

Results of a 3 year Evaluation of  
Slide Mounted Mini-RDS on Duty and  
Defensive Carry Pistols  
*(updated with 2 years of follow-up information)*



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## High Visibility Pistol Sights

There has recently been quite a bit of interest in improved sighting options for duty and defensive handguns. Vision issues, including middle-aged presbyopia can compromise the ability to see the front sight on traditional sighting systems. A wider rear sight notch can be beneficial. Several tricks to improve front sight visibility include the use of bright reflective tape (<http://pistol-training.com/articles/the-johnno-diy-high-visibility-front-sight>), paint the front sight a bright color, or install a bright fiber optic front sight insert.



Another option is to go with a high visibility tritium front sight like the excellent Trijicon HD or Ameriglo Hackathorn, the extreme version of this being the XS 24/7 Big Dot sight system and Tru Glo sights--both of which have significant issues.



## Frame Mounted RDS

A different route to provide higher visibility sighting is to use a small red dot sight (RDS). RDS sights have been used on pistols for many years, however, most handgun RDS use has been on highly specialized, expensive, open class competition pistols. In this application, the RDS is frame mounted and the pistols are rather large, bulky, and do not fit into typical duty holster designs. As result, current frame mounted RDS pistols are not typically suited for duty use. This is



unfortunate, as a frame mounted RDS is nearly an ideal sighting system, since the dot remains stationary while the slide is cycling, precluding the need to track the dot/sight.



After the conclusion of the original 3 year trial, the ALG 6 second RDS frame mount for Glock pistols, as shown to the left, was produced for a prominent military SOF unit for use during linear/tubular assaults. The name, "6-Second Mount", comes from a description used by one of the unit operators: *"The fight lasts 6 seconds...Either they're dead or you're dead, and aggression saves the day."* Holster selection is extremely limited with the ALG mount and no LE duty holsters are available.

## **Slide Mounted RDS**

Conversely, mounting an RDS on the slide is a much simpler option than a frame mounted RDS. One of the first individuals to report on slide mounted RDS for duty/defensive use was former Marine Corps officer Kelly McCann. Retired Santa Clara PD SWAT officer and gunsmith Don Lazzarini has used a mini-RDS on his handguns for over a decade, as has noted polymer pistol-smith and LE SWAT officer David Bowie ([www.bowietacticalconcepts.com](http://www.bowietacticalconcepts.com)) in Ohio. In addition, some very capable military SOF personnel have also used this modification. Some of the more common electronic sights used in this role include the J-Point, Dr. Optic, ITI Mini-RDS, Leupold DeltaPoint, Trijicon RMR, and the micro-Aimpoint (*H1/T1*). The downside of a slide mounted optic is the need to track the red dot as the slide cycles from shot to shot and the very high forces placed on the optic as the slide violently reciprocates.

Since 2010, several Northern California LE agencies have been experimenting with small slide mounted RDS on duty handguns. The initial results are quite promising. There are several options to mount a small RDS on duty and defensive handguns. The easiest method is to drift out the standard rear sight and simply add a dove-tail adapter allowing the RDS to bolt on to the side, as shown in the photo to the right which depicts the first RDS test pistol shot at SJPD.



Unfortunately, the use of dove-tail adaptors to slide mount RDS led to the discovery of several significant problems, including that the optic was too high above the bore—thus resulting in difficulty picking up the dot on presentation of the pistol and inability to properly co-witness the RDS with back-up iron sights (BIS). In addition, some of the dove-tail adaptors were quite fragile and suffered from pre-mature failure.

Fortunately, there are better options to slide mount RDS. The lowest profile method and the one that fosters the most natural shooting position is to permanently mil the slide and directly screw the RDS to the slide. This allows the RDS to sit lower, allowing a more natural shooting position, faster more consistent dot acquisition on pistol presentation, and a rough co-witness of the BIS with the RDS red dot when using taller iron sights, as used with suppressors. The aforementioned David Bowie in Ohio, Mark Housel at L&M Precision Gunworks, LLC in North Carolina ([www.landmprecisiongunworks.com](http://www.landmprecisiongunworks.com)), and Doug Holloway at American Tool & Engraving in MI ([www.ateiguns.com](http://www.ateiguns.com)) have done innovative work mounting RDS's on a wide variety of pistols. Recently, Robar in Phoenix, AZ ([www.robarguns.com](http://www.robarguns.com)) has begun performing quality RDS installations on pistols.

Below are two duty pistols with RDS milled directly into the slides.



Since the conclusion of the initial 3 year test period, multiple vendors, including Zev Technologies ([www.zevtechnologies.com](http://www.zevtechnologies.com)), now offer replacement after market slides that are specifically cut for RDS installation.

The Unity Tactical ATOM mount is currently the most versatile option available for attaching an RDS to a pistol slide. A complete pre-milled slide can be purchased from Unity, as shown on the pistol to the left below or the ATOM mount can be milled into an end-user's existing OEM slide as shown on the pistol below to the right. The significant advantage of the Unity ATOM mount is the ability to switch optics easily and quickly using a wide variety of adaptor plates available for different optics. The ATOM mount does require placing the BIS in front of the RDS, but this is not a significant issue.



With the increasing popularity of slide mounted RDS, several firearms manufacturers have begun to offer pistol models with RDS ready slides directly from the factory, including the FN Tactical, S&W M&P CORE, and Glock MOS models as shown below.



### **Back-up Sighting Systems**

It is critical for a duty/CCW pistol to have a back-up sighting capability, such as BIS or a laser. Typically with a slide mounted RDS, a taller “suppressor” style BIS is required. With BIS, there is never a worry about finding the red dot, even in awkward shooting positions—just line up the iron sights as normal and the red dot is there. When first learning to use the RDS, there are some perceived advantages to having the rear BIS behind the RDS (*ie. RDS between the rear BIS and ejection port*) as it is easy to quickly pick up the irons in the usual manner, resulting in the co-witnessed red dot ending up exactly where it needs to be, so no "hunting" to find the dot occurs. In addition, painting the front sight a bright yellow or lime green aids in quickly finding the front sight and rapidly acquiring the dot. Following numerous repetitions in presenting the RDS equipped pistol, finding the dot becomes much less of an issue and BIS location becomes a relatively moot point. Placing the RDS at the rear edge of the slide with the rear BIS in front of it (*ie. BIS between the RDS and ejection port*) has its own merits--the view of the RDS is uncluttered, access to rear controls is enabled (*especially important on the Leupold Deltapoint and ITI MRDS*), less holster modifications may be necessary, and the front edge of the optic is slightly protected by the BIS.

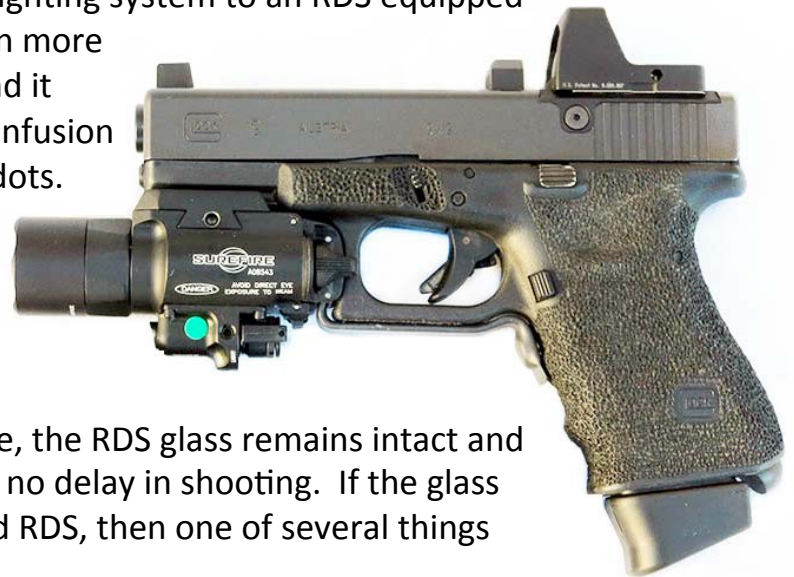
Initially all the pistols with slide mounted RDS were equipped with basic black BIS, as that was all that was available in 2010. As noted, some officers painted their front sights yellow or lime-green. More recently, suppressor height BIS with tritium inserts have become available. While some shooters complain that having BIS with tritium inserts is distracting, many end-users report they prefer having a green front sight tritium insert and dim yellow rear inserts, as it aids them in rapidly finding the RDS dot, especially in darkness.

Note that a co-witnessed BIS allows a solid visual reference to ensure the red dot zero has not shifted. Be sure to use witness marks on all BIS, as well as RDS adjustment dials to easily identify if anything has been shifted out of normal position.



Lasers are another viable back up sighting system—examples include the Crimson Trace Lasergrips (*as shown on the pistol to the left*), the Crimson Trace Rail Master, as well as laser-light combinations like the Sure Fire X400 (*as shown on the pistol*

*below*). A green laser is preferable to a red one when using a laser as a back-up sighting system to an RDS equipped pistol, as it is visible in more lighting conditions and it prevents potential confusion over seeing two red dots.



If an RDS has a simple electronics failure, the RDS glass remains intact and transitioning to a BIS is immediate with no delay in shooting. If the glass cracks or spiderwebs in a slide mounted RDS, then one of several things happens:

- if the dot is still be visible, the sight can continue to be used like an old OEG.
- if the dot stops functioning, but the BIS are still visible through the glass, then the target can be engaged using the BIS.
- if the dot is not working and the BIS is not visible through the cracked optic, then the optic either needs to be removed or the broken glass punched out using a knife or multi-tool in order to effectively use the slide mounted BIS.
- if a laser is mounted on the pistol, then the target can immediately be engaged in the event of a dot failure, irrespective of the glass condition of the RDS.

## Which RDS for use on Pistols

Several small, mini-RDS are available for slide mounted pistol use.

Docter Optics were the original RDS used. The metal frame and glass proved to be fragile and zeroing the sights was somewhat difficult. Customer support for handling these issues was less than ideal.



The ITI MRDS offers some nice features including top loading battery and adjustable intensity, but because the base is thicker it is hard to properly install BIS compared with the lower profile bases on the RMR and Deltapoint. In addition, the non-standard battery type is not ideal. It has rear controls, so BIS must be in front of the optic. The MRDS has proven relatively fragile when used on pistol slides.

The Deltapoint glass is clear and distortion free. The Deltapoint frame around the glass is low profile resulting in minimal field of view obstruction. The sight adjustments on the Deltapoint can be locked into place--possibly a good thing, unless the appropriate mini torx driver is not available. The Deltapoint metal housing and glass is more fragile than the RMR or micro-Aimpoint. Rear adjustment screws make it easier to mount the BIS in front of the optic. The Deltapoint reticle nearly washes out in certain lighting conditions. Battery life is shorter than several other optics, including the RMR and micro-Aimpoint.



Since the conclusion of the original 3 year study, an improved Deltapoint Pro has been produced for a military contract. It offers a top loading battery, click adjustments, and an armored housing. It is waterproof to a 33 foot depth. Unfortunately these are not yet readily available to civilian agencies or individuals, so long term testing has not yet been possible.



The dot on the self-illuminating Trijicon RMR models, as shown to the left, has a tendency to wash out in some lighting conditions, so a decision was made to only use the battery powered RMR versions in order to ensure adequate dot brightness in all lighting conditions.

The RMR glass has more distortion and a smaller field of view than the Deltapoint, although this does not turn out to be significant in actual use. The RMR red dots are ideal in shape and clarity. While the non-adjustable RMR dots are brighter than the Deltapoint reticle, they can still nearly wash out in certain lighting conditions. The RMR metal chassis is more robust and less prone to structural failure than the Deltapoint, Dr. Optic, or ITI MRDS. Battery life has proven longer on the RMR's than all the other mini-RDS except the micro-Aimpoints. Click adjustments simplify zeroing RMR's.



The adjustable intensity RMR-A, as shown to the left, allows the dot to be turned on and off, allowing practice with the BIS. Being able to quickly adjust the brightness is useful as it eliminates dot wash out. Unfortunately, the first generation of RMR-A's exhibited premature electronic failures when used on pistol slides. Trijicon corrected this situation and current versions appear to be functioning adequately.

The advent of the Unity Tactical ATOM mount, makes the micro-Aimpoint an effective option for use on pistol slides. For personnel operating in adverse conditions such as swimming, surf zone, dusty environments, and in precipitation like snow/sleet/heavy rain, etc... that will kill typical open top mini-RDS, the micro-Aimpoint is the most viable option. The micro-Aimpoint is the easiest slide mounted RDS to zero. The major downside is the lack of duty holsters for pistols using the micro-Aimpoint. Micro-Aimpoints have less "field-of-view issues" than the RMR's, have a brighter dot, and are more robust. Conversely, RMR's have a much less distorted and crisper dot, are lower profile, and fit more holsters.





## Holsters for RDS Pistols

Holsters for pistols with a slide mounted RDS require a bit of thought. Not only does the holster have to work with the RDS, it also must make accommodation for the taller BIS. Early in the RDS trial, Safariland SLS 6004 and 6280 duty holsters were modified using a Dremel tool to fit open top mini-RDS's on Glocks, M&P's, and 1911's, as noted in the photo to the right. These modifications do NOT allow pistols with the larger micro-Aimpoints to fit in the SLS holsters. Safariland later introduced the 6354DO ALS duty holsters for a military customer; these superb holsters are only produced for Glocks mounting a mini-RDS like the Dr. Optic, RMR, or Deltapoint as shown to the left.



Safariland ALS 6354DO

Recently, Safariland has introduced the ALS AP2, a duty holster for LE very similar to the 6454DO. The AP2 is available for Glocks and M&P's in 9mm/.40, as shown to the right. Bladeteq also makes a duty holster for the Glock with RMR.



Safariland ALS AP2

For off-duty and concealed use, many holsters are available that work with slide mounted RDS. For RMR equipped pistols, the Fricke Seraphim and JM Custom for AIWB & IWB, along with the Fricke Michael for OWB, have proven superb. Holsters like the

Raven Phantom are also fantastic and work with all the mini-RDS options, including the micro-Aimpoint, although they may require a bit of modification to the front edges of the shirt guard and area over the ejection port. The Safailand 5197, Comp Tac, and Alessi DOJ- open port OWB holsters work with all slide mounted RDS.



Fricke Michael



Comp Tac



RCS Phantom



Modified Safariland SLS 6004/6280

## **Lessons Learned After 5 Years of RDS Use On Service Pistols**

For shooters who have difficulty visualizing standard iron sights, a pistol RDS definitely improves hit probability, especially at longer ranges. The use of RDS on all weapon systems (*handgun, SMG/PDW, shotgun, rifle*) creates a common sight picture across platforms. The RDS allows the shooter to remain fully focused on the threat and not have to transition back to the front sight prior to firing—this is an incredibly SIGNIFICANT factor in the real world!

Under 12-15 yards, conventional iron sights are generally faster for most shooters; beyond that, a handgun with an RDS is tough to beat. A shooter is doing quite well, if when using a slide mounted RDS equipped handgun, they can EQUAL conventional iron sight performance during rapid fire shooting from around 12 yards and closer. The real benefits of a pistol with slide mounted RDS occurs at longer ranges, with movement of the shooter or target, and in low light. Shooting at moving targets and when shooting on the move is dramatically easier with an RDS. When engaging a hostile target in a larger open area such as a school, shopping mall, airport, etc... that requires extensive movement and long shots, an RDS offers a substantial advantage over conventional iron sights based on numerous timed and scored practice scenarios. An RDS also offers advantages in reduced light shooting, as an RDS equipped pistol completely eclipses conventional tritium sights for low light shooting and is unsurpassed when using night vision.

Initially the larger 6-8 MOA size red dots were preferred, however, with increased experience using handgun RDS, the smaller 2-4 MOA dot size became more appealing for many shooters, especially for longer range targets. The ability to easily turn the dot off to allow practice with the BIS was appreciated. Likewise having the option to switch from auto intensity to manually adjusting dot brightness to optimize it for different lighting conditions was preferred. Much like with an AR15, awareness of the dot offset from the bore must be maintained at closer ranges under 10 yards or so. A 25 yard zero was used on all handgun RDS, allowing hits from 0-100 yards. Many shooters noted that it took several thousand presentations before they became fully comfortable with rapid target acquisition using the RDS. Almost all shooters quickly achieved large gains in their accuracy scores at 25 yards and farther.



Several older officers suffering from middle aged presbyopia had been plagued with steadily diminishing qualification scores over the past several years. After adopting an RDS equipped pistol they noticed a dramatic increase in their scores—some shooting better than they had 25 years earlier.

## RMR Evaluation

After evaluating the available mini-RDS options, the Trijicon RMR was selected as the primary optic for testing. In early 2010, six RMR02 8MOA sights with 4 digit SN's were installed on the milled slides of four Glock 9mm's and 2 M&P45's. These six original RMR02's each fired in excess of 10,000 rounds with no RDS failures over 3 years. One battery was changed after 33 months of continuous use, one battery was changed after 36 months of use, and



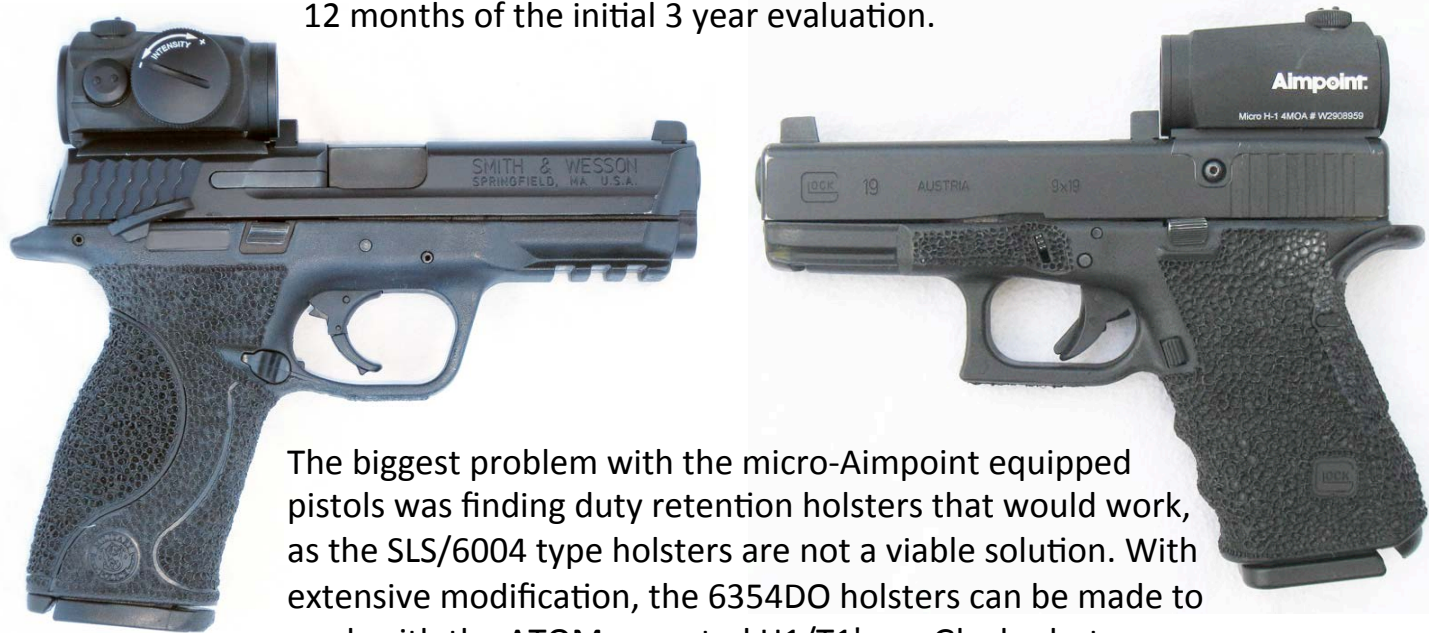
three batteries were still working at 39 months of use. One of these initial RMR02's broke after 5 years of service and about 15,000 rounds and was quickly replaced by Trijicon. The other five original RMR02's are still in service, although all are now on their second battery. These RMR02's were carried daily, including use in rain, snow, sub-zero temperatures, and 100 degree heat. *Adding a small amount of electrical insulating tape between the battery and the slide to protect the battery contacts on the RMR from touching the slide metal is prudent to prevent premature battery failure.* The use of the Trijicon RM63 mount sealing plate is also wise.

In early 2011, twelve adjustable intensity RMR-A's (*RMR06 & RMR07*) were mounted on 9 mm Glocks and M&P45's and added to the testing. Six additional RMR's were also mounted on the slides of various other pistol types. All 18 of this second group of RMR's had 5 digit SN's. The adjustment pads on the early RMR-A's were very sensitive to even slight touch. Several individuals with RMR-A's on duty pistols found that the right side dimmer switch would frequently get hit while the pistol was in the holster (*modified 6280's/6004's, RCS Phantoms, Comp Tac Belt Holsters*) causing the red dot to be too dim. This occurred just sitting in cars bumping against the seat belt buckle, getting jostled when going through shoot houses, and with general pistol manipulations. The advent of holsters, like the Fricke Michael and the Safariland 6354DO, that protect the RDS seems to have nearly eliminated this issue.

Several of this second group of RMR-A's had trouble holding windage--typically moving 8-10 clicks clockwise over a few hundred rounds of shooting. Painting witness marks allowed a quick visual indicator to identify if this occurred. Nail polish was used by some shooters to lock the windage screw down. Trijicon rapidly fixed these problems. More seriously, when mounted on handgun slides, the second group of RMR-A's experienced frequent premature electronic failure. Unlike the original RMR02's, NONE of the second group of RMR-A's lasted beyond 5000 rounds and quite a few failed under 2000 rounds. Trijicon immediately repaired each failed optic. After the initial 3 year study ended, Trijicon eventually identified the failure points and instituted engineering changes to increase robustness and durability of the RMR-A's

## **Micro-Aimpoint Evaluation**

As a result of the repeated RMR-A electronic failures and the fortuitous availability of the Unity Tactical ATOM mount, several micro-Aimpoints (H1/T1) were added to the final 12 months of the initial 3 year evaluation.



The biggest problem with the micro-Aimpoint equipped pistols was finding duty retention holsters that would work, as the SLS/6004 type holsters are not a viable solution. With extensive modification, the 6354DO holsters can be made to work with the ATOM mounted H1/T1's on Glocks, but

this is not practical for large scale issue. When using a micro-Aimpoint H1, most users set the brightness dial to "9" and left it there. Every once in a while the right side adjustment dial was accidentally altered, usually to a brighter setting, when the side wheel was bumped. One micro-Aimpoint right side brightness dial was broken when it sustained a hard blow during training—the dot did not turn off, but the brightness could no longer be adjusted.

## **Bottom-Line After 3 Years**

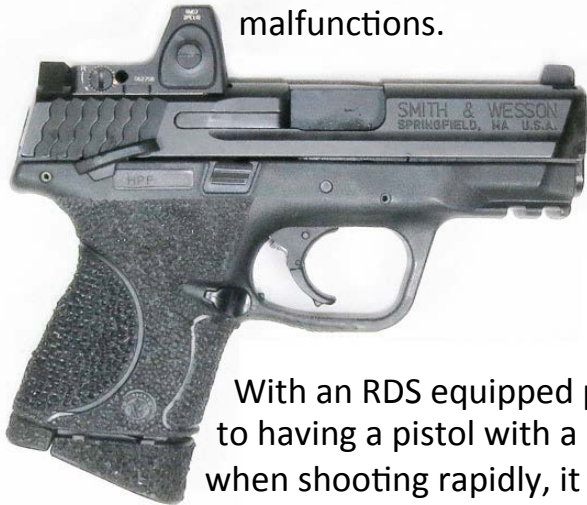
**The preferred RDS for pistol slide use over the 3 year test was the original Trijicon 8 MOA RMR02.** Unfortunately this RMR went out of production. The micro-Aimpoints also worked well, but the lack of duty holsters, and their slightly larger bulk limited their appeal. **Most shooters wished the second group of RMR-A's had been more durable and reliable, as this optic had many features desired by end-users.**

- For those with vision issues, an RDS equipped handgun can be the answer.
- For certain specific operational requirements and mission sets, a handgun mounted RDS is an excellent tool, particularly for long range engagements and when using NV.
- The ability to remain fully focused on the threat and not have to transition back to the front sight prior to shooting is a key advantage of a pistol with RDS for LE use.
- Slide mounted, reciprocating RDS are harder to shoot and less durable than stationary, frame mounted optics.

*If you don't need an RDS, you don't have to use one; on the other hand, those who do use them, find them quite helpful in many respects.*

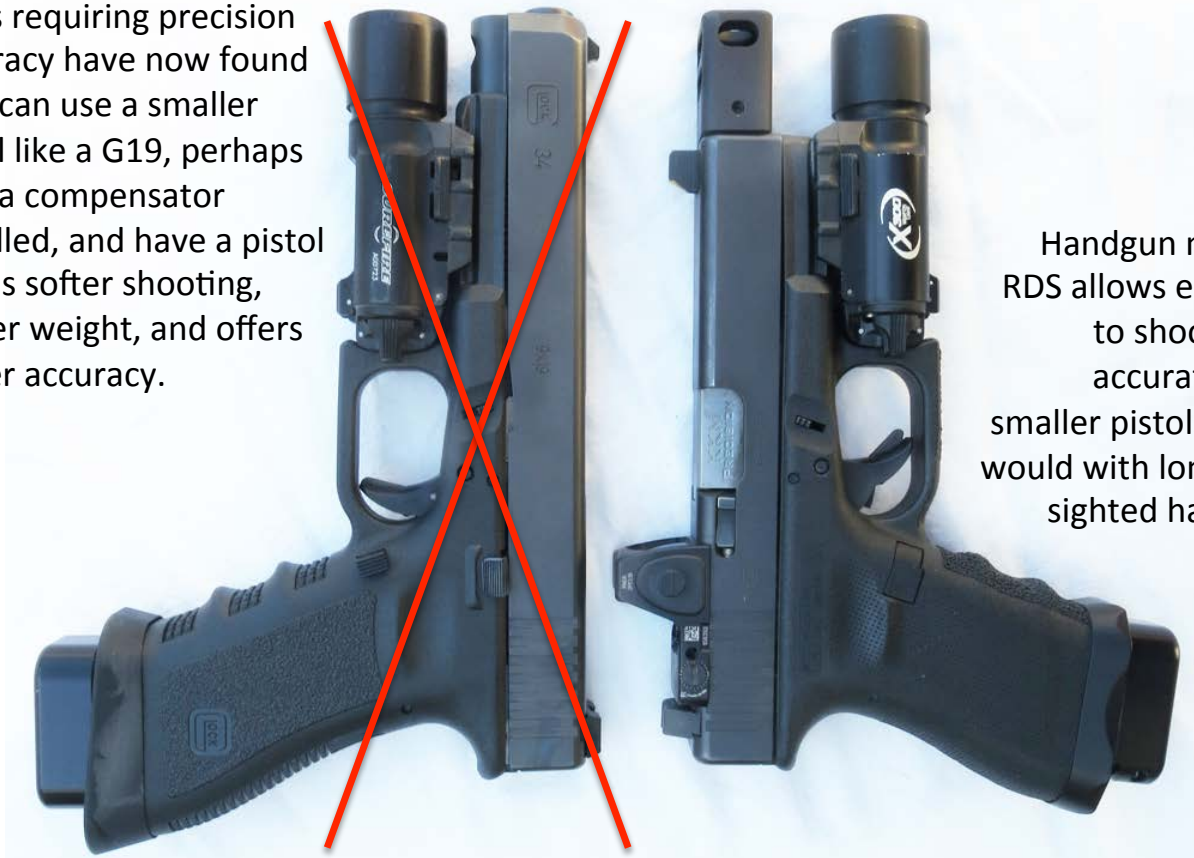
## **Additional RDS Thoughts After Five Years**

In late 2013, after the conclusion of the initial 3 year test, Trijicon finally released an improved, more robust version of the RMR-A. With the advent of reliable RMR-A's, a decision was made to standardize on the 3.25 MOA RMR06, as almost all end-users preferred the smaller adjustable intensity dot. An additional 12 RMR06's (*all with 6 digit SN's*) were purchased in late 2013 and put into service on 9 mm Glocks and M&P9's; those sights have functioned for the past 18 months with no problems and without any battery changes. One of these new test pistols, a 3<sup>rd</sup> Gen Glock 19 with a 6 digit SN RMR06 in a Unity ATOM mount has fired excess of 10,000 rounds without any optic issues or other malfunctions.



After seeing benefits of RDS use on duty pistols, a number of officers had sub-compact back-up (BUG) and compact off-duty pistols equipped with RDS's (*primarily S&W Shield, G26, S&W M&P9c, and G19*). Interestingly, many felt the compact pistols with shorter slides were actually easier to shoot accurately and rapidly with the RDS.

With an RDS equipped pistol, there is no "sight radius", so there is no benefit to having a pistol with a longer slide. In addition, many end-users report that when shooting rapidly, it is easier to track the RDS dot shot-to-shot when mounted on a shorter slide. As a result, many shooters who previously used long slide, iron sighted pistols like the G34/G35 to benefit from the enhanced sight radius on demanding shots requiring precision accuracy have now found they can use a smaller pistol like a G19, perhaps with a compensator installed, and have a pistol that is softer shooting, lighter weight, and offers better accuracy.



Handgun mounted RDS allows end-users to shoot just as accurately with smaller pistols as they would with longer iron sighted handguns.



Compensated G19 fits in holsters for G34/G35 as shown to the right.



Safariland ALS 6354DO

### Updated Handgun RDS status after 5 Years

After 5 years of use, the preferred RDS for use on pistol slides is currently the Trijicon 3.25 MOA RMR06. The new 2.5 MOA Leupold Deltapoint Pro warrants significant testing once it becomes readily available. The use of mounts like the ATOM, CORE, MOS, etc... that allow easy swapping of optics encourages rapid upgrades as RDS technology improves. Any organization that procures handguns would be wise to ensure that all new contracts specify RDS capable pistols. Almost all new handgun requirements for SOF units, as well as for savvy LE agencies require RDS capable pistols.

Sig has reported that the new Sig P320 pistols will be available from the factory with RDS capability as an option.



Mounting RDS on inert training pistols like the SIRT can speed-up initial acclimatization to RDS equipped pistols and help new end-users more rapidly develop proficiency.

