

LOSS OF ZERO IS A MAJOR PROBLEM

Our weapons aren't always zeroed when we need them. As a result, we're losing some portion of the effectiveness of those weapons... and putting our Nation's warriors (and innocent bystanders) at increased risk.

We've had the honor of training thousands of our Nation's protectors over the past decade. During courses that include rifle work, we routinely ask students if they have a good zero. Almost all of them will say 'yes'. When we move to the range to confirm, though, the VAST MAJORITY of them will have to make adjustments. Conversations with other instructors indicate that this is a common situation. *Shooters think they're zeroed. But they're not.*

The fact is that a large percentage of military and law enforcement personnel are operating with rifles that are not zeroed. The implications of this are enormous. For the military, it means reduced lethality and increased casualty rates for friendly forces and non-combatants. For LEOs, it increases risk to officers and innocent bystanders (and increases liability).

Legendary firearms instructor John Farnam wrote a great article (attached in Addendum A) that illustrates the problem in the context of domestic law enforcement. In that article, his 'friend from a big department' describes recreating a standoff situation on their range a few days after the actual event. He wanted to see if officers on scene could've made the required shots if the situation had played out differently. The answer was 'NO'. He is quoted as saying "Non-zeroed rifles in police service are a disaster waiting to happen." Mr. Farnam's friend is right. But it's not just law enforcement. It's most 'armed professionals'.

DON'T AGREE?

If our weapon systems really do hold zero, why do we start every qualification with half a day of zero confirmation? And why do the vast majority of shooters have to make adjustments each time?



If we had to make adjustments, we lost zero somewhere between trips to the range.

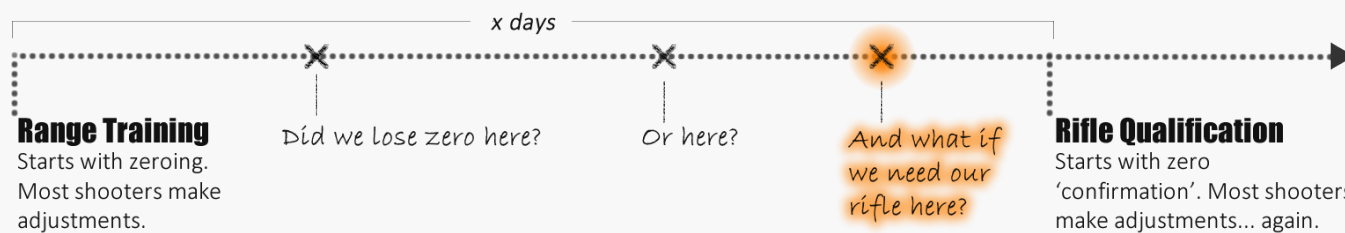
OUR PROCESSES HIDE THE PROBLEM

It's not just qualifications. Virtually every trip to the range starts with confirming (or establishing) zero. How often, though, do we take note of zero adjustments needed on weapons that were supposed to have been 'operational'? The answer for most units/ agencies/ shooters is 'never'... but that's the *wrong* answer. Having to make adjustments to a 'zeroed', operational rifle should be a BIG DEAL. Unfortunately, though, we have allowed it

to become normal and accepted. We make our adjustments, do the day's work on the range, and forget. Then on our next trip to the range, we do it again.

Most shooters are somehow losing zero between trips to the range. And starting each training (or qualification) session 'fixing it' with zero adjustments HIDES THE PROBLEM. *What if we'd been called on to use that rifle two days before we went to the range?*

We've been hiding a zero retention problem by adjusting zero prior to qualifications and live-fire training days.



What if we needed that rifle two days before we went to the range?

SWEAT & ZERO

The Army's SWEAT model, which was developed by the Maneuver Center of Excellence (MCoE) at Ft. Benning, GA, is useful for understanding combat weapons as a 'system of systems'- and for understanding the elements involved in establishing and maintaining zero. Within the SWEAT framework, the individual weapon 'system' is comprised of: Soldier (or shooter); Weapon; Enhancements (i.e. optics and mounts); Ammunition; and Training.

There's obviously no magic in this model- and there wasn't intended to be. But it serves as an excellent reminder that achieving effective hits on bad guys involves more than just a rifle or an optic; it requires proper calibration of each of the elements of a fairly complex system. This is important, particularly since we have a tendency to look at one or two components of the system (typically the gun and sights) in isolation.

So, what does SWEAT have to do with zero? A lot. Zero is traditionally defined as the alignment of sights so that point of aim (POA) equals mean point of impact (MPOI) at a specified distance. That's technically true. Zero isn't just about sights, though. It's about getting ALL of the elements of SWEAT aligned and calibrated. A perfectly zeroed weapon, for example, will be suddenly un-zeroed if the shooter changes his/ her cheek weld. So, professionals *must* buy a high-quality, battle-proven optic and a solid mount- that's incredibly important. But that's not the end of our zero retention concerns.

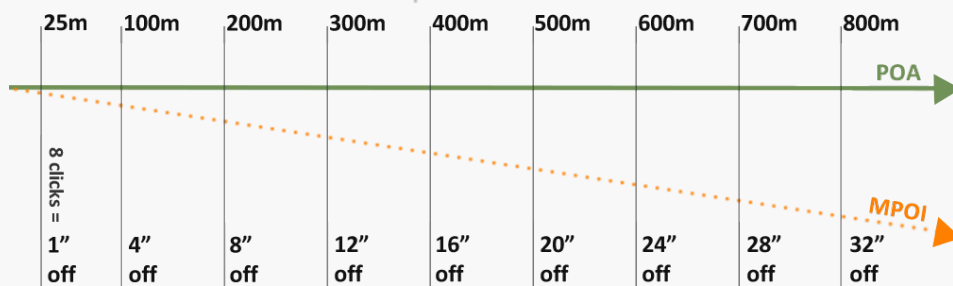


Zero is the glue that holds the SWEAT elements together. It's about getting ALL of the components of SWEAT calibrated to each other. If any one of the components changes or moves, zero is lost... AND WE MISS.

HOW MUCH DOES IT REALLY MATTER?

So, what's the big deal? My shooters are just tweaking zero, not making major adjustments...

If you're reading this you probably know better. A 'minor' one inch zero adjustment on the 25m zero range means that, if the shooter had been called on to use the rifle before the adjustment, a perfect sight picture and flawless fundamentals would have yielded peripheral hits (that may not stop the threat) on a fully-exposed, squared-up bad guy... *inside of 100m*. Bad guys using cover or further away would have been missed entirely. Maybe this is why the M4 'isn't lethal enough'?



If we hadn't made that 'minor' adjustment to zero.

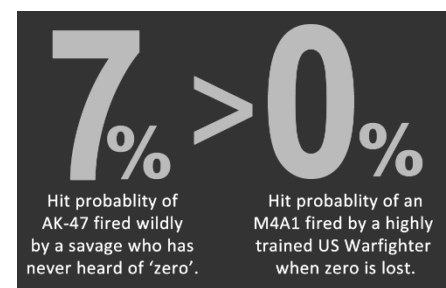


An otherwise perfectly executed shot group at 150m.

THE PRECISION PARADOX

The more we improve the components of SWEAT, the more dangerous loss of zero becomes. In fact, it reverses the overmatch that our superior equipment and training provide us... and puts us at a distinct disadvantage.

Under stress, a skilled shooter with good equipment will place the dot on the threat and deliver a relatively tight shot group. He's done so enough in training (after adjusting zero) that he *expects* hits. BUT... if zero is off, the result will be *very consistent* misses. A terrorist with an AK, by contrast, may spray rounds in a 24 MOA cone (so zero is not important for him)... but the law of probability says that one of those sprayed rounds will eventually find its mark. Meanwhile, we're still shooting our tight group of misses. When our zero is off, even a little, the precision of our weapon systems works against us.



The Precision Paradox.

So, what can we do about this hidden problem? First, unit leaders and firearms instructors need to start taking note every time shooters make zero adjustments. This doesn't solve the problem, but it will show us whether or not the problem exists within our organization and, if it does, it will help us understand the extent of the problem. We can then go through a troubleshooting process to attempt to determine WHY zero was lost. Was it the sight? The mount? Or did the shooter change their position on the rifle? Is the problem isolated, or systemic?

A SOLUTION THAT'S SIMPLE, INEXPENSIVE, AND PROVEN

Understanding the problem is one thing. Solving it, though, requires constant monitoring of the SWEAT elements to ensure that each is properly calibrated. As we've discussed, we're currently losing zero between range trips. A possible solution would be to increase the frequency of trips to the range for zero confirmation until adjustments are no longer being made. That's not practical (or even attainable) for most organizations or shooters, though. And it also doesn't address the issue of equipment failure prior to a patrol or operation, possibly resulting from the bumps or knocks inherent to the combat environment. A more practical and complete solution – really the only solution – is the Collimator.



There are complex interactions between each SWEAT term. Major advancements will only come from exploiting these interactions.

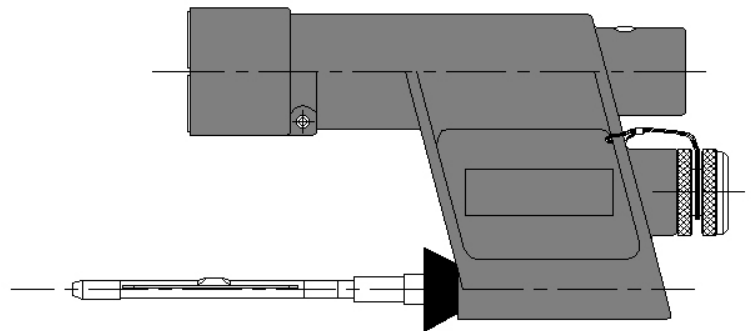


- Small Arms Ammunition Configuration (SAAC) Study

The Infantry Weapon Collimator is a precision optical device that allows shooters to check zero quickly and accurately in any environment. Practically speaking, it does three things when fielded to the proper level (squad or fire team for MIL, precinct/ zone/ department/ SWAT for LE) and supported by doctrine and/ or SOPs:

First, it allows for zero confirmation during pre-mission checks. We can identify and correct acute equipment issues like loose mounts or optics that are 'walking'. We can also: accurately adjust zero for the altitude where we're operating; zero replacement rifles; or change and zero sights to meet mission requirements.

Second, it allows for frequent (routine) zero checks without making trips to the range or expending ammunition. This will help shooters better understand the complex interactions between SWEAT elements- so there is tremendous training value in this quick, simple process. Also, since the collimator provides immediate, precise, visual feedback, it helps shooters establish and ingrain a consistent position on the rifle.



Finally, the collimator saves a tremendous amount of time, ammunition, and other resources on the zero range. It saves enough money, in fact, to quickly pay for itself. And the time we save can be shifted to more useful, combat marksmanship-oriented instruction and drills so that we build better combat shooters.

Frequent zero checks with the collimator help shooters establish and ingrain a consistent position on the rifle.

PURCHASING INFORMATION

The Infantry Weapon Collimator is a COTS item. It has been fielded by the US Marine Corps, and is use by US and other military forces and law enforcement agencies for well over a decade. It's accuracy, repeatability, ease-of-use, and durability have been repeatedly confirmed. It is completely passive (no laser emissions), so it does not require laser safety review or laser safety officers.

Infantry Weapon Collimator (USMC)

NSN: 4931-01-633-3390

Model: 4600-0047

Weapons: M4/ M16A4/ M27

Sights: Iron, ACOG, CCO, NV (I²)

Zero Distance: 100m

Sniper Weapon Collimator (US Army)

NSN: 1240-01-622-0044

Model: 4600-0048

Weapons: M110/ M2010/ other 7.62mm Sniper

Sights: Magnified optics

Zero Distance: 100m

Custom variations are available upon request.

Collimators are available for most military and law enforcement weapons, including rifles, machine guns, grenade launchers, and even the M3 Carl Gustaf. Standard collimators work with iron sight, optics, and image intensified NV sights. There are also models for thermal weapons sights (TWS) and IR lasers.

I personally love the collimator. I was in charge of a rifle range and used them daily for confirming zeroes when a shooter said they were having issues. At the infantryman level, we used them as a quick reference before, during and after patrolling. Weapons and optics get knocked around a lot on combat patrols and this single item offered the confidence needed when we were worried about returning fire.

- USMC Division Gunner

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SUMMARY

- + We have a problem that gets more and more critical as the precision of our weapon systems improve. Lethality and combat effectiveness are badly degraded when zero is lost... and most shooters are losing zero regularly. The problem is hidden by our training and range procedures.
- + The collimator solves the problem by allowing shooters to quickly and accurately confirm zero in any environment, and by helping shooters build a consistent position on the weapon. It is a proven, COTS solution that can be implemented at a cost of less than \$1,500 each.
- + The cost of the collimator will be recovered (and net gains realized) by savings in ammunition and range time

RIFLE ZERO

by John Farnam | 7 Mar 2016

From a friend with a big department:

“Not long ago, I supervised a standoff situation where our officers were placed in positions to engage a dangerous suspect. Several officers were armed with M4s. Bystanders were thickly mixed-in! Range to suspect was between 10 and 30m.

Happily, our situation was resolved without our officers having to shoot.

As a precaution, I asked all officers to report, with their red-dot-equipped M4s, to the range the following week. I set-up a situation with paper targets that exactly duplicated the situation with which were confronted a week earlier.

Given generous time, stable, braced firing positions, and stationary targets, not one of our officers was able to deliver required shots, even after several attempts!

When asked about sight settings and zeros, most officers were not prepared to answer definitively. Some didn't even understand the question!

An examination of the M4s present revealed that, in most cases, the red dot and the back-up iron sights did not agree. Some were not even close!

Through rigorous training with much range time, we are aggressively addressing these issues.

Non-zeroed rifles in police service are a disaster, waiting to happen. I'm thankful disaster didn't happen to us, ... through no fault of our own!

Comment:

The foregoing gaffes are all too common! Police departments have rushed military rifles into service, often without necessary accouterments, nor necessary training. Some officers understand how to set-up and run these weapons, but many don't.

Rifles can't be “shared.” Sight settings are individual, and each officer must have absolute confidence in his, confirmed regularly on the range. Otherwise, the rifle is little more than a big and bulky pistol, with scant chance of ever positively contributing to any tactical situation.

/John

SOURCE: <http://defense-training.com/2016/rifle-zero/>