

Part 1- Safe Shooting Practices for Muzzle Loading Arms

1.1. General

This document is issued by the MLAGB giving guidance on the safe practices and procedures to be adopted when shooting muzzle loading arms. Compliance with these practices and procedures is essential for the persons shooting on private ranges or wishing to gain an NRA Certificate of Competence in Muzzle Loading Arms. For details on the certification process for the NRA certificate see Part II of this document.

This Document sets out the minimum standards for the safe handling of powders, primers etc. during storage, carriage, shooting preparation and shooting a detail. It also includes the safe handling on the range of loaded and unloaded muzzle loading arms, whether they are rifles, muskets, shot guns, pistols or revolvers. Finally, it gives guidance on assessing the safety of a shooter involved in muzzle loading disciplines. It is the compliance with these standards that an authorised course giver, club official or other assessor must seek in any shooter wishing to be passed safe to shoot unsupervised on a one to one basis.

This document does not address the manner by which shooters shall be trained, which is the responsibility of individual trainers. Also, it does not include competition rules, or the rules for Range Officers or Range Conducting Officers administering ranges on which muzzle loading arms are being shot.

In this document the words Range Officer and Range Conducting Officer are interchangeable.

1.2. Storage and Transport of Powders and Priming Systems

1.2.1. The purchase, transport and storage of black powder (gun powder) is regulated by law. Keep bulk quantities of the powder in the container in which they were purchased. Powders which were originally supplied in tins should be transferred to plastic or card containers as soon as possible. These containers must be kept in a wooden box of approved design when in domestic premises. Limitation on the amount of powders kept applies. Store percussion caps in the tins in which they were bought, and keep them separated from powders.

1.2.2. It is preferable to transport powders in a plastic box containing pre-weighed charges in glass or plastic phials. If preparing weighed charges is not practicable, transport the powders in a standard powder flask or flasks where different grades of powder are to be used. The transport of the powders in their original containers to the range is lawful but discouraged. The transfer of powders from such containers to phials and/or flasks on the firing point is strictly forbidden due to the quantity of the powder which could be exposed to sparks.

1.3. Storage and Transport of Muzzle Loading Arms

1.3.1. Storage of reproduction muzzle loading arms is regulated by law, as is the storage of original (antique) arms which are held to be shot and are not just for display. Such arms must be stored in locked metal safes of approved design.

1.3.2. Transport of such arms to the range is preferably done when each arm is placed in individual containers or sleeves, or stored together in a purpose built box. Such containers or sleeves should be kept out of sight when travelling by car.

1.4. Unpacking of Powders and Priming Systems on the Range

1.4.1. When phials of powder or filled flasks are unpacked they should be placed at the table of the firing point for

the pistol disciplines, and on the rear loading table for long arms. The quantity of powder unpacked and placed on these tables should be sufficient only for the detail to be shot, together with essential spares.

- 1.4.2. Spilled powder from phials or flasks should not be allowed to accumulate on the loading table, but should be wiped up and disposed of safely as soon as it appears. When the loading tables are placed on grass excess powder can be safely brushed off the table into the grass, where it will quickly break down.

1.5. Unpacking of Arms Prior to Shooting

- 1.5.1. Arms which are in their covers on the range are referred to as being "boxed". Boxed arms should only be unpacked at the firing point or in a designated area on the range. Once unboxed, percussion arms should have the lock placed on "half cock", or on "full cock" where no half cock provision exists. On flint locks the lock should be on half cock where possible with the frizzen open to show that the pan is empty. On matchlocks the pan cover should be open and no match should be fitted to the serpentine. For long arms the same applies. Alternatively, the hammer may be lowered on to a cap cover if this is fitted to the arm.
- 1.5.2. Long arms which have been unboxed and prepared for shooting shall be placed in racks to the rear of the firing point muzzle upwards. Such racks may be provided as part of the range structure or may be provided by the shooters themselves. Pistols and revolvers must be placed on the table at the firing point pointed down range. Only one such arm should be placed on the table at any one time. The muzzle of pistols on the bench shall be forward of powder flasks or powder phials. These provisions are to enable the Range Officer to see that all arms are safe, particularly when giving instructions for shooters or range staff to "go forward" on pistol ranges. They should not be touched for any reason whilst anyone is forward of the firing point.

1.6. Handling of Arms Prior to the Start of a Shooting Detail

- 1.6.1. Cleaning (de-oiling) of pistol barrels and cylinder chambers at the firing point prior to shooting may only be done once there is no one forward of the firing points. In pistol and revolver competitions shot under MLAGB and MLAIC rules, it is permitted to dry fire providing there is no one forward of the firing point.
- 1.6.2. Cleaning (de-oiling) of barrels on long arms is normally carried out at the rear loading table as soon as the arm is unboxed and prior to stacking in the rack provided. Note that any Range Standing Orders for a particular MOD range would take priority in this respect.

1.7. Handling of Arms During a Shooting Detail

- 1.7.1. Pistols and revolvers should be loaded at the firing point. Long arms are loaded at the rear table and are taken to the firing point with the muzzle pointed upwards. When loading long arms from flasks in competitions, such flasks should be double shuttered. Arms may only be primed when the shooter is in their final shooting position. Whilst priming, the arm should be pointed downrange and should not be elevated above the top of the stop butt.
- 1.7.2. Priming the pan of a flintlock or matchlock should either be by trickle priming powder from a phial, or by using a priming flask with a capacity of 250 grains or less. When using the common commercial brass priming flasks with spring spout at one end and a screwed brass top at the other, the screw-on top must be removed and replaced either by a single layer of tape or the top blocked with a cork, before use. The use of full sized powder flasks to prime such arms is prohibited.
- 1.7.3. In mid/long range rifle competitions where the target is raised by the butt marker, the Range Officer will arrange for the marker to drop the target to allow fouling shots to be taken. Here, capping or flashing off will be

done at the firing point with the arm pointed towards the butts, or with the muzzle pointed to a space in front of the firing point dependent on local rules or practice. The fouling shot may then be placed into the butts in the area of the target before it is raised.

- 1.7.4. When a percussion cap fails to ignite, it is common practice to drop the hammer on the same cap a second time, which will often resolve the problem. If this fails the cap will need to be replaced, and the nipple may need to be cleared of priming mixture. When a flint lock pan fails to ignite, it is normal to re-close the frizzen and retry. If the priming still fails to ignite, the cock should be put on half cock, the frizzen opened, and the priming charge emptied from the pan. The pan can then be cleared and recharged and/or the flint replaced. On the matchlock, the arm must be continuously pointed down range whilst the free hand first raises the serpentine from the pan, the pan cover is closed -preferably with the hand below the pan, and finally the lighted end of the match is returned to its container. It must be noted that it is not uncommon for a matchlock which failed to set off the priming as the match fell to ignite the priming during the process of withdrawing the match from the pan.
- 1.7.5. Should the cap or priming powder ignite but fail to set off the main charge, the shooter must hold the arm pointed down range for a period of approximately 30 seconds before bringing the arm down from the aiming position to re prime, etc.
- 1.7.6. Reasons for the main charge failing to ignite after the priming system has been set off more than once is attributable to:
 - a) No powder in the barrel or cylinder,
 - b) The loaded powder has been contaminated- usually from oil in the barrel or chamber which has not been properly cleaned prior to loading, or
 - c) A blocked touch hole or nipple.
- 1.7.7. On single barreled pistols and long arms when there is a ball but no powder in the barrel, or the powder is contaminated, it is often easiest to drive the ball from the barrel using a Sparklet Bulb and a suitable adapter for either the percussion nipple or a flint or matchlock touch hole as appropriate. If this fails to remove the nipple or touch hole liner (where this is possible) and trickle a little dry powder into the cavity behind the ball. This will normally provide sufficient power to blow the ball from the barrel following re-priming. The clearance of ball in this manner must be done in the direction of the butts. The complete clearance of the ball from the barrel must be checked with a ram rod before reloading.
- 1.7.8. If either of these processes fail, or the touch-hole liner is fixed, the ball must be withdrawn from the barrel using a screw ended ball-puller. **Before attempting this, the main powder charge should be rendered inert, by pouring cleaning fluid or oil through the touch hole and down the barrel.** The permission of the Range Officer must be sought to remove the arm from the firing point to a designated area for this to take place. Extreme care must be taken in this case as the arm is effectively live until the ball is safely removed.
- 1.7.9. On revolvers it is common practice to remove the cylinder, remove the nipple and to force the ball from the chamber with a thin rod.
- 1.7.10. When a nipple or touch hole is blocked, it is normally possible to clear it at the firing point with a pricker or similar needle without disturbing other shooters.
- 1.7.11. Match for matchlocks must be lighted away from the table on which powders are placed. The lighted end of the match must be enclosed in a suitable container-designed to stop the match releasing sparks-before being brought to the firing point. The lighted end shall be returned to the container between shoots. On the matchlocks the match itself should be secured either in the hand or attached securely to the match pot, short lengths of match tied to a piece of string are to be discouraged as they can fly about all over the firing point.
- 1.7.12. On completion of a detail where the shooting of long arms has taken place, the Range Officer will confirm with all shooters they their guns are clear, once all shooters have confirmed this all guns must be benched, and

no one is to go forward until the command is given by the RO "Go forward and change targets" or to stand down if shooters are not changing their own targets. If any shooter's firearms are not clear, then the procedure above must be adopted.

Guidelines for Shooting Muzzle Loading Arms

1. General

Part 1 of this COP is published to cover three particular aspects of muzzle loading shooting.

- a) It gives direction on and the basic rules for safe practices for all persons involved in both shooting and administering the shooting of muzzle loading arms.
- b) It provides guidance for persons acting as Range Officers who are appointed by their club's executive to run muzzle loading disciplines at club level, or who are asked to act as Range Officers at open meetings.
- c) It is a key document used to be used in the courses run by the Muzzle Loaders Association of Great Britain (MLAGB) to train persons who need to be independently assessed to become Range Officers by qualification.

2. Disclaimer

The MLAGB believe that the contents of this COP represent existing good practice. It must be clearly understood, however, that this Code of Practice in whole or in part has no authority under UK or EU Health and Safety Legislation, the current UK Firearms Act, or Ministry of Defence (MOD) requirements for construction and safe usage of ranges. Both parties disclaim any responsibility for any accidents involving the handling of black powder or its substitutes, or any firearms, however caused. All shooters should ensure that they have adequate third party insurance to cover any claim arising from injury when handling black powder, its substitutes or related arms, from any cause whatsoever.

3. Definitions

Throughout the COP the word "Range Officer" is used to describe the person in charge of shooting on the range, whether he or she is a club appointee, a person acting as a Range Officer at an MLAGB meeting, or a National Rifle Association (NRA) Range Conducting Officer (RCO). Where the NRA RCO designation is specifically used, it applies only to such NRA qualified staff. Other organisations, such as Historical Breechloading Smallarms Association (HBSA), also use the designation Range Conducting Officer, as much of their shooting is done on MOD or NRA controlled ranges.

Throughout the COP, the word "pistol" is used to describe any form of single shot pistol together with any form of revolver, whilst the word "long arm" is used to describe anything from matchlock muskets to muzzle loading rifles.

4. Handling Black Powder and Range Design Approval

Other bodies generating rules and constraints are various departments of the MOD who define and approve range structures of all kinds, and the Health and Safety Executive (HSE), who have a great influence on the storage and movement of explosives, including black powder and its nitro analogues.

5. Range Construction for Muzzle Loading Arms

Muzzle loading arms may be shot on outside civilian ranges already certified for cartridge arms providing the arms used are within existing limits of velocity or muzzle energy stated on the Range Safety Certificate. On MOD and Territorial Army Volunteer Reserve (TAVR) ranges, the use of muzzle loading arms must be authorised within the local Range Orders. Safety considerations on the shooting of muzzle loading arms on indoor ranges are given in Appendix II of this COP. However, there are elements of muzzle loading that require facilities which may not be

provided on ranges used mainly by shooters of cartridge arms. These are the "problems" of muzzle blast, "ball skimming" on revolvers and debris from flintlocks, and sparks from the matches from matchlocks.

The muzzle blast from many black powder pistols is much greater than that experienced by pistol or carbine cartridge shooters for the same velocity and/or muzzle energy. This is especially so when shooters are using the larger calibre smoothbore flintlocks, where anything up to 50 grains of black powder is being discharged in a 10" long barrel. This level of muzzle blast is extremely disturbing to shooters on adjacent firing points if nothing is done about it. Blast screens, as shown in range layouts in figures 1.1, 1.2 and 1.3 are essential. Such screens are normally made of 1/4" ply or thicker material, and extend forward from the rear of the shooting table at the firing point. This assures that the Range Officer can see the actions of the shooters at all times.

The second problem is that of "ball skimming" and shards of flint from flintlocks. All revolvers, where there is not perfect alignment of each chamber with the centre of the barrel cone (and there are very few of those) tend to slice a sliver of lead off the side of the ball or picket bullet as it jumps from the mouth of the chamber into the barrel. In addition, when flintlocks are discharged, small particles of flint break off as it hits the frizzen. Such debris is blasted sideways on discharge, and can cause injury if adjacent shooter's shooting glasses do not have full sized side wings on both sides.

A further problem is the generation of sparks blown from the lighted matchlock discharges. Although there is a requirement for the shooter to ensure that the match is retained with the arm on discharge, this does not stop glowing shards of the cotton match from being blown either about or from the firing point. The fitting of blast screens also helps to resolve this problem.

The perforated plastic netting, which is installed in some ranges from the forward edge of the shooting table at the firing point to some 112m to the rear of the shooting table poses problems for muzzle loading shooters. Such mesh screens are normally installed to enable the Range Officer to see what the ISSF cartridge arm shooters are doing from the side. These screens are unfortunately quite ineffective in reduce the above problems. Muzzle loading pistol shooting should only be scheduled on such ranges in exceptional circumstances, and competitors should be spaced at every second firing point to help to counter their deficiencies.

The amount of smoke emitted from black powder guns is much in excess of that emitted from the equivalent sized cartridge arms. It is therefore essential that when muzzle loading arms are shot on indoor ranges the air extraction system is both adequate to deal with the products of firing, and is in operation.

Many indoor ranges have been constructed or modified with vertical back-stops with Linatex rubber or equivalent curtains hanging in front of the back stop to prevent "splash back". A common thickness for these curtains used for .22" calibre rim fire and pistol calibre centre firearms is 6mm. Balls discharged from muzzle loading arms of small calibre and a related small charge may have insufficient energy to pass through such a thickness of curtain, and bounce back down the range. The minimum loads and calibres insuring penetration are given in Appendix IV of this COP. Thin fabric curtains can be hung in front of the rubber curtains on a temporary basis when shooting small calibre pistols or long arms, which effectively keeps "bounce back" under control.

The Range Officer has a duty to see that the facilities appropriate to the muzzle loading arms which will be in use on the range are in place and in operation before allowing shooting to commence.

Assistance on questions arising with regards to muzzle loading range safety can be addressed to the MLAGB Police and Military Liaison Officer.

6. Range Staff

At major range complexes such as Bisley and Wedgnock there will be any number of Range Officers officiating on different ranges with in the complex at the same time.

Many ranges are split into bays, probably divided between the end firing points of each bay and the target area/back stop by dividing walls, often made of railway sleepers. These dividers are more than sufficient protection to enable shooters or range staff to "go forward" in one bay whilst shooting is still progress an adjacent bay. This enables much greater range utilisation when disciplines with different timings are being held on the same range. Each of these bays will typically have six or more individual lanes, each with its own firing point, and each bay will have its own Range Officer, or perhaps a Safety Supervisor on MOD ranges. This Range Officer will be fully responsible for the safety aspects and shooting within that bay. Where a range is split into bays each with its own Range Officer or Safety Supervisor, a more senior Range Officer may be appointed to maintain overall supervision of the range.

In some ranges, such as Wedgnock, some 40 or more firing points may be under the control of a single Range Officer. Individual competitors may be shooting any one of the MLA courses of fires appropriate to that range (e.g. the MLA pistols competitions of Kuchenreuter, Cominazzo, Colt and Mariette) at the same time, but because the range timings and rules are identical, a single set of range commands can be used.

7. Range Officers

7.1. Duties of Ranges Officers - General

Range Officers at club level maybe required to run their club range for a very limited number of courses of fire, and with a very limited number of types of arms. At the other end of the scale, Range Officers may be required to carry out their duties for a large number of muzzle loading disciplines, including the shooting of both pistols and long arms. An MLAGB qualified Range Officer will be sufficiently experienced to run ranges at regional and national as well as club level. In all these different disciplines the range commands may vary, the targets vary, the course of fire vary, the distances vary, and the procedures for "capping off" or priming vary. However, the basic safety and range control techniques are a common feature, and once learned can be applied across a whole range of muzzle loading disciplines.

The prime duty of the Range Officer when muzzle loading arms are being shot is to run safe shooting sessions, whether on a club night, or at an open meeting. He does this for the benefit of the shooters with due respect for the local range orders, the immediate course of fire, and where appropriate the rules of the competition being shot.

In carrying out these duties, safety is absolutely paramount.

A Range Officer supervising a muzzle loading course of fire is expected to know both the rule for running the range and running the current course of fire. Such a course of fire may be relatively unstructured in the club environment with practice, training and competitive matches taking part on the same range at the same time. Once the Range Officer has learned to control shooting both in the club environment and typical competitions of the types illustrated, he will be able to control others with safety. What is particularly important is that the Range Officer recognises common safety problems or potential breeches of the rules, and acts accordingly. Intervention should, where ever possible, be carried out without disturbing either the composure of the shooting or the adjacent shooters on the firing point. Common sense is the best background for a good Range Officer.

7.2. Actions of Range Conducting Officers controlling shooting on MOD Ranges

The general duties and action of Range Conducting Officers are covered in the NRA RCO manual, and the training courses which the NRA runs are used to assess applicants for these appointments. There should be nothing in this COP which contravenes the 2002 or subsequent releases of the RCO manual or NRA teaching for civilian personnel shooting on MOD ranges. This COP does not address any of the basic rules regarding the use of MOD ranges, other than those required when using muzzle loading firearms.

7.3.Actions of Range Officers controlling the shooting of Muzzle Loading Arms on any Range

The following outlines the responsibilities of the Range Officer, or in practice the Range Officer plus his supporting staff. Whilst this list of responsibilities may look extensive, in practice most of it is a mixture of muzzle loading experience and common sense. It helps that routines established by the average muzzle loading shooter from the general club night to national events, take care of a great deal of what follows without any intervention from a Range Officer.

7.3.1. Control of Shooters

- Ensure individual shooters are aware of the range commands to be used and the course of fire to be undertaken.
- Ensure that shooters under training or with limited experience are properly and independently supervised.
- Ensure that shooters comply with the rules regarding the use of open containers of black powder or its substitutes, or percussion caps.
- Ensure that shooters comply with the rules regarding the appropriate techniques for loading and priming, particularly when long arms are loaded at a table behind a firing point.
- Ensure that shooters comply with the requirements to remove spilled black powder or substitutes in a safe manner.
- Take note of indication of malfunctions made known by shooters, and take appropriate action where necessary.
- Ensure that dry firing, capping off or flashing of pans, or fouling shots is only carried out when authorised.
- Where appropriate to the competition, ensure that the pistol or long arm is of the appropriate class as detailed in clauses 1.20, 1.21 and 1.22.
- Ensure that both eye and ear protection are in use.
- Ensure the dress code, if in operation, is complied with.
- Ensure that the shooter is taking the proper stance in competitive matches, and is not leaning against the shooting table or blast screen.
- Ensure that loading techniques particularly for revolvers, are in compliance with rules of competitions.
- Ensure that the load and the loading techniques in use are appropriate to the arm and the course of fire.
- Ensure that shooters who have finished shooting before the end of the allotted time for a competition do not disturb adjacent shooters, either by excessive cleaning of arms, by dismantling their equipment at the firing point, by talking to spectators or other shooters, and that their arms are "proved safe" before boxing.
- Ensure that any arms remaining charged at the end of any series or course of fire are discharged safely into the back stop before further action is taken.

7.3.2. Control of Spectators

7.4.Range Commands -General

The Range Officer should not shoot at the same time as officiating on the range; where clubs allow the shooter to the end of the line to become the Range Officer for that detail, even when shooters are both small in number and highly experienced, they should understand the implication of a safety review following an accident and the effect on their club's insurance.

At Wedgnoek, range rules are that when there are over 4 shooters, there must be a non-shooting RO, and the RO book on the range must be signed by each RO when they take over the running of the range.

MLA Commands

Open Fire (alternative - two short whistle blasts)
Cease Fire (alternative - an extended whistle blast)

NRA Commands

Start
Stop

7.4.1. Supporting Commands

There are a number of other commands which may be given, fully applicable to MLA or NRA based shoots. However, these would not be given during a muzzle loading course of fire unless an emergency cease fire condition arose, or when training cadets or beginners to a particular discipline. These types of command are often given in pairs, such as "show clear and bench weapons". Such commands are typically as follows:

- **"Ground Arms"**. The action of placing a long arm on the ground pointing in the direction of the back stop, having first removed any live caps, match or priming powder, and the lock having been put in the half cock position.
- **"Bench Weapons"**. The equivalent of "ground arms" for pistols, pointing the arm downrange towards the backstop whilst being placed on the table at the firing point. Also applicable to long arms when being fired from a table at a firing point.
- **"Show Clear"** The action of showing that the arm is clear of the main charge and all priming material
- **"Stand Back"** The action of putting a clear space between the grounded or benched arm and the shooter to ensure that the arm cannot be touched and hence discharged by accident. Often used when range staff have to "go forward" half way through a series to repair targets.
- **"Unload"** The action of removing the ball or bullet from a barrel, as well as de-priming the lock and putting it into a safe position (see 1.7.2). Use this command with care as loading muzzle loading arms without discharging them safely can be particularly difficult.
- **"Load and Make Ready"** The action of loading single shot pistols for the duelling sequences, and particularly revolvers for the advancing target and the turning target disciplines of the Bow Street Runner and similar courses of fire.
- **"Load but do not Cap"** The action of loading revolvers at the 25m firing point in preparation to moving to a forward firing point under Range Officer's command.

7.4.2. Range Commands -Long Range and Multiple Disciplines

When shooting at ranges of 100 yards or more, and where the target is marked from the butts a single target may be used by two or more shooters in sequence. Here, muzzle loading long arms and pistols are often shoot on the same detail as cartridge weapons. This specifically happens in shooting HBSA, Vintage Arms Association (VAA) and International Long Range Pistol Shooting Association (ILRPSA) courses of fire. Special arrangement and commands are made to take care of the extended loading cycles for the muzzle loading arms compared with cartridge arms. Such commands are given in the Rules published by these organisations, but, because of their limited application, are not reproduced here.

The range commands to be used shall be clearly stated prior to the detail being started by the Range Officer.

7.4.3. Range Commands - Temporary and Emergency Cease Fire

Situations will arise requiring the stopping of shooting before the scheduled end of the detail. Such incidents are thankfully infrequent. On such occasions the Range Officer must exhibit commands commensurate with the situation. A temporary cease fire may be occasioned, for example, to repair targets that have been blown off by the wind. An emergency cease fire would be occasioned, for example, because of a shooting accident or illness of a competitor who cannot be treated without disturbance to the other shooters. Note there is no difference in the range commands given under emergency or temporary cease fire situations.

7.4.4. Temporary Cease fire situation

Such situations, as outlined above, will occur from time to time. When a formal competition is in progress, it is normal for range staff to be briefed by the Range Officer, who then work quietly from one end or bay, requesting competitors to "bench weapons" (or equivalent command) as soon as possible for them to do so. This is preferable to giving the load commands "Cease Fire" (or "Stop,

Stop, Stop") in this situation. This is to avoid approaching a shooter when on aim except in a real emergency.

7.4.5. Emergency Cease Fire

Such a situation when a dangerous or hazardous situation has become apparent this could be spectators wondering forward of the firing point or across the range towards the butts or backstop. It would also be called in a medical emergency where, for example, a competitor had been taken ill at the firing point. In this case the load command "Cease Fire" or repeated whistle blasts in MLA controlled competitions, or the command "Stop-Stop-Stop" in NRA competitions under the control of an RCO, is essential.

Once shooting has been stopped, the Range Officer must ensure that the range is made safe to enable either the emergency or the temporary cease fire situation to be remedied. The command "Bench, or Ground Arms" and "Show Clear" will almost certainly have to be given, although a command "Bench and Stand Back", perhaps leaving arms in a loaded but unprimed position may be appropriate in an emergency, when the time take to "Show Clear" to a third party is not available. Even if a serious accident takes place the Range Officer should call on an aid for help whilst he closes the range down safely, rather than putting range safety into the back ground to deal with the accident himself.

The command "Unload" should be used with care on muzzle loading ranges - to remove the ball and charge from a muzzle loading arm is not easy under any circumstances. The safest way of "unloading" a muzzle load arm is to discharge the shot into the back stop providing this option is open to the shooter.

When the "Cease Fire" command has been given in the middle of a course of fire, the "Show Clear" command would require that a revolver or single shot percussion pistol was "benched", the hammer was at half cock, and there were no caps on the nipples. The shooter would then automatically "stand back" from the firing point. The equivalent position for flintlocks is with the cock at half cock, the frizzen open and the pan clear of any powder. On matchlocks the match must be returned to its container, the pan cover should be open and the pan empty of all powder. On long arms the equivalent would be to "show clear" and then to ground the arm pointing in the direction of the stop butts. Only when the whole range has been proved safe to the satisfaction of the Range Officer (and not his staff) can range staff go forward safely to rectify the problem.

The Range Officer himself must make provision for the time lost from calling a "Cease Fire" to be made up. If, as has happened, the detail has to be stopped for some time (say for more than 15 minutes of a 30minute detail) it may be preferable to re shoot the complete detail at a later time. There are always winners and losers when this decision is made, and the Range Officer should make clear his reasons for declaring a re-shoot to competitors and competition adjudicators alike.

7.5. The Level of Briefings given by the Range Officer

When shooting on an MOD range, a briefing on the range commands that will be given and the course of fire to be shot must be given by the RCO, either in writing or verbally, to all those who are about to shoot on the range. Even on civil ranges, the Range Officer shall brief the competitors where there are site specific situations or rules that must be adhered to. The MOD requirements are clear that, irrespective of the course of fire being shot on MOD ranges, an adequate briefing with due regard to the competence and experience of the shooter shall be given for ALL courses of fire.

The number of commands which may be given on an MOD range by an RCO are more than that normally given by an MLAGB Range Officer on a civilian range. The Range Officer must be both clearly informed of and be aware of the competence of the shooters on any range, such that over-detailed commands are not given. It is suggested that where a Range Officer is officiating on a civilian range, that he quietly approaches any unknown shooter to ascertain whether they are conversant with the rules, and whether the competitor has shot a course of fire before. When one or more shooters are identified that need to be briefed this can be done to the group on a relatively informal basis,

rather than in what may be termed "militaristic approach" to the range as whole.

7.6. Basic Safety Rules in Handling Black Powder

Black powder is ignited by a flame or spark. A spark may come from any source, from the lighted end of a "match" on a matchlock, from the sparks from the frizzen from a flintlock or the jet flame injected into the powder in the chamber by a percussion cap. It can also unfortunately be ignited by the unrestrained end of a "match" being blown into an adjacent firing point, sparks from a grass fire, glowing ash from a previous shot (again a matchlock "problem"), or exceptionally by static discharge. It can also be ignited by the glowing embers of a cigarette, which is why smoking of any sort on the range by competitors, range staff or spectators is strictly forbidden. When burned in the open air, a small quantity of black powder flashes but does not explode. The finer the powder the faster it burns. Black powder explodes when burned in a confined space, like the chamber of a gun- or, unfortunately, in a partly capped phial or a leaky powder flask.

It is common practice for black powder to be brought to the range in a copper powder flask or in pre-charged glass or plastic powder phials. However bring it in its original container is the only method of transport allowed within the current HSE Regulations (SI 1993 number.2714). However, dispensing from such containers into flasks or phials on the range exposes larger quantities of black powder to potential hazards, and many shooters consider that this transfer is best done at home, where it is easier to find a "flame proof area", despite the existing HSE Regulations. Containers of black powder of any size must only be opened on the range to dispense its contents, after which it should be immediately re-closed. The minimum quantity of powder should be opened at any one time. It is good practice for a club's executive to encourage their use irrespective of the discipline or the rules under which shooting is taking place.

Flasks used for priming flint locks should hold a minimal quantity of powder. The MLA rules state that 250 grains (16 grams) is the maximum amount of powder a priming flask should hold. An accident involving a closed priming flask and a matchlock long arm has led some shooters to prime their matchlocks from individual phials holding the minimum required priming for each shot as an alternative. This can also be used as an acceptable alternative for flint locks. When using priming flasks with screwed caps on both ends, it is a sensible precaution to remove the end away from the spout and replace it with a cork or similar "blow out" closure whilst the flask is on the firing point. The priming of arms using self-priming locks (e.g. on Manton pistols) is also acceptable if this is carried out at the firing point itself. It is not acceptable if loading has to be carried out behind the firing point.

The match for matchlocks has to be lighted by an open flame "somewhere" on the range. Where a designated area for lighting the match is not available, the shooter must light his match with constant regard for the actions of adjacent shooters, who may open black powder containers being unaware of the match light's actions. The glowing match is kept at the firing point in a perforated container to allow air to enter but stop any sparks from escaping. It is only removed from this container when required to be inserted into matchlock's serpentine, and is replaced in this container as soon as the shot has been discharged.

7.7. Spillage of Black Powder

Black powder will be spilled on the range, however carefully handled. This arises when phials are being filled from flasks, when chambers or barrels are being charged from flasks or phials, or when the ball or bullet is forced down the barrel which blows powder out of the nipple or the touch hole. Although precautions are taken by all black powder shooters in this respect, some powder will land up either on the firing point or the loading table, or on the ground around the firing point.

If powder is spilled on an outside range, nature will take care of the problem, as the powder will quickly become damp, disintegrate and will finally be washed away. When loading at a table or at the firing point when the range is covered steps must be taken to remove powder when spilled. The Range Officer shall insist that spilled powder is

wiped from tables at the firing point or on the loading table as soon as practicable. For this reason indoor ranges should not be fitted with carpeting, coir matting, or other materials likely to retain spilled powder under the loading table or at the firing points. Black powder can accumulate in such carpets, and it can be very difficult to remove spilled powder safely or effectively from them.

On indoor ranges, most of which will have concrete floors, a muzzle loading shooting session will leave the floor in front of the firing point covered with burned powder, bulk filler (such as semolina), spent patches, wads and minute particles of lead. The detritus should be routinely removed and disposed of in a manner defined by the club's executive at the end of a shooting session. The floor should be dampened first to stop any lead dust which may exist being unnecessarily brushed into the air. When dry this detritus may burn, particularly where Pyrodex or other black powder substitutes or nitro powders have also been used, say, in gallery rifles during the same shooting session. This is because virtually all of the finer grades of black powder ignite in the barrel (even if it continues to burn outside the barrel) whereas a small proportion of other powders usually fail to ignite and is blown down range.

7.8. Handling Muzzle Loading Arms in the Range

Never let anyone pick up a muzzle loading arm (or any other for that matter) that is not theirs without first requesting permission from the owner to do so. Assume all muzzle loading arms are loaded till proved otherwise.

Pistols and long arms should be charged at the firing point on any range with tables at the firing point.

The arm, having been loaded, is carried forward to the firing point muzzle inclined upwards and the firing position taken up. Only then is the cap placed on the nipple, the pan primed or the match removed from its storage tin and fitted to the serpentine on the match lock.

When a shooter has completed the designated number of shots in a detail with a fixed time period (e.g. 30 minutes), the shooter should quietly wipe the arm and temporarily protect it from corrosion. He should then sit down on the chair provided or stand back as appropriate and by doing so indicate to the Range Officer that he has finished that course of fire. The arm is then ready to be checked by a range official that it is safe, and the official will give permission for the arm to be "boxed". The Range Officer has every right to require a shooter to "unbox" a pistol which has been boxed without third party assessment to show it is clear.

7.9. Responsibility for Functioning of Arms during a Competition

The shooter is deemed responsible for the correct loading, functioning and maintenance of a firearm once the detail has been started. In MLA competitions the shooter cannot ask for help from anyone to resolve a problem, whether the firearm has broken or has been misloaded without abandoning the competition. It is vitally important that, following a miss fire for any reason, that the arm is kept pointing down range for a full 20 seconds before attempting to resolve the fault.

Resolving misloading problems can and should normally be resolved by the shooter at the firing point itself, providing disturbance to other shooters is avoided. For example, a cap which failed to ignite the powder in a revolver chamber would simply be replaced by another. A cap which fails to ignite may fire quite satisfactorily if the hammer is dropped on it a second time. When the powder in a flintlock or matchlock pan ignites but fails to ignite the main charge the pan is simply cleaned then re-primed.

In all these circumstances there is no need to inform the range staff. If, however, such a problem with a firearm cannot be resolved in this way, the shooter would be expected to inform the Range Officer even though the Range Officer cannot provide assistance. If a firearm breaks it should be removed from the firing point having been proved safe by the Range Officer. If it can be repaired during the remaining time of the detail, the competitor is entitled under the rules to return to the firing point to carry on where he left off.

The replacement of a repairable firearm with another is not normally allowed under NRA or MLAGB rules, and would normally result in disqualification. No extra time is allowed to resolve such problems. The Range Officer has no

authority to assist a shooter to resolve malfunctions. This "no help" also applies if the shooter is disabled, more from the point of view that such situation are not covered in the rules rather than being obdurate.

In this case the Range Officer should use his discretion is providing or authorising help whilst ensuring that no advantage to the shooter ensues.

7.10. "Capping Off" of "Flashing Pans" and "Fouling Shots"

Black powder guns of all sorts, having been cleaned and lubricated after the previous shooting session, tend to accumulate oil in the nipples of percussion arms, touch holes of flintlocks and matchlocks and patent breeches. All shooters should (but sometimes forget to) completely "de-oil" their arms before starting to load. It is almost impossible to remove all the oil which has collected in the nipple cavities and patent breaches, and it is therefore common practice to discharge a cap or flash the pan without any powder in the chamber in an attempt to clear oil from these parts. Failure to do so can lead to a misfire on the first shot, and if oil gets into the powder the shooter may well have a major problem in clearing it in the short term.

It is also common practice to shot a "fouling shot" prior to starting the first series of shots. This clears the last vestiges of oil from the chamber, and coats the barrel with the same degree of fouling that it will encounter during the course of fire. When the actions of capping off or taking a fouling shot can take place depends on the competition. The fouling shot will be directed at the backstop away from the targets. Some continental European countries shoot the fouling shot into the ground in front of the target, but this is not approved of in the UK.

In MLA competitions, capping off, flashing off of pans or the discharge of a fouling shot can only take place once the command "Open Fire" has been given. In international or other formal shoots it is necessary to declare a "fouling shot" to the Verification Officer before the competition starts otherwise penalties may be incurred. Cylinders may be removed from revolver, but not for loading, unless no loading mechanism is fitted, as in the case in some English revolvers. The practice of removing the cylinder from the revolver and capping it, leaving it out of the revolver until the command "Fire" is given, is considered as "loading". Any shooter who does this should be requested to de-cap the cylinder immediately.

7.11. Misloaded firearms

There is always the possibility of a firearm being misloaded by the shooter. Loading with oil in the breech is one cause. Loading with a misaligned patch on a single shot is a typical problem, and loading without powder is not uncommon. In this case the shooter has to take action to remove the ball from the barrel and reload in the proper manner. In MLA competitions the competitor cannot request aid in resolving this problem without abandoning the match.

The removal of a ball in the chamber can be done in three ways. Perhaps the fastest way on a single shot pistol or long arm is to blow the ball out of the barrel using a Sparklet bulb and commercially made adapter which are available for percussion and flintlock/matchlock systems. Another common way is to unscrew the nipple or threaded touch hole liner, trickle a little fresh powder into the chamber via the exposed aperture, and, after obtaining the agreement from the Verification Officer or Range Officer, discharge the fire arm into the backstop. The shooter must ensure that the ball has left the barrel. The final solution is to use a screw ended rod which is forced into the ball which is then withdrawn via the muzzle. Again there is no addition time allowance for the shooter if this occurs.

When revolvers are misloaded it is general caused by too little or too much black powder or filler, or the wrong size ball. In MLA competitions, if the misloaded chamber will fire the competitor can inform the Verification Officer that he wishes to discharge an incorrectly loaded firearm into the backstop, and he will get permission to do this without penalty.

7.12. The Shooting Stance

A variety of shooting stances are used in muzzle loading shooting, all pistol course of fire the standing position is used. The Range Officer must check that the shooter is not leaning against the shooting table or any blast screen during any competition series. In long arm shooting, standing kneeling, prone and back positions are used dependent on the competition being shot.

7.13. Loading Aids and Restrictions

A drop tube is commonly used on single shot firearms to guide the powder into the chamber, rather than allowing it to "hang up" on the fouled surface of the barrel. The exception to this are long arms used in MLAGB competitions where the arm is categorised as a "military" rifle or musket. Here, only a short filler tube can be used. This short tube is allowed to prevent spillage as the powder is dropped into the barrel.

In most long range long arm competitions a sling (normally to an original design) can be used, and wrist supports may also be used in long distance competitions in excess of 600m. A Range Officer would need to consult the appropriate set of rules for such competitions to obtain the correct details.

In MLA revolver competitions, a loading press is only permissible when the revolver is not fitted with the necessary rammer. In all normal circumstances the revolver must be loaded with the cylinder in the revolver using the integral loading lever and rammer. This does not preclude the fully assembled revolver being supported in a stand during the loading process. In MLA revolver competitions a minimum of five chambers at each of the first two loadings for the 13 shot series. This is to prevent single chamber loading and using the revolver as a virtual single shot pistol rather than a revolver. The fouling shot may be taken from one of the five or six loaded chambers.

In shooting revolvers, it is common practice and it is mandatory under MLA rules to close the open end of each chamber after loading a high temperature grease or equivalent. Common understanding of this requirement is to seal the mouths of unfired chambers to prevent cross ignition between chambers. However since most revolvers are down loaded for target work, the tight fitting ball and the over-charge wads or bulk filler between the ball and the powder serves to prevent any flash reaching the powder in charged chambers. Much of this grease is blown away by the discharge of adjacent chambers. However any grease remaining serves to give the ball or picket bullet some lubrication as it passes up the barrel, and may also assist in keep fouling in the barrel soft.

Muskets held on shotgun certificates can only be shot with ball when taking part in shooting activities on Home Office Approved ranges.

7.14. Coaching and Spotting

7.15. Definitions and Verification of "Original" and "Repro" Firearms (extracted from the MLAIC "handbook")

*"Any alterations to an **original** firearm which would spoil its historical value makes it ineligible for use in MLA(IC) competitions".* An exception is the replacement of foresights on virtually all arms to change the point of aim providing the original profile of the sight is maintained. In some MLA competitions, it is not even possible to re-bed the barrel or reduce the original trigger pressure. Sleeved barrels are also forbidden, other than in Japanese and Portuguese matchlocks -where some were traditionally made in this manner- although even here there may be some limitations.

*"A **replica** is a modern made reproduction of an original antique firearm, with sights, lock assembly, stock and barrel in the original style. Original parts may be used to build replicas. Replica firearms need to bear proof marks."*

Replicas and reproductions are universally referred to as "repros". As a case in point the Ruger Old Army revolver, not being made as a reproduction of an antique firearm, is not eligible for use in .MLA replica revolver competitions, but is eligible for virtually all other muzzle loading revolver competitions.

7.16. Use of Eye and Ear Protection

- The use of both eye and ear protection is either recommended or mandatory in all muzzle loading shooting.
- Shooting glasses are considered acceptable eye protection.
- Ear protection can be by muffs or ear-plugs.
- Ear protection must be worn by both range staff and shooters.