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Shooting 700 Yards with the 97D Rifle

Andy Giambi Explodes a Milk Jug at Long Range with 6.5mm BRM

On a recent Prairie Dog hunting trip, we decided to make a video of a really long shot. This is the story of how it was done... The rifle, load, scope, etc.

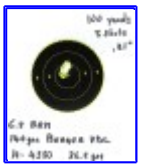
Andrea Giambi (Andy), Bob Fontanini, and me (Eben Brown) originally planned to video a 1,000 yard shot. Andy had worked up a really accurate load in 6.5mm BRM for his 97D rifle but the South Dakota wind was gusting to 40 mph. We finally were able to set up for a downwind shot at a measured 700 yard distance. We chose a gallon of milk for a target so that a hit would produce a bright white explosive reaction... And it worked! The impact of 6.5mm BRM at 700 yds is dramatic!

In the video, you will see the first few shots that missed within inches...

I left the misses in the video for two reasons: First to show how nearly "Right On" you can be with good preparation and an accurate rifle. But also to give credibility to the video. 700 yards is a heck of a long shot with swirling wind and mirage pushing the bullet and distorting the target. The scope crosshair is nearly the same size as the milk jug and a single click of scope adjustment moves the point of impact almost 2 inches. Down range, the sound of the shot arrives at the same time as the bullet. But from the shooter's perspective there is a definite time delay between hearing the shot and seeing the impact... That's "time of flight". You'll see that effect near the end of the video when we show Giambi at the bench and the target as an inset.

Finally, I've written up an article on the equipment, ballistic science and skill that went into making this shot and posted it below... I hope you enjoy the video!

The Accuracy Combination: Rifle, Load, and Skill.....



"I Found It!"... That's what Giambi put in the subject line of his email last Spring. He was talking about a load he had worked up for his Model 97D Rifle in 6.5mm BRM. Five shots into a group measuring .31" center to center. Surprisingly, it wasn't a maximum load. He had to back off from maximum to find the best accuracy... And accuracy is the main requirement for shooting at extreme distances.

"*...I worked up a good load for the 1000 yards 6.5 BRM shoot. Started with Varget but too hot, case sticking. Went to 38grs. of H-4350. Not too bad, some cases didn't extract, grouping in the 1" range. Step-decreased to 36.5 grs with OCL of 3.00" with Berger 140 gr VLD (BC .640) ...bingo! Look for yourself! Primer CCI benchrest.*"- A. Giambi

That .31" group is a combination of an accurate rifle, accurate load, and a high degree of shooting skill. It was shot at 100 yards so in theory, it translates into a 2.2 inch group at 700 yards. A milk jug is considerably bigger than 2.2 inches so that's sufficient accuracy to hit a milk jug regularly at 700 yards. On the other hand, consider that a respectable 1" group expands to 7" at 700 yards... That group is getting close to the size of the target and leaves no room for error or outside influences such as heartbeat, wind, mirage, etc. And so, the capability to shoot 1" groups is not sufficient accuracy to hit a milk jug regularly at 700 yards... You need something better.

Not everyone can shoot with this much skill. But, our 97D Rifle and 6.5mm BRM is easy to shoot well with.

Ballistic Science and Modern Riflescopes

"How far does the bullet drop at 700 yards?" Actually, it ***doesn't drop at all***... If you're sighted in properly. Consider that the bullet hits right at your point of aim if your rifle is zeroed for 700 yards! I realize that statement seems silly but it really isn't far from the truth in long range shooting.

Nowadays we have computers and **computer programs** that can calculate a bullet's trajectory. We can use this information to adjust our point of aim (hold over). Using this method, we'll have to account for bullet drop at some distance but, the amount of "drop" is still going to depend

Perhaps a more convenient approach to using calculated trajectories is the use of **ballistic reticles**. These are riflescopes where the reticle has different aiming points for different distances. We offer a very reasonably priced riflescopes in this category... the **Hawke Vantage**. You can download the software free if you'd like to see how this works without having to buy the scope. And probably the finest ballistic reticle systems in the world comes on the more expensive **HorusVision** rifle scopes. For the 700 yard Milk Jug shot, Andy was using his pride and joy HorusVision Hawk riflescope

on what range we have the rifle zeroed for.

To calculate a trajectory, you will need the actual muzzle velocity and the ballistic coefficient (BC) of the bullet. You can measure the velocity with a chronograph. The BC of your bullet is available from the bullet manufacturer on-line or from your reloading manuals.

Taking computer calculated trajectories to another level, a good riflescope has repeatable elevation adjustments (such as target knobs). Armed with such a scope and a trajectory chart, you can simply dial in the number of clicks to zero the scope for the distance you are shooting. And then just aim right on with no holdover. For example, you might zero for 200 yards and adjust your scope UP by 50 clicks to be zeroed for 500 yards. The markings on target knobs and 1/4 MOA clicks make this pretty easy to do... At 500 yards it is a little less than one full turn.

By now you are probably realizing the need for some way to accurately measure the distance to the target... If you don't know the distance, all of the calculated trajectories and ballistic reticles are useless! We recommend a good quality Laser Rangefinder... they're very accurate.

All of this stuff is truly amazing... It illustrates the extreme possibilities of an accurate rifle and cartridge. And it's just nice to know your equipment can do it. But sooner or later you come back to the question of what is the simplest, most practical answer for hunting?

I tell customers to zero their 6.5mm BRM for 200 yards. This will make it 3 inches high at 100 yards and 10 inches low at 300 yards. For deer hunting, you aim right on all the way out to 250 yards. Aim at the spine at 300 yards and you'll hit the middle of the chest. Simple.

The Importance of a Solid Rest...

For long distance shooting, its important to realize that very small errors become big misses down range. The human element is the main source of small errors such as tension input, heart beat, flinch, jerk, breathing, buck fever, and whatever. By using a shooting rest, you can remove most of the human errors from your hold.

See our **Bipods and Rests** department for Bulls Bags, Bench Rests, Bipods, and Gun Resting Accessories.

For hunting, a **Harris Bipod** can give you almost as solid of a hold as a bench rest. I favor the S-Type bipod with a Pod-Loc as this allows for leveling of the reticle to remove canting error... And friction makes it stay put.

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