

This topic can be found at:
<https://forums accuratereloading.com/eve/forums/a/tpc/f/4711043/m/2861098911>

jwp475 17 February 2010, 22:21

Terminal Bullet Performance

In handgun rounds a meplat of 78& in a truncated cone with sharp edges (instead of radiused) out penetrate hevier bullets with smaller percent meplat and or radiused edges.

The question is will this translate equaly to higherspeed rifle rounds

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

Gerard 17 February 2010, 22:26

quote:

The formula for the distance it takes a spinning Projectile to become unstable can be found in Munks formula

Or you can use an FN fired from the correct twist rate and not bother with Munk at all.

boom stick 17 February 2010, 22:29

So faster twist at same velocity penetrated farther and straighter

Hmmmm...



Faster velocity same 1:12 twist farther and straighter

Hmmmm...



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)

michael458 17 February 2010, 22:40

quote:

Originally posted by boom stick:
 So faster twist at same velocity penetrated farther and straighter

Hmmmm...



Faster velocity same 1:12 twist farther and straighter

Hmmmm...



That's The Rumor.

Fairly simple I would say!

<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 17 February 2010, 22:41

quote:

Originally posted by Gerard:

quote:

The formula for the distance it takes a spinning Projectile to become unstable can be found in Munks formula

Or you can use an FN fired from the correct twist rate and not bother with Munk at all.

Munk who? Does Munk know me?

I don't know Munk!

M

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ALF 17 February 2010, 22:48

ALF 17 February 2010, 22:55

capoward 17 February 2010, 23:01

quote:

Originally posted by boom stick:
 So faster twist at same velocity penetrated farther and straighter

Hmmmm...



Faster velocity same 1:12 twist farther and straighter

Hmmm...



Yep...second set of tests appear to bear that out. 😊

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

boom stick

17 February 2010, 23:17

So maybe because the bullet was stable in medium it pointed more of its energy forward?

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)

someoldguy

17 February 2010, 23:25

quote:

Or you can use an FN fired from the correct twist rate and not bother with Munk at all.

The best advice of all.

And Munk? That bastard still owes me \$50!

No thanks about Munk's formula. I only get so geeky. I'd rather come to my own conclusions, even if they're wrong. Helps the aging brain cells. Besides, who knows? Munk could have been wrong. 🤖

Glenn

michael458

17 February 2010, 23:31

quote:

Originally posted by ALF:
Micheal:

Munk may not know you, you may not know of Munk, that's ok however if there is any pontification or logic discusion to be had about rate of twist or best rate of twist and bullet stability in a target or if bullet rate of twist has any bearing penetration then then perhaps you should be introduced to Munk.

Hey Alf!

Well, I am here, Munk wants to meet me I will set aside some time for him. I think he should be introduced to me. First thing I will tell Munk is that 1:12 is for sure the best twist for what I need in .500 caliber rifles (not .510---.500) and that I think 1:12 must be best also for 458 caliber rifles, and then probably once again I would go with 1:12 for 416 also! All my 458s and 416s are 1:14, I wish they were 1:12. But no matter, I can get by with 1:14 if I use the right bullets with proper meplats! Expanding bullets don't make a damn bit of difference. Good proper solids, yes, gotta have the twist especially if meplat is short! Tell Munk to drop on by, I will sort him out.

Thanks Alf!
Michael

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michael458

17 February 2010, 23:35

quote:

Originally posted by someoldguy:
[QUOTE]Or you can use an FN fired from the correct twist rate and not bother with Munk at all.

Munk? That bastard still owes me \$50!

Glenn

That's Monk who owes you the \$50, not Munk! Don't go off the deep end on Munk!

Michael

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michael458

17 February 2010, 23:40

quote:

Originally posted by ALF:
So here is a question to all based on that statement "just use a FN'n bullet and all is solved.

1. Is a FN stable in flight on the way to the target and if those who claim it is why then do we to spin them?

And to follow on if we spin them faster do we actually make them more stable? yes we improve the stability number (static stability) but what about the two other parameters of stability namely dynamic stability and tractability?

2. From this, are they (ffN's) more or less stable than pointed bullets fired from the same gun in air?

If the same bullet weight and caliber one pointd ond a FN fired from same twist gun in air..... which is more or less stable in air?

What confers that increase or decrease in stability based on the nose shape?

3. Once the impact the target based on our knowledge of impact mechanics by all accounts all that has changed now is the value p = target density, and Coefficient of drag of for the target.

Is the FN stable or unstable ? (ie is there a overturning moment present when the bullets transitions from air to target? who says yeah and who says neh?

If your answer is yeah, there is a overturning moment present, how then is our bullet going to counter it?..... Because if it's there is doing to be huge based on the huge defferential between Cd from air to target.

Alf

I know you know better! Air stability is not an issue, pointy, flat, round, or with a party hat on. Terminal stability, once the bullet has to earn a living, not a free ride to target.

What makes it stable once it has to earn a living? If meplat is small for caliber, under 60%, faster twist rate will obviously cause it to be more stable. If meplat is 65% of caliber or more, the flat nose takes over and delivers stability. Higher velocity and proper twist combined give the same smaller meplat even more stability, for a longer period, thus deeper penetration. These are the factors involved in stability. Simple and easy! Tell Munk when you see him!

You know better than this!

Michael

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boom stick

17 February 2010, 23:59

We need a thread on shooter performance 🤖

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)

ALF

18 February 2010, 00:39

ALF

18 February 2010, 01:02

capoward

18 February 2010, 01:38

quote:

Originally posted by ALF:

So here is a question to all based on that statement "just use a FN'n bullet and all is solved.

1. Is a FN stable in flight on the way to the target and if those who claim it is why then do we to spin them?

And to follow on if we spin them faster do we actually make them more stable? yes we improve the stability number (static stability) but what about the two other parameters of stability namely dynamic stability and tractability?

2. From this, are they (ffn's) more or less stable than pointed bullets fired from the same gun in air?

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What confers that increase or decrease in stability based on the nose shape?

3. Once the impact the target based on our knowledge of impact mechanics by all accounts all that has changed now is the value p = target density, and Coefficient of drag of for the target.

Is the FN stable or unstable ? (ie is there a overturning moment present when the bullets transitions from air to target? who says yeah and who says neh?

If your answer is yeah, there is a overturning moment present, how then is our bullet going to counter it?..... Because if it's there is doing to be huge based on the huge defferential between Cd from air to target.

quote:

Originally posted by ALF:

Actually we cant meet the good Dr. Max Munk for he is no longer here, he passed away in 1986.

However if you have ever wondered about how they got to send rockets into the sky or how wings work or anything that flies (like bullets) thank him. Studied once with Prof Prandtl (now some here may have seen that name before 🤖)

As to the terminal behaviour of a bullet in a dense medium his slender body theory of penetration is at play.

Whith that said we leave it be for what it is..... the rest can ponder the why and wherefore of what bullets do will do between the comedy and sports pages of your local newspaper.

Perhaps if the result is given to enough "spin" no pun intended off course, it to may find its way into some copy of a popular AR supported hunting rag 🤖 ang get reproduced as fact

Alf,

Right up front it's been awhile since I read the studies (and I no longer have access to them so I guess you can take my comments for what you want) relating to military ballistics and cartridge development covering the era of around 1880 through around 1930. These studies utilized the science of the day, both mathematics and real live military testing, to identify the evolution of cartridge size-capacity and bullet size-shape-weight to meet the specific needs of the soldier/rifleman. I truly enjoyed about these studies due to the physical verification of the science of the day as well as the practical experiences drawn from the Spanish-American War and WWI.

What I have yet to read from any of these studies is the single bullet/cartridge combination that is ideal for use in the 15yd-50yd range that is also ideal for use in the medium 250yd-350yd range or the long 500yd to 700yd range. A Model 97 Winchester shotgun with buckshot to slugs worked best in that close range work while the 30-06 with 150gr flat base spitzer point worked best in the medium range which fell short of the 30-06 with 173gr boat tail spitzer for long range work.

I have also read in a few books covering African rifles and cartridges of the early 20th century that the cartridge development was drawn both from British military ballistics testing as well as the practical use of the rifles and cartridges against African dangerous game. Found it also interesting that in WWI that 50 caliber African sporting rifles using FMJ bullets were used against the "tanks" of the day while the military components worked feverously to develop real anti-tank rifles and rounds.

The reason I've thrown the above out is that I've very often read on multiple internet forums in threads relating to African hunting that dangerous game hunting does not take place at 100yds as due to the fact that there is little to no danger to the hunter by picking off a game animal at such a distance...I've read this danger doesn't arrive until inside the 50yd mark, and some say not until 15yd to 25yds is reached. If this is the case then the bullet shape desirable for this close range work will definitely not be the same bullet shape desirable for use against plains game at say 250yds.

I have not hunted Africa nor have I hunted bear on the North American continent so can truly say I have zero DG experience. I do have great interest in DG hunting as I do expect to do so within the next few years.

So as a favor to the mathematically challenged but ardently interested AR participant...as you have the knowledge of the studies and mathematical computations of the late 20th century to current day experts as well as field experience...can you utilize this knowledge to compute the optimum bullet shape, bullet density and bullet velocity as well as required rifle barrel twist rate to assure optimum performance against the most dense heavy boned DG animals at the 15yd-25yd range and then again for the say 40yd-50yd range as these two ranges are obviously the most hazardous to the hunter.

I thank you in advance.

Edited to clean up first sentence

Jim 🤖

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

ALF

18 February 2010, 04:31

RIP

18 February 2010, 06:21

Alf,

You seem to be quite the intellectual bully.
You know what is said about intellectual bullies?

They are usually overcompensating for one of three things:

1. They were nerdy teacher's pets in junior highschool and got physically bullied on the playground or school bus.
2. They are tortured by the memory of flunking highschool calculus, before they got religion and started paying attention in class.
3. They have tiny penises.

Get practical Alf!

You know it is impossible to certify any test medium as consistent enough to meet your standards of repeatability, and live game is likewise impossible in shot-to-shot invariance. And elephants don't fit into equations, as you say.

Four shots per batch of "Michael's Medium" is good enough. Useful.

Much better than your blathering about Munk.

His equations also apply to your favorite hat.

You know the one you put on your head when typing here, the beanie with a propeller on it.

MikeBurke

18 February 2010, 07:25

Tonight a .474 500 Grain Woodleigh was fired through the same setup as the .474 500 Grain NF was last night. (The test consisted of 4" of completely saturated newspaper, 1 1/4" of HardiPlank nailed to 1 5/8" of pine all on a 20° angle, 28" of water with 9 newspapers suspended in the water with each paper containing 40 pages, 5/8" of HardiPlank nailed to a another 1 5/8" of pine on a 20° angle opposite of the first setup, and then the remainder of the 72" box filled with saturated newspaper.)

The bullet entered center of the box, penetrated the first set-up of boards, went through the water, somewhere in the water it went astray. It hit the second set of boards about 3/4" from the top with the bullet sideways. It exited out of the top of the board and hit the 2 by 6 I use for a lid.

One thing I did note was that the newspaper I suspend in the water was shredded. There was much more damage than the North Fork generated. Maybe because it was traveling sideways going through the water? It may mean nothing but I did note it.

I may or may not come back to this test. The results were basically the same as the multiple shots I fired in the other media.

Hopefully I can start the velocity test this weekend.



capoward

18 February 2010, 07:37

quote:

Originally posted by ALF:

quote:

So as a favor to the mathematically challenged but ardently interested AR participant...as you have the knowledge of the studies and mathematical computations of the late 20th century to current day experts as well as field experience...can you utilize this knowledge to compute the optimum bullet shape, bullet density and bullet velocity as well as required rifle barrel twist rate to assure optimum performance against the most dense heavy boned DG animals at the 15yd-25yd range and then again for the say 40yd-50yd range as these two ranges are obviously the most hazardous to the hunter.

The answer is in short, No I cannot nor can anyone else for that matter, not within the limitations of our ballistics system in use. Hence our propensity to go about business usually totally "overgunned" for the job at hand (based on the increasing size of bore and guns taken to Africa to do hunting with) 458 Lotts and 700 "whatsemboomers" are hardly needed for more than 96 % of game one is going to encounter. 😊

Our "problem" if you wish lies in the choice of a weapon and bullet that has the least amount of recoil, has the greatest degree of accuracy and delivers a bullet that will do what is required of it. Just enough to do the job.... it is here where we have to know what our bullets do.

Anyone can shoot through an elephant with a kinetic energy penetrator shot from a Rheinmetal 120 mm Smoothbore gun, We have the math, we have the designs, we have at this time the most awesome firepower in terms of armor penetration known to mankind ! However it is not in the realm of most modern big game hunting guns to the same on the same elephant.

Nor for that matter to come up with a small personal shoulder fired arm that is perfectly effective on man

The math is not the problem, we can use the simple Alekseevski- Tait equations to calculate how our super bullet must look like, problem is no one has actually sat down and figured out what the compounded differential density of Elephant skull, skin, muscle etc is to apply the math.

We can build guns and bullets that will go through a hundred men standing in line, but whether the platform would be practical from a personal weapon sense ... unlikely.

I already know what my bullet will look like. 😊

It will be a sabotted fin stabilized or tail dragged stabilized slim bodied small meplat FN Flechette. (no need for Rifling, smoothbore all the way !) The thing will be made of tungsten and it will take out a dinosaur seated in a armoured car complete with body armour. 😊 And to any of its kin behind take care cause that bullet will do a couple of others too.

Alf,

Thank you for your quick and cogent response.

quote:

It will be a sabotted fin stabilized or tail dragged stabilized slim bodied small meplat FN Flechette. (no need for Rifling, smoothbore all the way !) The thing will be made of tungsten and it will take out a dinosaur seated in a armoured car complete with body armour.

Now as much as I'd like to own such a shoulder or hand fired weapon I doubt very seriously that the run of the mill individual will lawfully be able to own such a weapon let alone be able to lawfully use it in a lawful game hunting. Would be nice but Space Jackson hasn't arrived yet though over the past 40 years we've had a few good tries at it.

Ok, as science appears that it isn't the adequate/quick/simple solution to the dual range question it appears the issues boil down to two issues...as follows:

quote:

The answer is in short, No I cannot nor can anyone else for that matter, not within the limitations of our ballistics system in use. Hence our propensity to go about business usually totally "overgunned" for the job at hand ... are hardly needed for more than 96 % of game one is going to encounter.

Our "problem" if you wish lies in the choice of a weapon and bullet that has the least amount of recoil, has the greatest degree of accuracy and delivers a bullet that will do what is required of it. Just enough to do the job.... it is here where we have to know what our bullets do.

I totally agree that each and every hunter should only utilize the maximum bore firearm with which they are comfortable and can accurately shoot under adverse conditions if and only if the rifle caliber at

least exceeds the lawful minimum caliber for the intended game animal. I personally dislike the use of the minimally adequate/lawful caliber cartridge to be used against the target animal as I believe the target animal should be dispatched as quickly as possible with minimal suffering by the animal.

So now were at the second issue: an appropriate bullet that will quickly dispatch the target animal. As I perceive that's where this thread is headed, and has already answered to a great degree, so it would appear that this thread must continue marching along the path of identifying the best group of bullets for use primarily against dangerous game and secondarily against larger non-dangerous game utilizing less than the best scientific scenario to do so.

Edited to clean up the garbage sentence structure. Oh, and I added the u shown above in the word "our".

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

ALF

18 February 2010, 07:52

capoward

18 February 2010, 07:58

quote:

Originally posted by ALF:
Someoldguy:

A tip perhaps 😊

The formula for the distance it takes a spinning Projectile to become unstable can be found in Munks formula

To answer your riddle of the distance it takes for the bullet to tumble. You need to figure out the following.

1. what effect the resistance this target has on the impact velocity of your bullet ie the coefficient of drag for this paper target.... I have to warn you though that the most common source of error in testing is because the target ia often inconsistent.

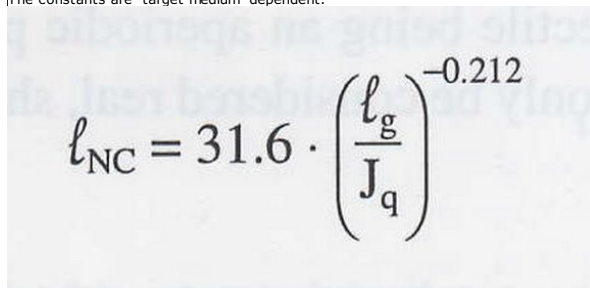
Tests done by various defence contracted authors all confirm, the biggest cause of inconstatant data lies with the consistency of the target.

2. you need to know more about your bullets. Length, transverse moment of inertia and where the CG is

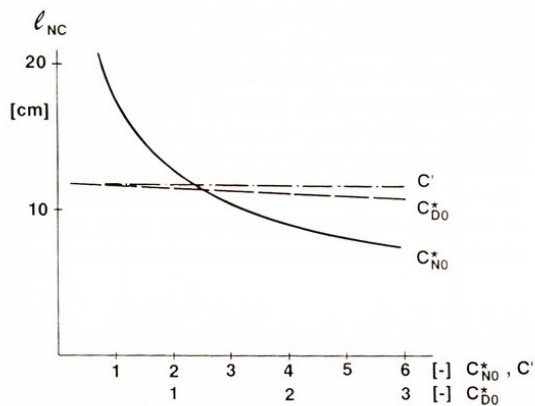
3. You need to know what impact angle of attack is ? so unless you have a high speed camera that can capture moment of impact and its set up so you ccan do the measurement . good luck

One you have all the data, some serious math follows and you come up with something that looks like this.

The constants are "target medium" dependent.


$$l_{NC} = 31.6 \cdot \left(\frac{l_g}{J_q} \right)^{-0.212}$$

and graphs that look like this 😊



or one can all skip it and simply go to the various journals of trauma and forensics and find the various articles and reports done on the very subject

quote:

Originally posted by someoldguy:

Okay, I've had a couple of Flintstone vitamins, so now I'm good to go with more geek stuff. 🤖

I found something interesting from my personal long-version penetration estimator that I'd like to share. It's like anything else that's mathematical/scientific/somewhat simple. It's not always perfect at predicting real-world results, but it gets reasonably close IMO. And I think I've found the two missing variables that make the thing work: The density and the compressive strength of Michael's test medium. (Which, despite the obsessive nitpicking of the some of the "3P crowd," appears to be reasonably well consistent.)

For the .500 B&M Super Short with a 400 grain bullet and an impact velocity of 1851 fps and a twist rate of 1:18. My model says that the penetration depth "should" be about 45 inches. However, the bullet becomes unstable at about 31" penetration and goes out of the box at 35". Going back into the formula and using Newton's law, I find that the velocity at 31", where the instability occurs, would be in the neighborhood of 1025 fps. With a twist of 1:18, this means that the revolutions per minute would be $1025 \times 720 / 18$ or 41,000 rpm. Okay, remember that.

The next was the same bullet with an impact velocity of 1847 fps and a faster twist of 1:12. The penetration depth "should" still have been about 45 inches, but it veered off at 37-39 inches. The estimated velocities where the bullets went unstable was much lower at 764 fps and 657 fps respectively. In rpm, this would be between 39420 and 45840 rpm. (An average of just over 42000 rpm.)

Now, the last test with an impact velocity of 2170 fps. The penetration depth "should" have been just over 49", but it stopped at 45". At this depth in my model still showed a velocity of 667 fps or just over 40000 rpm.

What I'm trying to point out with all this is that there appears to be an rpm range where a bullet becomes unstable and doesn't perform in the way it should. (In this case, in the neighborhood of 41000-42000 rpm.)

I don't know how much more evidence one needs to show how twist rate bears at least an indirect relationship to penetration!

Glenn,

I posted your post 2nd and Alf's response to you 1st. What you're attempting to compute could be very beneficial to the scientifically/mathematically challenged of us who are trying to keep track of the results of Michael's, and now Mike's, media mix bullet box mules.

I, as well as I believe other participants, would like you to continue your bullet depth computations utilizing any beneficial information that you might derive from Alf's contribution.

Thanks in advance.

quote:

Originally posted by ALF:

RIP 🕊️ 🕊️

None of the above regarding being a bully, not at all, just cannot sit still and have someone tell the world the earth is flat when we all know it's round !

Micheal posts the results, the results do not quite gel, some are sort of what can be called, "ball park" and what is to be expected but then some are clearly not? (and it does not take a rocket scientist to see why not)

Now based on this statments and assumptions are made trying to explain away the results; for instance spin rate is responsible for the "better performance" ?????

How could it be when the test is not even set up to test for the effects of spin rate?

Or increase in velocity gives the increase in penetration, Yes really did you actually test for it or think you were, Oh and those Barnes Buster bullet's they are worthless, no good based on what ????? these tests? Or Sectional density plays no role in ballistics, really, if it dont how in sams hell does your gun shoot?

Oh yes my favourite AR'sm.... that infamous Supercavity the root of all cause of many wonderous things when walk about on the Ivory trail.

To misquote the good Mr Mel Gibson in Braveheart. **These bullets and their "cavities " would "consume the English (elephant) with fireballs from their eyes, and bolts of lightning from their arses"** 🤖

You can use paper, you can use sand, you can use wood, but before you do perhaps take a look at what the big boys with the dark glasses say about their tests.

It's for free, google it Go check it out, even that boyoh ! Rathcoombe says it's so !

Oh as we love misquoting from Mr MacPherson (hope I got the Spelling right this time and it's the "Second Printing") bottom of page 64, just before 65 the stuff on mystics we see the Kinetic energy of rotation is always less than 2% of the translational kinetic energy..... it is not included in conventional ballistics and properly so" hell couldnt have said it more plainly could we now?

But they the guys with the dark glasses and white coats who work behind high fences have already done the math..... so somewhere in there it calls for bullets with a certain density, says velocity is important, says bullet length is important, says **target density** is important..... hmmm lets see now if we are going to test for velocity, then by jove all else must be equal..... then the test will be valid.... well sort of as long as our bullets dont stray, dont erode or deform. what about angular velocity, nope sorry they dont say anything about it.... they say in the fine print yes it's part of the scene but the contribution so samll dont need to even mention it. but off course we can test for it by keeping everything exactly the same just shoot the bullets from different twist barrels..... but dont forget everything must remain constant, just the twist may change !

Wood is valid, paper is valid, sand is valid , you can even make clay dolls if you want !

But ! and that is a very very big but, you had better make sure that the density, the degree of hydration and the quality of that mass of paper or whatever you are using for your tests is exactly the same between each and every shot, before going about uttering words about comparison, this bullet or that, this twist rate or that? because if it's not the tests are worth not the smell of the powder you got when they were done!

You guys are the ones blathering on about twist rate, you are the ones singing the praises of the 1:10 barrel or the, 1:12 . Do you really know what you are singing about and proclaiming? When someone points it out to you you get all pissy ! You sing the words but refuse to accept the meaning of the words or even acknowledge the writer of the song!

Why exactly do we spin our bullets?

Have you really given it some serious thought ? Well if you do you will come head to head with Dr. Max Munk, His formula for for the Overturning moment is why we spin bullets, why we should or should not use certain spin rates for certain applications, it determines the absolute length limit of a spin stabilized bullet. It also tells us why when the target is impacted bullets go South.

I am practical ! very very practical, I do not believe in chance luck or fate or voodoo for that matter..... so if you are going to sing spinrate and RPM to me , or these bullets are good or no good based on whims you have be ready to sing the whole song, not just the chorus, the same goes for just about every other song that's sung here on AR 🤖 🤖 🤖

Alf,

I'm not trying to be a pain in the ass but I must be a bit slow tonight. In the above quote you state:

quote:

Well if you do you will come head to head with Dr. Max Munk, His formula for for the Overturning moment is why we spin bullets, why we should or should not use certain spin rates for certain applications, it determines the absolute length limit of a spin stabilized bullet. It also tells us why when the target is impacted bullets go South.

I believe you provided Dr. Max Munk's formula to Glenn (someoldguy) to correct his computations to predict the penetration of the Barnes Buster bullets at different velocity levels in Michael458's test media.

But you earlier responded to my question with:

quote:

Originally posted by ALF:

quote:

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The answer is in short, No I cannot nor can anyone else for that matter, not within the limitations of our baslitsics ssystem in use.

So I guess I'm just to slow on the mental uptake here, I'm definitely been taking antibiotics for a few days now,...or Dr. Munk's formula can identify the parameters that I asked for...or it can't because as you quote, "not within the limitations of our baslitsics ssystem in use."

Can you please clarify using nickel and dime explanations without the 4-bit and half dollar stuff?

Thanks in advance.

quote:

I, as well as I believe other participants, would like you to continue your bullet depth computations utilizing any beneficial information that you might derive from Alf's contribution.

Thanks in advance.

You're welcome, Jim. And thanks for the kind words.

My computations tend to be on the conservative side using what I call the "long version." Then there is the "longer version" which has to use calculus and is probably more accurate, but it's a pain.

Glenn

Warrior

We come back to a question asked earlier ... how many spins (revolutions) would a bullet do inside an animal - say **30 inches** and **60 inches**, when we compare the following twist rates:

1-in-10" -- (eg 458 Lott = 2,250 fps x 720/10 = 162,000 rpm) - 3 spins and 6 spins respectively

1-in-12" -- (eg 458 Lott = 2,250 fps x 720/12 = 135,000 rpm) - 2.5 spins and 5 spins respectively

1-in-14" -- (eg 458 Lott = 2,250 fps x 720/14 = 115,714 rpm) - 2.1 spins and 4.2 spins respectively

What is under the spotlight now, is if the increased spin in target (from 2.1 to 2.5 to 3.0) enhances straight-line penetration.

And if increased velocity needs more SF, as advocated, where do we stand with the 460 Wby Mag?
Should they be all rebarrelled in line with the new GSC discovery?
If we were to compare the Lott with the Wby Mag, we get this for this for the Weatherby:

1-in-10" -- (eg 460 Wby = 2,700 fps x 720/10 = 194,400 rpm)
1-in-12" -- (eg 460 Wby = 2,700 fps x 720/12 = 162,000 rpm)
1-in-14" -- (eg 460 Wby = 2,700 fps x 720/14 = 138,857 rpm)

The conundrum that sticks its head out here is that IF the additional velocity and spin IS TO aid penetration in flesh, not paper, the increased drag in the target (drag goes up to the square of velocity in flesh) will activate the overturning moment quicker, given enough distance.

When we talk about "given enough distance", we have to decide what is enough for the application (say buffalo or elephant), anything more becomes moot. Why has the 460 Wby Mag not taken the PH's or DG hunters by storm?

The 9,3mm/320 gr Wdl FMJ gives sterling performance on DG, and with a standard twist of 1-in-14", we get:

1-in-14" -- (2,180 fps x 720/14 = **112,114 rpm**) revs per minute possibly the lowest of all DG calibers !!!

Using a FN Solid in the 9,3 or all other calibers can only improve reliability and weighs more for me than to go and rebarrel my rifle.

Warrior

michael458

18 February 2010, 16:53

quote:

Originally posted by ALF:

To misquote the good Mr Mel Gibson in Braveheart. **These bullets and their "cavities " would "consume the English (elephant) with fireballs from their eyes, and bolts of lightning from their arses"** 

the big boys with the dark glasses say about their tests.

But they the guys with the dark glasses and white coats who work behind high fences

Alf

You of course are talking about these sort of chaps, eh?









Sitting upon the throne, the lord our God turns to his "right" in which there sits michael458 at the lord's right hand. He says to michael458, son, you must change your handle to michael500, for I am giving to you rifles of various 500 caliber in which to smite the beasts of the earth. I am also giving you the proper bullets in which to accomplish your mission. These are truly "god sent" and you will go forth and smite the dangerous animals of the earth with confidence. Michael458 goes forth and does indeed smite the mighty beasts of the earth with his magical .500 caliber rifles and the bullets which were sent from the almighty on high. These bullets drive straight and true, they lead the way for michael458 in his endeavors and encounters with the mighty beasts of the earth. Like fire and lightning coming from his eyes, a man must go forth with Winchester M70 in hand, chambered for the mighty 500 MDM and 550 gr Solids blessed by the lord and one cannot fail with these gifts from on high, we are but mere mortals and must obey the word given down to us. So I go forth on my mandate, trusty Winchester M70 in hand, the great and mighty 500 MDM cartridges in my rifle, and I will smite the mighty beasts of the earth with it as I have been directed to do so!



I think even the lord must have a sense of humor? So before the rocks start coming my way, please give me a break---it's all humor!

Michael

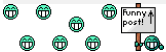
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MikeBurke


18 February 2010, 17:12



RIP

18 February 2010, 18:36

Michael, aka Professor M, or "M":

Very funny. Hilarious. You da man. Cool. 
Your mounting scientific data is better than any other scientist has brought forth as yet on the effects of twist in target. Others have simply dismissed it.

Alf,
So you admit you wear a beanie with a propeller to commemorate Max Munk?
More later ...

Warrior

18 February 2010, 20:09

Here is a quotation from Norbert that was made some time back on AR:

"The faster twist for penetration comes into play in the target (animal). The water vapour in the supercavitation bubble needs more rpm for stabilisation than the optimum twist for air. ... Norbert"

This is now in the spotlight again in this thread.
Does the bullet spin in the bubble?
Where is the bubble if there is a wetted surface?



Warrior

ALF

18 February 2010, 21:16

ALF

18 February 2010, 22:13

someoldguy

18 February 2010, 23:49

quote:

Sitting upon the throne, the lord our God turns to his "right" in which there sits michael458 at the lord's right hand. He says to michael458, son, you must change your handle to michael500, for I am giving to you rifles of various 500 caliber in which to smite the beasts of the earth.



Ordinarily a person would have to pay for such entertainment as we provide. But we get it all for free, here in Michael's thread!



Glenn

capoward

19 February 2010, 00:27

Alf,

Ok, target velocity of 1000mps (3281fps) to 1500mps (4921fps) with a VLD style bullet...can be reached with a 350gr LVD bullet in the 416 Barrett, or a 200gr LVD bullet in the 338 Lapua Magnum, and even by a 130gr VLD in the 270 WSM. Unfortunately all but the WSM require a barrel length substantially longer than 26" to reach the velocities and the rifle for the Barrett is just not something that would be used as a stalking rifle...even the Lapua pushes the envelope on in that arena.

One problem you've not address will be the straight-round hole the VLD style non-deforming will cause unless it tumbles within the heavy-bonded thick-bodied DG animals. And as you've noted if it tumbles it loses depth of penetration.

So it would appear as you've noted that the currently technology of FN monometal bullet with appropriate meplat size will remain the optimum bullet for close range use against heavy-bonded thick-bodied DG animals.




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

boom stick

19 February 2010, 00:33

Rip...

Are you saying Alf has multiple small penises? 

quote:

Alf,
You seem to be quite the intellectual bully.
You know what is said about intellectual bullies?
They are usually overcompensating for one of three things:
1. They were nerdy teacher's pets in junior highschool and got physically bullied on the playground or school bus.
2. They are tortured by the memory of flunking highschool calculus, before they got religion and started paying attention in class.
3. They have tiny penises.

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)

Warrior

19 February 2010, 00:44

This supercavitation bubble theory I believe is water-related, being a homogenous medium. So, how do we then make the leap that it can happen in an animal that is not homogenous. Let us take an elephant for example, when the bullet must go through say thick skin, muscle and then the lungs & heart, or perhaps through the stomach filled with leaves, and perhaps a cavity filled with air, before it gets to the vitals? How do we keep this "water vapour bubble" that engulfs the bullet intact in its journey through the animal? Is this possible?

The shoulder stabilization mechanism makes more sense to me, as it can dampen out small angles of attack and perhaps much easier to embrace. It makes sense that the meplat must be of a certain proportion of diameter to reach an ideal situation - 65% as Micheal suggested may just be the ticket, as penetration will vary as we play with the size of the meplat (Momentum/wetted surface) and a trade-off must be found.

Warrior

michael458

19 February 2010, 01:14

quote:

Originally posted by ALF:
The problem if we wish is the issue of projectile stability, how to control it and at this point given our current ballistics sysetm the FN bullet is what does the job.

Alf, be very careful, you are treading in unknown territory, you are beginning to agree with me it seems?

Rinker, why yes Alf, very observant! My Kimber Ultra 45 acp (with Mammoth Ivory Grips) is sitting on MacPherson to! Opps, no wait, the gun is on my .500 load data manual, Macpherson was later in the day, and at this moment it seems!

Now Warrior, pay attention, "Professor M" (the white lab coat, dark glasses guy) behind the tall fences, electrified and secret underground lab, is convinced at this time that 65% meplat of caliber is bottom end for reasonably stable penetration, not optimum. I believe optimum is somewhere between 67%-75%. However, this is still under study, and not by any stretch confirmed at this point, I am still working on it, as you can see!



Now if I could just figure out how to get this 30mm round in this rifle, using depleted uranium cores?



Michael

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michael458

19 February 2010, 01:23

quote:

Originally posted by someoldguy:

quote:

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Thank You, Thank you very much!

Michael

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

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boom stick

19 February 2010, 01:49

Classic!

I title this one "Wishful thinking"



[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

Alf,
We are all geniuses here and understand perfectly the science involved.
And that goes double for Professor M!

19 February 2010, 07:45

What you have failed to do is to provide the evidence from the real world! Not just the theory. Where are the test results that prove twist has nothing to do with penetration of game animals?
What? It does not exist?

I have seen reports of artillery testing, by military scientists, which measured velocity and pressure differences between twist rates of 1:15" versus 1:7.5".
A two fold difference in twist rate produced only 1/2 of 1% difference in the chamber pressure and the muzzle velocity.
The men in white coats and dark glasses behind the electrified fences, however have not bothered to consider testing twist rate effects on game animal penetration.
Not so much as a side of beef nor even a block of gelatin or wetpack.
So, Alf, **WHERE'S THE BEEF?**

Professor M's wetpack is the only beef we have here so far.

I am having built a .458 B&M with a 1:10" twist.
This will be compared to a 1:20" 45-70, using the same bullet and velocity.
That should show something!
It will be an extension of Professor M'S excellent work.
Critique that test proposal, Alf.
Until then, Alf,
WHERE'S THE BEEF?