

# Field Marksmanship Test

## 300m Rifle Range

### Objective

For the shooter to demonstrate proficiency with a centrefire rifle to the criteria as set out below:

- Knowledge of the ballistic trajectory of their chosen rifle/cartridge combination and the ability to apply sighting adjustments to hit the target.
- The ability to use appropriate shooting positions at varying target distances out to 300m.
- The skill to place a single, fatal shot, into a target circle that represents the side on Hilar Kill Zone on a deer (allowance of a Ø300mm circle).
- The consistency to place this shot, 5 consecutive times, at the required target ranges.

### Equipment Required

A centrefire rifle, either scoped or un-scoped with 5 rounds of ammunition.

### Procedure

- 1) The shooter must fire 5 shots only in this order as follows:
  - 1 shot at 25m standing
  - 1 shot at 50m standing
  - 1 shot at 100m sitting or kneeling
  - 1 shot at 200m lying prone
  - 1 shot at 300m lying prone
- 2) The use of a standard rifle sling is permitted.
- 3) Use of a front bi-pod or basic front rest such as a day bag is acceptable.
- 4) Use of a ballistic reticle and/or adjustable, external target turrets is acceptable.
- 5) There is no set time limit for the 5 shots to be completed. However, once started, all shots should be fired consecutively and be easily completed within 10 minutes.



An NZDA certificate of achievement will be issued to the shooter by the supervising Range Officer after successful completion of the test.

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### Rifle Zero Suggestion

Consideration should be given to sighting your rifle in at 200m. Generally, most centrefire rifles between .223 and .308 caliber when zeroed at 200m will also be close to zero at 25m. Between 25m and 200m the bullet will rise no higher than about 60mm. At 300m the bullet will be on average approximately 230mm low. This gives you a close-up bush hunting zero at 25m and an open country zero at 200m. Then just commit your 50m, 100m and 300m holds to memory. **Simple!**

So, in theory without even using hold-under or hold-over, a practised shooter could hit the first 4 targets just by aiming at the bullseye.

Average ballistic trajectories for popular rifle cartridges (in millimetres)						
200m Zero						Energy at 300m ft.lb
Cartridge	25m	50m	100m	200m	300m	
.223 Rem (55gr)	-7	+18	+47	0	-224	470
.243 Win (95gr)	-6	+21	+51	0	-222	1047
.270 Win (130gr)	-7	+19	+47	0	-207	1594
7mm-08 Rem (140gr)	0	+28	+59	0	-245	1499
.308 Win (150gr)	-2	+28	+59	0	-250	1538
100m Zero						Energy at 300m ft.lb
Cartridge	25m	50m	100m	200m	300m	
.223 Rem (55gr)	-20	-6	0	-94	-365	470
.243 Win (95gr)	-18	-4	0	-100	-373	1047
.270 Win (130gr)	-19	-4	0	-93	-347	1594
7mm-08 Rem (140gr)	-17	-2	0	-118	-421	1499
.308 Win (150gr)	-17	-2	0	-119	-427	1538

\*Calculated using Federal Nosler Ballistic Tip ammunition, 40mm scope height, 400m altitude.

### Ethical Shooting

It is generally accepted that the bullet shall have 1,000 ft.lb's (1,356 Joules) of retained energy at the target distance for ethically shooting deer sized game. Consideration should always be given to the appropriate rifle/cartridge combination for the distance being shot.

### Tip

Statistically, the 50m and 300m targets prove the most difficult. Be patient, take aim and good luck!

Target		Common Scope Adjustments		
		0.25"/100yds	0.25MOA	0.1MRAD
m	yds	mm	mm	mm
25	27.3	1.7	1.8	2.5
50	54.7	3.5	3.6	5.0
100	109.4	6.9	7.3	10.0
200	218.7	13.9	14.6	20.0
300	328.1	20.8	21.8	30.0

1 MOA at 100m = 1.145" (29.1mm)  
 1 MOA at 100 yards = 1.047" (26.6mm)  
 1 Mil (MRAD) at 100m = 3.94" (100.0mm)  
 1 Mil (MRAD) at 100 yards = 3.6" (91.4mm)

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## Information for the Supervising NZDA Range Officer

### Equipment Required

- 5 similar targets at least 320mm square with a bold bullseye, easily discernible at all distances.
- A ruler or tape measure in millimetres.
- Stickers for patching out shot targets (Avery Dot Dispenser Labels DMC14W 14mm White, Box of 1200).
- NZDA-BOP certificate of achievement.

### The Range Officer Shall

- 1) Ensure the Range Standing Orders (RSO's) are adhered to at all times.
- 2) Set out the targets at one shooting position, on all 5 target boards.
- 3) Advise shooters to fire one shot and not re-load until they have changed to their next shooting position. This is necessary to maintain compliance with the RSO's and control their cone of fire. Range officers will need to carefully manage the movement of the shooter and rifle between positions.
- 4) Ensure any front rests used are basic and that no rear rests are used such as sandbags. The purpose of this test is to simulate basic field shooting.
- 5) Either pass or fail the shooter after the completion of all 5 shots, and after carefully checking all 5 targets. **Targets shall not be checked until after the last shot is fired.** A shot outside the 300mm circle but still touching will be deemed to be a pass.
- 6) Issue a NZDA-BOP certificate of achievement to successful shooters.

### Tips for the Range Officer

- 1) To ensure range safety, particularly on Public Range Days or when supervising non NZDA-BOP Range Ticket holding members, consideration should be given to a supervision ratio of 1 shooter to 1 Range Officer (i.e. arms reach, close supervision).
- 2) This test was primarily developed to assist new shooters understand ballistics and holdover. However, it may also prove challenging for long range shooters shooting freehand out to 50m and bush shooters out past 100m, or shooters not accustomed pass/fail style shooting tests.
- 3) There is no time limit but once the first shot is fired the shooter must continue shooting through each position and distance in the order stipulated. It should be possible for most shooters to easily complete the 5 shots in a single public day 5-minute shooting detail. If extra time is required, then the shooter shall wait for the next detail to start to complete their remaining shots.
- 4) Practice and tuition beforehand are to be encouraged. The test can be taken as many times as desired in one day until a pass is achieved.