

U S ARMY HERITAGE AND

EDUCATION CENTERS

SAFETY MANUAL

FOR

HISTORIC WEAPONS

DEMONSTRATIONS

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INTRODUCTION

America's military history is a significant facet of our cultural and historical heritage. Since the Nation's bicentennial, military reenactment and living history involving the use of historic weapons, authentic uniforms and accoutrements, has increased in popularity and proved its effectiveness as a vivid means of interpreting the military actions of the United States Army. The U.S. Army Heritage and Education Center (USAHEC) approves of and supports this interpretive method on its Army Heritage Trail provided the safety standards and regulations described herein are adhered to and staff and volunteers supervising these activities are trained to do so.

In order to provide for the safety of visitors, staff and participants the USAHEC has prepared the following regulations to govern military demonstrative interpretation at the Army Heritage Trail. The regulations deal with weapons safety, handling weapons and blank ammunition during demonstrations, black powder storage, blank ammunition storage, and staff training.

This manual is a minimum standard. In certain situations and at specific events or times more stringent regulations may be required. These may be developed and implemented by the Site Safety Officers with approval of the USAHEC director.

It is the policy of the USAHEC 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 laws and regulations of the US Army, Occupational Safety and Health Act, The Bureau of Alcohol, Tobacco and Firearms (BATF), and the PA Department of Conservation and Natural Resources (DCNR).

STORAGE

In general, black powder and related explosives will not be stored at USAHEC except during the period twenty four hours prior and twenty four hours after scheduled historical firing demonstrations are being conducted. All historic interpreters should only carry the amount of powder and blank charges necessary to complete the demonstration they are contracted for. All powder and charges will be inspected upon arrival to the site by the designated Safety Officer for the event.

Safety Officer(s): Storage of black powder and the safety and supervision of historic weapons demonstrations at USAHEC will at all times be under the supervision of a trained Safety Officer who has been designated in writing by the director of USAHEC to be responsible for the enforcement of safety precautions. An alternate Safety Officer shall also be designated by the director to act during any temporary absence of the certified Safety Officer.

Magazine: There is no approved BATF magazine for ammunition storage at USAHEC. All blank ammunition used during events will be distributed to individual soldiers by their unit commander prior to the event and kept in a secured ammunition pouch or appropriate artillery limber. Only the amount of powder used for the demonstration in prepared rounds should be brought on site.

Transfer of Powder: Removal of black powder from a magazine shall be in a spark-proof, pass box. The pass box is 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 removed from the site.

Inspection: Regular inspections of a magazine will be conducted while the magazine is on site.

WEAPONS AND AMMUNITION

Small Arms: Rifles, muskets and pistols with a bore of less than one inch or less are defined as small arms.

Type: All small arms dating prior to 1898 shall be reproduction weapons of the correct historic period as designated by the Site Safety Officer. Original weapons manufactured during and after 1898 may be used during a demonstration or reenactment if they have passed the safety inspection. Original black powder or smokeless cartridge weapons manufactured prior to 1898 must be certified as safe by a registered gunsmith before being allowed on the field.

Small Arms Ammunition: Only appropriate powders shall be in specific weapons types. No smokeless powder may be used in a black powder weapon. Cartridges for muzzle loading small arms shall be of paper with no staples or other metal fasteners. Metallic blank cartridges will be production made of the crimped or waxed end type. No hand loads or homemade blank metallic cartridges.

Safety Devices: All flintlock small arms shall be equipped with flash guards and hammerstalls. Frizzens and cocks will be in the full forward position until ready to demonstrate 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 the hammer in its safety position until the weapon is being prepared to fire as part of a demonstration or tactical engagement.

Inspection: All small arms will undergo a safety inspection as directed by the designated Safety Officer following the checklist attached.

Firing Procedures and Personal Safety: The face will always be kept clear of the muzzle of the weapon. Minimum paper wadding may be used to load a muzzle loading weapon. Any foreign material other than black powder or a blank metallic cartridge shall not be put into the firing chamber of the gun. During non-tactical 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.

Manual of Arms: The Site Safety Officer shall approve the manuals of arms to be used for each demonstration.

Artillery: Only reproduction artillery pieces will be fired. Prior to firing, all weapons will pass the artillery inspection checklist attached. Weapons will be loaded with approved loads of specified grainage as per attached tables. Pyrotechnics and fused ammunition will not be permitted.

Each piece, including swivel guns of a bore diameter 1 inch or larger, must be serviced by a gun crew of at least 3 members and a field piece shall have a minimum crew of 5 members. Each piece must have a proper pick, rammer, worm, sponge and water bucket. Ammunition must also be properly stored in a secure limber chest. Cartridges will be made according to the attached specifications.

The proper location for artillery will be determined by the safety officer and the commanding officers of the participating units before the event. Artillery will not be moved from the approved location(s) without the concurrence of these individuals prior to the actual demonstration.

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

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

Clothing: For protection from flash burns, all demonstrators firing black powder weapons will wear natural fiber or skin long-sleeved outer garments or full uniforms as appropriate to the historical period being interpreted. 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

Barriers: Visible or physical barriers such as fences, ropes, ribbons and walls are required to keep visitors at the safe distances indicated on the range specifications section of this document. If natural features are inadequate, then 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. 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.

Control: The safety officer shall control and supervise all firing demonstrations including those conducted by outside organizations and volunteers.

Misfires:

1. Misfire Procedures for Small Arms: During a demonstration, if a small arm fails to discharge, the demonstration will immediately halt. Demonstrators and visitors will be instructed to hold their positions. The Safety Officer will explain the situation to the visitors, move them to a safe distance and supervise the demonstrator in clearing the weapon. The piece 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 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.

If a metallic cartridge weapon fails to fire during a demonstration, 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 will not be allowed to be used for firing. The re-enactor/interpreter will be responsible for removing the cartridge from the site and safely disposing of it.

If a metallic cartridge weapon jams during a demonstration and cannot be unjammed without tools, the weapon will be immediately withdrawn from the field with muzzle pointed upwards, to a designated safety area. The Safety Officer will insure that visitors and other demonstrators remain at a safe distance and will then supervise the demonstrator in clearing the weapon. The weapon must be re-inspected before it is allowed back on the field.

2. Misfire Procedures for Black Powder Artillery: In the event of an artillery misfire, the audience will be instructed that the weapon has misfired and 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 will be stopped; 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.

Weapons Handling: Visitors must be 18 years of age 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 inspected to make sure it is unloaded, 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 demonstrator/re-enactor is responsible for the weapon and will not leave it unattended while it is out of his/her control. No charges/cartridges may be handled by a visitor. Edged weapons may not be withdrawn or handled by a visitor.

FIRING DEMONSTRATIONS

Black Powder Small Arms

Loading: All loading of weapons will be done from pre-measured cartridges. Powder horns and flasks for priming 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.

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

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 tagged and removed from the demonstration area. All employees, volunteers' reenactors and/or reenactment units wishing to demonstrate arms at the USAHEC shall be authorized, in writing, to do so by the USAHEC Director or his designee, at least two weeks prior to the demonstration. Further, each individual and/or group shall receive a copy of the USAHEC weapons safety regulations at least two weeks prior to conducting firing demonstrations at the USAHEC. It is the responsibility of the individual or unit to review the USAHEC 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.

RANGE REQUIREMENTS

Pages 30 and 31 contain the specifications for demonstration firing ranges that must be followed for artillery and small arms 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 error on the side of SAFETY.

INSPECTION

Pages 21-28 contain the weapons inspection check lists which must be completed for each weapon used in firing demonstrations at USAHEC. Initial inspection of historic interpreters/reenactors weapons will be the pre-disassembly checklist. Weapons will be inspected each day either when cleaned following a day of demonstration or prior to firing.

TRAINING

The USAHEC Historic Weapons Safety Officer will certify appropriate staff members in the safety and handling of historic weapons and firing same for demonstrational purposes. Employees and volunteers will be required to be certified every two years. The on-site employee designated by the Director to be the Historic Weapons Safety Officer will be required to be certified by successfully completing a recognized federal or state certification course every five years. Bi-annual updates and training will be given locally. AHEC may not conduct demonstrations or programs involving the use of historic weapons without a Historic Weapons Safety officer present.

INSURANCE

Events involving firing demonstrations that are sponsored by the USAHEC will be insured for liability by the US Army. Individuals and/or groups will be designated volunteers of the USAHEC for the period of the firing demonstration. The volunteers will be required to sign in when they arrive to provide service.

In the case where a group/individual is using the site for training or some other purposes that is not a USAHEC sponsored program, they must supply an insurance certificate to the USAHEC as well as receive written permission to use the USAHEC grounds. This approval can only be granted by the Garrison Commander.

APPENDIX A: GLOSSARY

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

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

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.

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...

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.

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

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

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.

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

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

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.

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

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

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

Limber Chest: Historic wooden box to hold artillery ammunition.

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 piece.

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.

Misfire: When an historic artillery piece or small arm fails to discharge even though it is loaded.

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 travels through the vent hole to the main charge in the barrel.

Powder Flask: Historic metallic container for storing black powder.

Powder Horn: Historic 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.

Reenactment: A tactical demonstration between opposing forces on the field of battle. Reenactments are forbidden at USAHEC

Safety Officer: A designee of the USAHEC who has been trained and certified to supervise historic weapons demonstrations and in enforcing the applicable USAHEC regulations.

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

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

APPENDIX B: INSPECTION PROCEDURE

Musket Inspection Protocols and Procedures

The issue of safety is of primary concern at AHEC demonstrations. Detailed inspection checklists follow for the purpose of assisting the designated Historic Weapons Safety Officer.

18th Century Weapons

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 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 buildup between the lock-plate, pan and barrel. These parts should all be securely fitted with only hairline gaps between the metal and wood areas. Key inspection points are: No original weapons allowed on the field unless approved following previous regulations in this manual. All weapons will have flash guards mounted through the frizzen bolt. The frizzen will function smoothly. Weapons have “hammerstalls” that cover the metal surface of the frizzen. At the end of the inspection have the troops bring all hammers to the halfcocked position. This is in preparation for the final inspection point.
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.

19TH Century Muzzleloading Weapons

1. Percussion ignition weapons have a slightly different protocol. Most Civil War units draw rammers and insert them into the barrel during an inspection. As the inspector reviews the piece, it is jerked slightly upward allowing the ramrod to ping.
2. No percussion weapon is allowed to be “capped” unless it is being fired during a demonstration.
3. Musket tools are kept in a separate area of the civil war cartridge box and may remain there while on the field.

APPENDIX C: MUSKET INSPECTION CHECKLIST

After Disassembly (for AHEC-owned demonstration 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 pieces, the bolster is tight in the barrel.
- No problems have been reported by staff using this weapon.

ADDITIONAL COMMENTS:

Before Disassembly (for all muzzleloading weapons)

- The weapon is confirmed to unloaded by measuring the ramrod.
- 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 place 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 cone 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 pieces is well-seated and not battered.
- On percussion pieces, 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.

Additional Comments:

APPENDIX D: ARTILLERY DEMONSTRATION CHECKLIST

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 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 also downrange.
- The carriage is free to recoil if necessary so it won't buck or break something.
- The visitors are properly contained and at a safe distance and have good visibility so there will be no jostling and pushing to see and hear.
- The ammunition boxes are 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 one develop.
- There is a first aid kit and emergency communications system available.
- There are no open fires nearby--campfires, etc.

During:

- The crew is following the approved manual with each person where he is 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 and then washed 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.

Additional Comments:

APPENDIX E: MUZZLE-LOADING CANNON INSPECTION

- 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, lodgements, 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.

Additional Comments:

APPENDIX F: MAXIMUM LOADS

TABLE OF MAXIMUM LOADS FOR ARTILLERY

18th Century Artillery

WEAPON TYPE	CALIBER	MAXIMUM BLANK LOAD (ounces fg)
Grasshopper	3 pounder	8
British Lgt. 6	6 pounder	12
Brit. Field Howitzer	5.8 inch	10
Iron Gun	3 pounder	10
Iron Gun	4 pounder	10
Iron Gun	6 pounder	10
Howitzer	8 inch	36
Howitser	8.76 inch	16
Iron (Armstrong)	9 pounder	24
Iron(Armstrong	18 pounder	32
Iron (Armstrong)	24 pounder	36

19th Century Artillery

WEAPON TYPE	CALIBER	MAXIMUM BLANK LOAD (ounces fg)
Napoleon	12 pounder	20
M 1841 Howitzer	12 pounder	10
Mountain Howitzer	12 pounder	6
Gun 1841	6 pounder	10
Parrott Rifle	3 inch	10
Ordinance Rifle	3 inch	10

TABLE OF MAXIMUM LOADS FOR SMALL ARMS**18th Century Small Arms**

WEAPON TYPE	CALIBER	MAXIMUM BLANK LOAD (grains)
Brown Bess Musket	.75	125 grains
Charleville Musket	.69	125 grains
Pennsylvania Rifle	Varies	90 grains
Pistols	Varies	90 grains

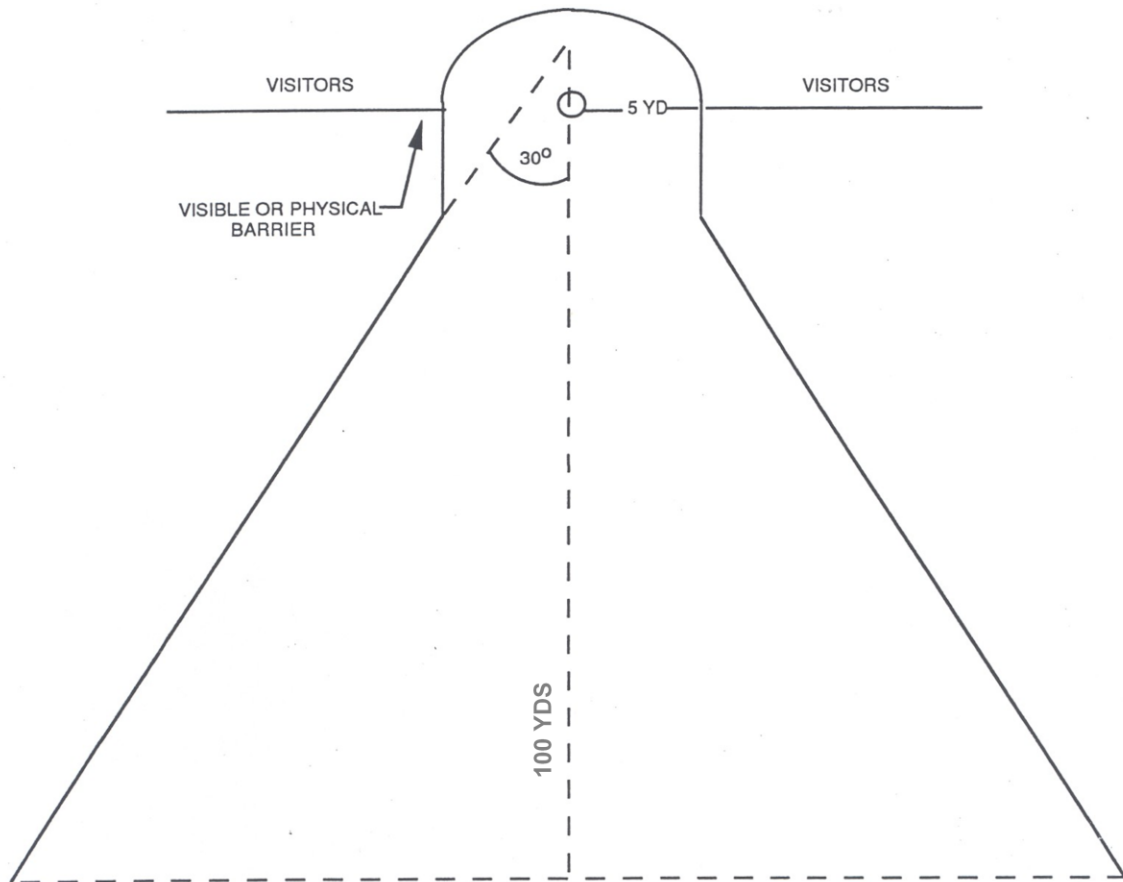
19th Century Small Arms

WEAPON TYPE	CALIBER	MAXIMUM BLANK LOAD (grains)
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

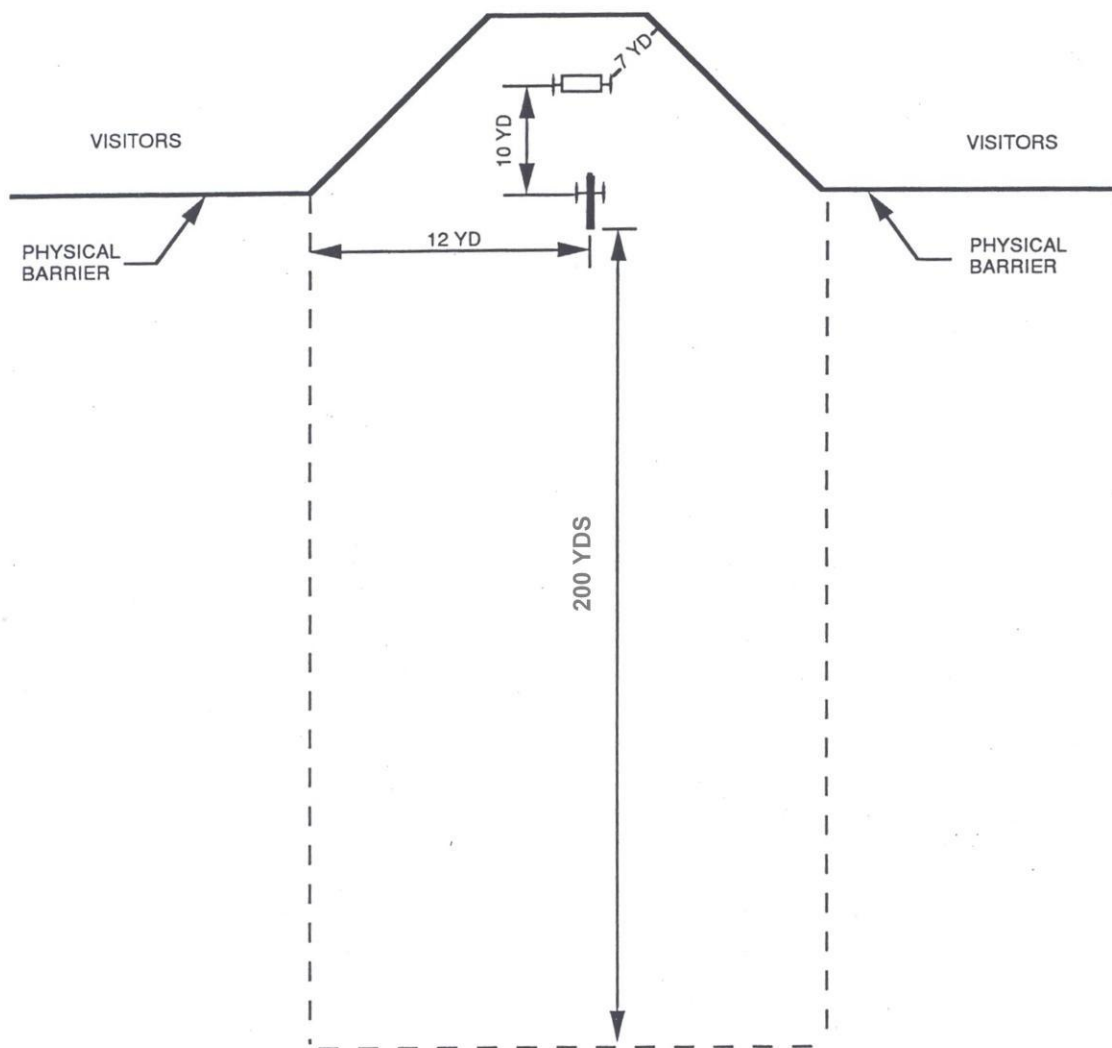
19th Century Metallic Cartridge Small Arms

WEAPON TYPE	CALIBER	MAXIMUM BLANK LOAD (grains)
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

APPENDIX H: RANGES FOR FIRING DEMONSTRATIONS



RANGE FOR BLANK SMALL ARMS FIRING DEMONSTRATIONS



RANGE FOR BLANK CANNON FIRING DEMONSTRATIONS

APPENDIX F: Event Demonstration Plan

This plan is prepared each time there is a historic weapons demonstration at USAHEC. The plan contains a realistic assessment of the areas approved for demonstrations enumerating distances, places for visitors, safety areas for unloading weapons and potential hazards.

APPENDIX G: Guidelines for the safe use of modern weapons in historic weapons demonstrations.

I. Weapons Safety:

A. 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 under your control 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, the clip removed; if it has one, and the action is open. 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 18 should handle a weapon.
7. No visitor should be allowed to handle blank ammunition.
8. No weapon should ever be pointed toward the public.
9. No fixed or unsheathed bayonets/knives.

B. Ammunition for demonstrations

1. All ammunition for tactical engagements will consist of blank cartridges. They will be of the star-crimped type or red wax plug type inserted in place of the projectile. Any other type 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) are **not allowed**.

3. Damaged cartridges, to include dimpled primers, discharged primers, or dented casings, will not be allowed.
4. Corroded cartridges (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 of any type are allowed on-site.

C. Weapons allowed for demonstrations

1. All weapons employed in the demonstrations, including propane-actuated machine guns, will be inspected.
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 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 make it automatic fire.
 - f. The guns working parts are operable.
4. The safety mechanism on each weapon will be checked and the cylinder cycled to insure that it is working properly.
5. Only Hollywood mounted Blank Firing Adapters (BFAs) may be used on semi-automatic weapons. (No exterior barrel mounted BFAs are allowed)

D. Special Considerations or Regulations:

1. **No fully functional automatic weapons are allowed on site without proper ATF paperwork and the permission of the Site Safety Officer in writing.**
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 when on display

3. Before the auto 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 backstop.

E. These guidelines serve as a minimum standard and may be amended at the discretion of the USAHEC Director or Site Safety Officer where more stringent regulation is required.

II. Weapons Safety during a demonstration

A. Small Arms Demonstrations

1. All modern small arms being used in a weapons demonstration shall be inspected following the requirements stated above.
2. The demonstration area shall conform to the same regulations for black powder weapons.
3. In the event of a misfire, the weapon will be removed a safe distance from the spectators, the misfired shell ejected from the receiver and turned in to the weapons safety officer for disposal.
4. Any weapon that jams will be removed to a location away from the spectators and repaired.
5. 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.

B. Artillery and Multi-man machine gun demonstrations

1. The regulations stated above will be used to inspect Artillery and multi-man machine guns for a demonstration.
2. Any weapon that fails the 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.
4. 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.
5. 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.
6. No spectator will be allowed to operate any moving part of an artillery piece or multi-man machine gun at anytime.