Dear Colleagues

**Sight adjustment to move a group, II**

**The Problem:**the first article with this title did not enable shooters to easily develop a routine to release shots and immediately form a 1 MOA group. That article included valid and speculative practices used by team coaches before and for many years after WWII.

A shooter’s coach in the 2020s has much better understanding of the sizes of groups able to be produced by individual shooters. That is, when a change of wind or mirage occurs, a shooter who has not been taught by an experienced coach, may inadvertently change his/her group size within the shoot. As a result, a change in wind velocity or direction, which indicates a need for the shooter to get shots away faster, will incur a change of group size from 1 to 2 MOA. This occurs due to an apparent need to release shots without waiting for the concentration of adrenaline in the bloodstream to return to base level. Faster shot-releases from a moving muzzle actually expand a group. As well, changes due to the refraction of light also encourage a shooter to release shots faster to avoid delays between shots.

In the 2020s, when a shooter seeks to group within the V-bull or 6-ring, it is necessary to be aware of what causes a group to expand. Hence, shots must be released using a routine which does not require the shooter to waste time thinking about factors that cause group changes.

This article provides a routine which can be adopted by TR and F Class shooters, who change the sight for every shot, continually adjusting group size without over-correcting. However, a shooter at middle-level who still releases unexplained shots, will need to read the next article.

**Discussion:**there are several factors which must be taken into account when releasing a string of shots so as not to expand the group wider than about 1.0 MOA (TR and F Class):

* the particular handload combination, found from experimental data to provide the smallest group, from a particular barrel and action
* the shooter’s measured minimum time (e.g. 4 seconds from the start of trigger bite) for which shot-release results in the smallest group
* the apparent minimal degree of bodily activity, maintained by the shooter during the 4 seconds while the concentration of adrenaline dissipates naturally before shot-release
* the observed changes of the light pattern, indicated by the refraction of light observed around the centre of the F-Class target.

**Experimental:**most shooters have experimentally confirmed that:

* the minimum time for a dry shot to be released from the point of trigger bite until release (with no sign of movement of the foresight or scope-sight element relative to the target), can be 3, 4 or 5 seconds (depending upon the shooter)
* the degree of wandering of the foresight that occurs while aiming, can be minimised,

enabling the minimum time for shot release to be constant, i.e. if measured from the moment when the trigger starts to bite.

The writer measured this and found it could be 3 seconds. Otherwise, it could be 4 or even 5 seconds, depending upon the ease of re-aiming with a minimum of bodily movement.

The practised sequence of steps for a shooter and coach in a team’s match, requires:

* observing the flag position and strength (at 500m where the flag is just approaching horizontal, at 9 or 3 o’clock, so that the wind arm reads 5 MOA). Note that this can change up or down by 0.5-1.0 MOA, depending upon the degree of refraction of light (refraction can be higher or lower when wind is faster; measured using 2 sighters)
* release of a dry shot, reloading with a minimum of body movement and returning to aim position as quickly as possible. This should result from at least two 4 second shots, until perhaps the 2nd shows no trace of movement of the foresight or scope element relative to the target
* with the wind reading applied to the sight, the coach quietly indicates to the shooter, Go, (the coach also estimating whether the release time takes more or less than 4 seconds)
* the shooter states whether the shot might not have been released correctly: then reloads and prepares for the next shot, bringing the sight onto aim and even starting the trigger release (no change made to the sight by the coach indicates the shot is close to the centre)
* when the coach quietly indicates Go, the shooter commences final trigger-release, keeping the foresight dead still relative to the aiming mark, until release occurs in not less than 4 seconds, then reloading for the next shot and bringing the sight onto aim
* even though the wind may change slightly, the foresight is brought onto aim, with the coach making a 1/2 MOA sight-change for a shot marked near the bullseye line; with the word Go from the coach, the shooter takes at least 4 seconds from trigger-bite to release
* since this shot may be on the edge of the V-bull or 6-ring, the coach moves only ¼ MOA to bring the group closer to the centre; with a quiet Go from the coach, the shooter takes at least 4 seconds from trigger-bite to release; NB in the first few shots the coach notes whether the group size is larger or smaller than 1 MOA (the V-bull or 6-ring), confirming that sight adjustments will easily centralise the 1 MOA group
* since this shot may be on the edge of the X-ring, the coach moves only 1/8 MOA to bring the group closer to the centre; with a quiet Go from the coach, an F Class shooter takes at least 4 seconds from trigger-bite to release
* for every shot that follows, the group is adjusted as above, unless it is well within the X-ring (F Class) or V-bull (TR).

If the shooter does not have a coach on the firing point, then he/she must fully understand and perform all of the above steps.

**Conclusion:**  most shooters are able to recognise competitors who group 1.0 MOA (TR) or 0.5 MOA (F Class). An increased number of TR shooters at the 2019 Sydney and also the Canberra Queens’ showed this, i.e. mainly due to their excellent body positions with automatic corrections of the natural point of aim. Many (both TR and F Class) were also using the correct trigger-release technique, with great care not to allow the position of a foot or the hand on the pistol grip to change position even the slightest during a 10-shot shoot.

It is now only a matter of time before each TR and F Class shooter attains the ultimate group (1.0 and 0.5 MOA in TR and F Class), adjusting the sight for every shot as described, unless it is in the middle of the X-ring. That is, the sight corrections here are intended to achieve a central group, with accurate movements into the centre of the V-bull (TR) or X-ring (F Class).

Happy New Year

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