

**SAFETY MANUAL
FOR
HISTORIC WEAPONS
DEMONSTRATIONS**



Pennsylvania
Historical & Museum
Commission

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INTRODUCTION

Pennsylvania's military history is a significant facet of the Commonwealth's cultural and historical heritage and should be interpreted by the appropriate historic sites and museums administered by the Pennsylvania Historical and Museum Commission (PHMC). Since the Nation's bicentennial military reenactments involving the use of historic weapons, authentic uniforms, and accoutrements have increased in popularity and proved their effectiveness as a means of interpreting the military history of the Commonwealth. The PHMC approves and supports this interpretive method at its historic sites and museums provided that the safety standards and regulations described herein are followed and staff and volunteers supervising these activities are trained and certified by the PHMC.

In order to provide for the safety of visitors, staff, and participants the PHMC has prepared the following regulations to govern military reenactment and demonstrative interpretations at the historic sites and museums under its jurisdiction. The regulations deal with weapons safety, the handling of weapons and ammunition during reenactments and demonstrations, bulk black powder and ammunition storage, conduct during battle reenactments, and staff training.

This manual is a minimum standard. In certain situations and at specific historic sites and museums more stringent regulations may be required. These may be developed and implemented by the Bureau of Historic Sites and Museums, regionally, or by individual Site Administrators and Site Safety Officers.

It is the policy of the PHMC to comply with all applicable provisions of Federal, State, and local safety codes and standards concerning the storage and handling of munitions, etc. This includes regulations of the Occupational Safety and Health Act, the Bureau of Alcohol, Tobacco and Firearms (BATF), and the PA Department of Conservation and Natural Resources (DCNR). If any of the above regulations differ, the PHMC and its historic sites and museums will comply with the more stringent regulations.

TRAINING

The Pennsylvania Historical and Museum Commission will certify staff and volunteers in the safe use and handling of historic weapons for demonstration purposes. Historic Site Administrators of sites where demonstrations and reenactments occur are required to be certified. Any on-site employees designated by the Site Administrator to be in charge of weapons demonstrations are required to be first certified by successfully completing the PHMC Historic Weapons Safety course. Mandatory updates and training in small arms and artillery safety will be provided for safety officers and volunteers who monitor events. Sites or museums where the Site Administrator has not been certified by the Commission may not conduct demonstrations, battles, or programs involving the use of historic weapons.

INSURANCE

Events involving firing demonstrations sponsored by the site and the associates group must be covered by the associate group's insurance. Individuals and/or groups will be designated volunteers of the associate group for the period of the firing demonstration. If necessary, the Commission may reimburse the

associate group for additional insurance costs entailed by the increased exposure to risk caused by these activities.

All volunteers will be required to sign in when they arrive at the historic site or museum to provide service. At sites where there is no associate group or where the PHMC is using the demonstrators/reenactors as volunteers in state service, the PHMC will insure the event and all state laws and regulations governing volunteers on Commonwealth property will apply.

In cases where a group/individual is using the site for training or for a purpose other than a site or PHMC-sponsored program, they must supply insurance as per the Facility Use Program guidelines.

POWDER STORAGE

In general, black powder and related explosives will not be stored at historic sites and museums administered by the Pennsylvania Historical and Museum Commission except during the period twenty four hours prior and twenty four hours after scheduled historical firing demonstrations are being conducted. However, under certain circumstances and with the written permission of the Executive Director, up to 50 lbs of black powder may be stored on PHMC sites for a period of 6 months if the following conditions are met:

- 1) Powder is stored in a Type 4 BATF permanent or mobile magazine.
- 2) The magazine is inspected weekly and a written record kept per BATF regulations
- 3) The powder is used only for Commission-sponsored black powder demonstrations.

- 4) Ignition primers are stored in a separate type 4 BATF magazine

In cases where firing demonstrations are scheduled on successive weekends up to 10 lbs. of powder may be stored on a Commission site in a minimum Type 3 BATF magazine that has been secured in an uninhabited building. This does not apply to demonstrations that are not sponsored by the Commission.

Role of Safety Officer in Powder Storage: Storage of black powder and other related explosives within the historic site or museum will be under the supervision of an officially trained and certified Safety Officer who has been designated in writing by the PHMC to be responsible for the enforcement of safety precautions. An alternate Safety Officer shall also be designated by the PHMC to act during any temporary absence of the certified Safety Officer.

Magazine Requirements: Bulk black powder in amounts in excess of 5 lbs. for use in demonstrations at the historic site or museum shall be placed a minimum Type 3 BATF magazine immediately upon arrival at the site by the certified employee or site Safety Officer. All powder and ammunition shall remain in the magazine until the time of the demonstration.

Black powder in amounts in excess of 10 lbs. will be stored in a Type 4 BATF box magazine constructed according to Title 27, Combined Federal Regulations, Chapter II (BATF), Section 181.187 and located according to the American Table of Distances in an uninhabited non-historic building. An uninhabited building is defined as being used for no purpose that causes a regular congregation of people during the period of time the powder is

stored in it. A separate Type 4 BATF box magazine is required for the storage of friction primers, percussion caps, loaded metallic ammunition, primed cases and other detonating devices; it must be located at least 10 feet away from the magazine containing black powder. No more than fifty (50) lbs. of black powder will be stored at any one time, less if possible, depending on the particular demonstration (see Powder Storage above).

Visitor Centers and administrative offices shall be considered to be "inhabited buildings". No portion of these buildings shall be used for storage of black powder, ammunition, or other explosive devices or for loading operations using these materials. In cases where a site or museum has no uninhabited non-historic buildings in which to store black powder and other explosives it will be necessary to construct a small outdoor magazine as per current BATF regulations and the American Table of Distances.

Magazine Inspection: Regular weekly inspections of the magazine will be conducted. Containers will be dated and the oldest powder will be used first.

Transfer of Powder: Removal of black powder from the magazine shall be in a spark-proof pass box. The pass box will be suitable for all black powder materials including loaded paper cartridges, powder horns, flasks, quill primers and assembled cannon charges. Ammunition may be transferred from the pass box to suitable historical containers such as cartridge boxes or limber chests for demonstration purposes. All ammunition not used in the demonstration will be returned to the pass box, and ultimately, the magazine.

Ammunition Preparation: Only PHMC staff may prepare black powder cartridges on-site. Demonstrators or reenactors not employed by PHMC may only bring pre-rolled charges to the site. Ammunition loading areas will be in an uninhabited building located at least 50 feet from the storage magazine. There will be a non-sparking work table provided, adequate spark-free lighting, non-sparking floor surface, and a secure entrance controlled by the person handling the black powder. The loading area will be cleaned frequently with water to prevent the accumulation of black powder dust. In cases where the site or museum does not have a building that is suitable for preparing ammunition, a secluded portion of the site may be secured using ropes or other means. The location should be at least 100 yards distant from any areas frequented by the public. A spark-proof work surface (wooden table for example) or another suitable alternative must be provided. The amount of powder to be removed from the pass box for the purpose of preparing ammunition is restricted to a maximum of 1 lb. at any given time.

WEAPONS AND AMMUNITION

Minimum Age of Participants: Participants must be a minimum of 17 years of age to carry and use a weapon (functional or otherwise) in demonstrations or opposing force reenactments.

Small Arms and Artillery Definitions: Rifles, muskets and pistols with a bore of one inch or less are defined as small arms. Weapons with larger bore diameters are defined as artillery.

Reproductions versus Original Weapons: All black powder small arms dating prior to 1898 employed in demonstrations and

reenactments shall be reproduction weapons of the correct historic period. Original weapons manufactured in 1898 or later may be used during a demonstration or reenactment if they have first passed the safety inspection.

Safety Devices: All flintlock small arms shall be equipped with flash guards and hammerstalls (frizzen covers). Frizzens and cocks will be kept in the full forward position until ready to load the weapon. For percussion small arms, no percussion cap shall be on the nipple except when being demonstrated or when preparing to fire. Cartridge weapons will remain unloaded with the breech closed and safety locks engaged (if possible) or with the hammer in its safety position until the weapon is being prepared to fire as part of a demonstration or tactical engagement.

Small Arms Ammunition: Only appropriate powder suited for the specific weapons types in question shall be used. Smokeless powder is not to be used in a black powder weapon, etc. Cartridges for muzzle loading small arms will be made of paper - no staples or other metallic fasteners are to be used. Metallic blank cartridges will be of commercial manufacture and of the crimped or waxed-end type. **All individual metallic cartridge blanks must be inspected by a certified Safety Officer prior to use in demonstrations or battle reenactments.**

The use of live ammunition (i.e. cartridges with any kind of projectile) is strictly forbidden.

Table of Maximum Black Powder Loads for Small Arms		
Weapon Type	Caliber	Maximum
18th Century Small Arms		
Brown Bess Musket	.75	125 grains
Charleville Musket	.69	125 grains
Pennsylvania Rifle	varies	90 grains
Pistols	varies	90 grains
19th Century Small Arms		
U.S. Rifle 1841	.58	60 grains
U.S. Rifle Musket	.58	60 grains
British Enfield	.58	60 grains
Musketoon	.58	60 grains
U.S. Musket 1842	.69	75 grains
19th Century Metallic Cartridge Small Arms		
U.S. Springfield Rifle	.50	70 grains
Sharps Carbine	.50	55 grains
U.S. Springfield Rifle	.45	70 grains
U.S. Springfield Carbine	.45	55 grains
Colt Revolver	.45	28 grains

Inspection: All small arms will undergo a safety inspection as directed by the designated Safety Officer following the attached checklist (pgs. 23-26).

Figure: Parts of a Black Powder Musket

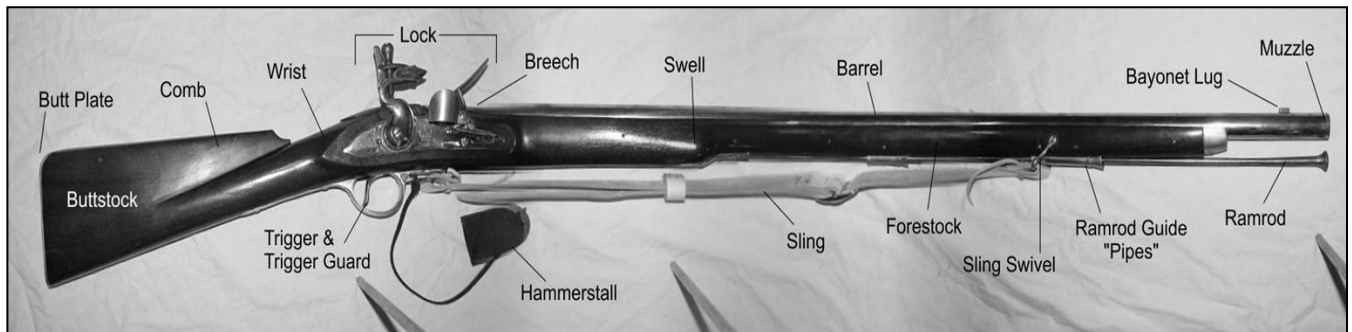
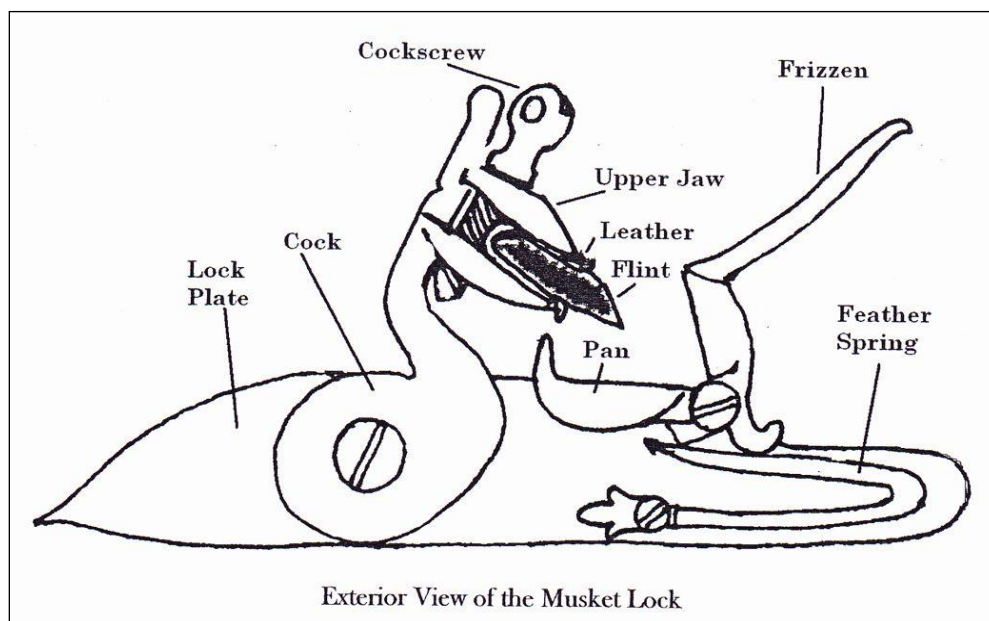


Figure: Musket Lock Components



Manual of Arms: The Site or Museum Administrator shall approve the manuals of arms to be used for each demonstration or reenactment.

Firing Procedures and Personal Safety: Weapons will be discharged above the head of the opposing force at a 45° angle unless otherwise dictated by the terrain of the engagement or the judgment of the Safety Officer in charge of the event. The face will always be kept clear of the muzzle of the weapon. During a battle tactical, no paper wadding or any foreign material other than black powder or a blank metallic cartridge shall be put into the firing chamber of the gun. **No ramrod will be withdrawn during opposing force battle reenactments unless instructed by the site Safety Officer.** A designated NCO or Officer for each side may withdraw a ramrod to clear an obstruction or charge in the designated safety area only, and only with the permission of a site Safety Officer. During non-opposing forces firearms demonstrations, charges may be rammed, but a charge shall not be rammed with the palm of the hand. Safety glasses and ear protection shall be worn by site or museum employees who are demonstrating weapons, and are strongly suggested for non-employees and volunteers **(PHMC ONLY)**.

Pistols: Pistols may not be fired during battle re-enactment activities unless approved by the Site Administrator or designated Safety Officer in writing prior to the event.

Smoke Grenades and Pyrotechnics: The use of smoke grenades/generators in demonstrations and battle reenactments by volunteers and reenactors is not permitted. Site staff are permitted to employ smoke grenades in demonstrations and

reenactments on the battleground provided the devices themselves are commercially-manufactured and the staff so engaged hold current Historic Weapons Safety certification. No other pyrotechnics or fused munitions are permitted.

Artillery: Only reproduction artillery pieces will be fired. Prior to firing all artillery pieces must successfully pass the artillery inspection checklist contained herein (page 26). Weapons will be loaded with approved loads containing the specified amounts of powder as per the table below. The use of fused munitions and pyrotechnics is not permitted.

Swivel guns of a bore diameter 1 inch or larger must be served by a gun crew of at least 3 members; a field piece (i.e. mounted upon a carriage) shall have a minimum crew of 5 members. Blunderbusses and wall guns may be utilized in non-opposing force demonstrations only. Each artillery piece must be properly equipped with a pick, rammer, worm, sponge and water bucket. Ammunition must be properly stored in a secure limber chest. Cartridges will be made according to the following specifications:

Table of Maximum Loads for Artillery		
Weapon Type	Caliber	Maximum
18th Century Artillery		
Grasshopper	3 Pounder	8 ounces fg
British Light 6	6 Pounder	12 ounces fg
British Field Howitzer	5.8 inch	10 ounces fg
Iron Gun	3 Pounder	10 ounces fg
Iron Gun	4 Pounder	10 ounces fg
Iron Gun	6 Pounder	10 ounces fg
Howitzer	8 inch	36 ounces fg
Howitzer	8.76 inch	16 ounces fg
Iron (Armstrong)	9 Pounder	24 ounces fg
Iron (Armstrong)	18 Pounder	32 ounces fg
Iron (Armstrong)	24 Pounder	36 ounces fg
19th Century Artillery		
Napoleon	12 Pounder	20 ounces fg
M1841 Howitzer	12 Pounder	10 ounces fg
Mountain Howitzer	12 Pounder	6 ounces fg
Gun 1841	6 Pounder	10 ounces fg
Parrott Rifle	3 inch	10 ounces fg
Ordnance Rifle	3 inch	10 ounces fg

The proper placement of artillery will be determined by the Safety Officer in consultation with the commanding officers of the participating units before the event. Artillery will not be moved from the approved location(s) without the approval of the Safety Officer prior to the actual demonstration.

A minimum of **three minutes** of time must pass between firing and loading during which time the bore will be thoroughly swabbed and wormed. Neither rapid fire nor live (projectile) firing is permitted. No wadding will be used.

The Safety Officer will authorize an artillery unit to demonstrate their weapon on Commission property. The Manual of Arms for the weapon will be approved by the Administrator before the unit's participation at the site.

Clothing: For protection from flash burns clothing worn by demonstrators firing black powder weapons should be made of natural fibers - long-sleeved outer garments or full uniforms appropriate to the historical period being interpreted are recommended. In addition, for artillery crews leather gauntlets shall be worn by the cannoneer that sponges and rams the piece, inserts ammunition, and corrects misfires.

VISITOR SAFETY

Control: The site Safety Officer shall control and supervise all firing demonstrations including those conducted by outside organizations and volunteers.

Barriers: Visible or physical barriers such as fences, ropes, ribbons, walls and natural barriers are required to keep visitors at the safe distances indicated on the range specifications section of this document. If natural features are inadequate ropes or other artificial means shall be employed. No visitors will be allowed in front of a line perpendicular to the muzzle of a demonstration weapon except as indicated in alignments for tactical reenactments. The minimum distance between visitors and demonstration weapons is five (5) yards [15 feet] for small arms; Seventeen (17) yards [51 feet] for artillery. Please refer to schematic drawings pages 17 thru 19.

Weapons Handling: Visitors must be 17 to handle small arms in the camp area and then only with the permission of the owner. Before any muzzle loading weapon is turned over, the weapon will be examined by the owner to make sure it is unloaded with the hammer (cock) forward in the "fired" position or, in the case of

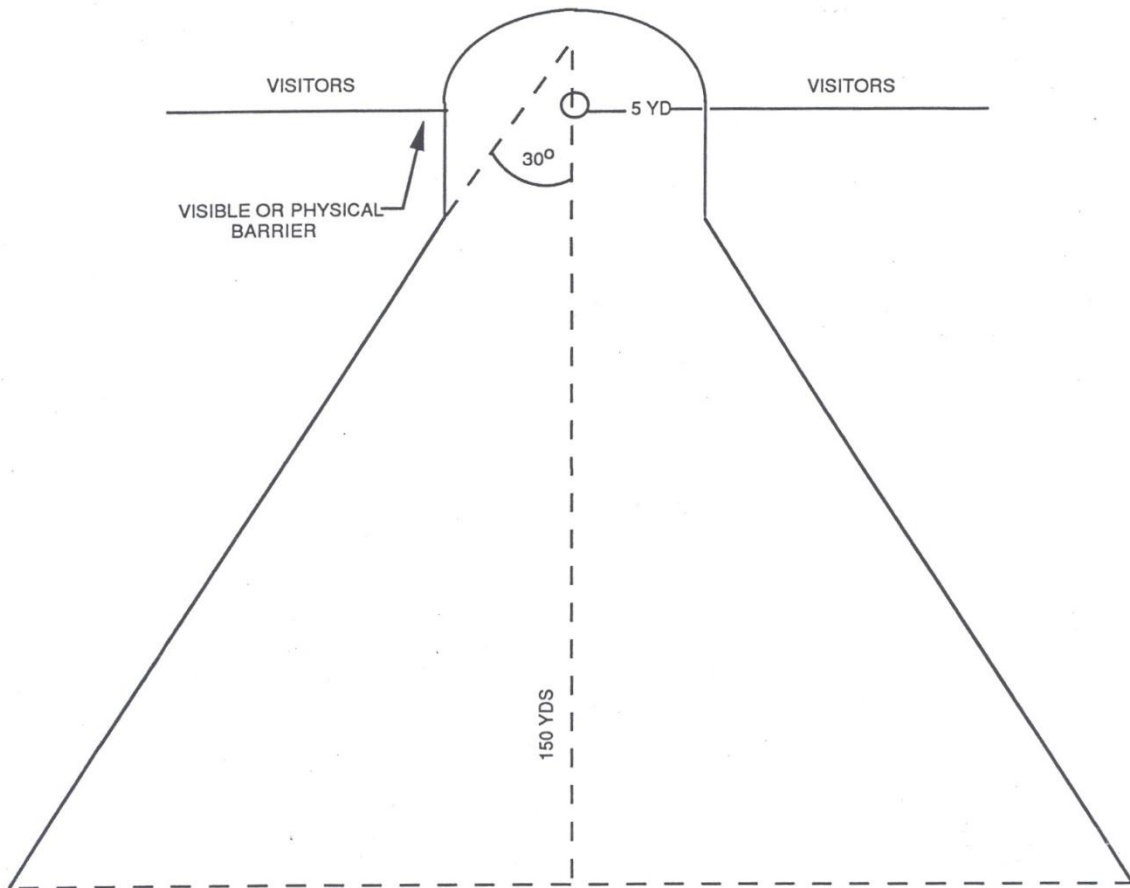
modern weapons, the breech open and the safety in the "on" position. The barrel should be pointed either skyward or toward the ground and away from any person. The owner is responsible for the weapon and will not leave it unattended while it is out of his/her control.

No charges, cartridges or ammunition may be handled by a visitor. Edged weapons may not be withdrawn or handled by a visitor.

RANGE REQUIREMENTS

The diagram below contains the specifications for small arms demonstration firing ranges including distance requirements and crowd control arrangements. Please note that the distances are mandatory but the positioning of weapons and the physical layout can vary based on terrain. *Always err on the side of SAFETY.*

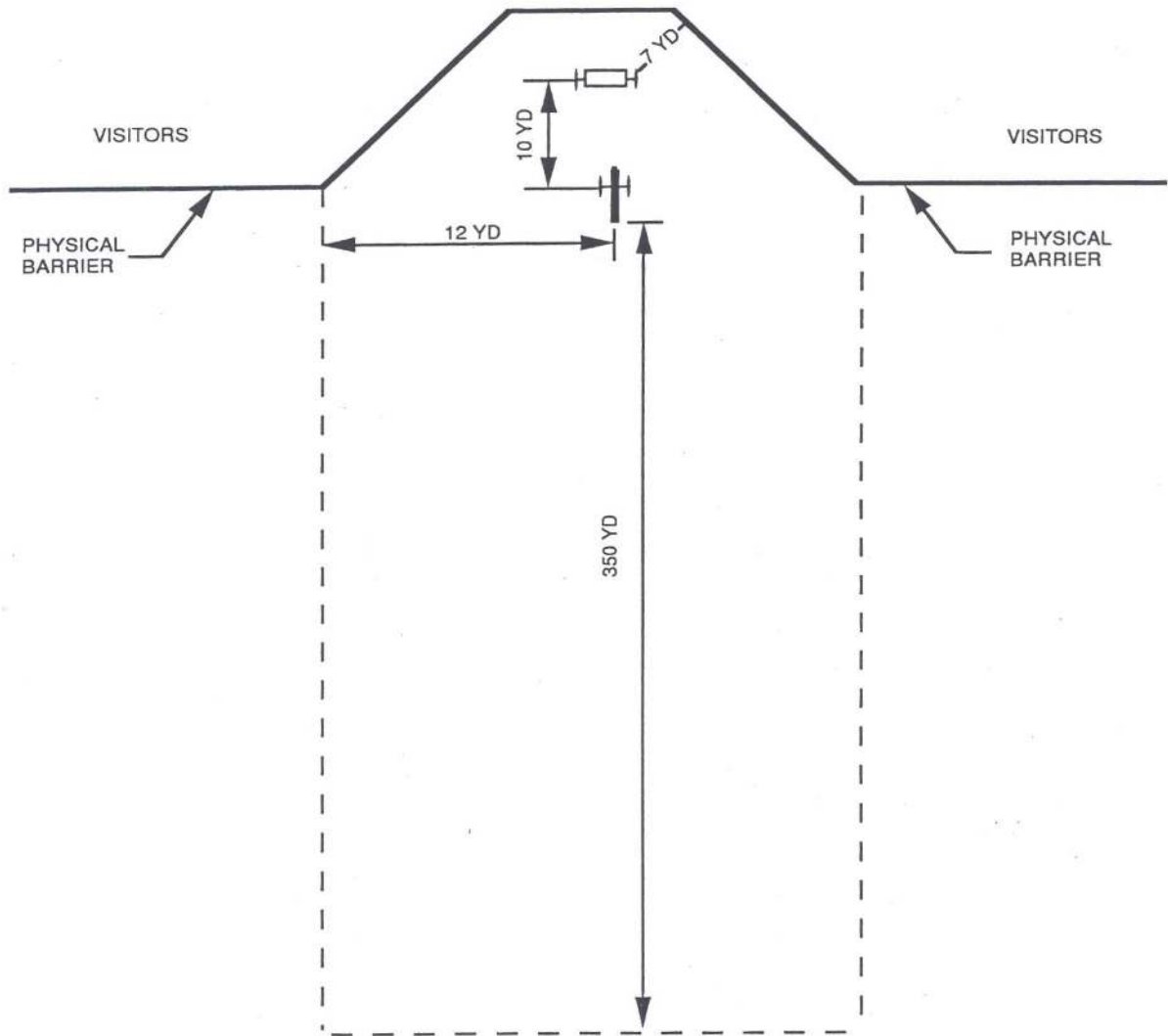
Small Arms Demonstrations



RANGE FOR BLANK SMALL ARMS FIRING DEMONSTRATIONS

The diagram below contains the specifications for artillery demonstration firing ranges including distance requirements and crowd control. Please note that the distances are mandatory but the positioning of weapons and the physical layout can vary based on terrain. *Always err on the side of SAFETY.*

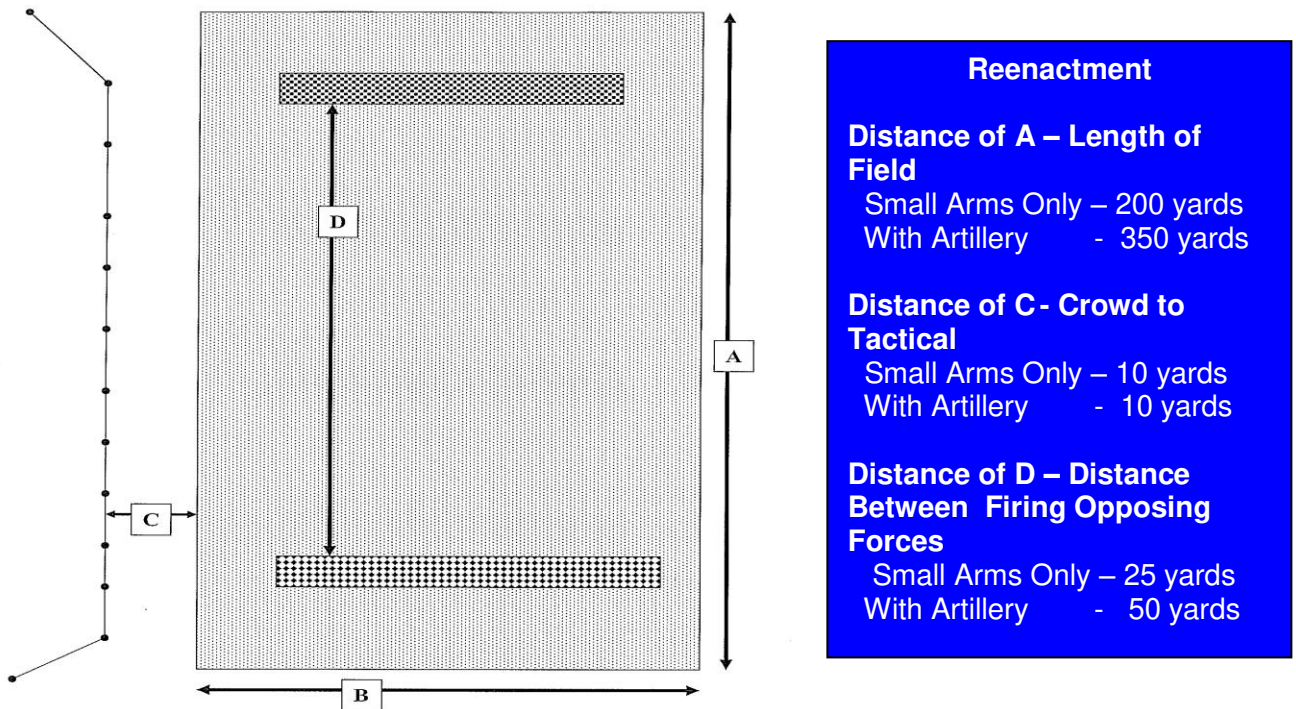
Artillery Demonstrations



RANGE FOR BLANK CANNON FIRING DEMONSTRATIONS

The following diagram illustrates an example of proper site layout for a battle reenactment with opposing forces. The terrain and conditions in which a tactical is developed often affect the overall planning.

Opposing Force Battle Reenactment



The following conditions **MUST BE MET** in order to have a battle tactical at your site:

- A minimum of 200 yards total tactical area for small arms fire only; minimum of 25 yards for opposing tactical fire between lines
- A minimum of 350 yards total tactical area for opposing line fire with artillery; minimum of 50 yards for opposing tactical fire between lines that support artillery
- No "inhabited areas" in the field of fire, (includes houses, public roads, site visitor buildings, and other structures typically viewed as inhabited)

- A minimum of 10 yards distance must be maintained at all times between the spectator and the outside edge of the battle line when perpendicular to each other
- No visitors to the front or rear of opposing forces
- Artillery to fire from fixed positions to be established prior to the commencement of the event.
- Opposing forces with small arms will not fire at ranges closer than 25 yards
- Artillery will not fire at an opposing force that closes to less than 50 yards.

WEAPONS INSPECTION PROCEDURES

The following pages contain weapons inspection checklists which must be completed for each weapon used in firing demonstrations and battle reenactments at the historic site or museum. Initial inspection of volunteers' weapons will be the pre-disassembly checklist. Weapons will be inspected each day prior to firing. A small sticker dot may be applied to the bottom of the trigger guard to indicate that the weapon has passed inspection. The stickers may vary in color from day to day.

Musket & Cartridge Inspection Procedures

The issue of safety is of primary concern at PHMC site reenactments and demonstrations. A detailed inspection checklist follows for the purpose of assisting the designated safety officer.

1) Inform the duty officer of the unit to be inspected that you would like him to conduct a weapons inspection of his troops. Advise him to muster the men who will be participating in the demonstrations and tactical maneuvers and ask him to conduct the inspection in the following manner:

2) "SECURE ARMS". This is the act of inverting the weapon barrel downwards towards the ground to insure that no objects or powder is loose in the weapon.

3) "Search Arms". This involves removing the ramrod sliding it down the barrel so that it will make contact with the breech. This should produce a "ping" sound if the rammer is steel. Wooden rammers do not make this sound. The height of the rammer that has not entered the barrel is also an indication of a possible charge or object in the barrel.

4) "Poise Firelock". The weapon is presented to the inspecting officer with the lock at eye level and facing the inspector. It is at this point that the inspecting officer and the safety officer should observe each weapon for physical defects or dangerous powder build-up between the lock-plate, pan, and barrel. These parts should all be securely fitted with only hairline gaps showing between the metal and wood areas. Key inspection points are:

- a. No original weapons allowed on the field.
- b. All weapons will have flash guards mounted through the frizzen screw.
- c. The frizzen will function smoothly.
- d. Weapons have "hammerstalls" or frizzen covers that cover the metal surface of the frizzen.

At the end of the inspection have the troops bring all hammers to the half-cock position.

5) "Hang Firelock". Have the inspecting officer instruct the troops to place their right thumb inside the trigger guard, rotate the barrel to the right and let the weapon hang on the thumb so that the weight of the weapon is on the trigger mechanism. Any discharge of the lock on half-cock (safety) fails the inspection for that weapon. Some commanders prefer to allow the safety officer to test the trigger of each weapon which requires a stronger than normal pull on the trigger to insure that that it will not fire at the half-cock position.

6) "Inspect cartridges". While remaining in ranks, the reenactors will be instructed to turn ("left face" or "right face") and inspect the cartridges of the reenactor they are now facing. Each individual cartridge will be inspected to ensure it does not contain a projectile, contains the appropriate powder charge, and has been properly assembled. The unit

commander will inspect the cartridges of the soldier at the end of the rank that is not inspected by an adjacent reenactor.

Black Powder Small Arms Inspection Checklist

Before Disassembly (for all weapons)

- () The weapon is confirmed to be unloaded by *measuring rammer*:
- () Your overall first impression is favorable.

The Stock:

- () No cracks, splits, splinters or rough edges.
- () Butt plate, trigger guard, etc., fit tightly.
- () No burrs on butt plate or trigger guard screw heads.
- () If band springs, they work smoothly.
- () If pin-fastened, pins all there, tight and wood not splintered.
- () No burns around the top of lock that can cause the weapon to fail.
- () Two-piece stocks have sections securely joined.

The Lock:

- () Lock works smoothly.
- () Hammer of cock fits tightly on tumbler.
- () All hammer positions are firm and solid.
- () Half-cock position works properly. *Weapon will not come off the half-cock with pressure applied to the trigger equal to the weight of the weapon.*
- () When trigger pulled, it works properly releasing the cock cleanly.
- () Trigger pull is proper. If it feels light, a scale may be used to measure not less than three pounds of pull.
- () Set triggers are properly adjusted and work smoothly.

- () Lock fits snugly into stock and pan is tight against barrel. No powder can fall between lock and barrel.
- () Striking face of a percussion hammer is not battered. It strikes the cap or one squarely and in the center.
- () Lock jaws grip flint securely.
- () There is a proper leather or lead flint wrap.
- () The flint is in good condition and at proper angle.
- () Frizzen is in working order.
- () Frizzen is in good condition and not gouged or cracked.
- () Pan is clean and properly aligned with vent hole.

The Barrel:

- () Barrel fits stock.
- () Free from dents or cracks.
- () Flint does not strike the barrel.
- () Muzzle not dented or worn.
- () Cone on percussion weapons is well-seated and not battered.
- () On percussion weapons, hole is clear and of proper size. The shoulders are not worn down.
- () On firelocks, vent is clear and of proper size.
- () No signs of heavy corrosion around vent or cone.
- () Sights, if extant, are complete and operable.
- () Barrel bands or pins hold barrel securely.
- () Ramrod is straight, fits the stock properly, and the threads at the lower end are clean and free of burrs

After Disassembly (for PHMC-owned weapons at each cleaning)

The Stock:

- () No shiny spots in lock recess from rubbing by metal.
- () Lock recess is clean and free of splinters, splits and cracks.
- () No splitting or cracking around tang screw hold.
- () Bed for barrel is clean.
- () Any ramrod spoon or spring works freely; its recess is clean.
- () Nose cap is securely fastened to the stock.
- () Joint is firm on two piece stocks.

The Lock:

- () All internal screws are tight.
- () No internal parts are broken, cracked or chipped.
- () The nose of the sear and tumbler notches are sharp and in good condition.
- () No signs of metal rubbing on inside of lock plate.
- () No signs of improper repairs or incorrect replacements.
- () On firelocks, the frizzen fits down snugly on top of the pan.
- () With hammer fully forward, the mainspring does not disconnect from the tumbler nor does it protrude below the lockplate.
- () All parts are clean and lightly oiled.

The Barrel:

- () Breech plug is fully seated and properly aligned.

- () No indication of separation on "patent breeches".
- () Bore is clean and in good condition.
- () Barrel pin lugs are complete and in good condition.
- () On percussion weapons the bolster is tight in the barrel.
- () No problems have been reported by staff using this weapon.

Black Powder Artillery Inspection Checklist

Before Disassembly (for all weapons)

- () Your overall first impression is favorable.

The Tube:

- () Tube is clean and free of rust or corrosion.
- () No sign of external damage or strain (dents, cracks, etc.)
- () Inside of the bore is clean and relatively smooth.
- () No internal signs of damage (bulges, lodgments, pits, etc.)
- () No sign of corrosion damage at breech of the bore.
- () On modern iron guns with liners, the liner is secure.
- () The vent is clear and of acceptable size.
- () No signs of cracks or bending around the trunnions.
- () No signs of weakness at the chaplets on bronze tubes.

The Carriage:

- () Wheels are tight and free of rot and insect infestation.
- () Body of the carriage is free of rot and insect infestation.
- () No pieces or parts missing, cracked, bent or broken.

- () Wheels move freely.
- () Elevating mechanism works smoothly and properly.
- () None of the ironwork is coming loose.
- () Tube rotates freely on its trunnions.
- () Trunnion caps fit snugly and are properly keyed.
- () Lids of side boxes and limber chests fit snugly.
- () Limber chests and side boxes are clean and free of spilled powder.
- () Wood generally free of serious checking and splintering.
- () Wheel hub does not gouge the end of the axletree.
- () Linchpin is not digging into wheel hub.

Equipment:

- () All necessary equipment is present.
- () Sponge is in good condition and fitted to the bore.
- () Rammer head is secure and free of cracks.
- () Smaller items in good condition (linstock, thumbstall, buckets, etc.)
- () Prongs of the worm are sharp and not bent.
- () Haversack is clean and free of spilled powder.
 - () The gun book is being kept up to date.

CONDUCT OF FIRING DEMONSTRATIONS BLACK POWDER SMALL ARMS

Control: All firing demonstrations will be under the supervision of the designated Safety Officer. All regulations and range requirements shall be adhered to.

Each individual and/or group shall receive a copy of the Commission's regulations at least two weeks prior to conducting firing demonstrations at the site or museum. It is the responsibility of the individual or unit to review the Commission regulations and certify in writing that they have read the regulations and agree to adhere to them. A unit is defined as the actual reenactment unit and not a larger association of several units such as the B.A.R., for example. The written verification must be received at least two days prior to the demonstration or the individual and/or group will not be permitted to conduct firing demonstrations.

Loading: All loading of weapons will be done from pre-prepared cartridges. Powder horns and flasks will only be used for priming and shall not contain more than two ounces of black powder. Cartridge boxes shall hold the cartridges securely so that they will not fall out during times of heavy activity. Cartridges shall be neatly made using the proper sized former. Black powder spilled in the demonstration area should not be allowed to accumulate. Excess powder should be soaked with water several times.

Weapons: Only historically accurate weapons designated for use at the site or museum shall be fired. All weapons shall pass the required inspection or be removed from the demonstration area. All employees, volunteers, reenactors and/or reenactment units wishing to demonstrate arms at the Commission's historic sites and museums shall be authorized to do so in writing by the Safety Officer at least two weeks prior to the demonstration.

Misfires: Black Powder Small Arms Demonstrations

During a demonstration, if a small arms weapon fails to discharge, the demonstration will immediately halt. Demonstrators and visitors will be instructed to hold their positions. The site Safety Officer will explain the situation to the visitors, move them to a safe distance, and supervise the demonstrator in clearing the weapon. The weapon will be re-primed and fired. This procedure may be repeated. If the weapon fails to fire a third time, the cock will remain in the full forward position, the pan will be emptied, and the hammerstall placed on the frizzen. The weapon will then be removed from the field, maintaining the five-yard distance requirement from any visitors, with the muzzle pointing directly up. The designated Safety Officer will accompany the demonstrator as the weapon is removed. The firing demonstration will cease until the return of the designated Safety Officer unless another is present.

In a secure area, removed from any visitors, the flint may be adjusted or replaced, the vent picked, frizzen cleaned, and the piece discharged. If this fails, the weapon will be discharged with a CO2 discharger or flushed with water poured into the bore, taking care to keep the muzzle pointed in a safe direction. If a discharger is used, the weapon will be discharged into an appropriate backstop and all foreign material will be collected and properly disposed of. If flushing is used, the flushing will continue until the water exiting the vent is clear. The barrel will then be wormed to remove any portions of the cartridge or other foreign material and flushed once more. However, in the event the vent is clogged and water poured in the bore cannot exit, the vent may be picked while the

barrel is full of water. When the water flows clear, the weapon may be subsequently wormed. Once the weapon has been cleared, cleaned and re-inspected, it may be returned to active use.

CONDUCT OF FIRING DEMONSTRATIONS BLACK POWDER ARTILLERY

Control: All firing demonstrations will be under the supervision of the designated Safety Officer. All regulations and range requirements shall be adhered to.

Each individual and/or group shall receive a copy of the Commission's regulations at least two weeks prior to conducting firing demonstrations at the site or museum. It is the responsibility of the individual or unit to review the Commission regulations and certify in writing that they have read the regulations and agree to adhere to them. A unit is defined as the actual reenactment unit and not a larger association of several units such as the B.A.R., for example. The written verification must be received at least two days prior to the demonstration or the individual and/or group will not be permitted to conduct firing demonstrations.

Before:

- () The gun has been inspected, inside and out.
- () Bore is clean of foreign material.
- () The gun crew has demonstrated their knowledge of and ability to adhere to the position responsibilities outlined in a standard artillery manual of arms.
- () The carriage is in good condition and all keys are secure.

- () The accessory equipment is in good condition--sponge head in good repair, rammer and sponge secure on staff, etc.
- () Sponge head fits bore snugly but not too tight.
- () Ammunition boxes, haversacks, etc., are clean and free of spilled powder.
- () Ammunition is properly prepared, with just enough on hand for one demonstration.
- () The equipment is on hand to handle a misfire.
- () Required number of personnel are present to safely fire the piece.
- () The gun is situated safely in relation to the visitors.
- () The interpreter can see all of the visitors and can also see downrange.
- () The carriage is free to recoil if necessary so it won't buck, break, or collide with anything.
- () The visitors are properly contained, are located at a safe distance, and have good visibility so there will be no jostling and pushing to see and hear.
- () The ammunition boxes or limbers are located at a safe distance from the piece as well as from the visitors.
- () Conditions are not so dry as to risk a range fire from the muzzle blast.
- () Equipment is available should a range fire develop.
- () There is a first aid kit and emergency communications system available.
- () There are no open fires nearby--campfires, etc.

During:

- () The gun crew is following the approved manual with each crewmember located where they are supposed to be.

- () The sponge is adequately damp but not soaking wet
- () The man ramming is holding the rammer properly and the vent is being properly tended at the same time.
- () The rammer man is wearing gauntlets, but they are not so stiff and heavy as to cause fumbling or other difficulty.
- () The sponge head does not contact the ground at any time during the demonstration to prevent grass, sand, etc., from sticking to it.
- () If there is a misfire, it is handled safely and properly.

After:

- () After firing, the piece is wormed, sponged out, and dried.
- () All weapons, explosives, and accessory pieces are accounted for.
- () The weapon is secured and stored properly.
- () Demonstration area is inspected for smoldering residue.
- () Sponge head is thoroughly rinsed and dried.
- () All remaining explosives are promptly returned to proper storage area.

Misfires: Black Powder Artillery Demonstrations

In the event of artillery misfire the audience will be informed that the weapon has misfired and will be told the basic procedures for clearing that misfire. **The artillery crew will wait a minimum of three minutes before re-priming and firing the piece.** If the piece fails to fire a second time, the demonstration/reenactment will be stopped; the audience will be removed from the demonstration/reenactment area to a minimum

distance of 300 feet. After three minutes and with the permission of the Safety Officer, the procedure for clearing the weapon may begin. Minimum procedure is to elevate and flood the bore of the tube and the vent with water and worm the charge from the bore. Preferred procedure is to discharge the powder into an appropriate backstop using a properly fitted CO2 discharger. All spent or foreign material will be collected and disposed of properly. Once the charge has been removed and the vent cleared, the piece may be cleaned, re-inspected, and if passed, returned to service.

CONDUCT OF FIRING DEMONSTRATIONS POST-1898 SMALL ARMS

1. All modern small arms being used in a weapons demonstration shall be submitted to the same inspection requirements as weapons used in a tactical reenactment.
2. Any weapon that fails the safety inspection twice prior to the demonstration shall be removed from the demonstration.
3. The demonstration area shall conform to the same regulations for black powder weapons (see page 31 of the Weapons Safety Manual)
4. In the event of a misfire, the weapon will be removed a safe distance from the spectators and the misfired shell will be ejected from the receiver - the shell will be given to the site Safety Officer for disposal.
5. Any weapon that jams will be removed to a location away from the spectators and repaired.
6. No weapon will be handled by the spectators or removed from the demonstration area until it has been cleared by the on-site Safety Officer as being empty.

Misfires: Post-1898 Small Arms Demonstrations

If a metallic cartridge weapon fails to fire during a demonstration or battle tactical, the safety (if the weapon is so equipped) will be flipped to the "on" position and the cartridge removed from the firing chamber. The cartridge will be marked as a "dud" and placed in a separate pocket or cartridge container so as not to be reused. Any cartridge with a dimpled primer is not to be reused for firing.

If a metallic cartridge weapon jams during a demonstration and cannot be un-jammed without tools, the weapon will be immediately withdrawn from the field with muzzle pointed upwards, to a designated safety area. The site safety officer will insure that visitors and other demonstrators remain at a safe distance and will then supervise the demonstrator in clearing the weapon.

CONDUCT OF FIRING DEMONSTRATIONS POST-1898 ARTILLERY & MACHINE GUNS

The same regulations used to inspect artillery and multi-man machine guns for tactical reenactments will be used to inspect these weapons before a demonstration.

1. Any weapon that fails the inspection twice prior to the demonstration shall be removed from the demonstration.
2. The demonstration area shall conform to the same regulations for black powder weapons (see page 15 of the Weapons Safety Manual)

3. In the event of a misfire, the audience will be moved to a safe distance and the weapon will be properly cleared per the approved army manual for that weapon. Any misfired bullet or shell will be turned over to the site safety officer for appropriate disposal.
4. No spectator will be allowed to enter the demonstration area until the weapon has been inspected, cleared and deemed secured by the site safety officer.
5. No spectator will be allowed to operate any moving part of an artillery piece or multi-man machine gun at anytime.

Misfires: Post 1898 Artillery Demonstrations

In the event of artillery misfire the artillery crew will wait a minimum of three minutes before re-priming and firing the piece. If the piece fails to fire a second time, the demonstration/reenactment will be stopped and the audience will be removed from the demonstration area to a minimum distance of 300 feet. After three minutes and with the permission of the Safety Officer, the procedure for clearing the weapon may begin. Minimum procedure is to elevate and flood the bore of the tube and the vent with water and worm the charge from the bore. Preferred procedure is to discharge the powder into an appropriate backstop using a properly fitted CO2 discharger. All spent or foreign material will be collected and disposed of properly. Once the charge has been removed and the vent cleared, the piece may be cleaned, re-inspected, and if passed, returned to service.

CONDUCT OF OPPOSING FORCE REENACTMENTS BLACK POWDER SMALL ARMS & ARTILLERY

In addition to the other regulations in this manual, the requirements for simulating combat scenarios listed below will be followed.

- Ramrods may be carried in a battle reenactment but they **will not** be withdrawn from the pipes except upon instruction by the site Safety Officer. In the event of a misfire that cannot be cleared, following the misfire procedure, an NCO or Officer, with the permission of the Safety Officer in a designated misfire area, will clear the misfire with a CO2 discharger or a fiberglass ramrod. The weapon will be cleaned and re-inspected. Once the safety officer has cleared the weapon it can return to service. Edged weapons will not be drawn except as symbols of rank and ceremony.
- No hand to hand combat or atrocities will be permitted.
- Stay with your unit and follow all officers' orders. They know the battle plan.
- If an enemy charges and will not stop-give way or fall down
- If charging and the enemy does not give way - stop.
- If wounded or killed - do not rise again until the engagement is over.
- Do not fire or strike at an enemy who is too close - fall down or give way.
- Never disturb an artillery crew!
- Only paper cartridges without staples or other fasteners will be used to load arms. For artillery: aluminum foil cartridges.

After a demonstration or reenactment, the designated area will be policed by site personnel for spent and live cartridges or charges. All material will be collected in paper bags, soaked in water and properly disposed of. **DO NOT BURN SPENT CARTRIDGES!**

Misfires: Black Powder Small Arms

During a battle reenactment, a small arm that has misfired may be re-primed and firing attempted two additional times. If, after the third attempt, the small arm does not fire, the site Safety Officer will be notified and the weapon will be removed from the engagement to a designated safety area. The site Safety Officer will instruct the re-enactor to prime and fire the weapon. If the weapon still does not fire, then the charge will be dumped on the ground and dispersed and the weapon will receive a field cleaning, a re-inspection, and returned to the reenactment upon approval by the Safety Officer. If the charge cannot be cleared by dumping, then the gun will be removed to a designated area away from the engagement and the procedure for clearing a weapon that misfires during a demonstration will be followed.

Misfires: Black Powder Artillery

In the event of artillery misfire the artillery crew will display a crossed rammer and sponge to alert other participating reenactors to stay clear of the gun. **The artillery crew will wait a minimum of three minutes before re-priming and firing the piece.** If the piece fails to fire a second time, the demonstration/reenactment will be stopped and the audience will be removed from the demonstration/reenactment area to a minimum

distance of 300 feet. After three minutes and with the permission of the Safety Officer, the procedure for clearing the weapon may begin. Minimum procedure is to elevate and flood the bore of the tube and the vent with water and worm the charge from the bore. Preferred procedure is to discharge the powder into an appropriate backstop using a properly fitted CO2 discharger. All spent or foreign material will be collected and disposed of properly. Once the charge has been removed and the vent cleared, the piece may be cleaned, re-inspected, and if passed, returned to service.

CONDUCT OF OPPOSING FORCE REENACTMENTS Post-1898 Small Arms

The tactical engagement area will be pre-determined by the site administrator or his designee, the site Safety Officer, and the participating unit commanders. Distances will conform to the best practices as prescribed by the PHMC Historic Weapons Safety Manual. Site Safety Officers have the right to increase those minimum distances if they feel the tactical safety zones are inadequate.

A physical safety barrier of not less than 10 yards will be erected between the visitors and the engagement area. **There will be no weapons discharged from within the safety zone.**

The minimum safe shooting distance between aggressors with small arms is 25 yards. This can be reduced to no less than 20 yards in heavy cover if the site safety officer deems the brush in the area too thick to permit effective sight between combatants at the 25-yard distance.

No weapon should ever be pointed toward the public.

Do not aim directly at another reenactor. Shoot above their head or to the left or right if the area is clear of other troops.

No fixed or unsheathed bayonets/knives

No hand to hand combat

No mock executions or atrocities.

The tactical area will be policed for shells at the end of the tactical.

In the event of a real emergency immediately contact the safety officer and relay the problem.

If a medical incident occurs during the battle, call out the words "DOC" or "Corpsman Up" to notify the Safety Officer, NCO, line officer, or medical personnel.

No artillery piece or multi-man operated machine gun, whether operable or not, should change position during a tactical engagement.

Ammunition for tactical engagements

1. All ammunition for tactical engagements will consist of blank cartridges. They will be of the star-crimped type or red-plug type inserted in place of the projectile. Any

other type of blank cartridge must be pre-approved by the site Safety Officer.

2. Any ammunition not identified as an approved blank or containing any type of projectile (wood/plastic/rubber/bullets, including those known as shredder-type bullets) **is not allowed.**
3. Damaged cartridges (damage includes include dimpled primers, discharged primers, or dented casings), will not be allowed.
4. Corroded cartridges (those showing patina on the brass) will not be allowed.
5. All failed ammunition will be collected by the senior NCO and secured in a proper ammunition storage container until after the engagement. Re-inspection of ammunition is required.
6. No pyrotechnics, apart from commercially-manufactured smoke grenades used by PHMC staff only (pg.13), are allowed on-site.

Weapons for tactical engagements

1. All weapons employed in the tactical engagement, including propane-actuated machine guns, will be inspected prior to the engagement.
2. Any weapons that fail inspection can be re-inspected. If a weapon fails more than two inspections or has no hope of passing due to major damage, it will be removed from the bivouac.
3. Overall, the condition of the weapon must be sound:
 - a. Action and barrel are clean
 - b. Stock is sound and no major chips or breaks
 - c. No loose or missing parts

- d. Sling is in good condition
 - e. Gun has not been customized or altered to permit automatic fire.
 - f. The weapon's working parts are operable.
4. The safety mechanism on each weapon will be checked and the action cycled to insure that it is working properly.
5. Only professionally mounted Blank Firing Adapters (BFAs) may be used on semi-automatic weapons. (**Exterior barrel-mounted BFAs are not permitted**)

Figure: Exterior Barrel-mounted BFA



Weapons Safety in Camp:

1. While in bivouac, all weapons will be empty. All weapons will be handled and treated as loaded at **ALL TIMES**.
2. Never point the muzzle at another person. Keep the barrel pointed skyward or towards the ground (Neutral Position).
3. Never leave a weapon unattended. Your weapon must be in your possession at all times or it must be racked and under a posted guard from the unit. Shoulder Arms designed with a stacking swivel are permitted to be stacked.
4. Never dry-fire a weapon.
5. If you allow a visitor to handle a weapon, be sure that the weapon is unloaded and the clip removed, if it has one. Visually check the chamber by cycling the action. Be sure to instruct the visitor that the barrel must remain in a neutral position.
6. No visitor under the age of 17 should handle a weapon.
7. No visitor should be allowed to handle blank ammunition.

Special Considerations or Regulations:

1. No fully functional automatic weapons are allowed on-site.
2. Modified demilitarized automatic weapons using propane gas and spark plug to simulate rapid fire sounds shall employ a muzzle cover when not in use to guard against tampering while on display
3. Before an automatic weapon enters the engagement, it will follow the above inspection procedures as they apply, have the bore inspected, and fire a test round into a secure backdrop.

Misfires: Post-1898 Small Arms

If a metallic cartridge weapon fails to fire during a demonstration or battle tactical, the safety (if the weapon is so equipped) will be engaged or flipped to the "on" position and the cartridge removed from the firing chamber. The cartridge will be marked as a "dud" and placed in a separate pocket or cartridge container so as not to be reused. Any cartridge with a dimpled primer is not to be reused for firing.

If a metallic cartridge weapon jams during a demonstration and cannot be un-jammed without tools, demonstrators and visitors will be instructed to hold their positions. The site safety officer will explain the situation to the visitors, move them to a safe distance and supervise the demonstrator in clearing the weapon. If the weapon cannot be cleared, the demonstration will be halted and the weapon will be removed from the field and properly cleared in a designated safety area. The weapon must be re-inspected before it is permitted back onto the field.

During a battle tactical, if a cartridge weapon jams the demonstrator will either assume a position where the weapon will no longer be operated or remove the weapon from the field to be cleared as stated above. The site Safety Officer will be notified and the weapon will be taken to a designated safe area away from visitors where the weapon can properly serviced, re-inspected and returned to the engagement.

GLOSSARY:

Demonstration: a program or event that incorporates the demonstration of a weapon type, tactical system, line of march, etc. as portrayed by a person or unit with no opposing force.

Reenactment: A tactical demonstration between opposing forces on the field of battle. Often incorporates volunteers or non-paid PHMC staff in a volunteer capacity.

Safety Officer: A designee of the Pennsylvania Historical and Museum Commission who has been trained and certified to supervise historic weapons demonstrations and in enforcing the applicable PHMC regulations.

Type 4 Box Magazine: See BATF Regulations and Construction Documents for a Magazine.

Small Arms: Historic weapons with a bore diameter of less than 1".

Artillery: Historic weapons with a bore diameter of 1" or larger.

Bore: Inside diameter of the barrel of an historic weapon. A bore diameter of 1/2 inch = 50 caliber; of 3/4 inch = .75 caliber; etc...

Cartridge: Container, most commonly of paper, used to hold a measured amount of black powder. In the case of artillery, aluminum foil is often used.

Metallic Blank Cartridge: A brass cartridge either crimped or wax plugged at one end with a center or rim fire primer used in historic weapons firing a metallic cartridge.

Blank Firing Adapter (BFA): A device affixed to the end of a gas-operated metallic cartridge firing weapon which allows the semi-automatic action to cycle a new cartridge into the firing chamber of the weapon.

Former: Wooden dowel used to roll paper cartridges. It is sized to the bore of the weapon for which the cartridges are made.

Powder Horn: Historic container for storing black powder.

Powder Flask: Historic metallic container for storing black powder.

Quill Primer: A goose quill or paper soda straw laced with black powder which is inserted in the vent hole of a cannon or other artillery. The Quill Primer carries the fire from the linstock to the main charge in the barrel.

Linstock: Historic equipment to discharge cannons. Consist of a rope that has been soaked in salt peter and is wrapped around a piece of wood. It is in effect a slow burning match. The burning end of the rope is used to ignite the quill primer and thus fire the weapon.

Cartridge Box: Leather pouch worn over the shoulder which contains a wooden block with holes that accept pre-made paper cartridges.

Belly Box: A wooden block with leather flap used to hold paper cartridges. Commonly worn on a belt around the waist.

Limber Chest: Historic wooden box to hold artillery ammunition.

Flash Guard: Brass or steel device that directs the flash from the lock of a musket or rifle upward and away from nearby soldiers and visitors.

Flash: Term for the rapid burning of the gun powder that has been placed in the pan of a firelock weapon.

Hammerstall: Leather sleeve that fits snugly over the frizzen of a firelock weapon to prevent accidental ignition.

Frizzen: Hardened steel device on the firelock weapon that when struck by the flint yields sparks which in turn ignite the gun powder placed in the pan of the weapon

Pan: Depression on the lock of a firelock weapon that is adjacent to the vent hole in the barrel. Priming gun powder is placed in the pan. Sparks from the flint striking the frizzen fall into the pan igniting the priming powder. Part of the fire in the pan travels through the vent hole to ignite the main charge in the barrel.

Vent Hole: Hole through the barrel of a firelock weapon or historic cannon.

Cock or Hammer: That part of a firelock weapon that holds the flint and travels forward when the trigger is pulled causing the flint to strike the face of the frizzen and thus create sparks.

Edged Weapon: All manner of swords, bayonets, knives and belt axes.

Misfire: When an historic artillery piece or small arm fails to discharge properly while loaded.