

Addons:

[ftp://www.armedassault.info/armad/addons/NWD\\_Ballistics.rar](ftp://www.armedassault.info/armad/addons/NWD_Ballistics.rar)  
[ftp://www.armedassault.info/armad/addons/NWD\\_RealDispersion.rar](ftp://www.armedassault.info/armad/addons/NWD_RealDispersion.rar)  
[ftp://www.armedassault.info/armad/addons/NWD\\_M19Binoc.rar](ftp://www.armedassault.info/armad/addons/NWD_M19Binoc.rar)

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How to use :

First of all, huge thanks to Kronzky and his portable target range. Without the ballistics tracking in that script, none of this would have been possible.

You know how the supposed difference between the ArmA ballistics and the VBS2 ballistics is ArmA's lack of bullet-specific ballistic coefficients? Well, when poking around in the data files, I found that the "airFriction" parameter can be set per bullet type. After a little research, a little ballistics calculator work, and a whole lot of tweaking, I've managed to create proper exterior ballistics for each small-arms bullet. 😊

Rounds now drop much, much more, particularly 5.56 mm and 5.45 mm rifle bullets. Since damage is dependent on speed in ArmA, that also means that body armor has no problem stopping rounds past 500-600 meters or so. You'll still take damage, but not much.

If you want to see exactly how they compare, I've got a comparison spreadsheet [here](#). There are two tabs, one for my ballistics, and one for stock ballistics. The first graph on each compares the game trajectories with the ones that came out of my ballistics calculator, the other two graphs show only the game ballistics. (Whoops, just found out that this is a bit out of date. 5.56 is much closer to the "real M16" curve than that spreadsheet suggests.)

The included ACOG reticles are realistically proportioned, with accurate 7 degree fields of view. These are the actual scopes the Army uses, and the ones BIS modeled on the guns in ArmA. The BDC marks line up perfectly with the ballistics, too, and by no coincidence. 😊

The ACOG TA01NSN on the M4:



The ACOG TA31F on the M16A4:



Unfortunately, illuminated reticles are beyond what can be done with a hex editor. If anyone can offer help in making those reticles look correct at night, I'd be much obliged.

I've also included a third pbo with some redone rocket and missile values. These are to be regarded as beta, but the M136 AT4 ballistics should be fairly accurate (as long as you fire within +/- 10 degrees of horizontal...). The RPG-7 is hopeless, but it at least has a realistic muzzle velocity and flight range. The other rockets and missiles have (mostly) realistic thrust times and impulses and whatnot, and maneuverability is decreased all around. I've spent a lot of time trying to get the TOW missiles right, but they're *really* buggy. The missiles track several feet below the crosshair, and TOW shots beyond 1500 m are impossible in both this mod and the standard game. I don't think I can fix that.

As an added bonus, I've tweaked dispersion values to go along with the new ballistics. Find that mod here:

[ftp://www.armedassault.info/armad/addons/NWD\\_RealDispersion.rar](ftp://www.armedassault.info/armad/addons/NWD_RealDispersion.rar)

This fixes something that annoyed me to no end: in the stock game, the accuracy of single shots depended on your fire mode! With this mod, that particular bit of insanity only applies to the AI, and single shots with your rifle set to automatic fire will be exactly as accurate as single shots with your rifle set to single fire. Sniper rifle dispersion is also increased to realistic values, and MP5 and handgun dispersion is reduced to realistic values. (Small arms dispersions might still be twice what they should be, but that's the way it was before. I think the value might be halved for player weapons.) Gatling cannon and machine gun dispersions are also reduced to their published values, being 1.5-3 mil for mounted machine guns and 5-8 mil for gatling cannon. I figured I'd get a certain amount of flak for this one, so it's separate for now. Using the ballistics and dispersion mods together will certainly not give you any advantage, but using this one alone may. It will yell at you if you try, but I don't think it will stop you.

As an added added bonus, I've made a properly calibrated rangefinding reticle for the binoculars, modeled on the US Army's M19 Binoculars. Find it here:

[ftp://www.armedassault.info/armad/addons/NWD\\_M19Binoc.rar](ftp://www.armedassault.info/armad/addons/NWD_M19Binoc.rar)

There's no real good way of simulating what you see when looking through binoculars, but you can only use the reticles in these things if you resolve the image into one circle. The numbers are tens of mils, and lines are 1/2 mil thick:

Binoculars



I'm open to suggestions or corrections from anyone who's actually used this particular pair. I'm sure the reticle should be lighter (it's only in one eyepiece, after all), but I couldn't make it look right. These should be 7x zoom instead of 4x, but that would mean clipping off the top and bottom of the reticle.

#### ISSUES:

I fully realize that the Russian weapons are heavily disadvantaged at long range by these ballistics. That's just the way it is, unless anyone has ballistics data on any of the new Russian AP ammo. As it is, US 5.56 mm is simulated as new M855 green tip, while 5.45 mm ammo is simulated as crap from the 70's. The SVD is simulated with the new sniper ammo, at least, giving it slightly better ballistics than the M24. If anyone really wants, I can look into uploading the data I used in the ballistics calculator.

Subsonic 5.56 and 5.45 rounds are a complete fudge job. Subsonic 5.45 does exist, and is in fact the only type of ammo that can be fired through a suppressed AK-74 in real life, but I couldn't find anything about it. Subsonic 5.56 does not exist except as goofy handloads and silly custom ammo. I used the goofy handload that (I believe) the US Army was once looking into using. They don't use it. Part of the reason is that subsonic 5.56 mm ammo will not cycle the action of any 5.56 mm rifle. Needless to say, that isn't simulated in ArmA.

All small arms are re-zeroed to fix a small issue in ArmA. The "distanceZoomMin/Max" values set the distance at which bullets will re-cross the plane of the barrel. This is not the same as zero, which is properly defined as the distance at which the bullets will touch or cross the plane of the sights. In short, distanceZoomMin/Max does not take sight height into account. This ranges from a 3% error for .50 caliber rifles to a 47% error for M16s and M4s with ACOG scopes. I'm not entirely sure about this behavior, but this way seems to work better than not.

The M24's ammo was set to fly flatter than the ballistics calculator would otherwise have said. It just didn't seem right to me that the brand new ammo the Army is raving about would be so much poorer than Russian 7.62x54R sniper ammo, and it seemed completely wrong that it would have more drop than 5.56 green tip. It's not boosted by much, just enough.

Damage, as said before, depends on bullet speed in ArmA. I've tweaked the 5.56mm and 5.45mm rounds with this in mind. They should be one-hit kill at ranges below 50m, about the same damage as stock at 200m, and less damage past that. At 800m, it will take about 8 hits to kill someone. Damage for other bullets is probably still a bit off. Subsonic rounds in particular need some work.

I'll be away from my computer for the next week starting tomorrow, so if there are any other issues, you're out of luck for now. 😊

Almost forgot. If you're using gmJamez' windage and elevation mod, here's a cheat sheet:

In minute of angle:

<http://gallery.filefront.com/NonWonderDog//685608/>

In mils:

<http://gallery.filefront.com/NonWonderDog//685609/>

My calculator only works to 1000 meters. Anything beyond that you'll just have to figure out by experimentation.

As you can see, the SPR and SVD are now zeroed to 300 meters, and the KSVK to 500 meters. Both Russian guns have scopes adjustable between 100 and 1000 meters in real life, and the scope on the SPR does not change zero as you zoom in and out in real life.

The big boresight mark on the KSVK scope kind of lines up with the barrel, if you need to use the gun at short range.

BI Forum Topic :

<http://www.flashpoint1985.com/cgi-bin/ikonboard311/ikonboard.cgi?s=7d2bcf7bc20a2bf66d086e99d871a47c;act=ST;f=70;t=66195>