

NOVEMBER 15, 2010

PARK DIRECTIVE 3230

HISTORIC WEAPONS RULES AND REGULATIONS
FOR STATE PARKS PERSONNEL AND VOLUNTEERS CONDUCTING
RE-ENACTMENTS OR LIVING HISTORY IN ARKANSAS STATE PARKS

These rules and regulations are for the use of Arkansas State Parks (ASP) personnel and volunteers under the direct physical control of ASP personnel (volunteers who are not acting as members of an organized re-enactment unit) in organizing and conducting living history re-enactments and firing demonstrations in-park or at department sponsored events. They are a combination of best practices intended to provide guidance to park personnel in spotting safety violations and safe handling, storage, and use of black powder and historic weapons. They are not intended to replace the safety guidelines used by individual units that participate in events.

To implement these rules and regulations, ASP will establish a State Park Safety Officer team that will consist of two (2) employees from each region active in black powder programming. The Safety Officers will participate in training designed to implement these regulations. Training will consist of hands-on instruction in the handling, storage, and use of black powder and black powder firearms procedures for conducting safety inspections and the proper care and maintenance of historic weapons.

I. REQUIREMENTS

- A. Age Limits – Participants must be at least 14 years old to carry a historic long arm or pistol, 16 years old to load and fire a long arm, and 18 years old to load and fire a pistol. For artillerymen, members of a gun crew in positions #1 through #4 and Gunner (see Appendix VIII) must be at least 17 years old. All participants under the age of 18 must be under the supervision of a parent, legal guardian, or responsible adult who has signed the consent form (see PD 3240, Waiver and Release).
- B. Scenario – Scenarios will be approved by State Park Safety Officers (SPSO). There will be no hand-to-hand combat, or unsafe deviation

from scripted scenario action. Any such action observed will result in the immediate expulsion of the involved individuals from the event.

- C. Clothing and Accoutrements - Clothing and equipment must be appropriate. All uniforms will be of period design and fabric with special attention to correct footwear. ASP reserves the right to refuse persons or equipment deemed inappropriate.

II. WEAPONS

- A. Long Arms - Only historically accurate pre-1945 long arms (rifles, muskets, carbines and reproductions thereof are allowed in ASP. All weapons shall be in good working order with functioning half-cock/safety and blank adaptor where applicable. Flintlocks will be equipped with a hammerstall, frizzen cover, and flashguard. In the event of a misfire, refer to Misfire Procedures for Musket and Rifle (see Appendix I).
- B. Pistols - Participants carrying pistols must be at least 18 years old. No solid wadding is allowed in revolvers. All revolvers should have one cylinder to remain unloaded and unprimed. All weapons shall be in good working order with functioning half-cock/safety.
- C. Ammunition - Powder will only be carried in the form of properly rolled cartridges or commercially purchased blanks. A properly rolled cartridge is defined as one rolled in a soft paper* with between 60 and 100 grains of ffg black powder (as befits caliber and type of weapon, flintlocks have extra powder for priming). *Penny wrappers, heavy bond paper, bright or neon colors, plastics, staples, or tape will not be used for rolled cartridges.
- D. Percussion Caps - No CCI six partition/ six flange caps. They are distinguished by their copper color, extra loud report, and the tendency to come apart. Flangeless musket caps other than #10 or #11 are not allowed as they can shatter causing injury to the face and eyes.

Percussion caps and cartridges will be carried separately and securely. Under no circumstances will projectiles be brought on site.

- E. Inspections - Inspections will be conducted daily under the direction of an SPSO. ASP reserves the right to refuse weapons on the field if found operationally unsafe or inappropriate for the scenario. Organized units shall conduct inspections of their respective units

under the direction of an SPSO. ASP owned firearms should have an ASP Small Arms Inspection Form completed monthly (see Appendix IV).

- F. Edged Weapons - Swords and sabers will be carried only by Officers and appropriate NCOs of re-enacted military units. No sword fighting will be engaged in without the express written permission of ASP personnel. Knives carried will be of the period and secured in a period sheath. At no time will knives be drawn on the field. Bayonets must be secured in a proper scabbard with a metal tip. Bayonets may only be fixed during drill, to stack arms, or for educational purposes. Bayonets will not be fixed on the field. Should bayonets be fixed, State Park Safety Officers will stop the event

III. EVENTS

- A. Organization - All groups are welcome and shall be assigned to serve within the structure recognized by ASP and the designated event leaders. Group leaders are responsible for the conduct of their group and shall deliver a roster of persons attending to the designated SPSO each day.
- B. Camps - Both military and civilian camps shall be laid out and all participants shall camp in assigned areas. Fires shall only be permitted in designated areas. Do not discard trash in fire pits.
- C. Vehicle Access - Vehicle access and times must be arranged by the park superintendent or designee. This will be strictly enforced.
- D. Personal Conduct - Illegal or abused substances will not be permitted.

IV. RULES FOR ALL MOUNTED PARTICIPANTS

- A. Mounts - All mounts, pack, and draft animals shall be under care and control of a designated person at all times.
- B. Health Records - A current EIA (Coggins) is required for each animal per state and event regulations. Participants will be checked at registration before entering the site. If there is no paperwork or it is not up to date, the animal will not be allowed on site. Current Flu, Rhino, and Tetanus vaccinations are highly recommended for each horse.

V. RULES FOR ARTILLERY

- A. Artillery - Only Full-scale reproductions of period and theater appropriate artillery pieces are permitted. Scale reproductions may be accepted for demonstrations on a case by case basis and only by invitation of event organizers.
- B. Inspections - Satisfactory evaluation at an artillery inspection conducted by a State Parks Safety Officer is mandatory for participation. It is the responsibility of the respective crews to ensure that they submit to inspection in a timely manner.
- C. Gun Standards - All iron or steel cannon barrels must be manufactured or retrofitted with an inner liner or sleeve. The liner must be smooth and free of pits. Carriage construction shall be authentic in detail (if authenticity is questioned, Mordecai specifications will be controlling). All implements and accoutrements shall be properly constructed to maintain an authentic appearance.

All artillery pieces must have an Artillery Inspection Checklist completed prior to participating in events (see appendix III).

Each muzzle-loading gun will require the following tools and equipment:

1. Sponge bucket
2. Sponge-wool shearling or other natural fiber with a thick nap in good condition with intact seams
3. Rammers-the back end shall be tapered to the diameter of the rammer staff to prevent loss of hand in case of accidental misfiring
4. Priming wire-pick made of brass or bronze
5. Worm-double-edged and fitting the bore properly
6. Thumbstall-or leather glove for thumbing vent
7. Priming Pouch
8. Gunner's Pouch-or haversack
9. Heavy Leather Gauntlets-or gloves
10. Ammunition Chest
11. Vent Brush
12. Gimlet
13. Lanyard-five feet minimum
14. Hearing protection

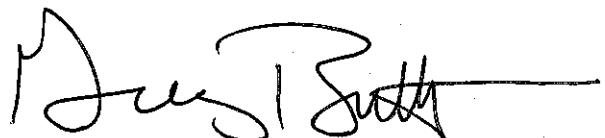
Artillery firing will only take place during the scheduled times on an appropriate blank firing range (see appendix VI).

- D. Ammunition - Blank rounds for artillery should be constructed of heavy duty aluminum foil, no plastic baggies, and powder charges shall not exceed 3 oz. of Cannon Grade black powder per inch of bore. One randomly selected round will be submitted to a SPSO for inspection.
- E. Crew Standards - A gun crew shall consist of at least three trained people consistent with the time period being portrayed and the type of piece. And at least this number will be present during the firing of the piece. As stated under the General Rules above, all men in positions #1 through #4 and Gunner shall be at least 17 years old. No pistols shall be carried by positions #1 through #8.
- F. Safety Standards - The maximum rate of fire shall not exceed one round per three-minute interval. Under no circumstances will artillery fire more than one round per three minutes. The Gunner of each piece is responsible for keeping time. Individual gun commanders may invoke a longer waiting period than the 3-minute rule, regardless of orders, if they feel that it would compromise safety to fire at a faster rate.
1. All artillery pieces will cease firing when their troops advance forward of the muzzle of that piece. Likewise, artillery crews will cease firing when opposing troops advance to within 50 yards of their piece.
 2. The loading and servicing of the piece will be performed in accordance with the artillery practices of the period MODIFIED FOR SAFETY. The gun commander shall regulate the correctness and rate by which the crew serves the piece. The bore shall be wormed and thoroughly wet sponged after each round. The vent shall be stopped with a proper thumbstall or glove from the time any implement enters the bore until the rammer is removed from the bore after the charge is rammed. **NO DOUBLE TAPPING OF CHARGES IS PERMITTED!** Charges should be rammed with one firm stroke.
 3. In the event of a Level I misfire the Misfire Procedures for Artillery will be performed after notifying an SPSO and the appropriate time limit has elapsed. Level II misfires must be supervised by an SPSO after the event has ended. This will be covered during safety inspections (see appendix II).

Related PD: PD 3240 – Historic Weapons Safety Rules for
Living History Participants

**APPROVED BY THE ARKANSAS STATE PARKS, RECREATION AND TRAVEL
COMMISSION AT THE SEPTEMBER 22-23, 2010 MEETING AND FAVORABLY
REVIEWED BY THE ADMINISTRATIVE RULES AND REGULATIONS
COMMITTEE OF THE ARKANSAS LEGISLATIVE COUNCIL AT THE
NOVEMBER 15, 2010 MEETING.**

APPROVED BY:


GREG BUTTS, DIRECTOR
Arkansas State Parks

APPENDIX I

MISFIRE PROCEDURES FOR MUSKET AND PISTOL

When a firearm misfires:

1. Remain at the position of Aim....count to ten
2. Repeat prime, aim, and fire.
3. If the firearm does not discharge, pick the vent and repeat step 2 above. (with flintlock firearms, wipe battery and pan with a piece of cloth, then pick vent)
4. If the firearm still fails to discharge, repeat step 3 above
5. If the firearm fails to discharge after the third attempt to correct the misfire, bring the firearm to RECOVER ARMS and announce, "Misfire."
6. Maintain RECOVER ARMS until the completion of the event, or
7. Remove to the rear where a State Park Safety Officer can clear the weapon with a CO2 discharger. (This option may not be available at all events.)

At no time should a worm and rod be used to extract charges.

Efforts should be made to correct the cause of the misfire before placing the weapon back in service.

APPENDIX II

MISFIRE PROCEDURE FOR ARTILLERY

I. LEVEL I MISFIRES

- A. Gunner - In the case of a misfire, the gunner immediately gives the command, "Do not advance, the primer has failed!"

The minimum waiting time before attempting to reprime the piece is thirty seconds, except when the primer simply slips out of the vent or the lanyard hook slips from the primer. When a misfire occurs, good judgment on the part of the Gunner is crucial. In many cases, it is prudent to wait longer than thirty seconds, at least until smoke has ceased to issue from the vent.

When the Gunner determines that sufficient time has elapsed, the command is given "Reprime the Piece." When Cannoneer #2 signals, "Ready," the Gunner gives the command, "FIRE." The Gunner will be alert during the repriming that all numbers perform their duties safely and correctly.

- B. Cannoneer #1 - Cannoneer #1 will remain in the position of READY during the repriming, keeping his eyes downrange for possible range violations.
- C. Cannoneer #2 - At the command of "Reprime the piece", Cannoneer #2 rises from the READY position and steps with the left foot first, inside the wheel, keeping his/her back to the muzzle, without grasping the wheel and positions himself/herself close to the axletree. With the left hand, back of the hand down, Cannoneer #2 carefully removes the failed primer. He/She then takes the priming wire from Cannoneer #3 over the wheel. He/She grasps the priming wire with the thumb and fore finger of the left hand. The wire is inserted into the vent and released, allowing it to drop into the vent. After a short pause, he/she retakes the wire as before and pricks the charge well. The wire is then withdrawn and returned to Cannoneer #3 over the wheel.

Cannoneer #2 turns to his/her right and takes a prepared primer over the wheel from Cannoneer #4. He/She inserts the new primer with the

left hand, using the right to hold the lanyard and keep it from becoming entangled on the carriage. When the primer is inserted, he/she moves the left hand down the breech to secure the lanyard while Cannoneer #4 moves into firing position, being sure to maintain eye contact with Cannoneer #4 as #4 takes the slack out of the lanyard.

When Cannoneer #4 is in position, he/she will nod his head to indicate the signal for #2 to release the lanyard and retrace his/her steps back outside the wheel, keeping his/her back to the muzzle and without grasping the wheel.

Once outside the wheel, he/she resumes the READY position and announces, "READY!"

- D. Cannoneer #3 - When the command "Reprime the Piece" is given, Cannoneer #3 steps forward even with the hub of the wheel and hands Cannoneer #2 the priming wire over the top of the wheel. He/She remains there until #2 returns the priming wire and then #3 returns to his/her original position.
- E. Cannoneer #4 - When the command "Reprime the Piece" is given, Cannoneer #4 steps forward, even with the hub of the wheel. He/She immediately prepares another primer by fixing it to the lanyard. He/She hands the primer to Cannoneer #2 over the wheel. Keeping eye contact with #2, he/she takes the slack out of the lanyard as before, nodding when in position so that #2 can return to his/her position outside the wheel.

When the command FIRE is given by the Gunner, Cannoneer #4 pulls the lanyard as before.

- F. Cannoneer #5 - Cannoneer #5 remains in position, keeping his/her eyes down-range, alert for possible range violations.

NOTE: The Level I repriming procedure is repeated three times before going to Level II procedures to correct a misfire. However, if the primers are faulty, not igniting, the gun may be fired with a quill primer and linstock.

II. LEVEL II MISFIRES

Artillery firing events/demonstrations in ASP will remove powder charges and wadding only with a CO2/H2O fire extinguisher. Only under extreme circumstances will the artillery worm be placed in service to extract the charge. Level II misfires will only be corrected once the event/demonstration is concluded.

- A. Cannoneer #5 is responsible for the placement of the misfire kit or contacting an SPSO.
- B. The Gunner will remain in place and direct the unloading operation under the supervision of an SPSO. Cannoneers #2, #4, and #5 will perform the procedure.
- C. Cannoneer #5 will retrieve the misfire kit, load two 60cc disposable veterinary syringes with water, and hand them to #4. Cannoneer #4 will inject water into the vent. It is the judgment of the Gunner to determine if additional water is required.
- D. Cannoneer #4 returns syringes to #5.
- E. Cannoneer #5 will retrieve the CO2/H2O fire extinguisher and hand to #4.
- F. Cannoneer #4 will introduce the vent adaptor nozzle of the CO2/H2O extinguisher into the vent of the cannon and discharge extinguisher.
- G. Cannoneer #2 will submerge the expelled powder charge in a bucket of water.

SAFETY NOTE: Cannoneer #4 will wear leather gloves during Level II misfire procedures. In extreme circumstances or if CO2/H2O is unavailable, after completing steps 1-4 above, fully elevate muzzle, continue to inject vent until vent is flooded. Cannoneer #1 will then flood the bore and using the worm, carefully draw the charge and place it in sponge bucket.

APPENDIX III

MUZZLE-LOADING ARTILLERY INSPECTION CHECKLIST

Unit: _____

Weapon: _____

Bore in inches: _____

S/N or Gun# _____

The Tube:

- ☐ The tube is clean and free of rust and corrosion
- ☐ No sign of external damage or strain (dents, cracks, etc.)
- ☐ Inside of bore is relatively smooth
- ☐ No internal signs of damage (bulges, pits, lodgments, scale, etc.)
- ☐ On iron guns with liners/sleeves, the liner/sleeve is secure
- ☐ The vent is clear and of acceptable size (not exceeding .280")
- ☐ No signs of stress around trunnions
- ☐ No signs of weakness at the chaplets on bronze tubes

The Carriage:

- ☐ Wheels are tight and free of rot or insect infestation
- ☐ Body of carriage is free of rot or insect infestation
- ☐ No parts are missing, cracked, bent, or damaged
- ☐ Wheels move freely
- ☐ Elevating mechanism works smoothly and properly
- ☐ None of the ironwork is loose
- ☐ Tube rotates freely on its trunnions
- ☐ Trunnion caps fit snugly and are properly keyed
- ☐ Lids of limber chest and/or side boxes fit securely
- ☐ Wood is generally free of serious checking or splintering
- ☐ Wheel hub does not gouge the end of the axle tree
- ☐ Linchpin is not digging into wheel hub

Equipment:

- ☐ All necessary equipment is present
- ☐ Sponge is in good condition and fitted to bore
- ☐ Rammer head is secure and free of cracks
- ☐ Prongs of the worm are sharp and not bent
- ☐ Small items in good condition (thumb stall, tube pouch, etc.)
- ☐ Leather gauntlets in good condition
- ☐ Limber box and haversack is clean and free of spilled powder
- ☐ The gun book is up to date

THIS WEAPON: Passed _____

Failed _____

Comments: _____

Inspector: _____

Date _____

Effective until superseded

APPENDIX IV

I. ARKANSAS STATE PARKS SMALL ARMS INSPECTION FORM

Date _____ Weapon # _____ SN# _____

This weapon has been checked for the following safety conditions:
A Yes on any question constitutes a safety failure.

	<u>Condition</u>	<u>Yes</u>	<u>No</u>
Barrel	*Loaded	_____	_____
	*Bore Obstruction	_____	_____
	*Dents, Dings, or Bulges	_____	_____
Stock	*Cracks or Splits	_____	_____
	*Rough Edges	_____	_____
	*Missing Screws or Looseness	_____	_____
Lock	*Works Roughly	_____	_____
	*Half-cock Inoperable	_____	_____
	*Trigger Pull Too Light/Heavy	_____	_____

Inspector's overall impression of the weapon: Fail _____ Pass _____

This weapon inspected by _____

This form is an assurance that this weapon was in safe functioning condition at the time of inspection. Safe operation and adherence to all safety rules is the responsibility of the undersigned demonstrator.

I have read and understand all rules, policies, and directives concerning the use of historic weapons at Arkansas Department of Parks & Tourism events.

Name _____ Date _____

II. INSTRUCTIONS FOR COMPLETING ASP SMALL ARMS INSPECTION FORM

There are three parts to the historic small arm: barrel, stock, and lock. **The check-in form is to be completed in ink only!** Each of these three parts has three conditions to be checked.

A. BARREL

1. Barrel-Loaded - Check to see if the barrel is loaded by springing the rammer. Check the weapon to insure there is no live percussion cap on the cone. Insert the ramrod into the bore, threaded end first. Inspector should hear a metallic "ping" when the rammer contacts the breech face and the rammerhead should barely protrude from the muzzle indicating an unloaded weapon. Mark "No" on the check-in form and proceed to the next condition.

If there is no "ping" or the rammerhead protrudes significantly from the muzzle, the weapon should be considered loaded. Mark "Yes" on the check-in form, the weapon has failed the safety inspection and must be cleared by a Park designated safety officer in a clear area. (See instructions on clearing a loaded weapon or misfire)

2. Barrel-Bore Obstruction - Using a bore light, check the weapon for any foreign matter present in the bore. If no bore light is available, insert the ramrod into the bore threads first. (Be sure not to insert rammerhead first, in rusty or excessively fouled weapons, it is possible to lodge the rammerhead in the bore.)

The rammer should move freely in the bore, mark "No" on the form.

Any stickiness or resistance to the rammer moving up and down in the bore is indicative of a bore obstruction. Rust and excessive fouling should be considered bore obstructions; mark "Yes" on the form, the weapon has failed the safety inspection and must be cleared by a Park designated safety officer in a clear area.

3. Barrel-Dents, Dings, or Bulges - Visually inspect the barrel for dents or deep scratches that deform the barrel. Pay close attention to the muzzle, it should be uniformly round with no deformities. Look for bumps, bulges, or swellings that indicate the barrel has been weakened.

The barrel is uniformly smooth, no deformity, mark "No" on the form.

The barrel shows dents, dings, or bulges, Mark "Yes" on the form. The weapon has failed the safety inspection and must be cleared by a Park designated safety officer in a clear area.

B. STOCK

1. Stock-cracks or splits - The stock must be free from cracks or splits that could result in stock breakage or the pinching of hands and skin. The stock is free from the above defects; mark "No" on the form.

The stock is cracked or split; mark "Yes" on the form, the weapon has failed the safety inspection and must be cleared by a Park designated safety officer in a clear area.

2. Stock-Rough Edges - The stock must be free of rough edges that could result in injury to the demonstrator's hands. The stock is free from the above defects; mark "No" on the form.

The stock has rough or sharp edges; mark "Yes" on the form. The weapon has failed the safety inspection and must be cleared by a Park designated safety officer in a clear area.

3. Stock-Missing Screws or Looseness - Check the stock for loose or improper fit. Check that barrel bands or pins are snug and in place. Check that all screws are in place and in good condition. Barrel bands should not be so tight as to prevent drawing rammer. The stock is free from the above defects; mark "No" on the form.

The stock does not hold the barrel or lock properly and tightly. Screws are missing, loose, or damaged in the butt plate, lock, trigger guard, tumbler, or barrel bands. Mark "Yes" on the form, the weapon has failed the safety inspection and must be cleared by a Park designated safety officer in a clear area.

C. LOCKS

1. Lock-Works Roughly - The lock must work smoothly. Depress the trigger with the forefinger of one hand. Use the edge of the other hand to move the hammer or cock back and forth. The hammer or cock should move smoothly without binding. Weapons made by EuroArms may exhibit some roughness and heavy trigger pull, as this is inherent in the lock. Please take that into consideration. Lock works smoothly, mark "No" on the form.

The lock binds, hangs, or requires excessive effort; mark "Yes" on the form, the weapon has failed the safety inspection and must be cleared by a Park designated safety officer in a clear area.

2. Lock-Half Cock Inoperable - The half cock is the safety on an historic weapon and must work. Move the hammer or cock through its positions, listening and watching for positive clicking at half cock and full cock. Check that the hammer releases cleanly when the trigger is pulled while keeping control over the hammer.

Place the weapon on half cock and suspend the weapon by the trigger with one finger while keeping control of the weapon with the free hand. If the weapon remains on half cock while supporting its weight on the trigger, the half cock is functioning properly. The half cock functions properly, mark "No" on the form.

The half cock does not function properly; mark "Yes" on the form, the weapon has failed the safety inspection and must be cleared by a Park designated safety officer in a clear area.

3. Lock- Trigger pull Too Light or Heavy - Trigger pull that is too light (hair trigger) can result in the weapon discharging unexpectedly. A trigger that is too hard to pull (too heavy) can be equally as dangerous.

With the weapon on full cock and the hammer/cock held by the free hand, determine if the trigger requires a reasonable amount of effort to fire the weapon. If the effort required is so little that the weapon could easily be fired unintentionally, the trigger pull is too light. If the effort required is so great as to make it difficult to fire the weapon when the order to fire is given, the trigger pull is too heavy. Trigger pull is reasonable, mark "No" on the form.

Trigger pull is too light or too heavy; mark "Yes" on the form, the weapon has failed the safety inspection and must be cleared by a Park designated safety officer in a clear area.

Inspector's Overall Impression - Conditions may exist, which make a firearm potentially unsafe in the opinion of the inspector. In these instances, the inspector should fail the weapon. Weapons that fail the initial inspection may be serviced or repaired. All repairs should be conducted by a qualified State Park Safety Officer or gunsmith.

APPENDIX V

SAFETY, CARE, AND STORAGE OF BLACK POWDER AND HISTORIC WEAPONS

The purpose of this Appendix is to establish department policies concerning standards and procedures for the safe storage, handling, and care of black powder and historic weapons.

I. **WHAT IS BLACK POWDER?**

Black powder is the oldest explosive and propellant known to man. From the beginning, it has been feared and treated with great respect. Even after 600 years of use, the need to be aware of the inherent hazards of working with black powder has not changed.

“It is important to keep in mind that a single, one pound can of black powder is the equivalent of seven sticks of dynamite.”

Don Steiner, NPS

Sporting black powder, which is the only kind of black powder that is to be used with historic weapons, is still made from the centuries old recipe of 75% potassium nitrate, 15% charcoal, and 10% sulfur. Black powder is called black because of its color, which comes from the charcoal. The original “gunpowder” is known today as black powder to differentiate it from later developments such as nitrocellulose “smokeless” gunpowder and sodium nitrate “blasting” powder. Using any “gunpowder” other than potassium nitrate sporting black powder in a musket or cannon creates an extremely hazardous situation that could result in an explosion that destroys the weapon and fatally injures the demonstrator(s) and bystanders.

There are three basic types of black powder. Serpentine powder refers to powder made by mixing the ingredients when wet and allowing the mixture to dry into a cake. The cake is then broken into grains. This process is the oldest and most dangerous. It was replaced by corned powder. Corned powder is formed by forcing the wet mixture through sieves which created grains of a regulated size. Corned powder could then be tumbled in a barrel to produce a denser and more polished grain, making it the third type of black powder, Glazed powder. In the mid nineteenth century, graphite was added to the barrel to produce a shiny surfaced grain. It was once believed that the graphite made the powder less hygroscopic or less capable of absorbing moisture.

II. BLACK POWDER DESIGNATIONS

- A. F, FF, FFF, FFFF. These letters refer to the sieve size and thus to the fineness of the grains of powder. Simply, the more f's, the smaller the powder. Grain size affects burn speed, with smaller grains burning more rapidly. The more rapidly it burns, the greater pressure it creates. FFFF is usually only for priming flintlocks, FFF for small bore pistols and some rifles, FF for muskets, and F or cannon grade for guns or artillery, with cannon grade being recommended.
- B. Duck Shooting Powder. Shotgun powder which is not processed as carefully as rifle powder.
- C. P. and T.P. These were early designations for coarse powder used mainly in shotguns and cannon.
- D. r and g following other designations such as FFg. The g stands for glazed powder and the r stands for unglazed powder.
- E. Pellet Powder. Powder compressed in large pellet size pieces used for blasting.
- F. Prismatic Powder. Pieces of powder formed in hexagonally cross-sectioned shapes. This was used for cannons.
- G. Soda Powder or "B" Blasting Powder. Made with sodium nitrate instead of potassium nitrate and used for blasting. It has a faster burning curve than potassium nitrate and is therefore louder.

III. CLASSIFICATION

"Gunpowder" is classified and regulated by three divisions of the federal government, Occupational Safety and Health Administration (OSHA), the Bureau of Alcohol, Tobacco, and Firearms (BATF), and the Department of Transportation (DOT). These classifications are as follows:

Substance	OSHA	BATF
Black powder	Class "A"	Low Explosive
Smokeless powder	Class "B"	High Explosive
Fireworks powder	Class "C"	Comb. Explosive

IV. TRANSPORT

Black Powder should be transported by at least two persons, properly secured and never left unattended. A working fire extinguisher is required. The DOT does not require a load of black powder to bear a placard if being transported by the end user.

V. STORAGE

Black powder should never be stored in a Visitor Center or other building that is accessible to the public. Black powder should never be left in an unsecured location. An unsecured location is any place accessible to anyone other than staff involved in black powder events or demonstrations and their supervisors. Black powder shall be stored in a black powder manufacturer's approved container.

VI. MAGAZINES

Do not store more than fifty (50) pounds of black powder in one place. Separate quantities of black powder by at least 18 feet. Storage of more than fifty (50) pounds in one place requires a Class I fixed magazine which is a dedicated purpose-built facility.

VII. CLEANING

Cleaning a black powder firearm can be wet and messy, please take that into consideration.

Items needed: tools for disassembly, cleaning rod, hot water, dishing washing liquid, cleaning patches, bucket, BreakFree Oil.

Disassemble the weapon as required and proceed using the following steps:

"Pa would take down his gun down from the wall and clean it. Out in the snowy woods all day, it might have gathered a little dampness, and the inside was sure to be dirty from powder smoke.

So Pa would take the ramrod from its place under the barrel, and fasten a piece of clean cloth on its end. He stood the gun barrel in a pan on the hearth and poured boiling water from the kettle into the gun barrel. Then

quickly he dropped the ramrod in and rubbed it up and down, up and down, while the hot water blackened with powder smoke spurted out the little hole on which the cap was placed when the gun was loaded.

Pa kept pouring in more water and washing the gun barrel with the cloth on the ramrod until the water ran out clear. Then the gun was clean. The water must always be boiling, so the heated steel would dry instantly.

Then Pa put a clean, greased rag on the ramrod, and while the gun barrel was still hot he greased it well on the inside. With another clean, greased cloth he rubbed it all over, outside, until every bit of it was oiled and sleek. After that he rubbed and polished the gunstock until the wood of it was bright and shining, too."

Laura Ingalls Wilder, Little House in the Big Woods
1932.

With a few modern allowances, this is still the best way to clean a black powder rifle or musket. For the sake of safety, don't use boiling water. The water should be hot, but not so hot as to scald the user. Use your own good judgment about how hot is safe for you to use.

Don't use a kettle, just pour the hot, soapy water into the bucket and place the breech end of the barrel (removed from the stock if possible) in the water, being sure that the vent or nipple is below the water level. As the ramrod is drawn up and down inside the barrel, it will pump hot water in and out through the vent. Change the water when it becomes excessively fouled.

Remove the barrel from the water and allow it to drain for a few moments muzzle down. Use clean, dry patches to rub the bore dry and then use a good, water repelling oil such as BreakFree oil to rub on the barrel both inside and out (you can use bear grease if you feel you must).

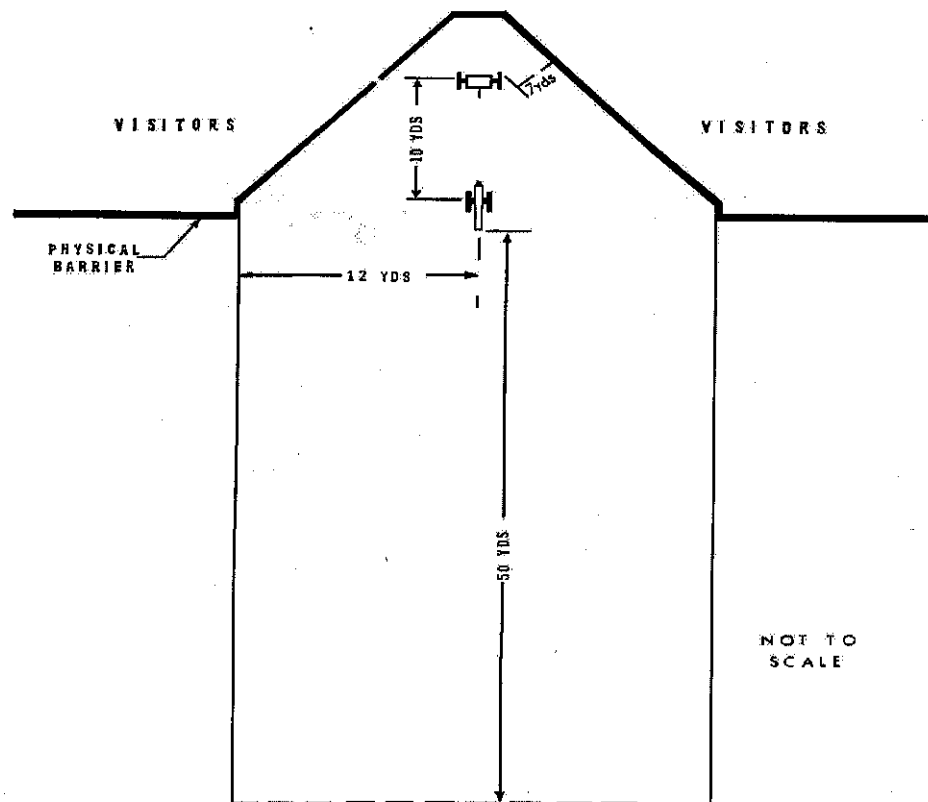
Weapons should be cleaned within a 24 hour period or as needed inside that period. For weekend demonstrations the weapon can be used all weekend before cleaning as outlined above. It is imperative that a weapon not be stored after firing without a thorough cleaning.

A brush on a cleaning rod can be used to remove excess fouling between demonstrations.

More oil is needed on a weapon being stored than one being used. A weapon that has been stored should have the barrel swabbed with a clean patch to remove excess oil before use. Bright finish weapons require special care to avoid rust.

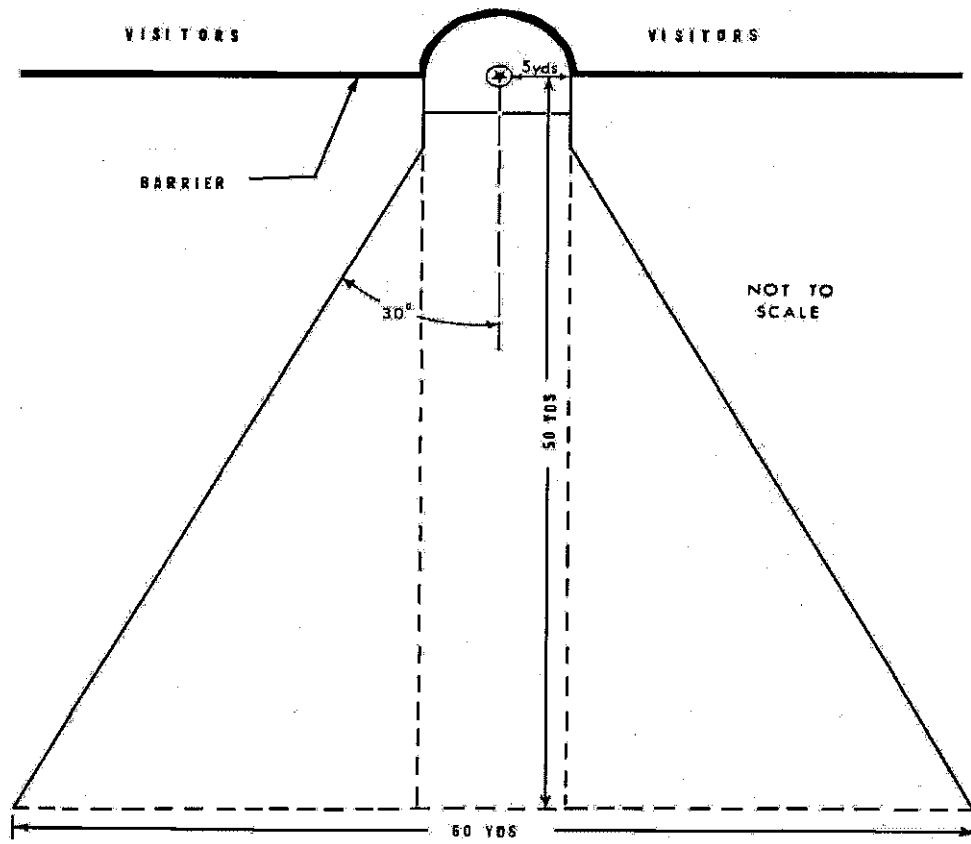
Each historic weapon that is the property of the Department of Parks & Tourism shall have a corresponding "Gun Book" which records the serial number, user of the weapon, time and date of each use and the purpose of the use, date of cleaning and any maintenance to the weapon.

APPENDIX VI



RANGE FOR BLANK CANNON FIRING

APPENDIX VII



RANGE FOR BLANK SMALL ARMS FIRING

APPENDIX VIII

Civil War Artillery Crew Positions

