





## **ALAMO BLACK POWDER SAFTEY MANUAL**

### Table of Contents

#### **Part I**

General Principals

Necessary Tools

Routine Inspection of Arms for Daily Use

Seasonal Inspection of Arms

Common Problems Encountered During Inspections

Accouterment Inspection

#### **Part II**

Certification

Levels

Exam

#### **Part III**

The Manual of Arms

Important Terms Regarding Drilling & Formation

General Rules

The Arms Positions

Load by Twelve Commands

Commands for Firing

The Flintlock Rifle, Pistol, & Carbine

The Flintlock Rifle

The Flintlock Pistol & Carbine

## **Part IV**

Handling a Misfire

Types of Misfires

Causes of Misfires

Level I Misfire Procedures

Level II Misfire Procedures

Safety Notes

Fixing Flints

Information Regarding Flints

NPS: Table of Maximum Loads – Small Arms

Small Arms Demonstration Check List

Glossary

Bibliography

NOTE: This manual was developed using previous safety measures previously adopted by the Alamo. However, it has been augmented with material recommended by the National Park System's safety manual regulating the use of black powder weapons and the Pennsylvania Historical & Museum Commission's Safety Manual For Historic Weapons Demonstrations, Revised August 2014.

The policies set forth in this manual are to be adhered to by the Alamo's staff and all others who participate in Alamo programming and demonstrations.

# PART I



## GENERAL PRINCIPALS

Safety is a prime concern at the Alamo. We want to avoid accidental injury to visitors, living history volunteers, staff, and the Alamo's historic structures. **REMEMBER: THESE ARE REAL WEAPONS!**

The Alamo Living History Coordinator will certify staff and volunteers in the safe use and handling of historic weapons for demonstration purposes. Any Alamo employees designated either to be in charge of or participate in weapons demonstrations are required to be first certified by successfully completing the Alamo Weapons Safety course. The certification levels for black powder are outlined in this manual and can be attained by arranging a private testing session with the living history coordinator, or attending a semi-annual testing session. General testing will be scheduled for the third Mondays in January and November.

All weapons used must accurately represent the firearms used during the prescribed time period.

All uses of historic weapons at the Alamo will strictly comply with the historic weapons demonstrations safety standards and will follow the procedures specified therein for the particular weapons(s) being used.

Weapons firing demonstrations conducted in areas administered by the Alamo are restricted to reproduction black-powder weapons.

In this document weapons referred to as Alamo-era weapons include the following: (1) flintlock rifles, muskets, and pistols; (2) percussion rifles, muskets, and pistols/revolvers; and (3) cartridge rifles, carbines, and pistols/revolvers of the types manufactured prior 1898 that utilized black powder.

“Black powder” refers to potassium nitrate-based, sporting grade black powder.

Original Alamo museum weapons will not be used in firing demonstrations. In cases where replicas are not available, original items from the Education Collection may be displayed under controlled circumstances but not carried by interpreters as part of their equipment without the knowledge and permission of the Director of Education & Curation.

Requests by outside groups or individuals to use non Alamo-era original weapons for display must submit a written consent form approved by both the Living History Coordinator and Curator.

Reproduction artillery may be displayed at the Alamo for the purpose demonstrating its use to the public, but cannon are never to be loaded and fired.

Firing demonstrations will use blank ammunition containing the grain size and powder charge appropriate for the firearm.

Projectiles shall not be fired from any type of historic black powder weapon in areas administered by the Alamo.

For protection from flash burns, all demonstrators firing black powder firearms will wear natural fiber or skin long-sleeved outer garments or full uniforms as appropriate to the historical period. Special care should be exercised with worn, thin, or fringed clothing.

Before firing, the demonstration interpreter will warn visitors of the loud noise, recommending caution to people with hearing aids and requesting control of children and pets. This should also be done in order to prevent startling or scaring visitors.

Battle reenactments and demonstrations of battle tactics that involve exchanges of fire between opposing lines, the taking of casualties, hand-to-hand combat, or any other form of simulated warfare are not allowed on the state controlled Alamo property. Battle reenactments generate an atmosphere inconsistent with the memorial qualities of battlefields and other military sites placed in the GLO's trust.

Procedures for historic weapons demonstrations are described in this safety manual.

All weapons used must accurately represent the firearms used during the prescribed time period.

All historic weapons demonstrations will be in compliance with the Director of Education & Curator's orders regarding Living History Interpretive Programs and any other related Management Policies.

For purposes of training and interpretation, the Alamo relies on the following two manual Scott's *Abstract of Infantry Tactics* (ca 1830) and Cooper's *Volunteer Manual: A Concise System of Instruction & Regulations for the Militia and Volunteers* (1836).

### **General Rules Regarding Safety**

- A trained and authorized member of the Alamo's Living History staff shall control and supervise all firing demonstrations including those conducted by volunteers.
- Absolutely no black powder will be allowed onto the grounds of the Alamo from the outside. Powder horns and cartridge boxes may be carried but must contain no powder. The living history coordinator or an appointed supervisor will distribute the cartridges inside the firing range. Until they are distributed the cartridges will be kept locked up and transported in an approved cartridge box. At the end of the demonstration all remaining cartridges will be returned to the supervisor.
- At the conclusion of all firing demonstrations, the demonstrator(s) must pick up all cartridge papers in order to make sure that no partially or fully loaded blank cartridges are left on the ground where visitors might find them.
- Keep all knives, bayonets or other sharp weapons/objects sheathed except when in use during demonstrations. Do not allow visitors to handle sharp or pointed objects.
- Absolutely no horseplay or mock engagements between participants.
- Living history volunteers will have their weapons inspected by a member of the staff.
- All demonstration areas must be designated as such and must have a rope or other barrier to separate spectators from participants.
- 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.
- 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.
- The user or owner is responsible for his or her weapon and will not leave it unattended.

**FAILURE TO COMPLY WITH THESE RULES WILL RESULT IN EXPULSION FROM THE EVENT.**

## INCIDENT REPORTING PROCEDURES

Every accident or safety related incident involving historic weapons or black powder safety and handling will be reported to the Regional Point of Contact at the earliest opportunity. Serious incidents will be documented on a Case Incident Report. Information concerning an accident or incident will include, but not be limited to, the following:

- Date, time, and exact location of the incident.
  
- A concise and complete statement of facts surrounding the incident. This should include the name, address, telephone number, and date of birth of all involved, including witnesses.\*
  
- Statements of persons involved and witness statements.
  
- Details as to whether a regulation or guideline was violated.
  
- Description of personal injury or property loss or damage.
  
- Weather and conditions at the scene (visibility, wind direction and speed, wet, slippery, loose gravel, etc.).
  
- Photographs and/or diagrams of the scene if they will assist with clarifying the narrative.

\* Should an incident occur, visitors will immediately be removed to a safe distance from the scene. Alamo staff, demonstrators, volunteers, members of outside groups, and/or visitors will be instructed to make no remarks or comments regarding the incident until interviewed by the

staff member investigating the incident. The Curator or his/her representative is the only individual authorized to make statements to the press or to the public concerning historic weapons accidents or incidents.

## **BLACK POWDER STORAGE AND HANDLING**

### **Regulatory Requirements:**

(a) In recognition of its public safety responsibility the Alamo's policy is to comply with all applicable provisions of federal, state, and local safety codes and standards.

(b) Where regulations differ, Alamo employees will adhere to the safety standards in this manual.

### **Magazine Supervision:**

(a) Magazine storage and black powder use within the park must at all times be under the supervision of an officially trained and certified employee, 21 years of age or older, whom the Curator has designated in writing to be responsible for the enforcement of all safety regulations and precautions relating to black powder. (b) In the temporary absence of the responsible employee a designated full-time Living History employee shall be designated in writing to act during this period.

**Notification of Local Fire Authorities:** Written notification will be provided to local fire authorities as to the type, magazine capacity and location of each site where explosive materials are stored.

**Outdoor Storage:** Outdoor storage of black powder, detonation devices or ammunition will be in an Alamo outdoor magazine, or Alamo indoor magazine(s) stored within another structure.

**Use of Inhabited Buildings:** Visitor centers and /or administrative offices shall be considered as "inhabited buildings" under OSHA regulations. No portion of these buildings shall be used for magazines containing black powder, ammunition, or other explosive devices, nor for loading operations using these materials.

### **Use of Storage Boxes:**

(a) Storage of the Alamo's black powder supply shall be in the designated, and approved red storage box. All powder must be contained in its original receptacle, or rolled in a paper cartridge. No loose powder will be permitted in the storage box. In the event of a spill loose powder must be contained immediately. The storage box and powder must remain locked at all times until they are used in a demonstration or returned to the magazine.

(b) The storage box is suitable for all non-sparking, exclusively black powder materials including loaded paper cartridges, powder-horns or flasks, but excluding percussion caps and friction primers. Ammunition may be transferred from the pass box to suitable historical containers such as cartridge boxes or limber chests for demonstration purposes.

(c) At the completion of the day's demonstration, unused ammunition will be returned to the storage box.

#### Magazine Inspections and Inventory:

(a) Regular openings and inspections of magazines must be performed by the responsible employee at least every seven (7) days to insure that there have been no unauthorized attempts at entry or removal of materials.

(b) No smoking or open flames are permitted in or around magazines. (c) The black powder inventory will be kept as small as program demand allows. An excess of six months' supply should be avoided and in no case shall black powder be stored more than two years. (d) Containers should be dated and oldest powder used first. (e) An inventory log will be maintained to document use of powder and magazine inspections. All employees shall register the amount of powder used, the type used, date it was used and the amount of unused ammunition returned to the storage box.

#### Ammunition Loading Areas:

(a) Ammunition loading areas shall be in an uninhabited building located at least 50 feet from the magazine.

(b) In addition, the loading area will be provided with a non-sparking work-table or bench, adequate spark-free lighting, non-sparking floor surface and entrance control by the person handling the black powder. The loading area will be cleaned frequently to prevent the accumulation of black powder dust.

Exposed Powder: Exposed powder should be kept to a minimum and must not exceed one pound or enough for one artillery round, if that is in excess of one pound. Loaded ammunition should be placed in a cartridge box and stored in the storage box as units are completed. Preparation of ammunition components (i.e. "cylinders") will be completed before powder is brought to the loading area.

## **WEAPON STORAGE AND SECURITY**

### **Storage:**

- (a) Historic Weapons will be treated as sensitive property.
- (b) In general, weapons will be stored and locked in the Living History gun locker when not in use.
- (c) Access to weapons cabinets will be limited to those employees requiring access to the storage area.

**Security:** Structures used to store historic weapons will be guarded with a monitored intrusion detection system.

### **Identification:**

- (a) All reproduction weapons used in demonstrations will have permanent identification markings placed in an inconspicuous location.
- (b) A complete inventory of firearms will be maintained by serial number, manufacture, model, GLO property number, barrel length, caliber, and location of identification marking on the firearm.

## **AMMUNITION PREPARATION**

### **Small Arms:**

- (a) In addition to following the procedures described in the approved small arms manuals, the living history coordinator will insure that paper cartridges are made neatly, using the proper caliber former, and also that powder loads do not exceed maximum loads.
- b) Small arms cartridges should be strictly accounted for, and unused cartridges returned to the magazine.
- (c) Small arms cartridges may be made in quantity in advance, however they should be used within 90 to 120 days of manufacture.

**Loose Powder:** Loose powder must never be allowed in a demonstration area, and dummy cartridges will be used when demonstrating their appearance at the history cart or when performing roving interpretation.

**Damaged Cartridges:** All torn or damaged cartridges will be destroyed by soaking in water until the powder is dissolved and the remains will be disposed in a safe place. Under no circumstances will torn or damaged cartridges be returned to the magazine.

## NECESSARY TOOLS FOR INSPECTION

All arms to be used during programs and/or demonstrations must be inspected by a trained member of the Alamo's Living History staff prior to use. This includes all Alamo and volunteer weapons. The weapon must be clean. The barrel must ring when the rammer is sprung, an indication that there is no foreign material at the breach. Flints must be in good condition and secured tightly in place between the jaws. All springs must function well and the cock catch properly at both the half- and full-cock positions. The vent must be clear. The piece must be fitted with a flash guard if it is to be fired. [See NPS, p6]

Each inspector must have the following tools with him while conducting inspections of arms belonging to either the Alamo or volunteers.

- Screw Driver
- Knapping hammer

Other specialized tools should be available to the inspector.

- Bore light
- Worm/Wiper
- CO2 kit
- Rammer puller

After inspection, the employee or volunteer is permitted to use his weapon in authorized programs and/or demonstrations. At events where a large number of participants are present, the inspector(s) should tag each weapon to indicate that it has passed inspection. At such events, no untagged weapon will be used in firing demonstrations.

Any weapon found deficient should be tagged and not used until the problem is fixed. All weapons should be inspected after each demonstration to make each has actually discharged. {Spring-RAMMERS.} All weapons should be cleaned and oiled as soon as possible after they are used. [See NPS, p6]

## **Pennsylvania Historical & Museum Commission Inspection Guidelines**

The Pennsylvania Historical & Museum Commission recommends the inspector should check the following list of items when examining each arm. These guidelines are included here as a reference as what is expected at other historical sites.

- a. Flashguard (Is one present and properly attached.)*
- b. Vent (Is it plugged or too large?)*
- c. Hammerstall (Is there one for the weapon?)*
- d. Lock function (The springs hold at all position without catching.)*
- e. Fit of lock in pan-vent area (Is there a gap between metal and wood?)*
- f. Trigger pull (Is it too easy or too hard?)*
- g. Fit of barrel breech to stock (Are there gaps between metal and wood?)*
- h. General inspection for obvious cracks and weakening of stock*
- i. Fit of bayonet to barrel on a military weapon (Must fit well.)*

*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 re-enactments 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.*

*"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.*

- 5. "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.*

*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 Brigade of the American Revolution., 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.*

## **SEASONAL INSPECTIONS OF ARMS**

Complete inspections of all weapons should be conducted by the Living History staff every six months. Weapons in storage should be checked on a regularly scheduled basis (at least monthly) for rust or other moisture, storage, or cleaning related damage. [See NPS, p6]

All newly acquired weapons will be inspected using the appropriate checklist before firing. If a weapon does not meet safety standards for any reason, that particular weapon will be tagged that details specifically the problem(s). The tagged weapon WILL NOT BE USED until repairs are affected. The park's Living History Coordinator will be responsible for insuring that such repairs are made as soon as possible. [See NPS, p6]

### **Common Problems Encountered During Inspections**

Overall Poor Cleaning. Inadequate or improper cleaning can result in a variety of safety and operational issues: coke build-up in the bore, cleaning patches left in the bore, rust, corrosion, screws too tight (parts can bind), loose screws, damaged stocks, etc. The final step in most demonstrations is weapons cleaning, and quite often demonstrators rush through the process. Proper cleaning and oiling of a weapon is critical, and without doubt the most frequent problem confronted during weapons inspections is poor cleaning. [See NPS, p6]

Missing Safety Devices. All weapons used at the Alamo are required to have hammerstalls and flashguards. It is not uncommon for demonstrators to neglect replacement of these items after cleaning, and many re-enactors from outside groups simply do not have them. Spare hammerstalls and flashguards should always be available for both park weapons and for re-enactors from outside groups. [See NPS, p6]

Weak Mainspring. A weak mainspring will increase the frequency of misfires. If a weapon appears to have a weak mainspring it should be replaced or taken to a competent gunsmith to be hardened. [See NPS, p6]

Weapon Fires on the Half Cock. A weapon that does not hold on the half-cock position can have wear or damage to the half-cock notch on the tumbler, a weak or broken searspring, or wear or damage to the nose of the sear. Worn or damaged parts should be replaced. [See NPS, p7]

Bent or Stuck Rammer. Bent ram rods are a frequent occurrence and can cause the rammer to bind in its channel, which can result in embarrassment when a rammer sticks, or in injury while attempting to forcibly remove a bent rammer from its channel. Bent rammers can be carefully straightened with little trouble, and parks should have a ram rod removal tool to deal with stuck rammers. Bent rammers often occur when a demonstrator tries to force down a cartridge that sticks part way down the barrel; short, sharp taps are not only safer, but work much better than fisting the ram rod and attempting to muscle the cartridge. [See NPS, p7]

White or light spots on the stock. Certain parts of the stock will have adhered powder after firing and require cleaning with water. Heavy rubbing of the stock with wet patches will eventually leave lighter spots, usually above the lock plate. A very light oiling with linseed oil after cleaning can prevent this problem. [See NPS, p7]

Cleaning Patch Lodged In Barrel. Attempt to remove a stuck patch by careful use of the worm. Always turn the worm in a clockwise direction or the worm may unscrew itself from the cleaning rod. A CO2 misfire kit or high pressure air from a maintenance shop can also be effective in

removing a stuck patch. Pulling the breech-plug is the last resort and extreme care should be used. [See NPS, p7]

Burrs or Sharp Points on Metal Parts. Careless handling or disassembly or assembly can result in damage to metal parts which can cause injury to demonstrators. Proper training can reduce this problem, but any burrs or sharp points should be filed or ground down. [See NPS, p7]

Broken parts. It goes without saying that parts break or will wear from heavy use. To reduce the necessity of tagging out a weapon for an extended period of time, parks should keep a supply of spare parts on hand, particularly parts that are prone to breaking. The following checklist should be used when inspecting individual firearms. Newly purchased firearms should be inspected using this checklist prior to placing into service. [See NPS, p7]

### ACCOUTREMENT INSPECTION

Note: All leather accouterments should be cleaned and oiled on a regular basis. Brass should be polished when it becomes dull. [See NPS, p10]

Bayonet Scabbard. The bayonet should fit properly in the scabbard. The point of the bayonet should not protrude through the scabbard. All parts should be sewn and in good repair. [See NPS, p10]

The Cartridge Box. Is not recommended to use a belly box. Because of its location on the demonstrator, he/she is subject to more injury if an accident occurs. It is recommended to use a cartridge box having a double closing flap. This serves as more protection for the cartridges and the wearer. All parts should be sewn properly and in good repair. [See NPS, p10]

When inspecting cartridge boxes, look for items that SHOULD NOT be there. (Cigarettes, lighters, matches, steel wool, extra cartridges, loose gunpowder, etc.) The only items that may be in the cartridge box are extra flints, flint caps, a musket tool and a gun worm. There is no need to carry any other things in the cartridge box. Some demonstrators carry dummy cartridges to show visitors. Be sure that they are plainly marked and easily distinguishable from blank cartridges, and that they contain no gunpowder. [See NPS, p11]

Hunting Bags. Used primarily by riflemen. The same rules apply to the hunting bag that apply to the cartridge box. Only the tools necessary to get the job done should be in the bag. This might include a period screwdriver, lubricant, and patches. Ensure that if a patch knife is secured to the bag, it is properly sheathed. [See NPS, p11]

Powder Horns. **When not giving firing demonstrations, there should be no gunpowder in the horns. When giving a firing demonstration, only enough powder should be carried in the large horn for one shot in a one shot demonstration; the smaller priming horn should only contain enough powder for one priming and three misfires.** [See NPS, p11]

*A NOTE ON REPAIRS – If you have little or no knowledge of even simple gunsmithing repairs, there are books on the subject. If there are any doubts of your ability to make these repairs, seek out a competent gunsmith who can do the job properly and safely. Do not try to do it yourself if you do not know what you are doing. You may cause more damage than there was before you started. In most cases, broken or damaged parts should be replaced with new parts. [See NPS, p11]*

## PART II



## **FLINTLOCK MUSKET COMPETENCY EXAM**

In order to be certified to participate in firing demonstrations at the Alamo, members of the staff and volunteers must demonstrate to the Living History Coordinator that he/she can safely and satisfactorily handle, load, and fire a flintlock weapon.

Candidates who can successfully demonstrate the above knowledge and skill will be asked to sign and date the appropriate form indicating that they understand and are bound to the provisions of the Alamo Safety Manual and will not deviate from the safety protocols contained therein.

## **Alamo Small Arms Certification Program**

### **Introduction**

The purpose of the Small Arms Certification Program is to ensure that Alamo employees and volunteers who handle functioning rifles, muskets, and pistols are qualified to do so safely and efficiently. Those who complete all levels this program will be qualified to hold pre-arranged firing demonstrations on Alamo property for educational purposes, and to do so in a manner that is both safe and entertaining to Alamo guests.

Each advancement will be marked by an oral and practical certification exam which will be administered and graded by the Living History Coordinator, and commemorated with an official certificate from the Alamo living history department. No one may perform duties beyond their certification level; violation of this rule will result in the individual losing all small-arms privileges.

The levels an Alamo employee or volunteer must complete are as follows:

- 1- Novice
- 2-Level-Two
- 3- Level-Three
- 4- Level-Four
- 5-Level-Five
- 6- Supervisor

The following pages will detail the safety standards and the process through which a trained Alamo employee or volunteer must pass in order to be allowed to handle historic weaponry and black powder on Alamo property or at any event which the Alamo endorses.

**NOVICE:** The Novice level represents the most basic level of certification in the Alamo's weapon's program. In order to certify for this level the candidate must be able to do the following:

- a) Identify the main component parts of a flintlock firearm (ie: the lock, stock, barrel, muzzle, butt, cock, steel, pan, touchhole, rammer and trigger.)
- b) Correctly identify the different flintlock weapons commonly used (Rifle, Musket, Shotgun and Pistol) and their main differences.
- c) Know how to correctly load a flintlock rifle and musket without using any powder.

Completing the Novice level certification enables a candidate to rove the Alamo complex grounds with an unloaded weapon after it passes an inspection by the Living History Coordinator or anyone ranking Musketeer or above. They candidate may also carry a shooting bag or cartridge box with a dummy-cartridge. These items may be explained to visitors by the candidate. The candidate will not be allowed to handle black-powder or fire any weapon in the Alamo complex. Doing so will result in dismissal.

**Level-Two:** The Level-Two level allows the candidate to carry an edged weapon in addition to a period-correct firearm. The edged weapons must compliment the firearm being carried and fit into the narrative the living historian is presenting to the public. In order to certify for this level the candidate must:

- a) Be able to identify the edged weapons primarily used by the LHD (knife, bayonet, tomahawk and sword) and their traditional functions.
- b) Know how to sharpen each weapon if necessary.
- c) Cary a sheath or scabbard for the weapon and keep the weapon on their person at ALL TIMES. The candidate may draw the weapon when necessary to explain its function but will not allow the guests to handle the weapon itself.
- d) Be able to differentiate between the various types of knives that we have and their uses.

Completing the Level-Two certification enables a candidate to rove the Alamo complex grounds with an unloaded weapon and edged accessories after they passes an inspection by the Living History Coordinator or anyone ranking Musketeer or above. They candidate may also carry a shooting bag or cartridge box with a dummy-cartridge. These items may be explained to visitors by the candidate. The candidate will not be allowed to handle black-powder or fire any weapon in the Alamo complex. Doing so will result in dismissal.

**Level-Three:** Level-three is the first level in which a staff-member or volunteer may fire one of the historic weapons. Completion of this level will allow the candidate to fire a musket at a proscribed Alamo firing demonstration or assist in a firing demo. In order to complete this certification the candidate must be able to do the following:

- a) Be able to identify all parts of a musket as described in the Alamo historic arms safety manual.
- b) Must be able to identify the differences between the muskets used at the Alamo.
- c) Must be able to follow the 12-step loading process in Scott's Military Drill Manual.
- d) Must be able to safely load and fire a blank musket cartridge with the supervision of a higher-level employee.
- e) Must be able to identify the characteristics of a safe field-of-fire.
- f) Must know the protocol for handling a misfire.
- g) Must demonstrate the ability to clean a musket barrel, stock and flintlock components.

Passing this level allows the candidate to participate in approved Alamo firing demonstrations. It also allows the candidate to assist in the training of other lower-level candidates. The candidate will also be allowed to carry blank black-powder cartridges as distributed by the Living History Coordinator. Any misuse of black powder, or the musket in a way that could lead to the injury or death of another will lead to the immediate revocation of Level-Three privileges and possible dismissal.

**Level-Four:** Level-four is the first level in which a staff-member or volunteer may fire one of the historic rifles. Completion of this level will allow the candidate to fire a rifle at a proscribed Alamo firing demonstration or assist in a firing demo. In order to complete this certification the candidate must be able to do the following:

- a) Be able to identify all parts of a rifle as described in the Alamo historic arms safety manual.
- b) Must be able to identify the differences between the rifles and the muskets.
- c) Must be able to follow the 12-step loading process in Scott's Military Drill Manual.
- d) Must be able to safely load and fire a blank rifle cartridge with the supervision of a higher-level employee.
- e) Must know the safe steps to "loading from the horn." (note- While loading from the horn is not part of our black powder demonstrations it is an important skill to know in order to provide factual information to guests)
- f) Must be able to identify the characteristics of a safe field-of-fire.
- g) Must know the protocol for handling a misfire.
- h) Must demonstrate the ability to clean a rifled barrel, stock and flintlock components.

Passing this level allows the candidate to participate in approved Alamo firing demonstrations, and carry a priming horn when necessary. It also allows the candidate to assist in the training of other lower-level candidates. The candidate will also be allowed to carry blank black-powder

cartridges as distributed by the Living History Coordinator. Any misuse of black powder, or the rifle in a way that could lead to the injury or death of another will lead to the immediate revocation of Level-Four privileges and possible dismissal.

**Level-Five:** Level-Five is the first level in which a staff-member or volunteer may fire one of the historic pistols or carbines. While most of the muzzle-loading weapons are long enough to not discharge in a candidate's face, pistols and carbines can, and will if not treated with care. Completion of this level will allow the candidate to fire a rifle at a proscribed Alamo firing demonstration or assist in a firing demo. In order to complete this certification the candidate must be able to do the following:

- a) Be able to identify all parts of a pistol as described in the Alamo historic arms safety manual.
- b) Must be able to identify the differences between the rifles, muskets, carbines and pistols.
- c) Must be able to follow the 12-step loading process in Scott's Military Drill Manual.
- d) Must be able to safely load and fire a blank pistol cartridge with the supervision of a higher-level employee.
- e) Must know the safe steps to loading from a pistol flask. (note- While loading from a flask is not part of our black powder demonstrations it is an important skill to know in order to provide factual information to guests)
- f) Must be able to identify the characteristics of a safe field-of-fire.
- g) Must know the protocol for handling a misfire.
- h) Must demonstrate the ability to clean a pistol barrel, stock and flintlock components.

Passing this level allows the candidate to participate in approved Alamo firing demonstrations, and carry a priming flask when necessary. It also allows the candidate to assist in the training of other lower-level candidates. The candidate will also be allowed to carry blank black-powder cartridges as distributed by the Living History Coordinator. Any misuse of black powder, or the pistol or carbine in a way that could lead to the injury or death of another will lead to the immediate revocation of Level-five privileges and possible dismissal.

**Supervisor:** This level allows the candidate to supervise lower-level candidates in their training and supervise Alamo firing-demonstrations, with the permission of the Curator or Living History Coordinator. It allows the candidate to prepare blank black powder cartridges for rifles, muskets, carbines and pistols. It also allows the candidate to prepare the field of fire for demonstrations. In order to qualify for this level the candidate must be able to complete the following.

- a) Cut, roll and fill 5 blank, non-leaking paper cartridges for a rifle, musket, and pistol according to the load-allowance chart included in the Alamo Historic Weapons Safety Manual and the appendix of this manual.

- b) Demonstrate their ability to identify a safe field of fire by serving as a safety guard for 5 Alamo firing demonstrations, and describing the component characteristics of a safe field of fire.
- c) Mark off the field of fire for a black powder demonstration at the Alamo complex. The FOF must be marked according to Alamo and NPS safety standards as delineated in the Alamo Historic Weapons Safety Manual.
- d) Must demonstrate the ability to monitor the public by serving as an assistant supervisor for at least 3 Alamo firing demonstrations.
- e) Must demonstrate safe management of Alamo black powder supply and adhere to standards set in the appendix of this manual for Black Powder Storage and Handling.
- f) Must demonstrate how to properly inspect an historic weapon according to the Alamo Historic Weapons Safety Manual.
- g) Must have passed through at least 6 drilling sessions with the Living History Coordinator and the Curator and demonstrate a knowledge of how to lead a small company of men according to Scott's instructions and how to begin, instruct, and stop a firing drill.
- h) Must demonstrate how to safely handle a misfire and "tag out" an historic weapon.

The completion of this level to act in a position of high responsibility at the Alamo and must maintain strict attention to the firing demonstration and possible safety concerns. This candidate will be qualified to demonstrate all the different types of firearms in the Alamo's living history collection and to work in a managerial position, should the need arise. Any misuse of black powder, wanton neglect on the part of the supervisor that could lead to the injury or death of another will lead to the immediate revocation of Supervisor privileges and possible dismissal.

## **Firing Demonstrations-**

### **A. BLANK CARTRIDGE MANUFACTURE**

#### **MATERIALS NEEDED**

1. Paper cut to specific dimensions (indicated in illustration). The paper should be light, strong, and able to be folded or twisted without being easily torn. 40 lb Kraft paper is fine, and can be obtained locally or from GSA.
2. Scissors or paper cutter.
3. Former: A six-inch wooden dowel slightly smaller than the bore of the weapon. If you are going to make cartridges with a ball, one end of the former should be slightly concave to fit the ball.
4. Powder measure & FFg Black Powder

**PROCEDURE**

1. Using scissors or paper cutter, cut cartridge paper into proper shape, as indicated in the pattern on the next page..
2. Keeping point “a” in the upper left hand corner, place former on “b-c” portion of cartridge, leaving at least one inch distance between the cupped end of the former and point “b”.
3. Roll the paper all the way around the former by rolling the former away from you, bringing the paper around with it.
4. Twist the rolled cartridge end in the same direction as you rolled it. It must be twisted tight enough to form a seal without leaking any powder, but not so tight that the paper is torn.
5. Remove former and using powder measure, pour proper amount of powder in cartridge.
6. Twist the top of the cartridge in the same direction of the roll, again twisting tight enough to seal cartridge.

## **B. FIXING FLINTS**

This is definitely an art, but one which can be easily learned with experience. Each particular flint requires its own particular method of fixing and there are many variables to take into account.

First, the flat side can be placed upwards or downwards, depending on the shape and size of the flint. The flint must be placed between a lead or leather cap to hold it between the jaws of the cock. Second, determine where the flint will fall. Let the cock down gently to observe where the flint strikes the steel. At the same time, look to make sure that the entire edge of the flint contacts the steel.

After firing a weapon, take the first opportunity to examine the flint and see whether it is fixed properly. If there is something wrong, fix it immediately.

Remember, there are no hard and fast rules to fixing flints. Each weapon is unique and requires experimentation in the placement of the flint. As long as you are aware of that, you should have no problems.

## PART VIII - FLINTLOCK MUSKET COMPETENCY EXAM

The following information, as it pertains to flintlock weapons, is required knowledge for any candidate to reach the supervisor level. The candidate may have his knowledge tested by another Alamo Supervisor at any time should there be any concern about the candidate's competency.

### ALAMO TABLE OF MAXIMUM LOADS - SMALL ARMS

#### Weapon Types Caliber Max Blank Charge

##### 18th Century Flintlock

"Brown Bess" Musket	.75	125 grains Ffg
Charleville Musket	.69	125 grains Ffg
American Musket	.69	125 grains Ffg
Kentucky Rifle		90 grains Ffg
Pistols & Horse Pistols		90 grains Ffg

##### 19th Century Percussion

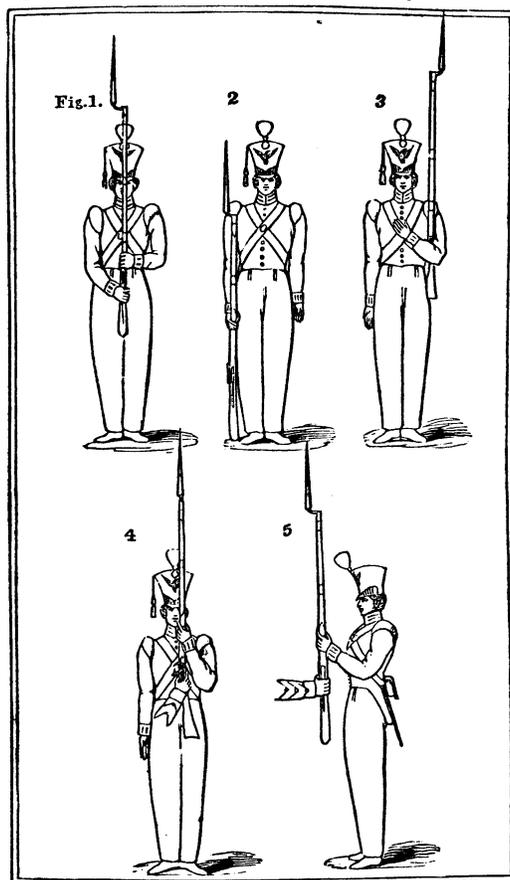
U.S. Rifle M1841	.54/.58	60 grains Ffg
U.S. Musket, M1842	.69	75 grains Ffg
U.S. Rifle Musket, M1855-1864	.58	60 grains Ffg
British Enfield Rifle	.577/.58	60 grains Ffg
U.S. Rifle, Musketoon	.58	60 grains Ffg
Sharps Carbine/Rifle	.54	60 grains Ffg
Revolver	.36/.44	27 grains Ffg

##### 19th Century Metallic Cartridge

U.S. Rifle, M1866-1870	.45	70 grains Ffg
Sharps Carbine	.50	55 grains Ffg
U.S. Rifle, M1873-1884	.45	70 grains Ffg
U.S. Carbine, M1873-1884	.45	55 grains Ffg
Henry Repeating Rifle	.44	28 grains Ffg
Colt/S&W Revolver	.45	28 grains Ffg

# PART III

PLATE IV.

*School of the Soldier.*

## THE MANUAL OF ARMS

All demonstrators must be provided with proper hearing protection. The demonstrator shall become familiar with the manual to understand the safe and proper handling of 19th century flintlock small arms and their interpretation to the visitor. The demonstrator should bear in mind proper military conduct while presenting programs before the public. For training, demonstrators may use a piece of wood instead of a flint and carry three short wooden dowels to serve as cartridges. The wooden cartridges must be removed from the musket after training sessions and before blank firing or storage. [See NPS, p13]

The Alamo's living history interpreters are called on at times to perform the manual of arms. This drill is detailed in Scott's *Abstract of Infantry Tactics*, ca 1830. Another useful manual of the period is Cooper's *Volunteer Manual: A Concise System of Instruction & Regulations for the Militia and Volunteers* (1836). Copies are available through the reference library for Alamo Guides.

The most common positions are described below. Photographs illustrate the various motions involved in changing from one arms position to another.

RBW

### Important Terms to Know.

<i>Line of Battle</i>	The line of battle is an imaginary line that passes under the heels of a rank of soldiers.
<i>Rank</i>	Two or more soldiers placed shoulder to shoulder. A unit commonly consists of two ranks.
<i>File</i>	A line of soldiers placed one behind the other. A unit commonly consists of files of two soldiers.
<i>Guide</i>	Refers to direction as in "Guide Right" or "Guide Left." Can also refer to a soldier on which other soldiers dress.
<i>Dress</i>	Refers to aligning the ranks and files of a unit.
<i>Flank</i>	Either end of a unit in line of battle - "Left Flank" & "Right Flank".
<i>Closed Order</i>	A unit in line of battle with ranks & files at normal intervals.
<i>Open Order</i>	A unit in line of battle with ranks & files at extended intervals.
<i>Interval.</i>	The distance between men composing a rank or file.

**General Rules.**

Always fall in with bayonets fixed and pans shut.

At the command preparatory to "March," (such as "Forward" or "Backwards") the soldier shifts his weight on his right leg in preparation to throwing his left foot forward.

At the command "March," the soldier steps off with his left foot.

After the demonstration is completed, the order to "Easy Springs" should be given, at which command all pans will be opened and cocks eased forward.

**Order Arms.** (2 motions) [Scott's *Abstract*, page 22]

This is the position of the soldier at attention, stationary. The musket is on the right side, butt on the ground, barrel to the rear. The piece is perpendicular to the ground. The right arm is extended naturally, the piece resting in the hand between the thumb (rear) and the fingers (front). The left arm is extended by the soldier's left side. Both feet are placed so as to form a "V" that opens to the front.

**Shoulder Arms.** (2 motions) [Scott's *Abstract*, page 17-18]

This is the position of the soldier at attention, stationary or moving. The musket is on the left side, the butt cupped in the soldier's left hand. The right arm is extended by the soldier's right side. The piece, which is positioned with the barrel to the front, is held as nearly vertical as possible. The left arm is not extended to its full extent but raised several inches to give the soldier more control of the piece. Both feet are placed so as to form a "V" that opens to the front.

**Rest.** [Scott's *Abstract*, page 22]

If the order "Rest" is given, the soldier is free to move his body but must keep his left foot on the line-of-battle. He resumes his previous position when he hears the command "Attention."

**Present Arms.** (2 motions) [Scott's *Abstract*, page 22]

The soldier is at attention and paying honors. The command is given from the position of "Shoulder Arms." In this position, the piece is brought in front of the soldier (opposite the left eye), barrel to the rear. The little finger of the left hand should be touching the feather spring, thumb pointed upwards. The right hand holds the piece at the wrist under the guard. Both feet are placed so as to form a "V" that opens to the front. This position is followed by a return to Shoulder Arms.

**Trail Arms.** (1 from Order, 2 from Shoulder Arms) [Scott's *Abstract*, 26.]

This command is given the positions of both Order Arms and Shoulder Arms. The piece is balanced in the right hand, which hangs by the soldier's right side. The piece is sloped at a 45 degree angle with the ground.

**Secure Arms.** (2 motions) [Scott's *Abstract*, 25]

This command is given from the position of Shoulder Arms. The piece is held in the left hand, barrel facing the ground. The muzzle is pointing to the front and the piece is at a 45 degree angle with the ground. The lockplate is tucked under the soldier's left armpit. The purpose of this position is to protect the musket from rain.

**Support Arms.** (3 motions) [Scott's *Abstract*, 24.]

This command is given from the position of Shoulder Arms. The cock is cradled in the crotch of the left arm, which is brought up across the chest at a 45 degree angle, fingers extended. The right arms is extended by the soldier's right side. Both feet are placed so as to form a "V" that opens to the front.

**Arms Port.** (1 motion) [Scott's *Abstract*, 25.]

This command is given from the position of Shoulder Arms. The piece is held in front of the body at an angle and in line with the crossbelt for the cartridge box. The right hand grasping the small of the stock and the left hand at the swell. The thumb of each hand should be pointing towards the muzzle.

**Charge Bayonet.** (2 motions) [Scott's *Abstract*, 25-26.]

The piece is held on the soldier's right side, with the tip of the bayonet at eye level. The left hand holds the piece at the swell and the right hand grasps the small of the stock. The left foot will be pointing to the front, the right foot will be behind the left. The right foot will form a right angle with the left foot, the hollow of the right foot touching the heel of the left foot.

**Commands for Loading** [Scott's *Abstract*, 26-28.]

Note: The frizzen was formerly known by these other terms: hammer, steel, or battery. Use one of these words instead of frizzen.

### Load by Twelve Commands. (Illustrations to Follow)

1. LOAD. (2 motions)
2. *Open*-PAN. (1 motion)
3. *Handle*-CARTRIDGE. (1 motion)
4. *Tear*-CARTRIDGE. (1 motion)
5. PRIME. (1 motion)
6. *Shut*-PAN. (1 motion)
7. *Cast*-ABOUT. (2 motions)
8. *Charge*-CARTRIDGE. (1 motion)
9. *Draw*-Rammer. (2 motions)
10. *Ram*-CARTRIDGE. (1 motion)
11. *Return*-RAMMER. (2 motions)
12. *Shoulder*-Arms. (2 motions)

### Commands for Firing

Fire by (insert the word Rank, File, Squad, Platoon, Company, or Battalion).

- Ready. (3 motions)
- Aim. (1 motion)
- Fire. (1 motion)
- Load. (1 motion)

Note 1: After firing, the soldier will not lower the piece unit commanded to either Load or Shoulder Arms. If commanded to Load, the soldiers must first Half-Cock his firelock before loading. If commanded to Shoulder Arms, the soldier must first Shut Pan and return the cock to half cock before shouldering arms.

Note 2: That the soldier may be habituated to wait for the word fire, the instructor shall frequently order arms to be recovered by the following command: *Recover*— ARMS.

ONE MOTION. Raise the firelock smartly, and resume the position of the third motion of *ready*. [Scott's *Abstract*, 28] {Note: The piece remains at full cock.}

### THE FLINTLOCK RIFLE, PISTOL, AND CARBINE THE FLINTLOCK RIFLE

Even though rifling and its advantages were known, it was not until the middle of the 19th century that a rifled firearm was widely accepted as a military weapon. In any case, the rifle did see action. It is also being used today in interpretive demonstrations. The same safety procedures that apply to the musket also apply to the rifle. The only difference in the loading process is whether you are using a cartridge or a powder horn. [See NPS, p38]

Loading with Cartridge. When loading with a cartridge, priming can be done prior to loading, just as a musket is loaded with a cartridge. [See NPS, p38]

Loading with a Powder Horn. If using a powder horn, to reduce the chance of injury, load first and then prime. *Be aware that when using powder horns, only enough powder should be carried in the large horn for one shot in a one shot demonstration; [if used] the smaller priming horn should only contain enough powder for one priming and three misfires.* One of the safest ways to load a rifle is to place the weapon (barrel side up) with the butt on the ground and held between your thighs, the muzzle angled away from your face at the proper loading height. This position will allow you to use two hands to fill the tip charger from the horn and then charge the muzzle. A crumpled ball of paper can be inserted into the barrel to serve as wadding. Lift the rifle with your left hand and slap the forestock with your right hand to settle the powder. Place the rifle back down into the loading position. The ramrod can be eased out of the pipes with the underside of your hand, using each hand alternately to safely withdraw it completely. Bring the rifle up to the priming position and prime. The rifle is now ready to fire. [See NPS, p38]

### **THE FLINTLOCK PISTOL AND CARBINE**

Primarily these weapons were reserved for the mounted dragoon or officer. The pistol was fired while mounted and the carbine fired when dismounted. No one fired a pistol at a target more than a few feet away with any serious hope of hitting it. The carbine was not much better. Apply the safety procedures of the musket and rifle in the case of the pistol and carbine. You should not attempt a pistol demonstration while on horseback. Keep in mind that these are short-barreled weapons, you are more likely to put your face over the muzzle when loading; therefore, pistols, and carbines should be primed after loading the main charge with the muzzle pointed downrange. EXERCISE EXTREME CAUTION WHEN USING SHORT BARRELED WEAPONS. [NPS, p38]

## PART IV

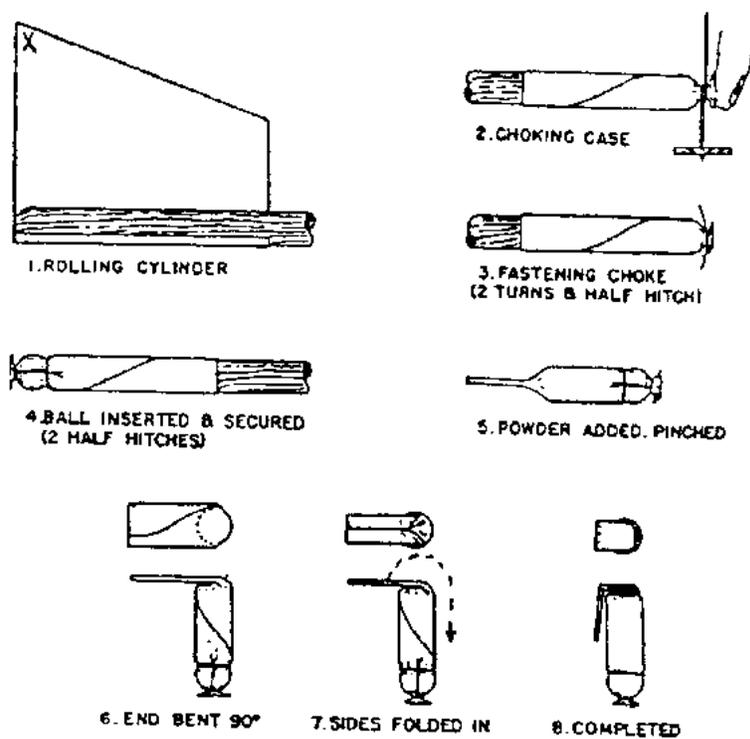


Figure 1 - Cartridge manufacture, 1840 Ordnance Manual

## **HANDLING A MISFIRE**

Flintlock, even when in idea conditions, can misfire (failure to fire, flash in the pan, or hang fire). Treat such incidents seriously in order to prevent injury to visitors, volunteers, or staff. [See NPS, p39]

### **TYPES OF MISFIRES**

A “Level I Misfire” is defined as a misfire that can be cleared on the demonstration area and the demonstration can continue. [See NPS, p39]

A “Level II Misfire” is defined as a misfire that cannot be cleared at the demonstration area without disrupting the demonstration. Specialized equipment is needed to render the firearm safe. [See NPS, p39]

### **CAUSES OF MISFIRES**

-- Improperly cleaned firearm: If a firearm is not properly cleaned immediately after use, the residue in the barrel will harden, rust and corrosion will form. This buildup of fouling will likely obstruct the vent. Excessive oil may pool in the breech and obstruct the vent or neutralize the powder charge. [See NPS, p39]

-- Improperly sized flint: If the flint is too large it can keep the pan from closing tightly allowing powder to be spilled while handling the weapon.

- -Improper flint position: The flint must be placed in the jaws so it will make good contact with the steel. . [See NPS, p39]

-- Improper loading procedure: The powder charge is not properly seated under the vent. Once fire has been introduced to the bore, do not re-ram the charge! [See NPS, p39]

### **LEVEL I MISFIRE PROCEDURES (Can be done on the field.)**

#### **Failure to Spark:**

1. Remain at position of aim. Count to ten in case of a possible delayed or hang fire.
2. Interpreter explains the situation to the public.
3. Return to the priming position and half-cock the firelock.
4. Check priming and flint. If the flint needs to be knapped or may come in contact with a metal tool, dump priming in order to present an accidental flash.
5. Reprime if necessary.
6. Repeat drill from “SHUT PAN!” command. This is done without reloading or ramming.

7. If the weapon fails to fire after three attempts, dismiss the visitors and move to a safe area to perform Level II Misfire procedures. [See NPS, p39]

### **Flash in the Pan:**

1. Remain at position of aim. Count to ten in case of a possible delayed or hang fire.
2. Interpreter explains the situation to the public.
3. Return to the priming position and half-cock the firelock.
4. Pick touch-hole and reprime.
5. Repeat drill from “SHUT PAN!” command. This is done without reloading or ramming.
6. If the weapon fails to fire after three attempts, dismiss the visitors and move to a safe area to perform Level II Misfire procedures. [See NPS. P40]

## **LEVEL II MISFIRE CLEARING PROCEDURES (Cannot be done on the field.)**

### **LEVEL II MISFIRE—CO2 DISCHARGER**

1. Keep the piece pointed in a safe direction.
2. Open the pan and dump out the priming.
3. Place the CO2 discharger with adapter in the vent. Press the discharger lever quickly and release.
4. Clean and inspect the piece before attempting to load it again. [See NPS. P40]

### **LEVEL II MISFIRE—UNLOADING THROUGH THE MUZZLE**

Should the CO2 discharger not be available or fail to remove the charge, the piece must be unloaded through the muzzle:

1. Keep the piece pointed in a safe direction.
2. Open the pan and dump out the priming.
3. Soak the powder charge with water poured down the muzzle.
4. When the powder charge is sufficiently wet, remove the obstruction with a worm.
5. Clean and inspect the piece before attempting to load it again. [See NPS. P40]

In group-firing demonstrations where multiple rounds are fired, a demonstrator who has had a misfire should announce or signal to the demonstration supervisor that a misfire has occurred before applying the appropriate misfire procedure. Once the misfire has been attended to, the demonstrator will come to the position of Shoulder---Arms! The demonstrator should remain at that position, and being sure not to reload and ram again, wait and fire on command with the rest of the unit. If the demonstration supervisor decides not to fire again, proceed with the Level II Misfire Procedure. [See NPS, p41]

## SAFETY NOTES

1. Weapons are to be pointed down-range and away from visitors at all times.
2. DO NOT ram again after a misfire.
3. All weapons are required to have flash guards attached when firing in ranks.
4. Hammerstalls are required items on flintlock firearms. [See NPS, p41]

NOTE: The Alamo Living History Coordinator will designate when hammerstalls are to be used.

## NOTES ON FLINTS

### Information Regarding Flints

“The best flints are translucent, with a smooth surface, of a uniform tint of light yellow or brown color, and slightly conchoidal fractures. . . . The parts of the flints are: the *edge* or *bevel*, the *back*, the *sides*, the *face*, slightly convex, and the *bed* or lower face, slightly concave; in using the flint, the bevel is placed uppermost. There are three sized for military service; *musket*, *rifle*, and *pistol* flints. A good musket flint will last for more than 50 fires. Flints are issued to the troops in proportion of 1 to 20 rounds.” [U.S. *Ordnance Manual* (1841), 177.]

From the NPS Manual: This is definitely an art, but one which can be easily learned with experience. Each particular flint requires its own particular method of fixing and there are many variables to take into account.

First, the flat side can be placed upwards or downwards, depending on the shape and size of the flint. The flint must be placed between a lead or leather cap to hold it between the jaws of the cock.

Second, determine where the flint will fall. Let the cock down gently to observe where the flint strikes the steel. At the same time, look to make sure that the entire edge of the flint contacts the steel.

After firing a weapon, take the first opportunity to examine the flint and see whether it is fixed properly. If there is something wrong, fix it immediately.

Remember, there are no hard and fast rules to fixing flints. Each weapon is unique and requires experimentation in the placement of the flint. As long as you are aware of that, you should have no problems. [NPS p49]

## NATIONAL PARKS SERVICE: TABLE OF MAXIMUM LOADS - SMALL ARMS

Note: The ball used is always smaller than the actual caliber of the piece. For example, a .75 caliber weapon takes a .72 caliber ball while a .69 caliber weapon takes a .62 caliber ball.

Weapon Types	Caliber Max	Blank Charge
<b><i>18th Century Flintlock</i></b>		
“Brown Bess” Musket	.75 [.72 cal. ball]	125 grains Ffg
Charleville Musket	.69 [.62 cal. ball]	125 grains Ffg
American Musket	.69 [.62 cal. ball]	125 grains Ffg
Kentucky Rifle	Variable	90 grains Ffg
Pistols & Horse Pistols	Variable	90 grains Ffg
<b><i>19th Century Percussion</i></b>		
U.S. Rifle M1841	.54/.58	60 grains Ffg
U.S. Musket, M1842	.69	75 grains Ffg
U.S. Rifle Musket, M1855-1864	.58	60 grains Ffg
British Enfield Rifle	.577/.58	60 grains Ffg
U.S. Rifle, Musketoon	.58	60 grains Ffg
Sharps Carbine/Rifle	.54	60 grains Ffg
Revolver	.36/.44	27 grains Ffg
<b><i>19th Century Metallic Cartridge</i></b>		
U.S. Rifle, M1866-1870	.45	70 grains Ffg
Sharps Carbine	.50	55 grains Ffg
U.S. Rifle, M1873-1884	.45	70 grains Ffg
U.S. Carbine, M1873-1884	.45	55 grains Ffg
Henry Repeating Rifle	.44	28 grains Ffg
Colt/S&W Revolver	.45	28 grains Ffg

[See NPS, p45]

The Pennsylvania Historical & Museum Commission recommends that the charge for a pistol should be approximately ½ of the rifle load of the same bore size, not to exceed 50 grains.

Note: 1 Dram Equals 27.3 Grains.

## **SMALL ARMS DEMONSTRATION CHECKLIST**

### **BEFORE**

- ( ) The piece has been inspected, inside and out. Bore is clean of foreign material.
- ( ) The demonstrator approaches the demonstration area carrying the firearm in a safe and military fashion.
- ( ) He is not encumbered with superfluous equipment.
- ( ) Misfire equipment is in place at the demonstration area.
- ( ) Visitors have a good field of vision of the demonstration.
- ( ) The interpreter has a clear view of all the visitors and down range area.
- ( ) Physical barriers between the visitors and the demonstration area are in place.
- ( ) Conditions are not too dry or windy to risk a range fire from the muzzle blast.
- ( ) First aid kit and emergency communications are available.

### **DURING**

- ( ) He is competent with the manual he is using.
- ( ) There is sufficient additional people for interpretation and crowd control.
- ( ) The demonstration area is safe for the size of the audience.
- ( ) The firearm is always pointed in a safe direction.
- ( ) At no time are there any parts of the demonstrator's body placed in a hazardous position in relation to the firearm.
- ( ) In the event of a misfire or other unscheduled event the demonstrator reacts properly.

### **AFTER**

- ( ) The demonstrator maintains military bearing and leaves the area carrying the firearm safely and in a military fashion.
- ( ) The demonstration area is policed for dropped cartridges, cartridge papers, etc.
- ( ) Any remaining cartridges are returned to storage facility
- ( ) The piece is cleaned, dried and oiled. The piece is returned to the storage facility.
- ( ) Any accessories are accounted for and returned to the proper storage areas.
- ( ) Your overall impression is favorable.

The student must perform the following motions according to the directions below in order to be deemed proficient.

### **HANDLING MOTIONS**

ORDER - - ARMS

SECURE - - ARMS

PORT- - ARMS

FIX - - BAYONET

CHARGE BAYONET

UNFIX - - BAYONET

ADVANCE - - ARMS

SUPPORT - - ARMS

TRAIL - - ARMS

SPRING - - RAMMERS

INSPECTION ARMS

### **FIRING MOTIONS**

SHOULDER- - ARMS

HANDLE - - CARTRIDGE

PRIME

SHUT - - PAN

CHARGE - - CARTRIDGE

DRAW - - RAMMER

RAM - - CARTRIDGE

RETURN - - RAMMER

SHOULDER - - ARMS

READY!

AIM!

FIRE!

SHOULDER- - - ARMS

## GLOSSARY

### **BARREL BAND**

One of several metal bands holding the stock together, as on the Charleville musket. (A banded barrel)

### **BARREL PIN**

One of several round metal pins holding the barrel and stock together as on the “Brown Bess”. (A pin-fastened barrel)

### **BREECH**

The closed end of the barrel. Includes the breech plug, the tang and the tang screw.

### **BRIDLE**

A metal plate that provides more support for the inside screws on which the sear and tumbler pivot in the lock.

### **BUTT**

That part of the stock which fits the shoulder when firing. Includes the wrist, swell, toe, and butt plate.

### **CALIBER**

The diameter of the bore expressed in hundredths of an inch.

### **CASEHARDENING**

A process by which heat and chemicals are used to harden a metal surface.

### **COCK**

Located on the outside of the lock and attached to the squared tumbler shaft. Holds the flint between the jaws.

### **ESCUTCHEON**

A metal plate inlaid to strengthen screwholes.

### **FEATHER SPRING**

The outside spring on the lock which controls the steel’s position. (Frizzen spring)

### **FLASH**

Ignition of priming powder in pan.

### **FLASH GUARD**

A metal plate attached around the outside of the pan to divert the flash. This protects the people next to you.

### **FLASH IN THE PAN**

The priming powder is ignited in the pan, but fails to ignite the main charge in the barrel because of a plugged vent.

### **HANG FIRE**

A condition on which an apparent misfire goes off after a short delay. This is the reason for the 10 second delay in the misfire procedures.

### **LOCK PLATE**

Metal plate to which is attached the workings of the lock.

### **LUGS OR TENONS**

Located on the bottom or underside of the barrel, through which a barrel pin passes to attach the barrel and the stock together.

### **MAIN SPRING**

The heavy spring on the inside of the lock that moves the cock.

### **PAN**

A receptacle that holds the priming charge.

### **PICK**

A fine steel wire used to clean out the vent hole.

### **PIPES, LOOPS, OR THIMBLES**

Short tubes under the small arm used to hold the rammer.

### **SEAR**

The part of the lock that engages the tumbler and cock and is released by the trigger.

### **SEAR SPRING**

The small spring that moves the sear.

### **STEEL, BATTERY, HAMMER, OR FRIZZEN**

The steel part which is struck by the flint. Hot pieces of the steel fall into the pan causing ignition of the priming.

### **TUMBLER**

Contains the half cock and full cock notches. It is attached to the cock by the tumbler shaft.

**VENT OR TOUCHHOLE**

The hole in the barrel near the breech through which the priming charge ignites the main charge in the barrel.

**REMEMBER THAT SAFETY, ESPECIALLY GUN SAFETY, IS EVERYONE'S CONCERN. IF YOU SEE A PROBLEM, SAY SOMETHING.**

