

This topic can be found at:

<https://forums accuratereloading.com/eve/forums/a/tpc/f/4711043/m/2861098911>

capoward

04 March 2010, 07:23

Terminal Bullet Performance

quote:

Originally posted by RIP:

Of course the bullet continues to spin inside the temporary wound cavity. That has been high-speed-filmed many times in transparent media, gelatin and water, and spinning bullets are seen emerging from shattered/penetrated plastic, wood, glass, metals, fabrics, etc.

The shock wave at the front of a supersonic bullet vanishes as it meets the denser medium, where the speed of sound is much higher in the denser medium.

The bullet nose does contact the medium at the stagnation pressure point at the center of the meplat.

The medium is instantaneously parted at that point and flows radially outward from that point.

It is flung outward by the near instantaneous momentum transfer from the bullet to the medium. That is a high G acceleration!

As the bullet continues onward, the medium continues expanding and cavitating around the sides of the bullet and behind it.

The bullet plows onward, spinning in a cavity that is a relative vacuum compared to air!

Spin still stabilizes in the cavity.

RIP that's a very clear description. Thanks!

Jim 

"Life's hard; it's harder if you're stupid"

John Wayne

capoward


04 March 2010, 07:26

quote:


Originally posted by I Bin Therbefor:

I wonder about the shock wave "vanishing". I believe that there has to be an energy transfer from the shock wave to the target before the bullet actually hits. I've seen too much structural damage done by shock waves to hold with the "vanishing" statement.

I agree that the creation of a shock inside the target would depend on the density of the medium which I do not know except to say it definitely is greater than air. Without evidence to the contrary, I accept your statement that no shock wave is formed inside the animal by the velocity of the bullet.

I wonder what difference it would make to the energy transfer (not stability) if the bullet were not spinning as occurs with a smooth bore launched, fin stabilized projectile. Would they both create the same wound channel? 



All rightee...Looks like its time for me to sit back and learn. 

Jim 

"Life's hard; it's harder if you're stupid"

John Wayne

Bike Rider

04 March 2010, 07:48

All time penetration champ?

6.5mm-156gr or 9.3mm-320gr or .500-512gr or .500-550gr?

If I can locate the 6.5mm bullets we will be good to for this weekends testing. My money is on the 6.5x53R mini monster.

Any bets?

BR

capoward

04 March 2010, 08:02

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BR

Talk about trying to take bets after the horses have crossed the finish line! 🍀

The only bet I'll proffer is...let me see...the 512gr (if you're taking about Michael's original trial bullet) will come in last...then it's going to be nip and tuck between the other three. How's that for sticking my head out! 🍀

Jim 🍀

"Life's hard; it's harder if you're stupid"
John Wayne

RIP **04 March 2010, 08:03**

BR,
What is your twist for that 6.5 boolit, what velocity, and is it an FN of any sort, at least a flat meplat on an otherwise RN?
No bets until more is known about your racehorse! Is that one of those magic bullets that got JFK?

RIP **04 March 2010, 09:05**

JFK Hearings Testimony:

Mr. Matthews - Will you say that the Mannlicher-Carcano 6.5 millimeter bullet, is a stable bullet?

Mr. Sturdivan - It is a very stable bullet, perhaps one of the most stable bullets that we have ever done experimentation with.

Mafunyane **04 March 2010, 09:29**

My bet is on the .500 550gr
I would have love to see the .450 rigby with a 550 gr solid

All that is needed for evil to triumph is for good men to do nothing!!

someoldguy **04 March 2010, 13:18**

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Spin still stabilizes in the cavity.
RIP that's a very clear description. Thanks!

+1



Glenn

Warrior **04 March 2010, 14:57**

This table gives us a quick view of the incremental revolutions and degrees due to faster spin:

| Velocity | Twist Rate | Rpm | Revs in 30" | Revs in 1.5" | Incr. revs | Incr. degrees |
|----------|------------|---------|-------------|--------------|------------|---------------|
| 2,200 | 10 | 158,400 | 3.0 | 0.150 | 0.025 | 9.000 |
| 2,200 | 12 | 132,000 | 2.5 | 0.125 | 0.018 | 6.429 |
| 2,200 | 14 | 113,143 | 2.1 | 0.107 | 0.013 | 4.821 |
| 2,200 | 16 | 99,000 | 1.9 | 0.094 | 0.010 | 3.750 |
| 2,200 | 18 | 88,000 | 1.7 | 0.083 | 0.008 | 3.000 |
| 2,200 | 20 | 79,200 | 1.5 | 0.075 | N.A. | N.A. |

Looking at it this way as to what happens in the first 1.5 inches in terms of increased spin, we hardly see any material effect - the additional bullet turn in degrees makes it easier to interpret.

The nagging question ... are we not perhaps barking up the wrong tree?

RIP

Corbin NC--Yes! Now Head of Sales for Para! Otherwise known as BikeRider right here! Heavy afflicted with fine wood stocks, myrtle in particular, has a few sticks of wood to die for, in fact when he brought them here last time I was considering if I could dump him and his car in the pond and confiscate the wood? It's that good! But it was one of those days I needed a lot of help on the range so.....but if he brings that wood back? Has the heavy hots for a 50 B&M and a 9.3 B&M and I suspect they will get a couple sticks of that wood put on them. Pretty good all around chap, damn good help on the range when doing test work!

As for the spread sheet, I included bearing surface and actual diameter too. I believe that on a couple of occasions that bearing surface, slow twist rate, and just a bit undersized bullet all factored into that bullet not being stable. So I started looking at bearing surface too, and as you see it varies quite a bit.

As for the spin once terminals begin, yes for a fact it does continue to spin. To what degree and what have you, I can't say. I can say this, remember JD's bullet with the cuts in the meplat? Spin in the target medium slings fluids away from the bullet, now this can only occur if the bullet is spinning as it penetrates. Target medium shows this to a degree because of the extra damage done to target medium over the exact same bullet without the cuts in the meplat. In addition this bullet loses energy and momentum far quicker than the bullet without the cuts, penetrates far less too. Also it does tend to become unstable the last few inches of penetration. You could call this particular bullet a LPS. Limited Penetration Solid!

I am convinced that for this bullet to function as designed it requires velocity. I actually shot it in the 50 b&M on several buffalo in 2007. While it did ok, it was not a miracle bullet. Something like this has little to do with wound channels and bullet digging, here we need to study the reactions of the animals being hit, "How do they take this bullet, and what reactions are given?". At B&M velocity, 2175 fps, it killed buffalo efficiently enough, penetration indeed limited as it is in the test medium, but reactions on buffalo did not seem to be any better than the other bullets.



Increased velocity to 2425 fps or so in the 500 MDM and on the Australian buffalo did help somewhat from what I could see, but the bullet was far overshadowed by the reactions with the 470 Copper HP, which was extreme! But my test subjects are tanks, I think I would see more reaction to taking this bullet from thinner skinned species, of which it has not been used for YET. Even then I believe it will be overshadowed by the NonCons and the way they impact and cause trauma. But the jest of the matter with this bullet is the fact that it is indeed spinning like a boat propeller in the target, slinging fluid away from center. LPS--Limited Penetration Solid. From the photo above you see this penetrated only 28 inches at an impact velocity of 2342 fps from the 500 MDM. Yesterdays test with the exact same bullet WITHOUT the cuts in the meplat at a lowly impact of 1850 fps penetrated dead straight for 42 inches! Interesting I think.

Michael

<http://www.b-mriflesandcartridges.com/default.html>

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michael458

04 March 2010, 15:28

OK the little 156 gr 6.5 bullet that Bike is talking about is some military of some sort semi round nose design he pulled from some very old ammo he had on hand. They are very long and have somewhat similar nose profile as the 9.3 320 Woodleighs and the 358 caliber 310 Woodleigh FMJs. Bike loaded some of these in some sort of 6.5 X something and we tested at 2060 fps, 2211 fps, and 2338 fps, 3 across. Only 1 box of medium at the time. These burned straight through the box, out the back, and god knows where from there, I don't recall recovering any of them, tiny little holes in the back of the 2X6s. I think one, did start to veer slightly off course at the exit.

Now I am going to upload some photos of the 9.3 and 358 caliber Woodleigh FMJ so you can see the difference in nose profile of these bullets as opposed to the RN design of a 500 gr Woodleigh 458 caliber fmj. I think it will show the difference enough that you will be able to understand what I have been talking about.





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Mitutoyo

ORIGIN

0.36

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Any bets?

BR

I dare not predict crap anymore, everytime I think I know something that goes out the window, like the other day with the 400 gr Grand Slams! Because of meplat size I stated they were not going to do well, but being compact as they are this overcome meplat size for them! SO.....But by Saturday we will have two boxes waiting on your arrival, 9.3 320 Woodleighs loaded and ready! You can bring those myrtle sticks if you want to????  But I won't be responsible for my actions if you do! Can you swim very good?

 HEH

On second thought, DO NOT BRING THE MYRTLE STICKS--It might be more than I can bear!

Michael

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Warrior

04 March 2010, 16:38

quote:

Originally posted by michael458:

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The fact remains that all these RN bullets do exhibit tangent ogives, none with sharp shoulders - all nicely rounded with varying meplat percentages, but the meplats are not exactly flat with the .458/500 gr. Wdl being the most rounded. None could actually be classified under the category of Flat Nose bullets.

Michael I know you try your best, and do not see this as criticism, but it is a damn difficult thing that you are out to trap and put to bed.

Warrior

michael458

04 March 2010, 17:48

Warrior

Correct, none of the smaller caliber woodleighs are FLAT. They penetrate as well as many of the bigger flat nose solids we have been testing, which is phenomenal and I would have never ever predicted such. So Why? Why do they do that, and we can't get a 500 gr 458 Woodleigh past 30 inches without going crazy? Well, obvious the first thing to look at is the nose profile, and they are vastly different than the 458 Woodleigh, as we can see. Other factors? Probably, but not identified as yet.

Put to bed? No, probably never as far as the masses are concerned. For shooters like many here, we are getting close. But there are many factors that must be considered, and each individual bullet design must be considered, there can be very few "blanket statements" that cover all bases as we have seen, as I have seen. And even when those things can be identified, there will be individuals that will always state otherwise!

So, I defer right back to page 1 and my statement thereof, this test work is for me, if one wishes to agree that is fine, if one does not agree, that is fine too, it is what it is and take it for what one has paid for it! I have zero to sell and not trying to. It is my intention to find what works best for me, what I have the most confidence in, and for me to take the very best I can to the field so that I might increase my chances of success in the field! For my part, the tests have never let me down, what has been successful in the test work has with zero incidence been successful in the field also. So what can I say?

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anyone else.

jwp475

04 March 2010, 20:15

quote:

Originally posted by RIP:

Doc M,
Corbin of NC?

If he is same helpful gunnutt I know, then we have a mutual friend. Say "hi" to Corbin for me.

John, Glenn, Jim, and all y'all with good heads free and clear of the goat:

Of course the bullet continues to spin inside the temporary wound cavity. That has been high-speed-filmed many times in transparent media, gelatin and water, and spinning bullets are seen emerging from shattered/penetrated plastic, wood, glass, metals, fabrics, etc.

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Warrior with his "number of revolutions in the goat" has his head deep in the ass of the goat.

An explanation in plain english that lay-men can understand and is still technically correct!!!!

Bravo, RIP excellent 🍻🍻🍻🍻🍻🍻

A 9mm may expand to a larger diameter, but a 45 ain't going to shrink

Men occasionally stumble over the truth, but most of them pick themselves up and hurry off as if nothing had happened.

- Winston Churchill

jwp475

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Warrior

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Michael

Michael458 great job, outstanding. You are disproving many myths and are confirming the truth that many wish to ignore.. Great job!!!! 🍻🍻🍻🍻🍻🍻

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capoward

05 March 2010, 00:07

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Michael,

I've patched two post together so that I can ask a single question, "The close-up photograph shows what appears to be a flat nose on the smaller diameter bullets...have you stamped their noses yet to determine if the nose is truly flat and if so the diameter of the flat surface?" *Edit Added: "And if not flat can you wollow them a bit to determine the overall diameter of the convex surface? As well as the convex surface's height?"*

Jim 🤖

"Life's hard; it's harder if you're stupid"
John Wayne

someoldguy

05 March 2010, 01:14

quote:

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I can attest to the mighty little 6.5, which is a small bore that thinks it's a big bore. I had a Swedish Mauser in 6.5x55 that I bought for the princely sum of \$129 about 20 years ago. I was dying to shoot it, but the only ammo I could find was Norma 156 grain **soft points**. I set a target up in front of a seven-inch diameter oak tree that my brother-in-law was going to saw down. (The tree was next to a large hill, so I wasn't being reckless.)

First shot, I noticed a large amount of debris coming from behind the target. I moved closer to see. It so happens that the bullet had penetrated the entire oak tree and had knocked off about four inches of the bark from back to front! The bark flying in the air was the debris I saw, in addition to the dust stirred up from the bullet's impact with the hill. I never did find the bullet but I saw where it went in. The "exit wound" on the oak tree was at least twice the bullet diameter, I would say.

Turns out, my brother in law decided not to cut down the tree. It's still alive and well out in the woods behind my house.

Glenn

michael458

05 March 2010, 01:54

Jim

Yes, I did in fact try to stamp both the .366 caliber and the 358 caliber Woodleighs, but no go. I suppose one might say they are RFN--Rounded Flat Nose? Now I can wallow them around some, but nearly impossible to get a proper measurement I think, in fact I did this, but when stamping, can't really tell where the edge of the convex is? I will give it a try, tomorrow when I am loading the test loads for Saturday.

M

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michael458

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Turns out, my brother in law decided not to cut down the tree. It's still alive and well out in the woods behind my house.

Well I don't have much use at all for anything UNDER 338 caliber, and the longer I live that number is moving up, right now it's hovering at .366 caliber. But if you boys promise not to tell anyone, anywhere, I will let you in on something, I bought my wife a Winchester M70 6.5X55 a few years ago. Now she is a city girl from Pretoria, never shot a rifle in her life, and 308 made too much noise for her, but she loves her 6.5X55. Doing all the load workups for her and shooting the little gun, I sorta liked it too. So later I built a 6.5 WSM, since I always have a WSM about for the B&Ms. It worked out pretty good, but it was a featherweight, and I rather have a little heavier barrel contour, so I built another one recently and it's doing well. We used the FW 6.5WSM in South Africa, my boys, and it was seriously impressive shooting a 120 gr Barnes X at 3300 fps. I almost thought they were shooting a real gun by the way things were dropping! Pigs, impala, warthogs, and even a wildebeast, very impressive. But if you tell anyone I said so, I will deny it to the end!

Michael

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capoward

05 March 2010, 05:06

Once upon a time the greatest scientific minds of Earth Sphere believed Earth Sphere to be flat and issued dire warnings to all Earth Sphere's sailing masters, "Stay close to the known world. Steer far from the earth's edge as disaster waits. Face disaster at the veil of the precipice if ye do not heed these warnings."

Thence sailing master Michael458, fondly known by his crew as Doc M for his temerity in challenging the known, having already sailed beyond the known world carefully modifying his trusty tools to overcome unforeseen obstacles, arrived.

Thus challenged the science masters, "heed our warning lest ye suffer disaster!"

Having sailed beyond the known world, sailing master Doc M has not yet found the veil of the precipice yet he sorely understands the hazards and pitfalls to be encountered when challenging the unknown.

It is true the edge of the world causes great disaster to all who tempt its barrier? Is it an impenetrable barrier? Is it no barrier at all? Have others suffered at the veils precipice? Would he fail as others before him were he to ignore the warnings?

Sailing masters must have suffered failures suffering dire consequences, else why would Earth Sphere's scientific masters issue this dire warning? Are the Earth Sphere's scientific master's dire warnings a faulty hypothesis?

All questions are without answer when none have the temerity to challenge an unknown...to prove or disprove a hypothesis. Yet does Doc M heed this dire warning and the impending disaster awaiting? Nay he does not!

Being a forthright sailing master Doc M accepts the challenge. He and crew sally forth to test the hypothesis, into the breach goes!

Throughout perilous journey Earth Sphere's science masters continue to heap dire warnings of disaster at the veil of the precipice upon Doc M's and the crew. Yet never faltering the daunting voyage continues.

Fearing the precipice is at hand Doc M carefully inspects the spheres selected for this task. Not unlike, but not like his favorite spheres which have proven themselves to the challenge many times. Similar yet different...Up to the task would they be?

The veil of the precipice is at hand. Doc M carefully selects one of his trusty tools and then two of the chosen spheres. Loaded and ready for firing, taking careful aim, he launches the chosen spheres at the veil. Will the spheres penetrate the veil proving the hypothesis faulty? Nay Doc M's first two sphere's failed; as they rapidly approached the precipice first one then the second is diverted and fails to penetrate the barrier. Admit defeat did he? Nay he did not!

Undaunted Doc M sets aside the tool and selects another of his trusty tools. Again selecting and loading two of the chosen spheres he readies their launch. Taking careful aim, Doc M launches the spheres at the veil. Will they succeed? Is the hypothesis discredited? Was the veil again an impenetrable barrier? Will the precipice cause potential disaster? Nay again as the spheres rapidly approached the veil they one after the other diverted failing to penetrate the barrier.

With heavy heart Doc M informs his crew, "We have suffered defeat at the precipice. The veil is impenetrable. The precipice is impassible. Our chosen spheres though specifically designed for our trusty tools the spheres cannot overcome the precipice' veil. Earth Sphere's scientific masters warnings are truth. To sally forth would court disaster as forewarned!"

Much murmuring was heard throughout the crew, "The chosen spheres are faulty. New spheres...New spheres say all. Yes new spheres will prevail! We must heed the warnings until we have new spheres!"

A voice from amongst the crew is heard. "Nay, use the new favorite tool," says the voice, "The new tool will defeat the veil of the precipice with the chosen spheres!"

Silence envelopes the crew and Doc M.

Earth Sphere's scientific master's voices are again heard to say, "Nay it is fallacy. Your spheres are faulty. The veil of the precipice is all powerful. Tools have no impact upon the spheres ability to defeat the precipice!" Much murmuring is again forthcoming from amongst the crew.

Doc M fondly recalls the good works performed by his new favorite tool using its newer and proven spheres. Yet a cloak of gloom surrounds him, swiftly his mind considers, "could his new favorite tool be the key, would the chosen spheres work, could they truly overcome the veil of the precipice? Or would it too fail?"

Vexed is Doc M, the crew awaits his response. Trusting the forthrightness of this crewman Doc M responds, "ye my new favorite tool it is!"

Taking great care Doc M selects his new favorite tool from amongst his tools. He again selects and loads two of the chosen spheres. Pensively taking careful aim Doc M launches the chosen spheres towards the veil. With much angst the crew awaits the results. "The veil of the precipice is supreme", Earth Sphere's scientific masters are heard to say.

The spheres approach the veil...and... First one penetrates the veil. Can it be? Then the second penetrates the veil. Can it truly be? Is it Success? Yes success!

Both of the chosen spheres have penetrated the veil and crossed the precipice. The new favorite tool was the key. Yes the new favorite tool is success! The chosen spheres have penetrated the veil and crossed the precipice and beyond!

The voices of Earth Sphere's scientific master's voices are heard to say, "Nay not true. It is fallacy. The tool cannot impart ability to the sphere to penetrate the veil and cross the precipice and beyond. It is not true. The precipice cannot such be foiled!"

Doc M and the crew looked amongst themselves with that knowing look that "what was done is done...Earth Sphere's scientific

master's dire warnings were fallacy, their hypothesis faulty."



Ok Glenn told me yesterday that if I wanted to be an ass I should be the best ass that I can possibly be. So...new ass I am. 🌐

quote:

Originally posted by Warrior:

This table gives us a quick view of the incremental revolutions and degrees due to faster spin:

| Velocity | -- | Twist Rate | -- | Rpm | --- | Revs in 30" | -- | Revs in 1.5" | -- | Incr. revs | -- | Incr. degrees |
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| 2,200 | ----- | 14 | ---- | 113,143 | ---- | 2.1 | ----- | 0.107 | ----- | 0.013 | ----- | 4.821 |
| 2,200 | ----- | 16 | ---- | 99,000 | ---- | 1.9 | ----- | 0.094 | ----- | 0.010 | ----- | 3.750 |
| 2,200 | ----- | 18 | ---- | 88,000 | ---- | 1.7 | ----- | 0.083 | ----- | 0.008 | ----- | 3.000 |
| 2,200 | ----- | 20 | ---- | 79,200 | ---- | 1.5 | ----- | 0.075 | ----- | N.A. | ----- | N.A. |

Looking at it this way as to what happens in the first 1.5 inches in terms of increased spin, we hardly see any material effect - the additional bullet turn in degrees makes it easier to interpret.

The nagging question ... are we not perhaps barking up the wrong tree?

Warrior

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1:14" twist rate barrel: 2040fps Muzzle Velocity: 48" straight-line penetration before exiting the rear of box, lost to recovery.

The Doc M's sailing crew is not the Earth Sphere's scientific minds...though there are a few included within the crew that would qualify intellectually.

You say it can't be, that it's improbable, yet it has been demonstrated. Perhaps it is time to re-test your hypothesis to determine where it went astray.



I'll blame me on the yardwork!

Jim 🍷

"Life's hard; it's harder if you're stupid"

John Wayne

Phatman

05 March 2010, 05:36

PRAISE THE YARD WORK



John 🍷

Give me COFFEE and nobody gets hurt

boom stick

05 March 2010, 06:08

OK here is an interesting observation...

Seems there is LITTLE risk or issue with DG carts and fast twists so if you have a slow twist barrel all the more to use flat nose solids to aid straight line and deep penetration over softs. Question is what will say a predictable expanding bullet like Barnes X do penetration wise at fast and slow twist???

Will Double rifle makers offer a fast twist option?

577 BME 3"500 KILL ALL 358 GREMLIN 404-375

we band of 45-70ers (Founder)

Single Shot Shooters Society S.S.S.S. (Founder)

jwp475

05 March 2010, 06:15

quote:

Originally posted by boom stick:

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Will Double rifle makers offer a fast twist option?

As a bullet expands the shank gets shorter and more likely to track straight than a long mono metal solid IMHO. Sometimes expanding bullets will tumble in game. I have a 400 grain partition 416 caliber that pinched the base together suggesting that it tumbled.

A 9mm may expand to a larger diameter, but a 45 ain't going to shrink

Men occasionally stumble over the truth, but most of them pick themselves up and hurry off as if nothing had happened.
- Winston Churchill

boom stick

05 March 2010, 06:27

I agree with the shorter uniform mushroom non tumble theory but what about depth of penetration?

My guess is that there will be little difference because the expanding bullets penetrate less anyway and the hydrodynamics is different, but hey... we are here to bust myths right?

This is the myth busters of terminal ballistics is it not?

Fun show that myth busters but half the time they get it wrong unlike professor mad man Michael.

quote:

Originally posted by jwp475:

quote:

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[577 BME 3"500 KILL ALL 358 GREMLIN 404-375](#)

we band of 45-70ers (Founder)
Single Shot Shooters Society S.S.S.S. (Founder)

RIP

05 March 2010, 08:21

All y'all,
Please excuse the typos. I am not drunk, just fat fingers typing on an iphone.

Doc M,
The witness cards do give a nice indication/record of cavitation within the medium. Belies the lack of tissue injury inside the temporary wound cavity. Those 500s carry some smack!

Smack. That is what the FN meplat does too.
We have to admit the nose of the bullet is contacting the medium/tissue for shoulder stabilization to keep the FN going straight. Sure, a shock wave in the air between the target and bullet might shock the surface of the target some nanoseconds before the bullet starts penetrating, but what does that puff of compressed air do besides warm and start stretching the surface? Those "Trident" point solids are a step down from the copper cup point for penetration, maybe? Holy thrashers, Batman! Should work well if made of brass or copper.
They increase the resistance and disrupt the FN stability.
The large FN meplat slings tissue aside just fine.
I see the "Trident" cuts as just disrupting the FN nose function, partially, but not as badly as hemispherical RN or spitzer.
Corbin's JFK bullet is the same one Bell used on elephant brain shots.
And the rifle has a 7.5" or 8.5" twist? Fast twist!
Maybe the nose is flattened like the Woodleigh 9.3 and .358 bullets?
If not, Corbin might want to take a hammer to the noses of the bullets before he loads them for Saturday.

quote:

[quote]Originally posted by boom stick:
Question is what will say a predictable expanding bullet like Barnes X do penetration wise at fast and slow twist???

Both are WAGs here...but you asked, so here goes...I believe the slower twist will give slightly more penetration and with slightly less expansion with a traditional expanding bullet with inverse holding true for the faster twist.

Best of both worlds is the NonCon monometal.

Jim 

"Life's hard; it's harder if you're stupid"
John Wayne

RIP

05 March 2010, 09:23

Nah, the slow twist .416/400gr TSX will get a poorer start into the test medium/critter, due to yaw, and will get its nose hole pinched shut and will tumble like a spitzer.

I don't think the fsster spin will aid expansion by centrifugal force.

Warrior

05 March 2010, 09:44

quote:

quote:

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Could it be that there is actually another variable or variables that are being ignored here?

The bullets were fired from 2 entirely different barrels - how close to identical are they?

And there is a host of barrel specs that one must consider or to tick off as being standardized.

Alf has mentioned angle of attack ... what else could there be apart from a standardized test pack?

Warrior

capoward

05 March 2010, 10:46

quote:

Originally posted by Warrior:

quote:

quote:

Originally posted by Warrior:

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And there is a host of barrel specs that one must consider or to tick off as being standardized.

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Warrior

Perhaps instead of running through the litany of reasons why the twist rate is not a factor perhaps you should consider that it is.

There were actually four entirely different barrels; one 20" twist rate, two 18" twist rate, and one 14" twist rate from four different rifles used in the test. I edited the quotation above to number them for ease of identification and better understanding. And the variance between the two 18" twist rate barreled rifles, numbers 2 & 3, was an average 10fps and 2" penetration with number 3 being the lesser of the two.

Perhaps it would be best to go back towards the beginning of this thread and reread Doc M's multiple postings regarding the Barnes Buster testing...multiple bullets with each rifle were fired into the normal bullet box mix.

Now regarding other variables involved in the results. Assuredly the shots were fired at less than perfect 0° angle to the target test sheet so that multiple bullets would fit upon the sheet. Heck go ahead and include a bullet yaw upon impact for each bullet. So, how did these additional issues impact the results?

If I recollect correctly the penetration results for rifles 1 through 4 was a penetration deviation of approximately 2" for all shots fired for each respective rifle.

So if all factors involved are important except twist rate, that the deviation within all shots fired for each rifle was 2" in penetration yet when twist rates are included the difference is 8" to 10" between the 1:20" and 1:18" twist rates, rifles 1 & 2/3, and 10+" between the 1:18" and 1:14" twist rates, rifles 2/3 & 4, and 20+" between the 1:20" and 1:14" twist rates, rifles 1 & 4. [Edit added in blue]

Perhaps it's just me but it appears that twist rate has a heck of a lot more impact upon penetration than does bullet angle and yaw at impact.

Sorry Glenn... 😞 I fell off the wagon again.

John I think I need some of that coffee too. 🤖

Jim 🤖

"Life's hard; it's harder if you're stupid"

John Wayne

someoldguy

05 March 2010, 12:13

quote:

Sorry Glenn... Frowner I fell off the wagon again.

Not a problem, Jim. I'm here for facts, not theories. I want my theories to support the facts, not vice versa. I don't mind throwing aside theories when they don't work anymore. I just consider theories as stepping stones to the truth, not necessarily as absolutes.

So far, the evidence seems to point to twist rate being a factor in penetration, so that's one of my theories. RN bullets generally don't do well in the medium, so that's another theory. Important exception is the 320 grain 9.3 bullet which performed like a FN! I would like to understand why this happened, but so far I haven't come up with a theory that gives me the warm fuzzies. 🍪

Glenn

capoward

05 March 2010, 12:57

quote:

Originally posted by someoldguy:

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Hey Glenn,

I believe we will shortly be adding Corbin's 156gr 6.5 bullet to the 320gr 9.3 Woodleigh for straight-line penetration. Why do they work like they do? I don't know. We've all heard the "deep driver" simultaneous with "long and heavy for caliber"... Is it true? I don't know. Except that there are a few very long and slim heavy for weight bullets that are very deep drivers. Perhaps they, as are at least two, have a very shallow slightly rounded nose shape to mitigate the bullet length for COAL feeding purposes. Is this nose design by happenstance or is it by knowing design intent. Again I don't know.

It would be nice to have a few each of Rigby's original 310gr .358 caliber and 410gr .416 caliber solids for nose shape comparison to the 310gr 9.3 Woodleigh test *and* to test against Doc M's double-box Mastodon mix. It would be nice to see if the reputation they garnered in the early 20th century as deep divers against Africa's largest DG holds true.

Oh well, guess we'll have to await Corbin's and Doc M's test results. Time for me to shut things down. Cheers!

Jim 🍪

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John Wayne

Warrior

05 March 2010, 14:11

quote:

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It would be interesting to see the SF for this 6.5mm/156 gr military bullet. It would rather long-for-caliber as it is a high SD bullet(.320). What was the twist rate for the rifle that was used in the wetpack test. We should not fall in the trap to say the twist is "fast" as it should be related to the caliber and bullet in question, and therefore we should rather calculate the SF value. Just out of interest, reason being, the longer a bullet is and complimented with a RN ogive, we know or we can expect ???

The plot thickens, damn.

Almost like the income tax act ... more exceptions than rules !!!

Let us probe deeper and enjoy the ride.

The good thing is Micheal is committed ... and what a ride this has been.

(That does not mean Micheal will take us for a ride ... a roller coaster ride ... up and down)

Warrior

michael458

05 March 2010, 15:24

Whew, long evening I see and we even made a new page, to #45 now! I see some good discussion along the way. But first, Jim, what a story over on page 44!!!! That's a piece of work! You did good, and I am honored, I think? HEH!

Boom

Back in the day, we all know the story of my issues with the .500s and straight line penetration with 1:18 was not giving me what I wanted. Now I had shot 1000s of rounds literally testing, load data, bullets, the works. .500 Was exciting, new, and while there were

lot's of bullets, most were not suitable for the velocities I can run. So there was a lot of test work done, lot's of test medium chewed up, all at 1:18. Now we go into the 1:12 for the stability issues with the solids, now we make the move to several new flat nose designs and everything is a mystery, I wonder what other changes occur in going from 1:18 to 1:12. Velocity, accuracy, loads, bullet performance of expanding, lot's of things were investigated.

It did not take long to see that all of my prior work was still valid, all the load data, accuracy of that load, velocity, everything "outside" the box was the same, zero changes, pressures did not go up, nothing with going from 1:18 to 1:12, with the great exception of the solids being more stable! I made the call within only a day or two and mandated that ALL NEW .500s Would have a 1:12 twist barrel. At the time there had been either 8-9 rifles built in 1:18 twist rates. 2 of these were mine. In the period between waiting on the new flat nose samples to be made up, and the actual time they arrived, which was not too long, I started retesting expanding bullets to make sure there was no surprises there. There were no surprises, expansion, depth of penetration, everything was the same, there was no changes from 1:18 to 1:12 with expanding bullets, including 3 different Barnes X bullets in .500, 275-325-and 375.

Now not to offend our double rifle readers, but I am not a double rifle guy, I am bolt trash and proud of it. I think a double is a work of art, beautiful, and we could argue the merits of one over the other but really it is a moot point, it's like the stupid magazine articles we see in the gun rags for the last 50 yrs, 30/06 vs 308, or 300 Winchester vs 300 WSM or some stupid trash as that. To the point, I would bet that the DR guys would not even know the difference in 1:18 and 1:12, I think some folks that make DR really should get with the program and look at stability during penetration and forget being the traditional twist rates! Twist rate is a real and viable factor for terminal penetration of solids, there is zero doubt. I have already seen it too many times now, and experienced it. There is not but one thing that can over ride a slow twist rate, and that is a "PROPER NOSE PROFILE FLAT NOSE SOLID". By proper I mean the meplat must be of sufficient size or % of caliber to over ride twist rate.

I can over ride twist rate of 1:18 in the .500s with the 510 gr solid that by stamp measurements comes to 66% of caliber, drop much below that and the 1:18 will not stabilize them. Mike has proven this in addition with his DR and the North Fork bullets over riding a slow twist rate. Since I can see zero reason and zero changes in any other factors in going from 1:18 to 1:12, I don't understand at all why we would even consider having a twist rate slower than 1:12 on any big bore rifle from 416 caliber to 510 caliber, I really can't say much above or below those calibers, but for sure those and anything in between, no reason at all for anything slower than 1:12! If your rifle is slower than 1:12, and most are, then one has to choose bullets carefully to over ride the poor and out dated twist rates.

Michael

<http://www.b-mriflesandcartridges.com/default.html>

The New Word is "Non-Conventional", add "Conventional" to the Endangered Species List!
Live Outside The Box of "Conventional Wisdom"

I do Not Own Any Part of Any Bullet Company, I am not in the Employ Of Any Bullet Company. I do not represent, own stock, nor do I receive any proceeds, or monies from ANY BULLET COMPANY. I am not in the bullet business, and have no Bullets to sell to you, nor anyone else.

michael458

05 March 2010, 15:36

quote:

Originally posted by RIP:

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If not, Corbin might want to take a hammer to the noses of the bullets before he loads them for Saturday.

RIP

Good term for what I termed LPS, limited penetration solids. The "Trident"! They are a step down from the copper cup point, I am sure of it. It's a very interesting nose profile, and those 3 tiny little cuts produce a completely different animal. Taking somewhat of an educated guess they are stable to 85-90% of their terminal journey at which point they do lose stability and veer, curve, and do all sorts of things. BAD or not? Well we must remember that this is a solid, but not designed for deep straight penetration. Designed to limit penetration of a normal flat nose solid of the same design and to inflict more damage or trauma to the target material, regardless of what that is. So yes, the design does disrupt the flat nose function for sure, not as much however as the RN. Some what of a NonCon, and really should be classed as such. At the same time however it does make study of disruption of the flat nose process very interesting and enlightening!

Spoke with Corbin yesterday, one of his 6.5s is 1:8 twist and he thinks the old military gun he has is 1:7. We are testing both and testing different velocity too. I will take some photos of the 6.5 bullets tomorrow and present with the report on them. I have to admit that when we did test some months ago I gave them only a cursory look at!

Have to get back on the range this morning, get two new boxes of medium made, and lot's of extra material ready to go in the box too!

Michael

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michael458

05 March 2010, 16:04

Since I brought up the Limited Penetration Solid, or Trident bullet once again, I have a little story I must tell I thought of this morning about that bullet. In November of 2007 I was helping mop up left over buffalo quota with Ross Johnson of HHK in Zimbabwe. The first real outing for the 50 B&M in it's current configuration, and with the bullets that are now standard for it. This is after hammering the two elephants with Dudley Rodgers. The 50 B&M had made a wonderful showing down there with the elephants, and I had gone from my belief of the 50 from being "adequate" for the job at hand, to being a real stopping rifle, cartridge, and of course the most important, BULLET combination! I had 5 buffalo to mop up and wanted the first one for the 50 B&M to be a good one you know! So we run into a good herd of the buggers and there is a nice big boss bull with them. Sneaking around we get to the top of a tiny hill above where they are feeding through the brush. Number one bullet up for testing is the NPS Trident NonCon! My interest was to see animal reaction, what does a big bull do when hit with this! I already knew penetration and bullet performance from the extensive test work done, I had no concerns there, just wanted animal reaction to taking this strange bullet design!

Set up on top of the hill just above them they are feeding along, about 30 yds or so. Lot's of brush, I had shooting through brush. Well the bull had now pulled from my right to my left and moving away with each step, found a hole in the brush, shot was a little high and forward I knew, but it was all I had, I fired, the bull dropped in his tracks and never moved again! I mean dropped like lightning had struck him from above and sucked every ounce of life from him in an instant! Things settle down and I suspect I knew what happened before arriving to the scene, but I am thinking that God himself has sent me a 50 B&M and it's about the greatest hammer ever devised, you know what I mean! But upon arrival to the buffalo I see exactly what happened and of course knew this in the back of my mind, bullet a bit forward, bit high had went through the shoulder and hit the spine! Of course he is going down like that, he has no choice and I had no choice, it was the only shot I had at the moment. So my first words to Ross were "That's not exactly the shot I wanted or needed to test this bullet!" For just a moment, maybe a few minutes I think, I was actually disappointed about the shot because that is not a proper test for what I wanted to OBSERVE. I was totally 100% in test mode! A few minutes go by and I except that for the first buffalo taken with the 50 B&M that I had done well, but to this day I remember that, "this is not the shot I wanted to do with this bullet". It was not a mistake, I knew it, and it's the only shot I had, but still I was disappointed that I had hit the spine and the fight was over before it started, and I had proved nothing about the bullet and the animal reaction by hitting the spine behind the shoulders. Test mode!

Also that bullet did not exit and the nose took a beating too.

Michael

<http://www.b-mriflesandcartridges.com/default.html>

The New Word is "Non-Conventional", add "Conventional" to the Endangered Species List!
Live Outside The Box of "Conventional Wisdom"

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buffalo

06 March 2010, 04:51

Michael...

Can I persuade you to try the 500 grs Hornady DGS .458" solid. They are advertised as "flat nose" solids. They are short for weight compared to monolithic bullets of same weight, so maybe - like the Speer AGS - they will penetrate surprisingly well... 😊
Someone in here had a good experience with them on elephants recently was it 465 HH??
They also got them in 480 grs, maybe you should test both..? As well as the 400 grs .416" DGS...

michael458

06 March 2010, 05:15

Buffalo

Yes, I will get some of them. They are cheap enough. I tested the 480 gr version when it come out, still have some of them too. They did not test well in the 458 B&M. And yes 465 HH used them this past year on elephant and they did very well in his 458 Lott, I think. Not sure if the 500s are any different than the 480s, but can get some and see. Test in the lott and the 458 B&M at both velocities, both have the same 1:14 twist.

Will check the 416s out after that.

I think they deserve a second go at it. Meplat is a little short on them however, and as we know, if we come up short on meplat, we need a faster twist, best I have is 1:14. Possibly a little extra velocity from the lott will help???? I will also have enough left over to get RIP some of them to test in his 1:12 and 1:10 twist 458 B&M, I bet there will be a big difference in performance of this bullet with the faster twist!

Michael

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465H&H

06 March 2010, 05:50

quote:

THE ACCURATERELOADING.COM BIG BORE FORUMS

Michael,

I used them in a 458 Win. at 2,150 fps.

465H&H

michael458

06 March 2010, 07:05

quote:

Originally posted by 465H&H:

quote:

THE ACCURATERELOADING.COM BIG BORE FORUMS

Michael,

I used them in a 458 Win. at 2,150 fps.

465H&H

As I recall you had a 1:14 twist also? I think we need to give them a go, as buffalo says. I will get some on the way. In the meantime I think I will try the 480s in the Lott and give them some velocity to see how that goes too.

Michael

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