Storage, Transportation, Manning, and Firing

Guidelines

for the

4-inch Coehorn Mortar

U.S.S. Fort Henry

Clearwater, Florida

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Forward

This guideline was created with the intention to document the operation of the U.S.S. *Fort Henry's* 4-inch Coehorn mortar and was compiled from several sources, including mortar manuals as well as modern operations which take into consideration the modern aspect of safety. The writer of this guideline has every intention of having the crew, other reenactors, and spectators being in a safe environment. Any errors or omissions is not the intention of the writer and therefore the writer does not assume responsibility for this documents content.

Safety

This equipment requires close scrutiny when operating. The short muzzle creates a fire ball, not only straight out but a close to right angles to the face of the muzzle. All care must be taken to assure that all personnel are behind the muzzle when clearing, loading, and firing. The mortar must maintained in working order and be safely operated. The mortar present a noise hazard. All personnel should follow guidelines for ear protection. The mortar can present a fire hazard in dry terrain as debris from the barrel can start a fire. The mortar is quite heavy (300 pounds) and can cause a personal injury hazard when lifting and moving.

When the powder chest contains one or more charges and/or primers it is to be locked at all times when it unattended. This means in camp and on the field.

This guideline does not cover projectiles of any sort as they are not used at this time.

General Description of Equipment

This mortar has a four-inch bore and uses approximately one-quarter pound (four ounces) of black powder. The mortar is a heavy, compact unit. It can be lifted and moved by two men with good backs. Due to the weight, the mortar can be transported by the two men only a short distance. Four men can move it, but as they would be in close proximity, there is a trip hazard.

Historically, mortars were used to fire a powder filled iron ball (exploding shell) with a timed fuse. The short, fixed elevation and laterally aimed barrel was used to "lob" the shells over fortifications where it would explode either upon landing or slightly above the ground. It was the fragmentation of the shell that created destruction. The distance a shell was to travel was determined by the amount of powder placed in the chamber.

To fire the gun, the distance from the mortar to the point of contact was estimated. The fuse was set to the appropriate time, and the amount of powder (loaded down the muzzle) was determined for the distance the projectile was to travel. Both the fuse timing and the amount of propelling powder was listed on a chart based on the distance. The chart was kept in the powder chest.

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I. EQUIPMENT INVENTORY LIST

The following is the inventory of equipment for the mortar. All of the below is required to operate the mortar. It is the responsibility of the keeper of the equipment to assure that all is transported to an event, and in working condition. any repairs or necessary replacement of items must be made prior to operation.

1. Mortar: Mortar barrel & carriage
2. Mortar: Muzzle plug
3. Implement: Bore wiper – wet sponge
4. Implement: Bore wiper – dry sponge
5. Implement: Bore scraper (worm)
6. Implement: Rammer (other end of sponge)
7. Implement: Linstock
8. Implement: Sponge bucket with water
9. Implement: Back board
10. Ammunition chest with lock
11. Implement: Leather gloves, 2 pair (chest top)
12. Implement: Vent prick & case (chest tray)
13. Implement: Leather thumbstall (chest tray)
14. Implement: Cartridge pass box (chest storage)
15. Implement: Quill primer box (chest tray)
16. Charge: Powder charges (chest cell)
17. Charge: Quill primers (chest tray)
18. Maintenance: Needle nose pliers
19. Maintenance: Large fouling removal scraper (chest storage)
20. Maintenance: Vent brush (chest tray)
21. Maintenance: Carriage broom (chest storage)
22. Records: Log book (chest tray)
23. Spares: Vent prick spares (chest tray)
24. Spares: Sponge covers (chest storage)
25. Spares: Slow match
26. Equipment: Matches (chest tray)

II. STORAGE

The mortar and equipment should be stored in a clean, dry, secured place. The powder should be removed from the powder chest and sealed in moisture proof and dated bags.

III. PREPARATION FOR EVENTS

Prior to events where the mortar will be used, the mortar and equipment should be verified that all is accounted for and in working order. The powder chest is to be neatly organized and kept that way while in use. Any touch up to the paint and finish of the barrel, carriage, powder chest, and equipment should be done in advance.

The accounting log will dated and will identify the amount (inventory) of charges and primers prepared and in the chest.

IV. TRANSPORTATION

Care should be taken in transporting the mortar and equipment. This care involves personal safety in moving heavy items, securing the items to prevent damage and theft.

Upon arriving at the event site (camp setup), the mortar will be unloaded and placed in an appropriate place. The powder chest should be located in a secure place. All items should be protected under inclement weather conditions.

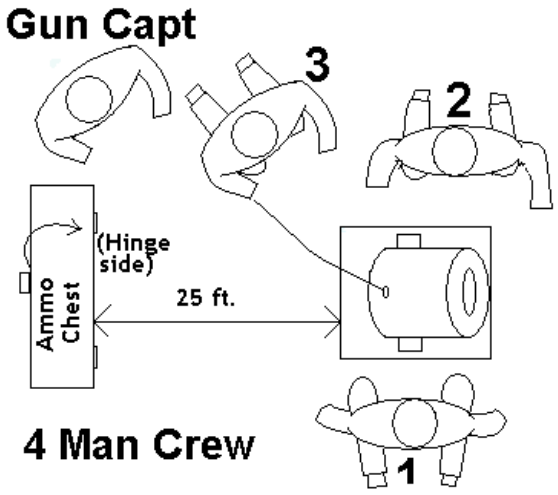
V. CHARGES

Mortar Powder charges shall be prepared in advance using four ounces of commercially manufactured black powder of American standard Fg or coarser granulation and four ounces of unbleached flour Use the special tooling to form the aluminum foil for the cartridges. Charges and primers are to be stored in the locked powder chest while at events. Follow the separate procedure for making the charges.

VI. CREW MEMBERS AND THEIR DUTIES

The normal mortar crew will consist of four men (optimal). (The mortar can be safely operated by three, four, or five men.) All of the gun crew members must be either certified by prior training and use or must be trained prior to fielding the gun. Under no circumstance will anyone operate the gun that has not been trained to use it. The normal mortar crew is identified by the titles below. For instance, the gun commander may say "*Number two, reworm*." The Gun Captain will be refered to by their rank (sir, chief, sergeant, etc.). The crew is as follows, including a brief description of their duties:

1. **Gun Commander** is in charge of the gun. He receives his orders from the artillery commander , company commander, or designated officer in the chain of command. He is responsible for the operation of the gun. He also brings the powder charge from the chest to Number Two.
2. **Number One** is responsible for wet sponging and ramming the cartridge.
3. **Number Two** is responsible for worming, dry sponge, and placing the cartridge in the muzzle.
4. **Number Three** is responsible for vent blocking, cartridge pricking, capping, and firing the gun.



VII. TACTICAL MOVEMENT OF THE MORTAR

There will probably be times when the mortar must be relocated while under fire or while being observed by spectators during an event. The mortar, chest and all equipment must be moved together. No items should be left in place nor two trips made.

VIII. PREPARATION FOR FIRING (SETUP)

As directed by the senior artillery officer, commanding officer, or other designated commander, the mortar will be placed into position. The powder chest will be placed about 25 feet behind the mortar, with the hinge side facing the mortar. The sponges, worm, and rammer will be placed on the mortar carriage, and the sponge bucket (with water) will be placed two feet to the right front of the mortar. The linstock will be placed about three feet behind the left rear of the gun. the backboard will be place to the rear of the carriage with one edge upon the lower lip. All other implements will be in the powder chest.

1. The mortar crew will fall-in behind the powder chest.
2. Gun Commander: "*Man the Gun"*
3. One and Two will take leather gloves, and Three will take the thumbstall, pick (in case), and cap pouch from the chest.
4. The linstock is lit (or is still lit from prior firing).
5. One, Two and Three will put on their equipment and proceed to their positions at the mortar. Each will remain standing, facing the gun.
6. On command "*Take Implements*" One, Two, and Three will kneel at their positions, and take the appropriate implements and remove them from the carriage.

IX. LOADING AND FIRING SEQUENCE

1. Gun Commander: "*Prepare the Gun for firing.*"
2. Three places his thumb (with thumbstall) over the touch hole, sealing it until the cartridge is seated.
3. Two worms the barrel. Give two complete turns of the worm at the breech each time to pick up any powder container remnants and to loosen any powder residue. As the worm is much smaller than the bore, the worm must be moved around the chamber to break free any remnants. Re-worm if remnants are on the worm, until the chamber is clear.

   (Safety notes: All sponging, worming, ramming, is done with the palm of the hand facing up and thumb along the edge of the ramrod facing away from the muzzle. Do not wrap thumb around the ramrod.) Everyone's faces should be behind the face of the barrel. No one should be able to see the bore.

4. One dampens the sponge (if necessary) and sponges the barrel. Do not soak the sponge.
   A. Sponge with a wet (but not sopping) tight-fitting sponge with a head of lambs wool or wool carpeting over a wooden cylinder affixed to a shaft at least one foot longer than the bore. The end of the sponge head should conform to the shape of the breechplug (hemispherical or flat).
   B. Seat the sponge against the breech with hand pressure and give two full rotations of the shaft. Withdraw the sponge half-length, twist, then reseat against the breech and give another two full rotations.
   C. Remove the sponge. If any powder container remnants or unburned powder comes out with the sponge, repeat the entire process, starting with Worm.
5. Two dry sponges the barrel. After wet sponging, the same procedure is used with the dry sponge. The dry sponge is cleaned and dried off periodically with an absorbent towel-type rag. (The purpose of the dry sponge is to remove excess moisture from the bore; if water is left in the bore it may cause incomplete burning of the next powder charge, leaving dangerously glowing residue.)
6. Gun Commander: *"Load."*

7. The Gun Commander (or powder monkey) will open the powder chest, remove one cartridge. The Gun Commander inspects the cartridge to see that it is sealed and intact. The cartridge is placed it in the leather cartridge box, and brought forward to Two.
8. A quill primer is also brought forward and given to Three.
9. Two places the cartridge, hands cupped below the muzzle, inserting the correct end into the muzzle.
10. Two gently lowers the rammer into the barrel. Do not crush the cartridge.
11. Three removes the cartridge prick from the case, inserts it into the vent, (fingers pinch the prick, not in the loop). He slides the prick down to feel it puncturing the cartridge. He does this several times turning the slightly bent pin making several holes. He removes the pin, wipes it on white material. If he sees powder, he yells *"Powder."* (If not, proceed to misfires, below.)
12. Three inserts a primer into the vent, all of the way.
13. Gun Commander: *"Ready."*
14. One takes the backboard and moves directly behind the gun (kneeling), places the bottom of the backboard on the rear of the carriage, holding it vertical, and crouches behind the board, head below top of the board.
15. Three rises, takes the linstock, faces the gun commander and repeats *"Ready*." At the same time. Two leans away from the gun covering his ear that faces the gun.
16. Assuring that his men are in position and the field is safe for fire, the Gun Commander: *"Fire."*
17. Three touches the quill primer with the linstock's slow match.
18. See "Misfires" if the gun fails to fire.
19. At this point, the Gun Commander will either have the gun cleared for:
    A. Repeat firing ... or...
    B. Cleared for moving, close and latch chest, store implements ...or...
    C. Cleared for Cease fire (assuming re-firing will occur), by storing implements. (Gloves may be placed on top of powder chest for brief stopping) ...or...
    D. Securing and storing all implements.

X. MISFIRES

1. No powder on initial puncture of cartridge.
    E. Re-prick until powder is noted.
    F. If several pricks fail to show powder, the Gun Commander will decide to either fire anyway of declare a misfire.
2. Failure to fire upon. ignition.
    G. Gun Commander: "Misfire" then reports to artillery commander or senior officer that we have a misfire.
    H. Wait three minutes, then Gun Commander: "Re-cap." Three inserts a new quill primer.
    I. Go back to Loading and Firing.
    J. For repeated misfires, this may be repeated at the Gun Commander's discretion.

K. Upon complete failure to fire, the gun will be secured by placing rammers across the barrel, forming an "X" and all will remain observant that no one enters the danger zone forward 50 feet, sideways 15 feet.

L. The mortar will be cleared at the end of the event by dousing the barrel and vent with water. The worm will be inserted and using a length of material twisted twice around the handle, the worm will be turned and slowly pulled out of the barrel, removing the debris, and repeated until all debris is removed. The barrel will be sponged as previously defined.

XI. SECURING THE MORTAR

The mortar will be considered secure after clearing steps are followed, and all implements, cases, thumbstall, and gloves, are stored, and the chest secured.

XII. REMOVAL FROM THE FIELD

After the mortar is secured, powder chest is locked, and the mortar, chest, and all equipment is removed to the camp (most cases). Upon return to the camp, the mortar log book will indicate how many rounds were fired, and the names of the gun crew.

The small log book will have the following entries made: Date; location; crew members; gun commander; rounds expended; rounds remaining in the chest; problems and issues; signature of person entering the data. This information will be transferred to the larger log book for the mortar. Make memos as to replenishing charges, percussion caps, repairs, maintenance, and who will be performing such and by what date.

XIII. REMOVAL FROM THE EVENT

The mortar will be cleaned by scraping the barrel to remove build up. All equipment to be cleaned and accounted for. The mortar is to be secured for travel.

XIV. TRAINING

All members are encouraged to train on the mortar in all positions. All Officers and NCOs are encouraged to train as Gun Commanders. At no time will any individual be required to be a gun crew member if they do not wish.

Initial training by the mortars previous owner has taken place. Follow-up training and retraining will be lead by previously trained personnel. Such training will require all safety reviews, multiple dry firing exercises, capped exercises, followed by powder firing upon assurance the trainee(s) are competent.

All training and firing will be entered in the mortar log book, as well as any rounds (powder) expended.

XV. OTHER DOCUMENTS

USS *Fort Henry* Artillery Log (kept by the commander). Record all powder firing of the mortar, date, place, rounds fired, crew members, problems, etc., number of starting rounds. If this log is not available, make written documentation for later entry into the log.

USS *Fort Henry* Individual Training and Usage Record (kept by the commander). Record all men using any artillery, date, name, type of gun*, type of firing, trainer(s) name, comments. If this log is not available, make written documentation for later entry into the log.
*In case we fire other artillery, we are keeping track of experience gained.

USS *Fort Henry* Mortar Inventory (kept by the commander). This is a checklist of all equipment. If this log is not available, make written documentation for later entry into the log.

Table of Fire, 4-Inch Mortar posted inside cover of mortar.