

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

ledvm 09 February 2011, 21:25

Terminal Bullet Performance

quote:

the test media would indicate?

The test media is imperfect.

~~~~~  
J. Lane Easter, DVM

Socialism is slavery to government regulation. To be pro socialist is to be pro slavery. You can't have Freedom if you have socialism.

**srose** 09 February 2011, 22:36

The test media is the most consistant media available that I know of. The best media is animals and I will be glad to test any bullet you want as much as you want me to. Just pay for the hunts and I'll be happy to send all the results.

**ledvm** 09 February 2011, 23:01

quote:

Originally posted by srose:  
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Agreed!!! I was just saying that media is not animals!

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J. Lane Easter, DVM

Socialism is slavery to government regulation. To be pro socialist is to be pro slavery. You can't have Freedom if you have socialism.

465H&H 09 February 2011, 23:44

quote:

Originally posted by srose:
The test media is the most consistant media available that I know of. The best media is animals and I will be glad to test any bullet you want as much as you want me to. Just pay for the hunts and I'll be happy to send all the results.

srose,

It is highly unlikely that I will pay your way to hunt elephants but I received an e-mail today from one of the PHs in Zim that I hunt with often and he has a 14 day, three tuskless hunt available. PM me if your interested and I will send you his e-nmail address.

465H&H

465H&H 09 February 2011, 23:46

quote:

Originally posted by ledvm:
quote:
the test media would indicate?

The test media is imperfect.

I am not sure that I would say that it is imperfect but you need to be very careful how you translate those results to performance on animals.

465H&H

srose 10 February 2011, 00:17

465H&H,

Thanks, 3 tuskless sounds like my kind of hunt. Not sure if I can go this year but thanks. I'll PM you.

Sam

michael458 10 February 2011, 01:13

quote:

Originally posted by 465H&H:

For sure we have learned alot thanks to all of Michaels hard work. But there are still several unanswered questions. For instance why does the Woodleigh 9.3 dia 320 grain bullet perform so well in michaels test media while larger calibers don't? Why do RN steel jacketed solids perform so much better in penetration and straight line penetration in elephants or buffalo than the test media would indicate? There is something going on here that we don't understand.

465H&H

Thank you 465HH. Some things we have covered, but yes there are questions, actually I figure there will always be some unanswered questions regardless of what we can do.

First let me go over the test medium quickly if I can. From day one, the test medium is not perfect, no question. No test medium is absolute, not even ballistic gel. Not even animal tissue is perfect test medium! In fact, it may be the worst test medium of all--there is nothing equal at all in animal tissue, and it's hard to work with and somewhat limited

as well! So we do the best we can.

My test medium is very hard on bullet performance! It does in fact put them to the test. It is aqueous (as is animal tissue), it is consistent in one sense of the word, and in another it has inconsistencies needed that puts some pressures on the bullets, especially solids of any sort! Let me explain! I discovered this somewhat by accident. My boxes were built to hold straight up newsprint. When I insert magazine/catalog material it is NOT even across, it's layered as it is not the same width as newsprint. So in some spots there are magazine backings, staples, double layers of mag/catalogs, so it is not 100% perfect by any stretch. I found out that the magazines add another dimension to penetration, they make it much tougher for the bullet to penetrate, and in particular penetrate with 100% stability. By accident I discovered a medium that allowed me to find the points at which one bullet would fail consistently, while another would be successful, consistently. By all means YES--performance of a RN is better in animal tissue than it is this test medium! That is a fact, no denying it! But at the same time--So is the FN solids! And, both in the test medium, and in the field, the FN Solid wins on a very consistent basis.

Compare to animal tissue? NO! No test medium compares DIRECT to animal tissue! Not Any!

Correlation between test medium and animal tissue? YES--this can be done with ANY test medium that is REASONABLE. Meaning that if we are hunting buffalo, elephant, hippo (or sharks), then testing with STEEL Plates is not a reasonable medium, is it? If we are testing for Armor Piercing ability, then by all means we need to test on steel plates. I think what I am using is "reasonable" medium.

To correlate you need lot's of animal tissue bullets to compare with your test medium. One bullet does not do it, and sometimes 10 do not do it. I am not ever going to present what I have as 100% all the way perfect, but it's as good as I got. I have shot quite a few critters, and I have always been a bullet digger, if there is one to dig! I have done enough to have some sort of rule of thumb of correlation between the test medium and animal tissue. Rule of Thumb--Not 100% perfect, as there are way to many variables in the field to consider. Rule of Thumb--expanding conventional premiums will penetrate from around 80% to 100% more in animal tissue than in the test medium. Solids--from what I have gathered is 30%-35% more in animal tissue than in the test medium. The NonCons, well what I have seen has been just about double from the test medium, but I caution that the sample has not been near enough yet to make a real determination, or even a rule of thumb! What I can say and be very confident of is that a NonCon will be deeper than a conventional in animal tissue, beyond that I can't say a real percentage. Not all the Rule of Thumb comes from just my observations in the field either, it correlates very close to what I have received from many others as well. Seems the rule of thumb is holding, but more needs to be figured out from the field with the NonCons!

That's about as short as I can get!

Next!

That damned 320 Woodleigh FMJ! Short and quick answer, it don't have the same nose profile as it's bigger bore cousins!





It looks like to me it's more of a "Rounded Flat Nose" if there is such a thing. The 310 gr 358 Caliber bullet is the same.

OK, this is well and good, and it might explain this in the short run--But the problem here is that the 286 gr Woodleigh FMJ appears to have the same profile as the 320, however it is a CRAP bullet for penetration, veers and turns all sorts of directions and is not stable at all! While it's big brother the 320 is stable! WHY? You got as good an idea on that as I do! Easy answer--I don't know!

Now, why did we have that one 320 going all the way to 73 Inches???? Good question, all the others tested are in the low 60s I think? Remember I said the test medium is not perfect? I suppose this is one of those imperfections, maybe the compression wasn't just right, maybe there was a void in the mix somewhere I did not know about, maybe a few thin spots where the magazine/catalog mix was thinner, I don't know? I have to report what I get, that's what I got! Testing more shows us that it is more likely to be in the low 60s than the upper 60s or lower 70s. Personally, I would discount that one and pay little attention to that one, when all the others are a bit more consistent! I try hard to get things right, but I am not perfect either!

Michael

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

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michael458

10 February 2011, 01:18

quote:

Originally posted by 416Tanzan:

quote:

For instance why does the Woodleigh 9.3 dia 320 grain bullet perform so well in michaels test media while larger calibers don't?

This needs retesting. You will notice that in the charts put up this week there was one 73" example. But it was a one time affair, the others "only" do 60-65". Even with Michael's testing I am not willing to trust myself to a long, long 320 gr. RN in .366. Something funny there. I'd rather step down to a FN 250 grain in 338 though.

Tanz

I would not really have much of a problem carrying that 320 in the field, to be honest. I carried that 310 Woodleigh FMJ for years with my 358 STA, just for reasons we have discussed, always good to have a solid with you, JUST IN CASE. I never used it in the field however, but it tested good like the 320 years ago in straight newsprint. So I trusted it, and would again if that's all, or what I had.

Today, having a choice, I would not choose it. I am sold "Solid" on the BBW#13, and that's what I would carry. That new 280 CEB BBW#13 Solid is it for me in 9.3. I even discontinued the other 9.3 bullet, the copper 260 gr barnes type profile.

Michael

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10 February 2011, 01:19

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Agreed!!! I was just saying that media is not animals!

Lane

Good to see you down here in the mix with us! Happy to have you!

Michael

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465H&H

10 February 2011, 02:07

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Michael

Michael,

I suggest that you use the average of all shots for that bullet. You can add the range ie. low 62, high 73 or provide the number of shots and the standard deviation.

465H&H

michael458

465HH

10 February 2011, 02:51

Excellent suggestion! I have done that with some of the bullets, especially in .500 caliber as I have shot many many of some types into the mix over a long period of time, another example has been the 450 "B" %(_\$# solid, in .458, as I have used that as a control many times. But I won't be any longer. My new control is anything that is a BBW#13 or North Fork--with those I can't see needing anything else.

Speaking of North Fork!!! I got part of my order in the other day, and some more are on the way, most of these Premium Bonded bullets, some expanding .458 caliber Cup Points, and to be run next week is a PILE of .500 calibers!

My North Fork in stock bullets has grown substantially now! Time to start some brand new Test Work!!! Yep, you heard me, in the plans right now we are going to put North Fork through the ringer over the next few weeks in fact! Hopefully if all goes well, starting some of that work next week! Do stay tuned, especially North Fork Fans! Which I am one!

We gonna roll'em, punch'em, rip'em, bust'em, beat'em and see just how good they are!

Gotta work that in with all the pressure traces as well still going on. Anyone interested in those sorts of things? Pressure traces?

Also for the double guys, Sam, myself and Dan have come up with some new test work that is going to happen within the next week or so with barrel strains also. Always working on an improvement, if it can be had! Here at MIB, we never stop looking for the next step up in evolution! If we can take it further, we run with it! Anyway, I am curious about some things so we gonna find out!

Lot's coming up over the next few weeks, I have not told you about some of the things yet--some really AMAZING things coming! It's all I can do not to bust out and tell everyone!



M

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michael458

10 February 2011, 03:14

Some things coming up we are going to look at!



NORTH FORK



PREMIUM BONDED BULLETS



**416 Cal.
325 Gr. SS**



**416 Cal.
325 Gr. SS**



**416 Cal.
325 Gr. SS**



**416 Cal.
325 Gr. SS**



Just a start!

M

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someoldguy

10 February 2011, 03:28

quote:

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Teasers! That's the way to keep your ratings up, Michael!



Anyway, I'm sure we'll all be here! Look forward to it!

Glenn

michael458

10 February 2011, 04:53

Glenn

I probably watch too much TV when I was a kid! I know all about the teasers. Problem is, I tease myself, and then I can't wait either! Gotta GO GO GO!!!!!!!!!!!!!!

HEh

Good Night, way the hell past dark here!

M

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someoldguy

10 February 2011, 08:18

quote:

That damned 320 Woodleigh FMJ! Short and quick answer, it don't have the same nose profile as it's bigger bore cousins!

quote:

It looks like to me it's more of a "Rounded Flat Nose" if there is such a thing.

I recall saying at the very beginning that the 320 grain 9.3 FMJ looked like it had more of a flat nose. But did anybody listen to me?

Oh, NOOOOO!!!!



Anyway, it's pretty clear that it ain't your daddy's FMJ.
All due respect to our daddies, of course.



But the lackluster performance of the similarly shaped 286 grain 9.3 still has me scratching my noggin.



Glenn

buffalo

10 February 2011, 14:43

quote:

Originally posted by michael458:
I try hard to get things right, but I am not perfect either!
Michael

WHAT!!!!!! You disappoint me Doc M..  

michael458

10 February 2011, 14:46

quote:

But the lackluster performance of the similarly shaped 286 grain 9.3 still has me scratching my noggin.

Glenn

Me Too? But I don't think the answer is in more test work, as the same will occur. The answer? I think beyond me.

In 9.3 there are two bullets that I would rely upon---The 286 North Fork and the New 280 CEB BBW#13. Those you can take to the bank for proper performance!

Just FYI, this is what I have been doing this week, and will continue to do for a bit, but next week able to work some terminals in with the North Forks--I hope!



Michael

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michael458

10 February 2011, 14:51

quote:

Originally posted by buffalo:

quote:

Originally posted by michael458:

I try hard to get things right, but I am not perfect either!

Michael

WHAT!!!!!! You disappoint me Doc M..

Buffalo

You are correct, I can't believe I said that!!!

It must have been in a moment of weakness? Maybe the drugs? I don't know. But of course I am actually the very essence of perfection, but I am just "modest" is all! Of course at times also full of crap as well! HEH HEH.....

Doc M--MIB

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

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416Tanzan **10 February 2011, 15:28**

quote:

Glenn: . . .
Anyway, it's pretty clear that it ain't your daddy's FMJ.
All due respect to our daddies, of course.
☺

But the lackluster performance of the similarly shaped 286 grain 9.3 still has me scratching my noggin.

Personally, I've found that investigation of anomalies in other fields often leads to a wider understanding of the issues. More testing may indeed show that 'almost flat' Roundnoses behave well. But first the anomaly between the 286 and the 320 should probably be re-confirmed

and maybe have their noses more carefully mapped.

+ + + + +

"A well-rounded hunting battery might include:
500 AccRel Nyati, 416 Rigby or 416 Ruger, 375Ruger or 338WM, 308 or 270, 243, 223" --
Conserving creation, hunting the harvest.

Esskay **10 February 2011, 18:47**

quote:

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It must have been in a moment of weakness? Maybe the drugs? I don't know. But of course I am actually the very essence of perfection, but I am just "modest" is all!
Of course at times also full of crap as well! HEH HEH.

Michael...I think you are not taking enough of the "colourless fluids" ..i.e. Grey Goose, Saki etc etc.

Not taking enough of those leads to hallucinations and delusional thinking...Please do not do this to us!! I have followed every page of this wonderful "work in progress", and it is my favorite post. I log onto AR and check this one first. One of these days we shall share some Saki or GG, whichever you prefer

Regards

Esskay

Saeed Ansari

(saeed_ansari on Skype)

michael458 **10 February 2011, 19:21**

EssKay

I think these days I might be turning into a light weight with the colorless fluids, I love to partake of the sake, but seems the Grey Goose is getting a little strong for me lately.

No my man, all in jest as I am sure you know!

Thanks so much for the support, wow.....That's incredible! That really means a lot to me! You know I am like a good old dog, a little pat on the head goes a long way with me!
HEH.....

Normally Thursday is a off day--but since I am behind on some things, I am off the the range right this second to get going on some work. Sorry, no terminals today, plain old PTs and some 416 B&M test work!

Catch you guys shortly!

M

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Esskay **10 February 2011, 19:47**

Michael,

You are the one who has been doing all the work..most of us (srose, mac et al obviously excepted) have just been learning vicariously. Even though you did not agree to my solution to your problem ☺ (just kidding)...now one of these days when you have some stuff for my 404J then we will have an involved conversation.

Warm regards

Esskay

Saeed Ansari
(saeed_ansari)

drewhenrytnt

10 February 2011, 21:44

quote:

Lot's coming up over the next few weeks, I have not told you about some of the things yet--some really AMAZING things coming! It's all I can do not to bust out and tell everyone!

Any chance this includes the bullets we have discussed in PM?

We Band of Bubbas
N.R.A Life Member
TDR Cummins Power All The Way
Certified member of the Whompers Club

465H&H

10 February 2011, 22:01

Why the 320 does better than the 285? How about sectional density? Duh!

465H&H

I Bin Therbefor

10 February 2011, 22:21

quote:

Originally posted by 465H&H:
Why the 320 does better than the 285? How about sectional density? Duh!
465H&H

Sectional Density doesn't do anything! It is a measurement of a physical characteristic. Explain the attributes of this characteristic and how those attributes cause deeper penetration.

465H&H

10 February 2011, 22:46

I think that your statement is technically correct but I had to repeat Physics 103 three times before I passed so I am not the one to ask. 😊 I suspect that all things being equal such as velocity, caliber, bullet shape and construction as well as stability the bullet with the higher SD also has more momentum thus a greater ability overcome resistance.

465H&H

I Bin Therbefor

10 February 2011, 23:03

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465H&H

Momentum is the mass times the velocity. How does sectional density contribute to momentum?

RIP

10 February 2011, 23:32

HA!!! Next page:

quote:

Originally posted by I Bin Therbefor:
Momentum is the mass times the velocity. How does sectional density contribute to momentum?

465H&H is correct, his statement is a simple truth, limited to what he specified:

" ... things being equal such as velocity, caliber, bullet shape and construction as well as stability the bullet with the higher SD also has more momentum thus a greater ability overcome resistance.
465H&H"

Notice he did not specify mass, because mass is directly proportional to sectional density. Substitute mass for SD in his statement and it has the same truth. When you are using two idealized, nondeforming bullets of the same caliber, mass and SD are factorable one into the other for use in formulas.

You cannot get equal results with a lighter bullet and higher velocity, even if the MV or Momentum is the same as with the slower, heavier bullet ... unless you are testing in "shear-thinning" test media where the resistance decreases with velocity, or some medium where resistance is constant regardless of velocity. Rare scenarios.

"Reactivity" of the penetrated medium, where resistance goes up exponentially with the velocity is the more usual game-shooting scenario. Above is just an aside.

Maybe the long 320-grain 9.3mm woodleigh FMJ with the ogived-FN nose shape is just past the line of sufficient stability? Good in air at long range, trickier in dense media. Whether gyroscopic/spin effects in a cavity help: They don't hurt. Nose shape borderline for shoulder stabilization?

Occasionally it stays stable to +70 inches, but more often it wobbles sooner, maybe due to test medium variation as stated? I shall await further research at McCourry Institute of Ballistics. Doin' good ain't got no end. 😊

465H&H

10 February 2011, 23:35

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465H&H

Momentum is the mass times the velocity. How does sectional density contribute to momentum?

SD is a simple way to describe the difference in two bullets of equal diameter but different weights or to compare different diameter bullets with different weights. It is a useful tool.

465H&H

Warrior 10 February 2011, 23:42

quote:

How does sectional density contribute to momentum?

Momentum = $M \times V$

Mass (M) must have some sort of shape and it is significant what shape the mass takes on. Let us look at extreme examples to make the point. Let us consider the following shapes with the same mass:

- a) a projectile with the shape of a penny (a coin if you like)
- b) a round ball
- c) a bullet

Which one will penetrate the deepest when shot at the same velocity?

Definitely the bullet. Why?

It has more mass concentrated behind the frontal area (ie the wetted surface)

The bigger the frontal area, the bigger the drag in target.

Now this is SD (sectional density).

And so SD finds its way into momentum.

If the wetted surface is let us say only 67% (2/3's), like in an FN shaped solid bullet, the effective SD is scaled up, as we have the same mass now behind a smaller XSA (cross sectional area) providing less drag in target. And so the manipulation of shape can upscale effective SD, and so become an important determinant in the penetration event.

Warrior

RIP 10 February 2011, 23:48

But too small an FN meplat, or a round nose,

will not be shoulder-stabilized enough to let the higher effective SD work for penetration,

unless the medium is such as to provide some side resistance/tail control to prevent tumbling, like dry plywood or maybe elephant skull?

someoldguy 10 February 2011, 23:50

quote:

Personally, I've found that investigation of anomalies in other fields often leads to a wider understanding of the issues. More testing may indeed show that 'almost flat' Roundnoses behave well. But first the anomaly between the 286 and the 320 should probably be re-confirmed and maybe have their noses more carefully mapped.

I agree. I know Michael has enough on his plate already, though. I wish I could throw in and do some testing of my own with the 9.3's.

Another thing, I'd especially like to test that oversized .475 Model 70 Megacarbine with .476 Westley Richards bullets. Somehow that intrigues me, I don't know why. Trouble is, .476 WR bullets aren't common and would likely all be in RN configuration.

Honestly! Some of you guys are misbehaving again!



quote:

Why the 320 does better than the 285? How about sectional density? Duh!

465, quit trying to sound like me! 🗨️

Actually, the lackluster performance of the 286 grain was its tendency to veer, which is what we've been seeing with most RN's in Michael's testing.

quote:

Momentum is the mass times the velocity. How does sectional density contribute to momentum?

Hmpf! Haven't you guys been paying attention in Professor Glenn's class? Participation in this thread means that you're automatically enrolled in Professor Glenn's College of Useless Knowledge.

There is the momentum density. Momentum density is the momentum divided by the penetrating surface area. Stated another way, it's simply the velocity times the sectional density. If you use the meplat diameter instead of the caliber, you'll get a more accurate value for the SD which is more easily translatable into real-world results. All you do is divide this value by 20 or 24 to get a range of how bullets might potentially perform in Michael's tests.

If you continue to fail to pay attention in Professor Glenn's class, I will have no choice but to keep those sexy coeds seated next to you after class. You can never have enough learning when it comes to sexual density. I mean, sectional density.



Glenn

RIP 11 February 2011, 00:00

Glenn, you neglect other stability issues for penetration. Nose shape effects involve more than just a change in effective SD, and thus more than effective momentum density. It is not all about momentum density.

That is just the Penetration Index of Art Alphin in the A-Square manual.

I refuse to revive the BS Index and throw in a factor for nose shape and another one for deformability, and multiple tissue factors for each layer encountered ...

Warrior

11 February 2011, 00:12

quote:

Originally posted by RIP:
But too small an FN meplat, or a round nose,
will not be shoulder-stabilized enough to let the higher effective SD work for penetration,
unless the medium is such as to provide some side resistance/tail control to prevent tumbling, like dry plywood or maybe elephant skull?

I think we have a general concensus that shoulder stabilization is a factor.

Warrior

someoldguy

11 February 2011, 01:43

quote:

Glenn, you neglect other stability issues for penetration. Nose shape effects involve more than just a change in effective SD, and thus more than effective momentum density.
It is not all about momentum density.
That is just the Penetration Index of Art Alphin in the A-Square manual.
I refuse to revive the BS Index and throw in a factor for nose shape and another one for deformability, and multiple tissue factors for each layer encountered ...

I've read the name Art Alphin before, but I'm not sure exactly who he is. As I recall from several years back, someone implied that I might have been a "devotee" of his, but this is not the case at all. Don't know the guy!

It's not that I *really* put a lot of stock in momentum density per se because I've already learned that there is much more to terminal ballistics than what any simple formula like that can ever quantify. That's why I referred to it as being part of my "College of Useless Knowledge." 🍷

I just use it to give myself a rough ballpark estimate, not as a mathematical or scientific certainty. Probably I shouldn't have even brought it up.

Glenn

Cross L

11 February 2011, 01:45

Ask ALF



465H&H

11 February 2011, 02:35

quote:

Originally posted by Cross L:
Ask ALF



I'll bet Alf didn't have to take Physics 103 three times to pass it.

465H&H

someoldguy

11 February 2011, 06:26

quote:

Ask ALF

You'll have to come out from behind that couch eventually, Cross.



Glenn

465H&H

11 February 2011, 22:24

[quote from RIP]Maybe the long 320-grain 9.3mm woodleigh FMJ with the ogived-FN nose shape is just past the line of sufficient stability? Good in air at long range, trickier in dense media. Whether gyroscopic/spin effects in a cavity help: They don't hurt.
Nose shape borderline for shoulder stabilization?

Occasionally it stays stable to +70 inches,
but more often it wobbles sooner,
maybe due to test medium variation as stated?

I shall await further research at McCourry Institute of Ballistics.
Doin' good ain't got no end.[/quote]

RIP,

Here is another possible scenario for the performance seen by the 9.3 320 grain bullet.

We know that RN steel jacketed solids perform much better in game than they do in gelatin or wet magazine test media. If they acted the same in game as they do in test media, then I should have seen RN solids exiting out the top of the head, under the jaw or out the side of the head on taking frontal brain shots on elephants, like they do in test media.

Possibly the problem isn't with the nose shape but the test media. While the above media may work well with FN solids it doesn't work all that well RN solids.

FN solids appear to cut a round hole about caliber size through the skin on entry into elephants. While with RN solids you see a hole that is smaller than caliber in size. You can easily push a FN solid into the entry hole but you have to exert quite a bit of force to do it with a RN solid. It is similar to what you see if you shoot a round nosed bullet into a paper target and then wad cutter bullet. The round nose leaves a hole that is less than caliber in size and it has radial tears out to the full bullet diameter. The wad cutter leaves a clean cut caliber size hole in the paper target.

I have seen and others have reported on the cutting affect of FN bullets in game compared to RN bullets. If the cutting is due to the FN how do these bullets cut tissue so cleanly if FN bullets form a cavitation bubble? The bubble pressure would be pushing the tissue away from the bullets nose, wouldn't it?.

It seems obvious to me that RN bullets push their way through test media or animal tissue and FN bullets cut their way through. Now picture how the tissue or media would react to these forces. In tissue the RN bullet will tear the tissue and push it aside while the FN bullet will cut a plug ahead of its route of travel. In wet magazines (WM) the same may well occur. When the RN bullet pushes its way through the WM media the media can randomly build up more material on one side than another. If that happens the pressure will not be equal on all sides of the bullet and the bullet will move in the direction of the least pressure. This can result in the RN bullet veering. The FN cutting action keeps pressure equal so the bullet tracks straighter through the media.

Now it seems that the veering seen in test media may be also dependent on bullet diameter. Smaller bullets will have less material buildup thus less side pressure. I believe the 6.5 bullets as well as the 9.3 bullets penetrated straighter and deeper than the larger caliber bullets. An interesting test would be to test heavy foe caliber RN solids in .256, .308, .338, .379, .416, .458, and .510 diameters and see where the veering starts to occur and how soon it occurs.

Just a theory from a rank amateur.

465H&H

CCMDoc

11 February 2011, 23:25

Michael458,

Have you received the "Big Boy Bullets" yet?

Just askin'



NRA Lifer; DSC Lifer; SCI member; DRSS; AR member since November 9 2003

STILL waiting for my Taksdale double or a refund

Don't Save the best for last, the smile for later or the "Thanks" for tomorrow