Ranch Dog Outdoors
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Ranch Dog’s Bullet for the 100 Year Hunter

As the century mark turned for the 35 Remington, during the year 2006, so did my interest in developing a cast bullet for use in this fine cartridge. It took longer than expected, passing through two complete evolutions, but now I’m satisfied and I’m sure you will be with the performance of this bullet at the casting bench, shooting range and in the field.

Like all my designs, I insist that this Ranch Dog bullet:
- Use the Lee Micro-Bands® for use with Liquid Alox and Lee Sizers.
- Fit the bore and throat/leade of the intended Marlin rifle.
- Seat with the bullet base not extending beyond the base of the case neck.
- Shoot well with a wide range of rifle powders.
- Be accurate at jacketed bullet velocities.

A long run of Marlin rifles had to be considered, 50+ years of manufacturing across two barrel types.

The very early rifle had the Ballard type rifling and then in 195X a switch was made to the Micro-Groove® barrels. Recently Marlin has once again started to use the Ballard type rifling. With the help of Tom Myers and his TMT Precision Chamber Dimension software, I was able to fully explore the measurements taken from chamber casts and apply them to the bullet design. The image below is from my 1954 336SC and it shows the deep cut Ballard rifling. The groove diameter is .3585” and the bore diameter is .3545”. More importantly note that there is very little space dedicated to the throat in the chamber (.0208”). This has an important influence on the ultimate diameter and length of the bullet nose. The bullet must be very close to the
groove diameter because no space has been given to allow the taper of the nose to fill the throat. In the case of this rifle, a .360” bullet is going to be seated deep in the case as the aft edge of the bullet nose will not be able to fill the throat in this chamber. The bullet is too big. Excess diameter is not a cure all!

The Micro-Groove® barreled rifles must represent the majority of Marlin’s chambered in 35 Remington because of the number of years in production. The chambers of these rifles have a shallower step into the throat of the chamber and freebore tapering into the throat.

This image is of my year 2000 336D. This is an interesting rifle in that the barrels are marked as Ballard barrels but have the standard Micro-Groove® rifling.

The groove diameter is tighter than the Ballard rifles (.3570” vs. the .3585”) but this diameter is being experienced further forward in the barrel. The bullet nose taper, from the aft band to the nose, fills the step, freebore, throat, and bore properly without excessive diameter! Tom’s TMT product is able to consider the distinct difference between the chambers of the two types of rifled barrels and maximize a single bullet the fills the needs of both!

**Why 190-Grains**

With the bullet nose fit dictating how much lead is going to be outside of the case, the only place for the remaining bullet weight to go is in the case. The 35 Remington has a relatively short case neck and any extension of the bullet beyond this space robs the cartridge of its limited powder space. At the same time, the bullet’s center of gravity and center of lift must be collocated, a consideration that is processed by the TMT software and the final bullet weight being the product of this process.

I have considerable experience with the Speer 180-grain FP and the Remington 200-grain CLSP and I have always thought that a bullet somewhere in between these weights might represent the best performance possible for the 35 Remington. It is very interesting that TMT’s Precision Cartridge Design software and Precision Cast Bullet Design software produced this result for this cartridge!

**How Does It Cast?**

Great! The trial molds where ordered as two-cavity molds but Lee Precision wanted to cut them as six-cavity blocks on their new CNC lathe. That was an offer I wouldn’t argue with!

The bullets dropped as expected. My casting was done with my usual alloy which is a Lyman #2 clone produced with 9# of wheelweights and 1# of 50/50 bar solder. I do add 1 oz. of #8 shot and water quench the dropped bullets for a BHN of 21. I have found this alloy tolerant of jacket bullet pressures and velocities, accurate, and deadly on big game.
RELOADING?

Based on my experience of working with both Hodgdon brand powders and my RSI Pressure Trace equipment and software, I feel I can forecast a given case capacity for each appropriate rifle powder that will produce satisfying results.

My choices are represented on the chart (left) that I feel was appropriate for my evaluation of the TLC359-190-RF with the 35 Remington. The chart represents the powders, charges, and case densities used in this evaluation.

I did check these charges against the Hodgdon Reloading Center’s recommendations for a 180-grain and 200-grain bullets. They are appropriate.

At The Range

All my shooting is done on my range behind my home. This evaluation was shot at 50-yards, with the RSI Pressure Trace equipment connected to my 336SC. This rifle has a Bushnell Banner 1.5-4.5X32 (#71-1545. This shooting is simply an evaluation if the design will meet the criteria establish for my Ranch Dog series of bullets. My actual load development to maximize the bullet’s performance with this rifle and a specific powder will follow. For my personal hunting needs, I will actually hold a “shoot-off” between my final powder/load choices at ranges up to 300-yards to determine the best possible combination for this rifle.

Again, I want to point out that there was no advanced load work. Just my selection of the arbitrary load data based on case densities rounded by 5% (85%, 90%, 95%, etc).

The results were very satisfying! Every powder and load choice shot under 2” 5-shot groups with H335 and H4198 producing groups slightly over 1”. I will need to investigate these two powders in detail as they seem to
complement the bullet and rifle well. I do also believe that a load from each of these powders could be exploited with standard load development discipline. The velocities were also satisfying with the most accurate powders (for this initial test) producing velocities well over 2000 FPS. The 32.0 load of H4198 gave 2123 FPS.

The loads of H335 and H4198 generated the greatest pressures. The SAAMI maximum for the 35 Remington is 33.5K PSI and was based on Remington’s original firearm considerations for this cartridge. I personally choose to use the cartridge to its full potential in the Marlin firearm and choose a maximum PSI of 42.0K, the same as used for the 30-30 Win, 444 Marlin and other cartridges bedded in the 336 action. Of course, the choice is at my own risk.

As noted, H335 and H4198 produced the highest pressures just as they produced the highest velocities and best groups. I often have customers relate how the harder they push a Ranch Dog bullet the better it performs and this definitely is going to be the case with this bullet. At the point where many bullets fail, the Ranch Dog design exceeds because of proper chamber fit! The labels above are from my TMT Precision Ballistics and Records software and include all the specific data from these two particular loads.

I do have a little room for improvement with both H335 and H4198 and will explore these powders in this rifle in depth. It is going to be easy to reach 356 Win factory ammo performance out of this Marlin chambered in 35 Remington! My TMT Precision Ballistic chart is to the right.
**WHAT ABOUT POWDERS OTHER THAN HODGDON?**

My shooters on “Team 359” who we know on the various forums as 6pt-sika and Steelbanger have been shooting the bullet from several models of the 336 with Hodgdon’s H322, and H380 but also with IMR3031, SR4759, W748, and XMP5744.

**WHAT’S THE AFT CRIMP GROOVE FOR?**

In a nutshell, it’s for me and the other 336ER (356 Win) owners out there. A crimp groove and a Micro-Band® are very similar in shape and for 35 Remington shooters seating at the forward crimp groove, this groove will simply provide additional lube volume.

I have done some shooting with this bullet and my 336ER but without collecting the pressure trace data. I recently received additional strain gages and will have a report concerning this rifle and caliber in the weeks to come.

**IS THERE ENOUGH LUBE?**

**Yes!**

If you haven’t used it yet, Liquid Alox is an incredible lube that withstands the pressures and temperatures of a bullet through a barrel. I consider it the ultimate bullet lube.

The picture on the left is a portion of target backing from my evaluation of this bullet. Notice the lube residue being wiped from the bullets as it passes through the cardboard despite the high pressure and velocities produced. This is very common sight at the target when using Liquid Alox.

**HOW DO I SIZE THE BULLET AND SEAT THE GAS CHECKS?**

I suggest that the die in the Lee Lube and Size Kit be used. Custom kits in .359” will be available on my web site.
What About the Marlin 1894’s Chambered in 357 Mag?

The fellow we know as Steelbanger on the various forums has been investigating the possibility of using this bullet in the 357 Mag. The 1894’s action does place a limitation on the cartridge’s overall length not exceeding 1.59” which means that when using a SAAMI recommended brass length of 1.285” the crimp will be on the ogive of the bullet (point on the bullet that the radius to the nose profile starts).

Steelbanger indicated that he would continue to develop his Lil’ Gun load so I have included the TMT ballistic chart for that load above.

When Is the Mold Going to be available?

With Lee Precisions’ 6 month production schedule, this mold will not be available in the Ranch Dog shopping cart until sometime in October of 2008. If you have an interest in this design let me know and I will keep you posted on its availability along with any other shooting that Team 359 reports on!