480 can be loaded up to a peak pressure of 48,000 psi to drive 405 grain cast bullets at nearly 1350 fps (http://www.hodgdon.com). But just like the .416 Rigby, the .480 Ruger is a formidable (and reliable) hunting weapon with 400 grain bullets loaded to more moderate pressures (35,000-40,000 psi). The value of moderate pressures for big

game hunting loads has not diminished over the years, it's just that we don't hear much about it in this velocity-obsessed age of belted magnum mania.

The importance of bullet weight to penetration was demonstrated by John Linebaugh as a part of his Linebaugh Seminar held in Cody, Wyoming (http://www.sixgunner.com/linebaugh/penetration_test.htm **Editors Note: This link is currently unavailable*, the results can be found here*). In a nutshell, Linebaugh's results demonstrated once again that penetration of a non-expanding hard-cast bullet is a primarily a function of bullet momentum, which is the product of velocity times mass. In John Linebaugh's own words, "Velocity is constantly diminishing variable. Bullet weight is constant.", meaning for the hunter, penetration is a function of bullet weight first, and velocity second. This is a very simple and very valuable lesson when hunting large game with a revolver (the hunter of medium sized game, like deer and antelope, is probably better served with expanding bullets). Due to the space constraints imposed by a typical revolver's cylinder and the limited case capacity of revolver rounds, the heaviest bullets that can be effectively used in revolver hunting cartridges runs something like this:

44 Magnum	325 grains
45 Colt	350 grains
454 Casull	360 grains

Therefore, in order to keep bullet length short enough to comfortably fit inside a standard length revolver cylinder, and still leave enough room for powder to operate at reasonable pressure levels, it is necessary to go to bullet diameters larger than .45 to get over 400 grains of bullet metal comfortably into a revolver cartridge.

As is apparent from the Linebaugh data, a 400 grain .475" bullet at 1100 fps should provide very similar penetration to the heaviest 454 Casull load (360 grains), and considerably more than the popular high velocity 300 grain 454 Casull loads. Weight (more accurately momentum) contributes penetration depth, while the nature of the wound channel is a function of the meplat. The LBT .475 400 WFN, RCBS 475 400 grain SWC, Lee 475 400 grain FP, and NEI 475 TC (a shortened version of #357 with only 2 grease grooves, very reminiscent of the SSK designs), mould designs all combine these attributes very effectively.


Variety of cast bullets for the 480 Ruger

Hodgdon's loading data for the .480 Ruger (http://www.hodgdon.com) indicates that 405 grain cast bullets can achieve velocities in excess of 1300 fps from a 7 1/2" SRH and still stay within SAAMI pressure guidelines. I believe that the test gun used by Hodgdon was a "fast gun" as I haven't been able to reproduce their velocities with any given powder charge.

Discussions with Taffin and several other .480 shooters suggest that my revolver is typical, and falls in line with their experiences. Load From a Disc calculations suggest that a 400 grain bullet at 1100 fps corresponds to a peak pressure of about 35,000 psi when paired with an "ideal" powder, and is in agreement that a 325 grain at 1325 fps corresponds to Hodgdon's measured peak pressure. Thus, I chose to target 400 grain cast bullets at 1100 fps for routine use in the .480 Ruger. In my gun, factory ammo provides case expansion of .509" and

somewhat sticky extraction, the 1100 fps loads listed below give .508" case expansion (or less) and eject effortlessly, providing some element of corroboration to the theoretical predictions.

I started out by sighting the Super Redhawk in with Hornady factory ammo. Accuracy was good and the velocities were right up to the advertised numbers. Temperatures were in the upper 90s and extraction was sticky, as might be expected for 48,000 psi loads with .007" chamber clearances. After the sights were lined up, the remainder of the factory stuff was burned up in a geomorphologic fracture analysis on the native basalt phases of eastern Washington. Let me tell you what, the .480 Ruger is a rock-buster extraordinaire! Several chunks of basalt the size of a big Idaho spud simply vanished in a cloud of dust. Larger pieces didn't stay that way long. Good stuff!

Bullets were cast from WW alloy with 2% added tin, they were air-cooled for a hardness of about 11-12 BHN. These bullets were all around 400 grains as cast (ranging from 392 to 409 grains depending on design). They were sized .476" and lubed with homemade Moly lube (1:1 Moly grease and beeswax). Accuracy tests were also performed using bullets that were water-quenched with this same alloy (BHN 16-18), but there was no advantage gained by doing this and so water quenching was dropped. No problems with leading were encountered with any of the loads tested.

Load evaluation started off with the LBT 400 grain WFN over 20.0 grains of IMR 4227 and a CCI 350 primer. Recoil was surprisingly mild and accuracy was good. Somewhat surprisingly, this load shot to the same point of impact as the 325 grain factory ammo at 25 yards. It was also quite flat shooting, hitting point of aim at approximately 125 yards when sighted in for 25. Velocity was just under 1000 fps. Loads were worked up from there, monitoring case expansion and extraction. Extraction was effortless with all loads listed. Most of the loads listed below delivered 5-shot groups in the 1 1/2" to 2" range at 25 yards.

Winchester 296 turned in its usual stellar performance, as did its cousin H110. IMR 4227 is also an excellent powder for the .480 Ruger. AA 1680 turned in a surprisingly poor performance. I expected AA 1680 would be nearly ideal when paired with 400 grain bullets, but for whatever reason this wasn't the case. As charges were increased, velocities came up to about 1000 fps and then leveled off. Accuracy was generally marginal, until charges reached about 25.0 grains (where groups tightened considerably), but then velocities started going back down. The most accurate load tested was the Lee FP over 21.0 grains of Winchester 296, and for these 400 grain cast bullets in general, 21.0 grains of W296 was the most accurate powder charge.

For those who don't cast their own, both the Lee and RCBS 400 grain cast bullets are available from Western Bullet Co. Other cast bullets suitable for the .480 Ruger are also available from Beartooth Bullets (http://beartoothbullets.com/index.htm), Cast Performance Bullet Co. (http://www.castperformance.com), Hunters Supply (http://www.hunters-

supply.com), Liberty Shooting Supplies (http://www.libertyshootingsupplies.com) and TrueShot Bullets from Oregon Trail Bullet Co.

Loading data for the .480 Ruger
7.5 Inch Ruger Redhawk
CCI 350 Primer
Starline Brass

NEI 475-370-PB (#357) - 392 grain WW + 2% tin
meplat = .310", crimp to meplat = .450"

Powder	Charge	Velocity	Comments
H110	21.0	1103	Accurate
W296	21.0	1089	Accurate
IMR 4227	22.0	1045	Accurate
AA 1680	25.0	974	Accurate

400 Lee FP - 398 grain WW + 2% tin
meplat = .340", crimp to meplat = .390"

Powder	Charge	Velocity	Comments
H110	21.0	1108	Accurate
W296	21.0	1114	Very Accurate
IMR 4227	22.0	1009	Accurate
AA 1680	24.5	1001	mediocre

400 LBT WFN - 406 grain WW +2% tin
meplat = .380", crimp to meplat = .380"

Powder	Charge	Velocity	Comments
H110	21.0	1103	Accurate
W296	21.0	1126	Accurate
IMR 4227	22.0	1075	Good load
AA 1680	25.0	1042	Mild Pressures

400 RCBS SWC - 409 grain WW + 2% tin
meplat = .325", crimp to meplat = .430"

Powder	Charge	Velocity	Comments
H110	21.0	1109	Accurate
W296	21.0	1112	Accurate
IMR 4227	22.0	1090	Accurate
AA 1680	24.5	1029	OK

I took the LBT 400 grain WFN load elk hunting in the high country of central Utah. The tag in my pocket allowed me to take a spike bull. We were camped out on the flats at about 6,500 feet elevation, and climbed up to about 10,000 feet to hunt -- first half with the trucks, second half with our legs. I got "up close and personal" with elk on the second day of the hunt. I had worked my way to the edge of some heavy timber overlooking a bowl that was lined with the brilliant yellows and whites of an aspen thicket. A herd of about 25 elk busted noisily out of the thick stuff above me and to my right, slowed to a walk upon entering the bowl, and walked single file in front of me, at about 25 yards; an absolute textbook opportunity for a hunter with an iron-sighted revolver! The only problem was, there wasn't a single antler in the entire bunch! All cows and calves. The only spike we saw came two days later when he did a remarkable impersonation of an antelope, sprinting full-tilt with a herd of about a dozen cows or so, a half mile out across the sage flats, heading towards a really nasty bunch of virtually inaccessible canyons. We found elk every day, it's just that everything else we saw were either branch-antlered bulls, cows or calves. That's why they call it "hunting".

Loaded with 400 grain bullets at 1100 fps and 35,000 PSI, the .480 Ruger can provide all of the penetration that a handgun hunter is likely to ever need, and in fact it can match or surpass the optimum heavyweight performance of the vaunted 454 Casull. This hardly qualifies the .480 Ruger as "just another .44 Mag". However, just because SAAMI decided on a 48,000 PSI ceiling doesn't mean I have to spend my time dangling from it, especially not with cylinder walls that are only .040" thick (even if they are some golly-gee-whiz-bang new alloy). For non-dangerous game applications, there is no need for the .480 Ruger to be loaded to 48,000 PSI, it just needs to be loaded with the right bullet to deliver all that it is capable of. A 400 grain flat-pointed cast bullet is just such a bullet, and the four bullets tested herein will all serve admirably. No, recoil is no longer in the .44 Magnum class, but it's far from

punishing. Penetration does not come without recoil. If this maxim offends your sensibilities, get over it.

To my way of thinking, THIS is the niche for the .480 Ruger -- a mass-production revolver that provides superior penetration, similar to the custom revolver heavy hitters (like the .475 Linebaugh) at moderate pressures, with bullet weights that the .44 Magnum and 454 Casull simply cannot handle. While it's understandable why the factory chose a 325 grain bullet, it is noteworthy that the component manufacturers (Hornady, Speer, RCBS, Lee, etc.) quickly tooled up to provide 400 grain bullets for .480 shooters. That the factories have chosen to limit .480 Ruger factory ammo with a 325 grain bullet concerns me not in the least, as I probably won't hunt with factory ammo in this gun. Not that there's one thing wrong with the factory offering, it's fine ammo, it's just that if I want to hunt with 325 grain bullets, I'm more likely to grab a .44 or a .45. My interest in the .480 centers around heavier bullets. This revolver was destined to shoot 400 grain cast bullet handloads from the very beginning. Just as the .44 Magnum has been described as being the .30-06 of the handgun world, so the .480 Ruger finds its niche as the .416 Rigby of the revolver world.

- Glen E. Fryxell

The LASC Front Page Index to all LASC Articles

Glen E. Fryxell Article Index