michael458 **21 July 2010, 21:35**

Terminal Bullet Performance

quote:

> Originally posted by CCMDoc:
> Michael,
>
> Just checked out your website - absolutely fantastic stuff there

Paul

Thanks a bunch, glad you went over. One day when I can put things together I am going to make a bullet testing page or two on it!

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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boom stick **21 July 2010, 21:47**

Who says we can't have some fun
It would be interesting to see the wound path of the 80% on game. See what that bullet will do to a heart and lung shot.
Was thinking you could make a "meplat ring" on the hollow point mono metal bullets so the petals will shear off leaving a truncated cone Flat nose behind. The bottom of the hex hole becomes the flat point as usual but the outer meplat is a perfect circle.

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)

srose **21 July 2010, 21:52**

quote:

> Originally posted by capoward:
> Very interesting test results Michael. Were there any visual trauma differences within your paper mass between 60% meplat and the 75%-80% meplats?
>
> Sam, very nice work with the bastard file on the test bullets!

Capo, Thanks for the compliment. I'm afraid Michael is getting tired of my weard designs. He tried to mess me up by telling me he needed two alike for each. He thought he had me then. I fooled him didn't I. That file is about worn out and so am I.

Sam

srose **21 July 2010, 21:57**

Michael,

I forgot I still have to make you a left hand screw bullet and I'll put a 65% meplat on them.

Sam

boom stick **21 July 2010, 22:02**

Sam.
thanks for making those bullets
they have been a good tool to prove this theory. You have been a good Igor to the mad scientist Michael. Someone repose that pic lol. So u r retiring the bastard file? So much for the new bullet company Bastard Bullet Works.

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

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

srose **21 July 2010, 22:07**

Boom stick,

I assume you are talking about me SAM not Andy? If so thanks!

SAM

boom stick **21 July 2010, 22:10**

Oh, Sorry. Yes. My mistake. I need some coffee lol.

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

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

michael458 **21 July 2010, 22:11**

Sam

Boomy is smoking today! Either that or the 50 B&M has hit him in the head this weekend????

Michael

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srose **21 July 2010, 23:01**

Yeah but what is he smoking!

boom stick **21 July 2010, 23:18**

> quote:
>
> Originally posted by srose:
> Yeah but what is he smoking!

Just fine cigars when I can
With 10 year cask strength Laphroaig or Lagavulin 16 year

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

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416Tanzan **22 July 2010, 01:07**

> quote:
>
> With 10 year cask strength Laphroaig or Lagavulin 16 year

My alltime favorites.
Cask strength, 57% -
blows my friends out of the water !

In blind taste tests with my family members:
all of them were asked to taste and say what
came to mind. All of them, with no prompting or
hints, said that Laphroaig made them think 'Africa'. My son, offered a taste while in the US, said that he thought of the infirmary in his East African boarding school from teen-days. Alchohol and the fragrance of smoke and moldy straw-roofed huts.
And Lagavulin just slightly more refined.
Thank you for the memories.

+-+-+-+-+-+-+

"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.

capoward **22 July 2010, 01:14**

quote:

> Originally posted by Michael458:
> Capo
>
> Yes, I did make mention of the increased trauma inflicted as we increased meplat size under the second post with the 65% to 80% meplats. I wish that I had taken time now to actually measure more in depth on that subject, but I did not do so, hind sight is great and I was stealing an hour here and there to get the work done. I observed it, I noted it, but did not measure it. The trauma showed up right from the start and continued to increase with each 5% more meplat. Of course with 75% and 80% having the most trauma up front, slowing down after about 10-12 inches.

Ok, if I hadn't quick scanned today's posts I'd have noticed that you'd commented on the increased trauma as the meplat percentage increased.

quote:

> Something that also should be pointed out, I observed (I should have actually measured) as we increased meplat size we also increased the impact trauma to target with larger wound channels and destruction of test medium. I wished I had taken the time to get actual measurements, but that is hind sight now, you will just have to trust me on this one.

It would have been nice to have had witness cards covering the meplat test…but, yep will take your word for the increasing trauma/meplat percentage relationship. The witness cards earlier fully demonstrated good trauma from the 66% meplat 510gr SST FN Copper Solids so there's no reason to presume this would also not hold true for the meplat percentage test.

quote:

> Everything done with a barrel of 1:12 twist rate, which no doubt assisted the bullets of less than 65% meplat. A slower twist rate I am sure would have showed the less than 65% meplat far less stable than they are at 1:12.

We can also hypothesize that a 1:10" twist rate would likely have stabilized the 60% meplat bullet without it veering the last few inches of its penetration.

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

michael458 **22 July 2010, 01:22**

quote:

> We can also hypothesize that a 1:10" twist rate would likely have stabilized the 60% meplat bullet without it veering the last few inches of its penetration.

Jim

I would concur with that statement. The 60% meplat was off 2" on one, and 1" on the other in total penetration, that's getting very close. 1:10 I believe would stabilize that.

Michael

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capoward **22 July 2010, 01:28**

quote:

> Originally posted by michael458:
>
> quote:

> We can also hypothesize that a 1:10” twist rate would likely have stabilized the 60% meplat bullet without it veering the last few inches of its penetration.

Jim

I would concur with that statement. The 60% meplat was off 2" on one, and 1" on the other in total penetration, that's getting very close. 1:10 I believe would stabilize that.

Michael

If time and resources permit, it would also be interesting to see how much more unstable the 50%-60% meplat bullets are with a 1:18" twist rate...as well as whether the 65% meplat would also lose stability the last few inches of penetration.

There would be no issue with the 70%-80% meplat so no need to test them with the slower twist rate.

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

boom stick **22 July 2010, 01:36**

Sorry for the thread hijack
416 Tarzan. You are a man of great taste. Just don't get me started on bourbons! Lol
So are the meplat wars over?
Do we have a reigning champ of 2/3rds ratio?
Maybe the 80% meplat ones can be stable in media in the slow 1 in 18 twist barrels or bullets exceeding three times the bullet diameter in length.

Edit. Looks like capo and I asked the said thing at the same time lol. seems like meplats will correct those pesky slow twist barrels

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michael458 **22 July 2010, 03:54**

Boomy, never a worry about a hijack here. Has to be white for me, and needs to be Grey Goose, had a bad experience once with brown stuff, yes, it was cheap, and I was young, but it has never let me forget. Too bad, I think I miss some good things because of that!

The meplat war over? I doubt it, I see others on other forums today saying that they don't need solids anymore anyway! So there will never be a lack of these "Experts", and "they" know it all because they went on a hunting trip!
They are the same "Experts" that bought their ammo, shot their rifle 5 times before leaving on the trip, PH did most of the shooting for them, after they flubbed it, come back home the "great white hunter" and "expert" in all things hunting, shooting, bullets, the works! I know this to be true, I have seen them in the flesh, many, many times! No, the "Experts" will always be the "experts" and they know more than us!

70% and up will be stable in 1:18. I think 70% to 75% would be optimum in a slow twist 1:18 or slower. This is why Mikes 470s do so well with the North Forks at 70% and his is slow, 1:18 or slower as I recall. All my .500s have been stable in 1:18 with 65% to 67% for most of the penetration, 90% or better. I think that Capo has a good idea about the 65% meplat in 1:18 performing like the 60% meplat in the 1:12.

Capo

Yes, the 1:18 would be a good test with some of the bullets we have now in 1:12. I have a pretty good idea.

M

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

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DWright **22 July 2010, 04:59**

What. . . ? Meplate war is over. . . ?
So now I have to pack up my lounge chair, unplug the popcorn machine, pick up my empty beer cans and move on. . .?
Damn ! . . . O well, I knew this thread would never go anywhere anyway. . . . .
Sheeesh. Was just getting comfortable

http://www.mazamasportinggoods.com

srose **22 July 2010, 05:20**

Don't worry too much, my bastard file isn't completely worn out. Michael still has plenty to work with.

srose **22 July 2010, 05:28**

Michael,

I noticed something in your tests that I think is interesting. The magic marker numbers I wrote on the bullets is still almost readable. This means that the sides of the nose didn't touch much as they traveled through the paper. Paper is very abrasive so this shows meplat is forcing the material away from the bullet thus reducing friction. Thats my guess anyway!

Sam

capoward **22 July 2010, 05:49**

quote:

> Originally posted by srose:
> Michael,
>
> I noticed something in your tests that I think is interesting. The magic marker numbers I wrote on the bullets is still almost readable. This means that the sides of the nose didn't touch much as they traveled through the paper. Paper is very abrasive so this shows meplat is forcing the material away from the bullet thus reducing friction. Thats my guess anyway!
>
> Sam

Dang Sam that's a good catch...sent me back a page to re-look at the bullets!

So now I have a question. Is it the meplat that is forcing the material away from the bullet sides during penetration? Or is there a pressure envelope that the meplat causes that leads the bullet during penetration that keeps the material away from the bullet sides until it slows/stops? Enquiring minds want to know!

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

srose **22 July 2010, 06:01**

I guess I brought up a point I can't answer!

srose **22 July 2010, 06:12**

OK I have another one to ponder! Is the twist the main factor in this case or is it the meplat? We know the change in meplat made a huge difference in how the bullets went straight. If you use a 65% to 70% meplat do you need fast twist? Michael maybe you do need to go back to the drawing board and test the same series of bullets in the 1-18 twist gun. Man I shouldn't have brought this up, more bullets to make!

I Bin Therbefor **22 July 2010, 06:17**

quote:

> Originally posted by srose:
> Michael,
>
> I noticed something in your tests that I think is interesting. The magic marker numbers I wrote on the bullets is still almost readable. This means that the sides of the nose didn't touch much as they traveled through the paper. Paper is very abrasive so this shows meplat is forcing the material away from the bullet thus reducing friction. Thats my guess anyway!
>
> Sam

Supercavitationxpialidocious or is that supercalifragilisticexpialidocious?

I keep forgetting.

465H&H **22 July 2010, 06:34**

I had intended to post the results of the stat analysis of Michael's latest tests here but I have run into a problem with the Forum posts messing up the tables. They end up so confusing that they are meaningless. If you would like me to e-mail them to you e-mail me at wlbwlb@aol.com and request a copy.

465H&H

boom stick **22 July 2010, 07:18**

Better to over twist and over meplat than under is what I've learned.
2/3rds meplat/diameter is the golden ratio it seems to me.
I think deflection resistance is the next frontier. What bullets can glance off if simulated bone and go the straightest.

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)

capoward **22 July 2010, 10:20**

quote:

> Originally posted by srose:
> OK I have another one to ponder! Is the twist the main factor in this case or is it the meplat? We know the change in meplat made a huge difference in how the bullets went straight. If you use a 65% to 70% meplat do you need fast twist? Michael maybe you do need to go back to the drawing board and test the same series of bullets in the 1-18 twist gun. Man I shouldn't have brought this up, more bullets to make!

Now its my turn to [redacted] a moment.

Ok brain toggled back a bit. The relationship between twist rate and FN meplat percentage… Oh boy this takes us back to around page 18 and running for another six pages or more!

I think the following excerpt from page 19 pretty well sums it up the relationship between fast twist rate and slightly less than 60% meplat:

quote:

> *Here is the summary of Michael's paper mix penetration test:*
> ***400gr Barnes Buster bullet [Edit added: 58% meplat];***
> *****20" twist rate @ 2061fps MV & 48yd impact:***
> ***38in straight line penetration, veered off course and exited top of box at 46in.***
> *****14" twist rate @ 2039fps MV & 48yd impact:***
> ***48in straight line penetration, exited rear of box at 48in.***

I think the following excerpt from page 1 of the following thread:
http://forums.accuratereloadin...0101804/m/7281027721
pretty well sums it up the relationship between slow twist rate and slightly more than 70% meplat:

quote:

> Tonight I will post a proper response to some of the questions although Michael458 does a better job than I do. Here is a spreadsheet of one test that I conducted.
>
> The only thing I do differently now is document the velocity of each bullet as opposed to an average of a group. Velocity +-100 FPS makes very little difference in penetration but I am trying to be more detailed in reporting.

Date	Bullet	Caliber	Weight	Meplat	Meplat %	Powder	Powder Charge	Impact Velocity	Straight Penetration	Total Pen.	Notes
13-Feb-10	North Fork	0.474	500	0.335	70.68%	RL15	89.0	2075 Average	73"	73"	Out of the back of the box
06-Feb-10	North Fork	0.474	500	0.335	70.68%	RL15	89.0	2075 Average	72"	72"	Stuck in Wood in back of box
06-Feb-10	North Fork	0.474	500	0.335	70.68%	RL15	89.0	2075 Average	72"	72"	Stuck in Wood in back of box
13-Feb-10	North Fork	0.474	500	0.335	70.68%	RL15	89.0	2075 Average	72"	72"	Stuck in Wood in back of box
13-Feb-10	North Fork	0.474	500	0.335	70.68%	RL15	89.0	2075 Average	72"	72"	Stuck in Wood in back of box
20-Feb-10	North Fork	0.474	500	0.335	70.68%	RL15	90.0	2091 Average	72"	72"	Stuck in Wood in back of box
20-Feb-10	North Fork	0.474	500	0.335	70.68%	RL15	90.0	2091 Average	72"	72"	Stuck in Wood in back of box
20-Feb-10	North Fork	0.474	500	0.335	70.68%	AA5744	50.0	1661 Average	71"	71"	Stopped at plywood in back of box
20-Feb-10	North Fork	0.474	500	0.335	70.68%	AA5744	50.0	1661 Average	71"	71"	Stopped at plywood in back of box
20-Feb-10	North Fork	0.474	500	0.335	70.68%	AA5744	50.0	1661 Average	71"	71"	Stopped at plywood in back of box
18-Mar-10	Hornady	0.474	500	0.271	57.17%	RL15	89.0	2079 Average	48"	69"	Stopped sideways in newspaper
18-Mar-10	Hornady	0.474	500	0.271	57.17%	RL15	89.0	2079 Average	40"	63"	Stopped sideways in newspaper
18-Mar-10	Hornady	0.474	500	0.271	57.17%	RL15	89.0	2079 Average	34"	54"	Exited top of box
06-Feb-10	Woodleigh Solid	0.474	500	RN	NA	RL15	89.0	2065 Average	23"	43"	Sideways in newspaper
31-Jan-10	Woodleigh Solid	0.474	500	RN	NA	RL15	89.0	2065 Average	22"	40"	Stopped at the top of the newspaper
31-Jan-10	Woodleigh Solid	0.474	500	RN	NA	RL15	89.0	2065 Average	22"	40"	Stopped in paper almost straight
31-Jan-10	Woodleigh Solid	0.474	500	RN	NA	RL15	89.0	2065 Average	22"	39"	Bullet come out of top of box
31-Jan-10	Woodleigh Solid	0.474	500	RN	NA	RL15	89.0	2065 Average	22"	36"	Bullet come out of top of box
31-Jan-10	Woodleigh Solid	0.474	500	RN	NA	RL15	89.0	2065 Average	22"	33"	Bullet come out of side of box
13-Feb-10	Woodleigh Solid	0.474	500	RN	NA	RL15	89.0	2065 Average	22"	41"	Sideways in newspaper
13-Feb-10	Woodleigh Solid	0.474	500	RN	NA	RL15	89.0	2065 Average	22"	41"	Sideways in newspaper
13-Feb-10	Woodleigh Solid	0.474	500	RN	NA	RL15	89.0	2065 Average	22"	41"	Sideways in newspaper
06-Feb-10	Woodleigh Solid	0.474	500	RN	NA	RL15	89.0	2065 Average	22"	45"	Sideways in newspaper
21-Feb-10	Woodleigh Solid	0.474	500	RN	NA	AA5744	50.0	1617 Average	21"	35"	Stopped sideways in newspaper
21-Feb-10	Woodleigh Solid	0.474	500	RN	NA	AA5744	50.0	1617 Average	21"	35"	Hit bottom of box
21-Feb-10	Woodleigh Solid	0.474	500	RN	NA	RL15	89.0	2068 Average	21"	36"	Came out of top and hit lid
21-Feb-10	Woodleigh Solid	0.474	500	RN	NA	RL15	89.0	2068 Average	21"	36"	came out of the top at 36"

Notes: **Kreighoff 470 Nitro**
Twist rate 1-18.9"
Barrel Length 24"

Test Media: The test box is fabricated from 2 by 6 pine boards and is 72" long.

Test media consisted of ¾" luan, 12" of saturated newspaper, 2 by 6 treated pine (shooting through the 1 5"8" thickness), and approximately 60" of saturated newspaper. Great care was taken to make certain the newspaper was thoroughly soaked in a tub prior to placing in the test bed.
After placing the paper in the test bed excess water was permitted to drain for 30 minutes.

The bullet entered the box at 33 feet from the muzzle.

So to sum things up regarding twist rate and meplat percentage…Boomy pretty much stated the best of all worlds:
[quote Better to over twist and over meplat than under is what I've learned.
2/3rds meplat/diameter is the golden ratio it seems to me. [/quote]
I do think we'll likely determine somewhat of a range when all testing is accomplished and the data collated…perhaps something along the lines of this:
• A 70% to 72% meplat will provide maximum within mass straight-line penetration for slow twist rate barrels…slow being a 1:18" to 1:20" twist rate.
• A 65% to 70% meplat will provide maximum within mass straight-line penetration for moderate twist rate barrels…moderate being 1:12" to 1:16" twist rate. And finally,
• A fast 1:10" twist rate barrel will provide maximum within mass straight-line penetration for 1800 fps to 1900 fps impact velocity with a bullet having a 65% to 75% meplat.
• A fast 1:10" twist rate barrel will stabilize a 60% meplat bullet to provide maximum within mass straight-line penetration with an impact velocity of plus 1900 fps.

[i]Edit added: Wow…If you look closely as Mike's testing results with the 70.68% meplat 500gr .475 caliber NF FN solid (.317 SD) fired from his 470 NE DR with 1:18.9" twist rate barrels…he achieved 71" of within-mass straight-line penetration at an impact velocity of 1661 fps while achieving 73" of within-mass straight-line penetration at an impact velocity of 2075 fps…a difference of +2" penetration with +414 fps impact velocity.

I think what this tells me is that I need to request Sam to provide sufficient identical 65%, 70%, and 75% meplat FN solid bullets in a single weight/caliber diameter for Michael to test the penetration capability of these bullets at impact velocities of 2100 fps, 1900 fps, 1700 fps, 1600 fps, and 1500 fps.

Now while this is a slight deviation from an exact weight/velocity test, if we utilize the existing Sam's bullet meplat testing that Michael just accomplished with the M70 1:12" twist rate 50 B&M, we can consider the 2100 fps impact velocity test completed if we're willing to accept a -20 fps impact velocity as meeting the benchmark velocity. Myself, I think that is totally reasonable deviation.

Michael…don't you still have a M70 50 B&M rifle with 1:18" twist rate barrel?

If so perhaps a dual run test using both twist rates (1:12" and 1:18" twist rates) with the above noted impact velocities will quickly flesh out a relationship between impact velocity, meplat percentage, and barrel twist rate!!!

Edit added x2: The reason I didn't suggest that the bullets be made heavier than the current 429gr, 430gr, and 435gr with their approximate .246 SD…especially when the 500gr .475 caliber bullets had a .317 SD…was that:
1) Michael has already established that the 510gr SST FN Copper Solid, .291 SD, fired from the 1:12" twist rate 50 B&M M70 results in 62" of within-mass straight-line penetration in the bullet box when fired at 2025 fps MV, and 84" of penetration within a rear shot Elephant when fired at 2100 fps MV. And,
2) The penetration results from Sam's test bullets have already matched the within-mass straight-line penetration of the 500gr .475 caliber Hornady FN solids and exceeded the average total penetration of the 500gr .475 caliber Woodleigh RN solids.

So basically…why not continue with the lighter weight bullets?

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

RIP **22 July 2010, 11:11**

Trivariate analysis of velocity, twist, and meplat, and all else constant ... very interesting ... like the old Chinese curse:
"May Michael live in interesting times."
The Good Doctor of Terminal Ballistics is going to be worked to death!
And we are all going to have so much fun in the process!

I hope to contribute some univariate analysis with 1:20" twist (45-70 Govt.) compared to 1:10" twist (.458 B&M), both pushing 400-grain Barnes Buster to 2000 fps.

Maybe I will have to load up the guns and ammo and take them to MBIT (Myrtle Beach Institute of Technology), to eliminate some variablity in test medium.

Surely I will be able to post a picture of another spanking new SSK .458 B&M this weekend.

capoward **22 July 2010, 11:50**

> quote:
>
> I hope to contribute some univariate analysis with 1:20" twist (45-70 Govt.) compared to 1:10" twist (.458 B&M), both pushing 400-grain Barnes Buster to 2000 fps.

RIP your testing will be straight as an arrow @ 2000 fps from the 1:10” twist rate barrel.

Michael has already run 48” within-mass straight-line penetration stability (out box at 48”) with his 1:14” twist rate @ 2039 fps MV so out of your 1:10” twist rate barrel you’ll have to test the Buster at multiple MV ranges to identify where it loses within-mass straight-line penetration stability…if that’s what you’re attempting to identify.

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

capoward **22 July 2010, 11:56**

> quote:
>
> The Good Doctor of Terminal Ballistics is going to be worked to death!
> And we are all going to have so much fun in the process!

Well we have to help him work through that 1500 lbs of test material somehow.

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

michael458 **22 July 2010, 16:57**

Wow, I have a lot of catching up to do, and will do so this morning. First however I received the statistical study from 465HH overnight, and as he said he was having some issues with getting the forms posted. I have taken it, converted this and that, little copy and pasting and so forth and I am going to get it posted here, exactly as he sent it to me for review. 465HH went to a tremendous effort to get us this, and I appreciate it. As you will see many times our boy WANTS a larger sample, he is not incorrect in this for statistical purposes, just that sometimes logistics interferes with "statistics".

Below is by 465HH

OK here are the results of Michael’s tests along with a cursory explanation of what they mean.

Definitions:

X = sample mean

SD = sample standard deviation

95% CI = 95% Confidence Interval

It is expressed as X= 45.5 + or - 1.386

to get the range you add the + and - the + to the mean. Therefore in this case the 95% CI would be a range from 44.114 to 48.886. It means that if we repeat the test 100 times we would expect 95 to fall within this range and 5 outside of it.

Straight Line Penetration Distance

Meplat	X	SD 95 %	CI + or -
RN	17.0	5.66	11.094
50%	20.5	2.12	4.155
55%	25.0	1.41	2.764
60%	38.0	2.83	5.547
65%	45.5	.707	1.386
70%	45.0	1.414	2.771
75%	40.0	1.000	1.960
80%	36.0	1.000	1.960

Total Penetration Distance

RN	25.0	4.240	8.310
50%	26.5	3.540	6.938
55%	28.5	.707	1.376
60%	46.0	2.828	5.543
65%	45.5	.707	1.386
70%	45.0	1.414	2.771
75%	40.0	1.000	1.960
80%	36.0	1.000	1.960

I have provided the basic mean and standard deviation for your use. Also to compare any of the samples just add and subtract the CI from the mean and if the two ranges for the samples overlap then the differences are not statistically significant.

Here are those results in a quick form:

Straight Line Penetration: NSD = not statistically different, SD = statistically different

RN vs. 50% NSD 50% vs. 55% NSD 55% vs. 60% SD
RN vs. 55% NSD 50% vs. 60% SD 55% vs. 65% SD
RN vs. 60% SD 50% vs. 65% SD 55% vs. 70% SD
RN vs. 65% SD 50% vs. 70% SD 55% vs. 75% SD
RN vs. 70% SD 50% vs. 75% SD 55% vs. 80% SD
RN vs. 75% SD 50% vs. 80% SD
RN vs. 80% SD

60% vs. 65% SD 65% vs. 70% NSD 70% vs. 75% SD 75% vs. 80% NSD
60% vs. 70% NSD 65% vs. 75% SD 70% vs. 80% SD
60% vs. 75% NSD 65% vs. 80% SD
60% vs. 80% NSD

The reason some of those results are not different may be due to low sample size. I expect that if the sample sizes were larger the variance and resulting SDs would be lower and thus show significant differences.

I also stratified the straight-line penetration samples into three sub-samples. RN, 50% and 55&% , 60%,65%,70%, 75% and 80%. I then compared the sub-samples for differences among them using the Students T test. Here are those results:

N to 55% n = 4 X =0.833 SD = 4.535
60% to 70% n=8 X = 42.125 SD = 3.643
75% to 80% n=4 X = 38.000 SD = 3.480

The probability that the first sample is the same as the second is 0.0001. Box plot for 95% CI for 50% and 55% vs. 60%, 65% and 70% PDF File; This difference is highly significant and suggest that you would be safe to say the differences are real.

The probability that the third sample is the same as the second sample is 0.064. Box plot for 95% CI for 60%, 65% and 70% vs. 75% and 80% PDF File; This difference is not significant at the 95% level. It is close and an increased sample size would almost assuredly show a significant difference. P value must be smaller that 0.0500 to be significant at the 95% CI level.

So what does all this stat-testing mean and what can we reliably say about the data? WE can be fairly confident in saying that meplat size influences depth of penetration.

From 50% meplat up to 65% meplat size penetration increased and a further increase in meplat size appears to have caused a decrease in penetration. A larger sample size of 75% and 80% would be required to prove that a decrease occurs. Eight of the 28 comparisons did not show a significant difference between the samples. Again, an increase in sample size would probably show that at least some of these are significantly different.

Another problem arose with the 75% and 80% samples the sample distances were the same so I could not compute Sds for these samples. I arbitrarily used a SD of 1.000 for that sample so that it could be worked. You can't divide 0 into another number so that was the hang up. Again a larger sample size would have solved that problem.

Be very careful in extrapolating these data to other calibers, nose types or profiles, test media, bullet weights, velocities etc. These data are only good for the test as designed and conducted by Michael. We would expect to see differing results that would be dependent on the type of media used and that especially pertains to animal tissue.

465H&H

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michael458 **22 July 2010, 16:59**

Well, I did not change anything 465HH had to say, but maybe I might have put some of his own words a little bolder so that we could see them a little better!

Michael

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srose **22 July 2010, 17:24**

Michael,

I'm sorry I got on an off the wall track. Don't know what I was thinking. Your tests prove in my mind that if you use a 65% to 75% meplat solid you will get the best performance with a solid. End of story! I really got confused trying to read all of those statistics and so on. I'd rather just see the hole in your test media or in an elephant skull.

You have done a fantastic job of figuring all this out and I want to thank you again for taking the time to test and post all your information.

Sam

michael458 **22 July 2010, 17:52**

quote:

> Originally posted by srose:
> Michael,
>
> I noticed something in your tests that I think is interesting. The magic marker numbers I wrote on the bullets is still almost readable. This means that the sides of the nose didn't touch much as they traveled through the paper. Paper is very abrasive so this shows meplat is forcing the material away from the bullet thus reducing friction. Thats my guess anyway!
>
> Sam

Sam and Capo

As Capo said, damn that is a good catch Sam. I had taken notice of it, but I had put no thought process into that, being so busy with other matters. Excellent however, there may very well be something to that "Supercavitationxpialidocious" thing after all?????? I would say that is as good an explanation as there is to this phenomena!

As for testing meplats in the 1:18 twist guns, yes, I can do that, would want the weights and nose profile the same as the current test. Or close is good. I pretty much know what the deal is, but....could easy verify that.

Boomy

Deflection resistance.....sorta a little bit done on that with some t'rex tests. I have angled some ugly materials in the past trying to get the 510 .500 to veer and can't accomplish that yet. It drives straight thru at very steep angles. Very hard test to do, and set up to be consistent, sorta one of those "Observe and Note" deals. But fun to do.

RIP

Very much looking forward to the "twist" tests that you will provide with the Super Duper 1:10 458 B&M---I would think if shipped Tuesday? Will be in your hands today!

You are welcome here at MBIT and we can make a plan.

I agree with Capo--the Buster is getting close at 1:14--I would think 1;10 would turn the tide on it.

Sam

Well one must slow down on the statistics and read carefully and compare carefully. I think the bottom line that 465HH got to is that even with the small sample it shows a definite trend towards meplat. If you take the meplat test on it's own it shows this trend, combined with all the solid work done over the last few years, then the meplat test stands on it's own. We have tested and worked with a lot of different and varied solids, and continue to do so, we are in no way at the end. However, even before this test was conducted, everyone that replied to what they thought the outcome would be was damn near spot on all the way across the board. Penetration depths were overestimated by most, however "Bullet Behavior" was spot on by everyone that replied on that, the only slight hangup was around 60% meplat. Now this was not pulled out of the air, this was based largely on their own experiences, and what we have done right here on this thread from past tests. Now the meplat test that was just conducted confirmed the work that had been done in the past, and because of the twist work we have done here, we already have a damn good idea of what it takes to get terminal stability in slower twists.

I think we have all done well and all involved in this thread has been a large part of it. Many things would be lost if I was doing this alone and did not have the wonderful collaboration of everyone here that has put so much effort and thought into this.

M

RIP **22 July 2010, 19:38**

Doc M,
.458 B&M shipped Wednesday (yesterday), otherwise same math as you stated.

michael458 **22 July 2010, 19:52**

RIP

You are not far from there, might be next day UPS???? If not today, tomorrow for sure.

M

michael458 **23 July 2010, 01:34**

I think I mentioned this, but there has been so much information the last couple of days I tend to forget. In my Winchester I had zero issues feeding until I got to a 75% meplat. 75% started to hang up a bit, bounce some on the feed ramp, and catch under the

feed ramp. 80% would not feed period, bumped right into the feed ramp, dead stop. Less than 75% gave no issues at all, not even a bump.

Feed and function trump everything! Life is such a bitch that way, compromise is required if one has a rifle "OTHER THAN A WINCHESTER" that won't feed a proper meplat. You have a choice to make if you are shooting a bolt gun that does not say Winchester on the side of it! Personally the best thing you can do is start off right with the big "W" to begin with. Solves all your issues.

Michael

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MikeBurke **23 July 2010, 02:59**

quote:

> Originally posted by michael458:
>
> Feed and function trump everything! Life is such a bitch that way, compromise is required if one has a rifle "OTHER THAN A WINCHESTER" that won't feed a proper meplat. You have a choice to make if you are shooting a bolt gun that does not say Winchester on the side of it! Personally the best thing you can do is start off right with the big "W" to begin with. Solves all your issues.
>
> 
>
> Michael

My Double feeds them all 

Macifej **23 July 2010, 03:07**

quote:

> My Double feeds them all

michael458 **23 July 2010, 03:56**

Mike


Job well done! I submit! Now how about post that photo with the shorts, glasses and the double over the shoulder! That's my boy, "ClassY" all the way! HEH.....

Agent J

Where you been? Accuse you of "lurking".

HEH

Michael

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Macifej **23 July 2010, 04:19**

quote:

> Agent J
>
> Where you been? Accuse you of "lurking".
>
> HEH

Contemplating things in Bore-dom, preparing for a visit to our friend TERA, and other things related or otherwise.