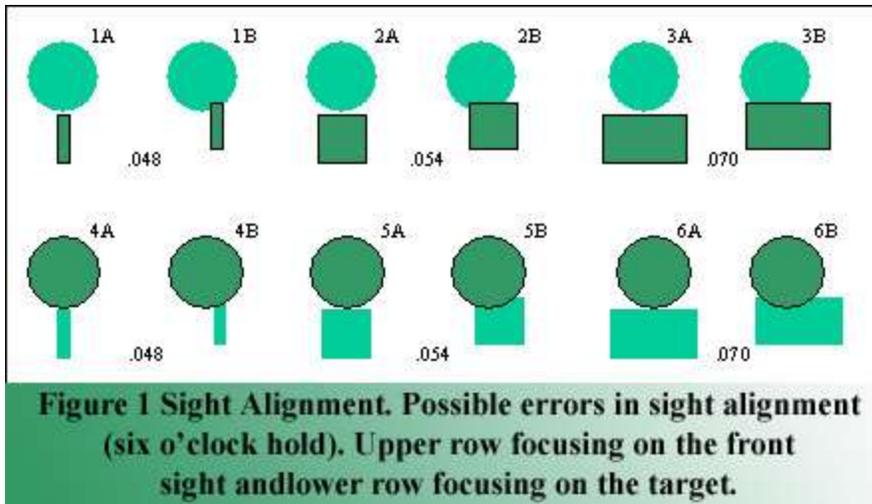


BULL GAZING

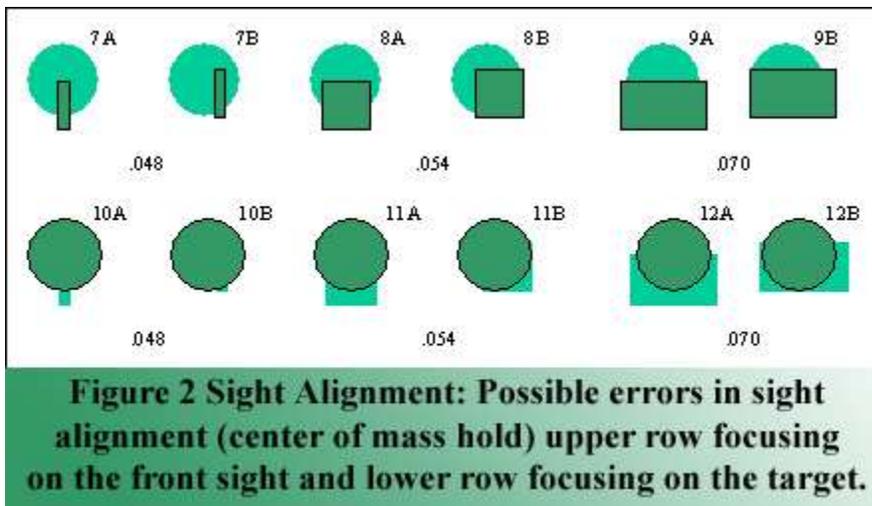
by L. E. Weidell with Derrick Martin

In conversations with non-shooters about High Power shooting they are amazed that we compete with a Service Rifle using only iron sights. They are even more surprised at the fact we are shooting at targets from 200 to 600 yards and at times out to 1000 yards. Several say that they can't even see that far. The challenge we have of course is keeping our shoots in the 10 ring. Wind, natural point of aim, rifle, and ammunition are just some of the explanations we use for shots outside of the desired location. This article is a discussion of sight alignment that includes the phenomenon known as bull gazing, vision problems, and corrective techniques. The following techniques have been practiced and discussed in great detail by High Master to Marksman competitors. As always a technique is a method to accomplish a task. A technique may or may not work for you.

When I first started to develop the idea for writing about sighting problems I picked the issue of bull gazing. The term bull gazing defines the prevalence of having the target in focus and not the front sight. When focusing on the bull it is difficult to tell where your front sight is in relation to the target. One symptom of bull gazing is vertical displacement of shots. When asked the shooter will ALWAYS say that he was focused on the sight, when in reality he saw the front sight, but was focusing somewhere between the sight and target. Your alignment of the front sight and the bull is not exact as it should be. In Figure 1, the targets show a six o'clock hold. The B targets have an equal offset to the right and elevation changes. Not all shots are vertical. Some shots may go high left or right as the shooter tracks the edge of the black towards the 8 o'clock and 4 o'clock positions. This can be more pronounced with a narrow front sight, as it is more difficult to judge offsets from center (1B). The examples (4B, 5B and 6B) attempt to demonstrate the result of focusing on the target and not the front sight. When the target is the focus of your attention the location of the front sight is uncertain.



In Figure 2 the Targets show a center of mass hold. The B Targets also have an equal offset to the right. The examples (10B, 11B and 12B) attempt to demonstrate the result of focusing on the target and not the front sight



There are several reasons why someone doesn't focus on the front sight. Some of the young shooters I have trained didn't know that the eye can only focus on one object and they tend to focus on the target. Their young eyes can switch back and forth so quick that they aren't aware of that limitation and are just focusing on the wrong object. Then there are the others like me who due to aging no longer can focus on anything close without some assistance. The problem is exacerbated when shooting an AR with its shorter sight radius. Just remember, you don't have to actually focus on the target, it can happen if you are focused between the target and sight.

Correcting the problem varies from simple to complex. If you haven't already, you need to develop the habit of focusing on the front sight. Using a wider front sight can help. The wider front sight is easier to focus on as well as perceive left or right angular errors. Blackening the front sight helps. A shiny object

is harder to focus on and lack of a uniform sight picture makes it harder to perceive errors in sight alignment. A technique is marking the sight using a sharp pencil and making a small line after blackening the sight. Some use a small dot of paint. The concept is to draw your attention to the sight. I know of one High Master that intentionally focuses on the base of the front sight post and actually aims with the peripheral vision outside of his focused aiming point. It was the only way he found to avoid elevation shots caused by focusing toward the target. Remember that a technique may or may not work for you. Once you have developed the habit of looking at the sight you shouldn't need to mark it.

If you have a hard time reading print you may need some additional help. As you reach forty to fifty years the eye loses accommodation. Accommodation is the eye's ability to focus on objects at various distances. The tiny hair like muscles in the eye bends the lens to focus on objects and lose their capability to work the lens and focus as you age. The result is you can no longer change focus on the front sight and the target quickly. Presbyopia also becomes a factor as the lens loses flexibility and can no longer focus on things closer to the eye. This is the same condition where your arms become too short. These factors are not as noticeable in brighter light, as your pupil closes down and tends to sharpen the image. As our eyes age and lose the ability to focus you have to focus on the sight-base, as larger items are easier to focus on. Shooters also use a small rear aperture to sharpen the image. This is similar to squinting or a high f-stop on your camera to increase the depth of field. This works with limitations. A small aperture (0.036 - 0.042) may not allow sufficient light to be focused on the eye to form a good image of the sight and target. You may start seeing dirt or spider webs in the aperture that you can't remove. It's not dirt it is insufficient light. When this occurs you need to make the hole bigger (0.046 - 0.054). To minimize the problem of insufficient light I use an "L" sight with different size apertures. I use the smallest one for most conditions but in the case where I am on the last relay and it is getting late in the afternoon I have the ability to flip the sight to the larger aperture. It even has an offset so when it rotates on the screw the zero doesn't change.



Figure 3: "L" Sight with different size apertures

There is an old saying "light up sights up" and "light down sights down." As the light changes on the target your ability to obtain a good sight picture changes. As you lose light in late afternoon, or if the sun goes behind a cloud, you can have a real problem seeing the target as the contrast between the target and sight decreases. With bright light on the target the contrast is high and it is easier to discriminate the front sight and the target. With the loss of contrast your front sight tends to go farther into the bull and your shots go high. This could be as much as a minute of angle.



Figure 4: Subconjunctival hemorrhage - Red Eye

Eye fatigue and muscle strain cause some of the problems. The muscles controlling the eye are as fine as hair. If the only exercise that your eye muscles receive are staring at the sights weekly, bi-weekly, or monthly it could be contributing. Exercise not only builds strength but also increases blood flow. Try focusing on a close object for three to five seconds then a distant object for the same amount of time and repeat for five minutes. It sounds easy

but it gets pretty tiring and the longer you do it the harder you have to concentrate. This means that you may do well at 300 yards but by the time you get back to 600 yards the stresses of the day have tired you out and your eye is suffering as well. Perhaps that is why the second string at 600 is so much harder. The strain you are put on the eye may even feel like you have sand in your eye after you get towards the end of the string or even after the string. I have on occasion broken some blood vessels (subconjunctival hemorrhage) in my own eye while shooting. It looks nasty but has no lasting effects. Without good blood flow hypoxia sets in and the eyes are the first to

suffer the effects of hypoxia. As you stare at the sights trying to make it perfect your blood flow slows and you use up the oxygen in your blood stream in about 3-5 seconds. Ever notice how the sights at first look nice and sharp and then start to fuzz out? Observe the High Masters and watch how fast they get the shot off after they get on the sights and the time it takes to complete the 20 shot string. When the conditions don't permit shooting they come off of the sights.

Another physiological effect is allergies. If you suffer from allergies you know first hand how much more difficult it is to focus. You do not have the symptoms that some have to suffer some of the effects. As the film over the eye thins out there are different ocular pressures and focusing is degraded. Your eye doctor may be able to prescribe a medication or over-the-counter medications may help.

Eventually some type of corrective lens is required. If you are already wearing glasses you may need an addition to your current eyeglass prescription. Most likely some increase (+0.xx) in the dioptic power so you can see the front sight. It is possible to over correct. When you can see the front sight really good and the target is nothing but a fuzz ball you need to reduce the dioptic power to see the target better. At ages 45-55 the eyes change rapidly and often requiring a new prescription each year. After that the rate of change slows.

You can use an insert from B Jones Sights or similar optical insert. An insert is easy to install, changeable if power needs to be increased or decreased, and is Service Rifle legal.

There are shooting frames where you attach different lenses and position the lens for sight alignment. The most common are Knoblocks or Champions Choice shooting frames. These frames do not require a prescription but can use a prescription lenses. If you are not using a prescription you may need to experiment until you find the optimum combination of lens strength. Then you need to find the optimum positioning.

Another favorite are shooting glasses that include the increased dioptic power in your prescription. The sighting lens is a modified lens with an increased dioptic power allowing you to focus on the sight. The non-sighting lens is your regular prescription.

The challenge is getting a good prescription. The ideal situation is where you bring your rifle with you when you get an eye exam. The down side is there are very few doctors that allow you to bring your rifle to the office. That requires you to describe what you need to your eye doctor. You have to convey

to the doctor that you need a specialty lens that allows you to focus on an object that is 0.50/0.72 inches wide, 20.0 to 26.5 inches from your eye, while looking through and aperture 0.42/0.54 in diameter. Once you have your prescription in hand you have to find the frame and lens. An advantage of specialized shooting glasses are they sit higher on your face which means you don't have to look through the top part of the frame or that grease spot that tends to get in the field of view. Randolph Rangers or Decot are an example of the type of glasses. Both offer frames with replaceable lens. This allows you to have different lenses for use with rifles with different sight radiuses, change colors, or replace scratched lens. Then as your eyes change all you need to do is get replacement lenses.

The different corrective devices each have merits. The insert is inexpensive but can change zero if taken out for cleaning and is unusable if filled with rain. You also need the same setup for all of your rifles. The shooting frames cost a little more, require some experimentation to get the proper setup. They can be knocked out adjustment with rough handling. The shooting glasses cost about the same as a frame and require a prescription. They offer greater protection from eye injury. The use of prescription glasses also corrects eye problems such as astigmatism. The added dioptic power requires some getting used to as the asymmetrical vision may cause a headache if worn too long. Both the frames and the glasses use cables that wrap around the ear. This keeps the glasses from sliding down your nose but can cause discomfort behind the ear. Wearing glasses for the first time takes a little getting used to if you have never worn glasses for extended periods of time. The frames and glasses allow you to use some sort of blinder so you can keep your non-aiming eye open and not have to fight binocular rivalry. The blinder can be a mechanical device or translucent tape on the lens.

Dry fire and practice at the range to build positive habits with the new technique to overcome bull gazing. Whatever technique you use your position may have to be modified if the sight insert contacts your glasses or your glasses contact the sight during aiming. Having your glasses shoved into your face during recoil is a bit distracting and annoying. Whatever method you have selected the rewards should be a better sight picture and increased score.