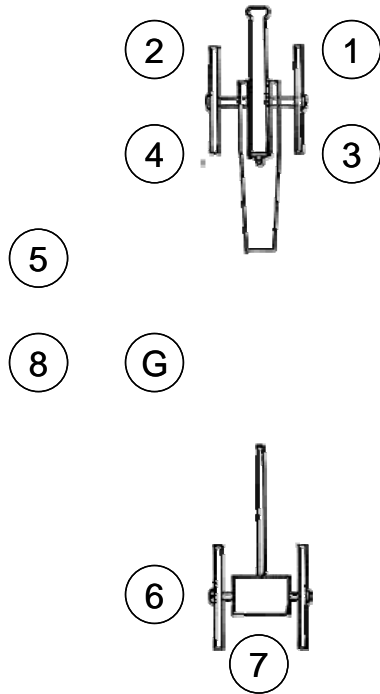


Field Artillery Posts and Duties



Basic Gun Crew

- **Number 1** uses a sponge/rammer, a large ash staff with a wool-covered sponge head at one end, to be wet for cleaning and cooling the bore, and a rammer head at the other for ramming and seating the charge.
- **Number 2** uses a worm, a large ash staff with a two twisted metal hooks at one end, to be used to remove the remains of fired ammunition, or mis-fired ammunition. Number 2 also inserts the charge into the bore to be rammed.
- **Number 3** has a pouch with the priming wire or vent pick, which is a pointed iron rod with a loop at the opposite end, and a vent brush, used to clean the vent and avoid fouling. Number 3 also carries a Thumb Stall which is used to seal the vent during cleaning and loading.
- **Number 4** wears a leather primer pouch attached to a belt, and holds the lanyard, a length of cord tied to a wooden handle, with a hook at the free end. Number 4 inserts the primer into the vent and fires the cannon.
- **Number 5** (also sometimes called the “Powder Monkey” in naval artillery) wears a leather haversack for carrying the ammunition between Number 6 and Number 2.
- **Numbers 6 and 7**, who work together at the chest, have tools for preparing the ammunition.
- **Number 8** carries either binoculars or a field telescope and is the spotter, standing wherever they can have the best view of the artillery’s effect and relay that information back to the Gunner.
- The **Gunner** carries the sight. The gunner gives the commands to the gun crew.

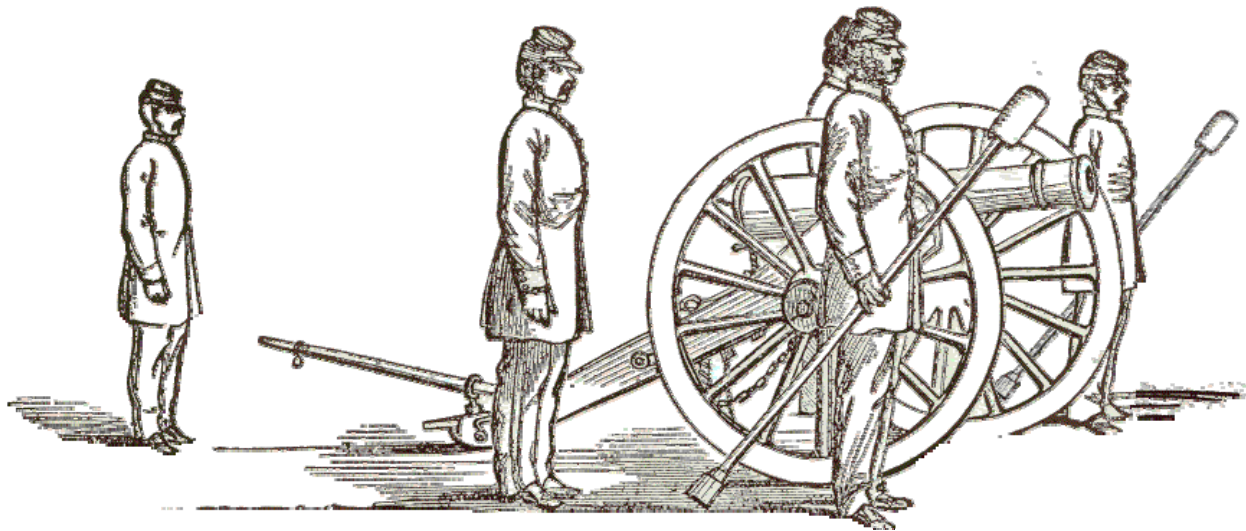
When preparing to take their positions, the gun crew lines up behind the limber, facing the cannon, in the following formation:

8	6	4	2	G
7	5	3	1	

or

6	4	2	G
7	5	3	1

When the Gunner gives the order: CANNONEERS, TAKE IMPLEMENTS!, the gun crew (except for Number 1 & 2) retrieves their implements from the limber and returns to formation behind the limber. CANNONEERS, POST!, the gun crew moves forward to the positions in the diagram and stands at attention. Number 1 & 2 will pick up their implements before coming to attention in their proper position.



When the Gunner gives the order: **CANNONEERS, SECURE THE PIECE!**, the Number 1 & 2 return their implements to the carrying hooks on the bottom of the carriage and the rest of the cannon crew returns their implements to the limber. The gun crew then returns to their previous positions (posts or limber formations). When the Gunner gives the order: **CANNONEERS, FALL BACK ON THE LIMBER!**, the gun crew returns to their formation behind the limber. If no order has been given to Secure The Piece, Number 1 & 2 will bring their implements with them to the limber.

Revised: Loading and Firing – By Detail

It is said that when you practice slowly, you learn quickly. The artillery drill By Detail is designed to teach the gun crew the specific loading and firing exercises step-by-step. In most artillery manuals, the By Detail drill is presented so the individual artillerist will know what to do for each of the By Detail instructions. This manual presents the By Detail drill so that the entire gun crew will know what to do for each of the By Detail instructions. This is simply a reordering of the drill information, but it presents it in a way that is easier to teach and easier to learn as a group.

The commands for By Detail are as follows:

LOAD BY DETAIL – LOAD; Two, Three, Four; SPONGE, Two, Three, Four; RAM, Two, Three; READY; FIRE; SERVICE; Two, Three, Four; SPONGE, Two, Three; CEASE FIRE

By Detail Artillery Drill (By Command)

CANNONEERS, POST

Number 1 – stands square to the front, in line with the front part of the wheels, holding the sponge about the middle of the staff in his right hand, and trailing it at an angle of 45 degrees, sponge head up.

Number 2 – stands square to the front, in line with the front part of the wheels, holding the worm about the middle of the staff in his left hand, and trailing it at an angle of 45 degrees, worm end up.

Number 3 – stands in line with the knob of the cascable, covering Number 1, the priming wire and vent brush in his right hand, the thumb stall on the left thumb, the tube pouch fastened to the waist.

Number 4 – stands in line with the knob of the cascable, covering Number 2.

Gunner – stands 10 yards behind the left wheel.

Number 5 – stands five yards behind the left wheel with the powder pouch slung over the left shoulder and hanging on the right side.

Number 6 – stands to the left of the limber, centred on the wheel.

Number 7 – stands immediately behind the limber in the centre.

Number 8 – stands with the gunner until placed by the gunner.

LOAD BY DETAIL

Number 1 – turns to the left to face the wheel and Number 2, and brings the sponge straight up with the right arm close to his side.

Number 2 – faces to the right to face the wheel and Number 1, and brings the worm straight up with the left arm close to his side.

Number 3 – turns to the left to face the vent.

LOAD

Number 3 – steps forward to the vent, holds the vent brush (or prick) between the index finger and the thumb of the right hand ensuring that no part of his body is in a straight line with the wheels, inserts and removes the vent brush (or prick) to ensure the vent is clear of debris, returns the vent brush or prick to the pouch, places the thumb stall over the vent with the left elbow extended as far to the left as possible and the fingers of the left hand on the left side of the tube pointing away from the vent (this allows the Gunner to sight the gun through Number 3's left arm), and shouts "CLEAR" to signal that the tube is ready for worming.

Number 1 – side steps to his right to bring his body just in front of the wheel.

Number 2 – side steps to his left to bring his body just in front of the wheel.

Number 6 & 7 – opens the limber chest, removes the correct powder charge, gives it to Number 5, and closes the limber chest. Number 6 & 7 keep the limber chest closed and secure. (The real distinction of duties between Number 6 & 7 is in the Live Fire Drill.)

Number 5 – moves back to the limber chest, retrieves a charge from Number 6, places it in his pouch, and moves to a position next to the Gunner.

Two

Number 1 – swings his left foot around the wheel, placing his left foot between the wheel and the tube, tilts the sponge to the left and grasps it with both hands, holding it at about a 45 degree angle, forming a cross with Number 2's worm across the front of the tube.

Number 2 – swings his right foot around the wheel, placing his right foot between the wheel and the tube, tilts the worm to the right and grasps it with both hands, holding it at about a 45 degree angle, forming a cross with Number 1's sponge across the front of the tube.

Three

Number 1 – lowers the sponge into the sponge bucket below the tube, removes the sponge from the bucket, swings his left foot forward without moving the right foot and swings the sponge to the right, outside the wheels, spins the shaft with his left hand to remove the excess water, swings his left foot backwards, and brings the sponge horizontal with the piece, just outside and to the right of the muzzle.

Number 2 – moves his left foot forward, facing toward the right, places the worm next to the muzzle with his hands towards the ends of the staff, left hand on top and right hand on bottom, inserts the worm into the muzzle, drops the right hand behind the right thigh, bends to the right with left knee extended and right knee bent, forces the worm home with the left hand, gives a minimum of two turns to the staff in the direction of the worm's gaining twist, draws out the worm, listening carefully to make sure that any debris is caught in the worm and is being extracted, grabs the staff near the worm on the bottom with the right hand, straightens up and brings the worm close to the body, shouts, "CLEAR" to signal that the tube is free from debris. Worming continues until the tube is free from debris. The worm is never inserted until Number 3 yells, "CLEAR."

Four

Number 1 – turns to the left and faces the tube, inserts the sponge head into the muzzle immediately after Number 2 removes the worm and shouts "CLEAR," drops his left hand behind the left thigh, straightens his right leg while bending the left leg and leaning left toward the axle, and forces the sponge all the way down the tube.

Number 2 – rests the worm head on the axle or the sponge/worm hook on the bottom of the carriage with the staff under the muzzle and away from Number 1 & 2, turns clockwise in the space between the wheel and the tube until facing the wheel with the back to the tube, both hands up at shoulder height to signal that he is ready to accept the powder charge from Number 5 keeping to the axle so that his body is behind the muzzle.

SPONGE

Number 1 – looks at the vent to ensure it is closed, turns the sponge two turns to the left with both hands, turns the sponge two turns to the right with both hands, making sure that the sponge is all the way in. For best results the sponge should be pulled halfway out and rammed back in several times and turned left and right several times to ensure all embers are extinguished. If air is heard escaping from the vent, Number 1 yells, “STOP VENT.” Sponging continues until there is no air escaping from the vent.

Number 3 – adjusts the thumb stall (if “STOP VENT” is shouted) to maintain the air vacuum within the tube.

Two

Number 1 – draws out the sponge, holding the top of the staff with the right hand, bends to the right by straightening the left leg and bending the right, grabs the bottom of the staff near the sponge head with his left hand, and places the sponge against the muzzle. There should be a ringing or thumping sound when removing the sponge is the vent is properly closed.

Three

Number 1 – turns the sponge by throwing the sponge head up with the left hand, rotating the staff with the right hand so the right hand is on the bottom with the thumb facing away from the muzzle and catching the top of the staff with the left hand, placing the rammer to the bottom of the muzzle, and tapping the muzzle two times to signal the gunner that he is ready to ram the charge.

Gunner – inspects the powder charge in Number 5’s pouch to ensure that it is a proper charge, and waves Number 5 forward to deliver the powder charge to Number 2.

Number 5 – opens the pouch to presents the powder charge to the Gunner, moves forward to deliver the powder charge to Number 2 on the Gunners orders, opens and raises the pouch so Number 2 can retrieve the powder charge, and returns to the limber chest.

Number 2 –reaches into the pouch carried by Number 5 and extracts the charge with the right hand, cups the charge with both hands close to the chest, turns counter-clockwise to face the tube, guides the charge along the bottom of the tube and carefully sets the charge just inside the muzzle, retrieves the worm in his left hand, steps outside the wheel, left foot going back first, swinging the right foot to the outside of the wheel, and left foot swinging back to return to POST position. The worm is placed on the left toe and the left arm is extended forward..

Four

Number 1 – inserts the rammer head only into the muzzle as soon as Number 2 has inserted the charge. He releases his left hand from the staff and extends the left arm straight out, pointing toward the breech with palm down.

RAM

Number 1 –rams the charge home with his right hand, thumb pointing away from the muzzle, by leaning to the left and almost throwing the rammer down the tube while dropping

the right hand and getting as much of his upper body as possible between the axle and the end of the muzzle as a precaution against premature firing. The charge is seated by carefully taking the staff by the right hand, thumb pointed out, withdrawing it slightly, and ramming the charge firmly but lightly only once, dropping the right hand below the muzzle as soon as the rammer hits home.

Two

Number 1 – jerks the rammer out with his right hand, thumb pointing away from the muzzle, allowing it to slide through the hand as far as the middle of the staff, grabs the staff with the left hand close to the rammer head, thumb pointing away from the muzzle, removes the rammer, stands straight with the rammer straight up, sponge head up, in the right hand with the right arm close to the body.

Three

Number 1 – steps outside the wheel, right foot going back first, swinging the left foot to the outside of the wheel, and right foot swinging back to return to POST position. The rammer is placed on the right toe and the right arm is extended forward.

Number 3 – jumps back to the trail handspike inserted at the end of the carriage, grabs the handspike with both hands, moves the trail in the direction that the Gunner taps the handspike until the Gunner raises both hands to signal that the gun is in position, and then returns to POST position.

Gunner – moves behind Number 3 on the trail handspike to site the cannon, taps the handspike in the direction he wants Number 3 to move the carriage, raises both hands when the carriage is in the proper position, and returns to POST position.

READY

Number 3 – steps forward to the left, ensuring that no part of his body is in a straight line with the wheels, holds the vent prick between the index finger and the thumb of the right hand making sure that no part of his hand is directly above the vent prick or inside the vent prick ring, inserts and removes the vent prick to puncture the powder charge, returns the vent prick to the pouch, holds the lanyard for Number 4 against the left rear of the tube with his right hand open flat, palm down, until Number 4 has walked out the slack and signalled Number 3 to return to post position. If Number 3 cannot prick the powder charge due to its position within the tube, Number 1 may need to Reseat the Charge (carefully ram it home one more time). If Number 3 still cannot prick the powder charge, the charge must be treated as a misfire (see Misfire Drill section).

Number 4 – inserts the lanyard hook into the ring of a primer, steps forward to the right, ensuring that no part of his body is in a straight line with the wheels, inserts the primer into the vent, moves to the rear and the left to remove the slack in the lanyard and to get clear of the wheels, holds the lanyard in his right hand, surveys the field of fire, waves off Number 3, raises his hand as a signal to the Gunner that the cannon is ready to fire when the field is clear, lowers his hand when the Gunner raises his hand, and continues to survey the field.

Number 1 – swings right foot backwards, right knee bent and left knee straight, covers left ear with left hand, holds sponge extended in his right hand away from the muzzle with the

rammer head resting on the left foot, and keeps eyes on the muzzle, to detect a possible misfire, and on the field of fire to ensure there is no one in the field of fire.

Number 2 – swings left foot backwards, left knee bent and right knee straight, covers right ear with right hand, holds worm extended in his left hand away from the muzzle with the staff resting on the right foot, and keeps eyes on the muzzle, to detect a possible misfire, and on the field of fire to ensure there is no one in the field of fire.

Gunner – raises his hand after Number 4 raises his to signal that he has command of the piece and surveys the field of fire to ensure that no one is in the field of fire.

FIRE

Number 4 – pulls the lanyard firmly toward his body or behind his body. If the gun fired correctly, Number 4 returns to post position.

Number 3 – if the gun fired correctly, Number 3 automatically turns to the left to face the vent.

Number 1 – if the gun fired correctly, Number 1 automatically turns to the left to face the wheel and Number 2, and brings the sponge straight up with the right arm close to his side.

Number 2 – if the gun fired correctly, Number 2 automatically faces to the right to face the wheel and Number 1, and brings the worm straight up with the left arm close to his side.

SERVICE

Number 3 – steps forward to the vent, holds the vent brush (or prick) between the index finger and the thumb of the right hand ensuring that no part of his body is in a straight line with the wheels, inserts and removes the vent brush (or prick) to ensure the vent is clear of debris, returns the vent brush or prick to the pouch, places the thumb stall over the vent with the left elbow extended as far to the left as possible and the fingers of the left hand on the left side of the tube pointing away from the vent (this allows the Gunner to sight the gun through Number 3's left arm), and shouts "CLEAR" to signal that the tube is ready for worming.

Number 1 –side steps to his right to bring his body just in front of the wheel.

Number 2 – side steps to his left to bring his body just in front of the wheel.

Two

Number 1 – swings his left foot around the wheel, placing his left foot between the wheel and the tube, tilts the sponge to the left and grasps it with both hands, holding it at about a 45 degree angle, forming a cross with Number 2's worm across the front of the tube.

Number 2 – swings his right foot around the wheel, placing his right foot between the wheel and the tube, tilts the worm to the right and grasps it with both hands, holding it at about a 45 degree angle, forming a cross with Number 1's sponge across the front of the tube.

Three

Number 1 –lowers the sponge into the sponge bucket below the tube, removes the sponge from the bucket, swings his left foot forward without moving the right foot and swings the

sponge to the right, outside the wheels, spins the shaft with his left hand to remove the excess water, swings his left foot backwards, and brings the sponge horizontal with the piece, just outside and to the right of the muzzle.

Number 2 – moves his left foot forward, facing toward the right, places the worm next to the muzzle with his hands towards the ends of the staff, left hand on top and right hand on bottom, inserts the worm into the muzzle, drops the right hand behind the right thigh, bends to the right with left knee extended and right knee bent, forces the worm home with the left hand, gives a minimum of two turns to the staff in the direction of the worm's gaining twist, draws out the worm, listening carefully to make sure that any debris is caught in the worm and is being extracted, grabs the staff near the worm on the bottom with the right hand, straightens up and brings the worm close to the body, shouts, "CLEAR" to signal that the tube is free from debris. Worming continues until the tube is free from debris. The worm is never inserted until Number 3 yells, "CLEAR."

Four

Number 1 – turns to the left and faces the tube, inserts the sponge head into the muzzle immediately after Number 2 removes the worm and shouts "CLEAR," drops his left hand behind the left thigh, straightens his right leg while bending the left leg and leaning left toward the axle, and forces the sponge all the way down the tube.

Number 2 – rests the worm head on the axle or the sponge/worm hook on the bottom of the carriage with the staff under the muzzle and away from Number 1 & 2, turns clockwise in the space between the wheel and the tube until facing the wheel with the back to the tube, both hands up at shoulder height to signal that he is ready to accept the powder charge from Number 5 keeping to the axle so that his body is behind the muzzle.

SPONGE

Number 1 – looks at the vent to ensure it is closed, turns the sponge two turns to the left with both hands, turns the sponge two turns to the right with both hands, making sure that the sponge is all the way in. For best results the sponge should be pulled halfway out and rammed back in several times and turned left and right several times to ensure all embers are extinguished. If air is heard escaping from the vent, Number 1 yells, "STOP VENT." Sponging continues until there is no air escaping from the vent.

Number 3 – adjusts the thumb stall (if "STOP VENT" is shouted) to maintain the air vacuum within the tube.

Two

Number 1 – draws out the sponge, holding the top of the staff with the right hand, bends to the right by straightening the left leg and bending the right, grabs the bottom of the staff near the sponge head with his left hand, and places the sponge against the muzzle. There should be a ringing or thumping sound when removing the sponge is the vent is properly closed.

Three

Number 1 – steps outside the wheel at the same time as Number 2, right foot going back first, swinging the left foot to the outside of the wheel, and right foot swinging back to return

to POST position. The rammer is placed on the right toe and the right arm is extended forward.

Number 2 – steps outside the wheel at the same time as Number 1, left foot going back first, swinging the right foot to the outside of the wheel, and left foot swinging back to return to POST position. The worm is placed on the left toe and the left arm is extended forward.

Number 3 – returns to POST position.

CEASE FIRE

When this command is issued by the Gunner or other commanding officer, the cannon crew returns to post positions and awaits further orders. If the cannon has just been fired, the cannon is serviced first. If the cannon is loaded, but not yet fired, Number 1 places the rammer on the right wheel to signal that the cannon is loaded.

Any member of the gun crew is not only allowed, but is required to shout “CEASE FIRE!” if the field of fire is not clear or if there is another potential safety problem. It is the responsibility of each member of the gun crew to act as a Safety Officer.

If the CEASE FIRE command is not given, the gun crew repeats the LOAD; Two, Three, Four; SPONGE, Two, Three, Four; READY; FIRE; SERVICE, Two, Three, Four; SPONGE, Two, Three until the CEASE FIRE command is given.

Once the gun crew understands and can demonstrate the By Detail drill proficiently, the gun crew should practice the drill without detail.

The commands without Detail are as follows:

LOAD; READY; FIRE; SERVICE; CEASE FIRE

For the purposes of drilling, the Instructor typically takes the role of the Gunner and issues all commands. When drilling gunners, the Instructor takes the role of Chief of the Section or another commanding officer.

Revised Misfire Drill

There are a number of reasons a cannon may misfire: Number 3 may not have broken open the powder charge with the vent prick, the primer may be bad, the charge may have rolled away from the vent, etc. If the cannon fails to go off, the Gunner will give the command:

FAILED PRIMER – DO NOT ADVANCE!

Number 1 – places the rammer on the wheel to signal that the cannon is loaded and is not to be approached.

Number 2 – takes three large steps backwards, sets down the worm on the ground in front of him, and raises both hands to the chest level, facing out.

Number 5 – secures the pliers and other primer removal implements from the limber and places them in his pouch.

The remaining members of the gun crew remain in their READY positions.

When at least 3-5 minutes have elapsed from the time the gun has stopped smoking, the Gunner will give the command:

REPRIME!

Number 2 – takes three steps forward, carefully steps inside the wheel, keeping his chest facing the wheel at all times (turning clockwise as he steps around the wheel), and ensures that his body is behind the muzzle by leaning left toward the axle.

Number 5 – steps forward to the left wheel, turns his back to the field of fire, and hands Number 2 a pair of pliers across the wheel, making sure to never get behind the wheel or the carriage.

Number 2 – still facing away from the tube, Number 2 takes the pliers in his left hand, removes the faulty primer, and hands the pliers back to Number 5.

Number 5 – takes back the pliers.

Number 3 – steps forward to the right wheel and hands Number 2 the vent prick.

Number 2 – takes the vent prick the same way the pliers were taken, holds the prick between the index finger and the thumb making sure that no part of his hand is directly above the prick or inside the prick ring, inserts the prick into vent and re-pricks the powder charge, and gives the vent prick back to Number 3.

Number 3 – takes back the vent prick and returns to READY position.

Number 4 – steps forward to the left wheel and hands Number 2 the lanyard with another primer attached.

Number 2 – inserts the primer and holds the lanyard against the rear and left of the tube while Number 4 removes the slack in the lanyard.

Number 4 – removes the slack in the lanyard and signals with a nod to Number 2 that he may withdraw.

Number 2 – upon receiving the nod from Number 4, steps out of the wheel, facing the wheel at all times and turning his body counter clockwise as he moves back around the wheel carefully and returns to a position outside the wheel facing the tube. He then takes three steps backwards, making sure not to step on the worm, retrieves the worm, and returns to the READY position.

Gunner – ensures everyone is in their READY position before giving the command to FIRE the cannon again.

If the cannon fires, the cannon is serviced normally. If the cannon fails to fire, the above procedure shall be followed again to extract the primer. However, rather than attempt another firing, the vent shall be flooded with water to put out any spark left by the primer, and then the muzzle shall be flooded with water. The Gunner will give the order:

FLOOD THE TUBE!

All members of the gun crew not directly involved should fall in behind the limber.

Number 5 – brings forward a large syringe to Number 3.

Number 3 – injects at least 10 syringe loads into the vent.

Number 2 – uses the sponge bucket to flood the muzzle.

After the powder charge has had time to be sufficiently soaked, the command is given:

REMOVE THE CHARGE!

Number 3&4 – raise the trail handspike, pointing the muzzle down. If this does not work, then the charge needs to be wormed.

Number 1 – worms the charge out and submerges it in the water bucket. After several minutes, Number 1 takes the powder charge out of the water, walks it forward of the cannon a safe distance, and, using the worm, breaks it open.

The United States National Park Service also recommends using a CO₂ fire extinguisher, rather than water, to handle rendering a misfired charge inert in the tube. The CO₂ is injected into the tube via the vent. This deprives the charge of the oxygen needed to ignite, and in many cases will actually cause the misfired charge to exit the tube due to the pressure introduced by the CO₂ fire extinguisher. All members of the gun crew should take positions well away from the cannon carriage when the CO₂ is released into the vent.

There is a slight chance of a static spark being created by the movement in the tube of the misfired charge in the CO₂ environment, but the risk is substantially less than what Number 2 faces during the Misfire Drill. If the misfired charge is rolled according to the standards outlined in this manual (see Section 8), the risk is minimal and any spark created by the CO₂ should not be able to ignite the powder. As with all misfires, extreme caution should be used to prevent injury should the powder accidentally ignite.

Once the misfired charge has been removed from the tube, either by being forced out from the CO₂ or by the means described in the Misfire Drill, the misfired charge needs to be handled according to the Misfire Drill (submerged and broken open – see above).