Dear Colleague

**Findings from the Canberra Queen’s, 2019**

**The Problem:** both Target Rifle and F Class shooters share difficulties which include:

* a need to release shots without adrenaline in the shooter’s bloodstream, which cause the muzzle to move when a projectile is released
* the release of shots in wind which often returns to a particular direction and velocity
* the release of shots in wind which keeps changing and does not often return to a particular direction and velocity
* when team shooting, the coach should assist each shooter to ensure that adrenaline in the bloodstream has lowered enough to avoid moving the muzzle of the rifle.

At the Canberra Queen’s, 13-17 Nov, 2019, TR and F Class rifle shooters experienced each of these difficulties and the means of overcoming them.

In particular, the writer coached a team of very skilled shooters and was at fault. He considers he did not help these shooters overcome the release of each shot to avoid widening their groups. Each shooter was well practised at letting a good shot go within 2 or 3 seconds of the word Go from the coach. Yet, in the team shoot each shooter was not given a chance for his adrenaline to lower. Hence, the groups were nearly as large as the bullseye, with some inners.

When answers to pressing problems become apparent at an important prize meeting, then such findings should be reported to shooters, just as research scientists record their observations for the benefit of colleagues working in similar fields of interest.

**Discussion:**the Canberra Queen’s, 2019 was fully up to its reputation. There were periods where flag changes showed the wind did not return to a common velocity and direction. Other shooters found instead that there were times when the wind did return to the same velocity and direction. Wind changes occurred rapidly, which required shooters to aim and release each shot quickly before another change occurred. These were welcome challenges.

On the other hand, rifle shooters have for more than the past century, practised the trigger-release technique, which enables a temporary rise in adrenaline in the bloodstream to fall naturally. Each shooter needs blood adrenaline to return to a level where tremors no longer move the muzzle at the moment when a projectile departs.

Sadly, this was not taught to the majority of rifle shooters, except by some renowned coaches across Australia and New Zealand, e.g. Tom Hann (Lysaghts Rifle Club, Newcastle) and Ted Teague (New Zealand and Launceston Rifle Club). It needs to be said that understanding the adrenaline response and the need for a shooter to introduce a lapse of time for it to naturally reduce in the bloodstream, is not easy to put into practice. This led some shooters to believe that the technique was a secret among leading shooters. Nothing could be further from the truth. At the Canberra Queen’s, the difference between leading shooters was clear, when they allowed muzzle movement to dissipate just before a shot was about to be released.

**Practical:**many shooters could be seen overcoming movement of the muzzle prior to the release of each shot. The unmistakeable signs for a TR shooter were:

* setting up a body position where the dead still rifle foresight did not need to be periodically returned upon wandering off aim
* positioning the forward elbow directly under the rifle, with the head and shoulders placed a little toward the forward elbow, so that it became the actual balance point (leaving the loading hand and arm free to move and return to a comfortable position after each shot)
* the muscles of the forward arm were allowed to become limp, shown by the supporting hand and fingers held loosely, i.e. no white knuckles
* no breathing at all by the shooter just before shot-release, lasting by one leading shooter for 4 to 5 seconds per shot, while for another it was 9 to 10 seconds (TR and F Class)
* a 1 MOA group of shots largely within the V-bull as shown on the Kongsberg screen.

When wind returns to a common direction and velocity:   the shooter (TR and F Class) spends time before a shoot ascertaining the most common strength and direction of the wind, as indicated by the flags. With this knowledge the shooter commences, having wound on the common wind strength on the rear-sight or telescope. Soon after firing, a wind change would cause the shooter to wait for it to return to the most common strength. Then the next shot would be released. Hopefully, the shooter was able to continue waiting and applying the chosen elapsed time, before the scorer applied a warning according to the rules.

When wind does not return to a common direction and velocity:  the shooter (TR and F Class) ascertained before the shoot that every shot was likely to not return to a common velocity or direction. However, the shooter also observed the minimum and maximum values for wind strength, which at Canberra, could indicate both right, left or fishtail wind. The best opportunity for minimizing error in reading wind velocity, was to decide to only release shots at 600 or 800m within say, 2 MOA left or 2 MOA right wind, i.e. not winding on 6 or even 9 MOA because large values would greatly increase the error in estimating wind strength.

Of course, each shooter in each of the above situations, had a need to introduce time for the adrenaline concentration in the bloodstream to reduce naturally, no longer causing movement of the muzzle.

Team shooting in each of the above wind situations:  the writer coached four very skilled shooters. They found their usual 1 MOA groups had enlarged, with some shots scoring inners. Each of these shooters was used to the requirement to release a shot immediately, upon the coach giving a quiet word Go, i.e. within 2 or 3 seconds. However, this was too early for adrenaline to reduce naturally in the bloodstream.

**Conclusion:**  shooters at the Canberra Queen’s 2019, should note the above findings and practise them, i.e.

* the technique described for allowing from 4 or 5 seconds (or 9 or 10 seconds by another leading shooter) for blood adrenaline to dissipate naturally before releasing each shot, which was observed to achieve V-bull groups in all 15 shoots by 6 leading shooters
* when releasing shots at the same flag position, centralise by altering the sight or scope sight to correct for positions of shots on the target
* when releasing shots during rapidly-changing wind, alter the sight or scope sight on the appearance of wind strength indicated by relevant flags, within a selected minimum range of wind values (e.g. between 2 MOA left and 2 MOA right)
* the writer as coach should instead have indicated that the shooter should release within say 4 or 5 seconds (or perhaps 9 or 10 seconds). If the wind changed, then the coach would tell the shooter to hold fire. Upon the coach again giving the word Go, the shooter would again try to get the shot away using this elapsed time and hence, reduce the size of the group to 1 MOA, i.e. the V-bull or 6-ring.

Best regards

Geoff