I. Scope

This policy and procedure guideline establishes a standard guideline for examining firearms and documenting relevant information. This protocol is applicable to all ATF Firearm and Toolmark Examiners.

II. References

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III. Safety Precautions

See ATF-LS-FT8 Firearms Safety and Shooting Guidelines.

Basic safety rules:

- Handle all firearms as if they are loaded, and check to see if they are.
- Always point the firearm in a safe direction.
- Keep your finger off of the trigger until you have made the decision to shoot.
- Always be certain of the target and the surrounding area.
- Thoroughly read the manufacturer's instruction manual for the firearm, when it is available.
- Check the firearm to be sure that it is functioning properly, and is free of obstructions.
- Take into consideration the proper ammunition and caliber for the gun recommended by the manufacturer.
- Consider if the firearm has been re-chambered for a different cartridge.
- Always wear eye and ear protection.
- Never use a firearm under the influence of drugs or alcohol.
- Do not rely on mechanical safeties.
- Do not alter or modify the firearm, unless case reconstruction makes it necessary.
- Always unload firearms when not in use.
- All firearms should be stored unloaded and secured in a safe storage location.
- Always transport a firearm unloaded, separate from the ammunition.

See also, AFTE Journal (Volume 23 Number 2) April 1991 – Firearms Evidence Examination, Module 7, D1, pp. 703-711.

IV. Apparatus/Reagents

Stereo microscope, comparison microscope, trigger pull gauge, calipers, rulers, non-marring dowel, bore light, bore scope, hand tools, gunsmith tools.

V. Procedures

See ATF-LS-FT9 Firearm and Toolmark Examination and Documentation for minimum required documentation and supplemental documentation depending on the purpose for which the firearm was submitted for examination.

In general:

- Record general information on firearm.
- Record condition of firearm.
- Preliminary examination for functionality. If not functional, describe malfunction.
- If necessary for the examination, and if the firearm is functional, test fire in accordance with test fire guidelines and safety manual.

Measuring overall length barrel length (if needed):

- Definitions
    - Barrel length – the distance between the end of the barrel and the face of the closed breechblock or bolt for firearms other than for revolvers. On revolvers, barrel length is the overall length of the barrel including the threaded portion within the frame. Barrel length normally should include compensators, flash hiders, etc., if permanently affixed.
    - Overall length – is the length of the firearm measured parallel to the axis of the bore from muzzle to a line at right angles to the axis and tangent at the rearmost point of the butt plate or grip.
    - Removable barrel extensions, poly chokes, flash hiders, etc., are not part of the measured barrel length or overall length.
- Barrel length
    - Revolver – Measure the distances from the breech end of the barrel to the muzzle, excluding the cylinder. This measurement can be done directly or by placing a non-marring item down the barrel, marking the distance from the breech end of the barrel to the muzzle and measuring the distance marked on the item.
    - Firearms other than revolvers – Measure the distances from the breechface, in a closed and locked position, to the muzzle. This measurement can be done directly or by placing a non-marring item down the barrel, marking the distance from the breech end of the barrel to the muzzle and measuring the distance marked on the item.
- Overall length
    - Measure the distances from the butt to the muzzle. Measurement shall be made parallel to the bore.

Test fire guidelines:

- The basic philosophy in test firing is that the examiner should attempt to obtain pristine specimens for the purposes as needed to perform the necessary examination for which the firearm was submitted to the extent feasible in a controlled laboratory environment.
- The examiner should evaluate the desirability of examining the inner surface of the barrel, chamber(s), and breech area prior to test firing and the need for retaining any residue that was present.
- Test fired components may be indexed for orientation and marked to record the sequence of firing. Notes may be made as to which chamber each cartridge was fired in as well as the action mode used for each test, when appropriate.
- A minimum of two test cartridges should be fired in such a manner that the test components will be useable for examination. It may also be necessary to fire additional cartridges.
- The examiner should be aware of the potential danger in firing down-loaded ammunition as well as the possible change in markings on ammunition components so fired.
- Test fired components are permanently marked for identification purposes and returned to the submitter along with the rest of the evidence. At the discretion of the examiner, extra test fired components may be made and retained in the laboratory for use in a reference collection.

Note: Examiners may choose to use worksheets for purposes of documentation in case notes.

VI. Quality Assurance

Error is avoided when equipment is maintained in good repair and regularly checked for calibration.

VII. Addendum

Additional Safety Checks for Specific Firearms

- Is the firearm unloaded?
- Has adhering trace evidence been collected?
- Are there any loose or damaged parts?
- Are there any dangerous modifications?
- Is there a barrel obstruction?
- Are there any loose or missing screws?
- Was the firearm originally designed for black powder?

Safety Checks: Revolvers

- Is the cylinder secure when closed?
- Do the chambers align with the barrel?
- Is the cylinder bulged?
- Does the cylinder bind?
- Does the cylinder lock up in single and double action?
- Does the cylinder skip chambers, with partial trigger return?
- Is there a functioning hammer block/transfer bar?
- Does the trigger return reliably?
- Is there an average trigger pull weight in SA/DA?
- Will the hammer push off?
- Will the hammer fall from half cock when the trigger is pulled?
- Are there any false seating positions?
- Does the hammer rebound when the trigger is released?
- Is the forcing cone cracked?
- Does the cylinder fit into the mainframe correctly?

Safety Checks: Non-Revolvers

- Do the safeties operate correctly (check each independently)?
- Engage safety and pull and release trigger. Does the gun fire when safety is then disengaged?
- Is there a disconnector?
- Is the disconnector functioning properly (hold trigger and cycle action)?
- Does the slide/bolt engage tightly?
- Will the gun fire with the slide/bolt partially open?
- Is the firing pin free to retract and not bind?
- Will the hammer push off?
- Does the half-cock notch catch?

- Will the hammer fall from half cock when the trigger is pulled?
- Are there any false seating positions?
- Will the hammer/striker release when the slide is allowed to cycle forward?
- Will the striker drop on a bolt action when the bolt is closed quickly?
- Is the trigger pull weight average for this type of firearm?
- Using inert ammunition, does it feed correctly?
- Check the slide and frame visually for hairline cracks.

Black Powder Firearms

Caution: Black powder is very sensitive to heat and impact. Be extremely careful when handling firearms loaded with black powder.

Percussion Revolvers

- Point the revolver in a safe direction.
- Place the hammer in a half-cock position so that the cylinder can rotate.
- Remove any percussion caps from the cylinder.
- Remove the cylinder from the frame.
- Remove the ball and powder charge with a jag.
- Never unload by firing.

Rifles

- Point the firearm in a safe direction and remove the percussion cap.
- Remove the ball and powder charge with a jag.

Ammunition

- Is the ammunition factory brand or reloads?
- Review the *Firearm and Ammunition Recall/Safety Warnings* as appropriate.

Powder (SAAMI)

- Do not store smokeless powder in the same area with solvents, flammable gases or highly combustible materials.
- Store only in Department of Transportation approved containers.
- Do not subject the storage cabinets to close confinement.
- Storage cabinets should be constructed of insulating materials and with a weak wall, seams or joints to provide an easy means of self-venting.
- Do not keep old or salvaged powders.
- Obey all regulations regarding quantity and methods of storing.
- Keep the storage and use area clean.

Test Firing Safety

- Prior to test firing a firearm, it must be inspected to ensure that it functions safely.
- Examine the firearm prior to loading for any cartridge/caliber modifications.
- If there is a reason to doubt the safety of a firearm or the ammunition used in it, it should be test fired remotely.
- Any problems or doubts concerning the safe handling or testing of a firearm should be brought

to the attention of an experienced firearms examiner.

- Employees must familiarize themselves with the operational characteristics of the firearm to be tested and the ammunition to be used before any test firing. Individuals in the immediate area of the test firing are to be notified that the test firing is going to occur.
- The test firing of firearms must be performed with the examiner and any assistants wearing safety glasses and ear protection.
- A visual inspection of the interior of the barrel will be made before shooting, and between shots if circumstances make this necessary.
- The firearm will only be loaded in the test firing area, just prior to firing.
- No test firing will be done without a second examiner or assistant present, either in the room, or in immediate area. An exception to this allows for FSL-W Firearms Section staff to monitor IBIS Section personnel in the water tank test firing room via the closed circuit camera/monitor system.
- Rifle cartridges may be down-loaded for firing, with cotton packed in the cartridge to hold the powder near the base. It is essential when firing down loaded cartridges to make sure that each fired bullet clears the barrel.
- A firearm examiner may determine that a gun is unsafe to fire, even remotely.

Snail Trap Shooting Rules

- No unauthorized firing of any weapons will be permitted.
- Ensure that the pump intake is fully submerged in the liquid. When the pump is plugged in and running, fluid must be spilling from the bottom of the trap into the small basket of the holding tank. Test firing will not be done into a dry trap.
- The barrel of the firearm must be pointed into the firing tube before any action is closed on a live cartridge. In the case of revolvers, the cylinder may be closed before, but closed in such a way as to ensure that a live cartridge does not come into a battery position.
- Unless it is necessary to fire a number of cartridges one right after the other, only one live cartridge is to be loaded for firing at one time.
- When firing, the barrel should be as close to level as possible in relation to the firing tube.
- The barrel of the firearm must remain in the firing tube until it is confirmed that the firearm is empty and safe.
- After firing, unplug the pump and check the fluid level.

Bullet Recovery Tank (BRT) Safety Rules

- All weapons that are to be fired into the BRT will be inspected for obstructions of the bore, cylinder and/or chamber and given a general safety check prior to being fired into the BRT.
- Personnel firing weapons will ensure that someone is either present in the firearms examination or office area or that someone outside of this area is aware that someone will be test firing weapons and that no one else is present in the vicinity of the BRT. Personnel firing weapons shall ask someone outside of the BRT room to check periodically to ensure that the shooter is safe.
- Eye and ear protection will be worn by shooters, and by all observers in the room. Observers will remain in back of the shooter, until such time as the shooter indicates that it is safe to go in front of or along side of the BRT.
- Prior to firing into the BRT, the shooter will:
    - Check the tank for other projectiles;
    - Ensure that the water level is at the proper level;

    - Ensure that the air filter/evacuation system is turned on;
    - Ensure that the lid is in a full down position;
    - Ensure that the door to the shooting area is shut;
    - Ensure that all observers are in a safe position and are wearing proper safety equipment.
- Weapons should be made ready to fire (i.e., cartridge chambered) only when the muzzle of the weapon is placed into the firing tube of the BRT, with the muzzle pointed towards the water. In the case of revolvers, the cylinder may be closed prior to insertion into the firing tube as long as a cartridge does not come into battery position when first closed.
- Do not fire any weapons in full-automatic mode.
- Do not fire any armor piercing ammunition into the tank.
- If a misfire occurs, keep the weapon's muzzle pointed into the BRT for at least 15 seconds before attempting to clear the weapon. Keep the muzzle pointed into the firing tube while clearing the weapon. Recheck the weapon's bore, cylinder, chamber etc: for obstructions prior to attempting to re-fire the weapon.
- Each shooter shall ensure that the area is cleaned up after firing. This includes the picking up of fired casings, removal of metal debris from the tank bottom and wiping up any water which may be on the tank, catwalk or floor.
- Cleaning of the tank's floor will be conducted on an as needed basis.
- Air filters and water filtration systems will be cleaned and/or replaced as needed.
- Ensure that the water in the BRT has some water conditioner present.
- The floor under the tank and adjacent walls should be inspected for signs of wear, stress or fracture at least every year.
- No smoking, eating or drinking is allowed in the BRT room.
- Wash hands thoroughly after firing weapons.

Safety Rules for Firearms Ranges

- While being transported to a range, firearms will be unloaded and secured separate from the ammunition.
- Prior to entering the range, the firearm will be functioned checked and the barrel checked for obstructions.
- All firearms will remain secured until the area of the firing line is entered.
- All firearms will be pointed down range at all times when they are out of a case or holster.
- All firearms shall have the action open or be secured in a case or holster when not on the firing line.
- Firearms will not be removed from a case or holster until the shooter has taken a position on the firing line.
- Firearms will never be dry-fired or handled behind the firing line.
- Never leave a firearm unattended.
- Firearms shall always be treated as if they are loaded, and there is no difference in the techniques used to handle an empty or loaded firearm.
- Shooters will personally examine every firearm handed to them to make sure they are unloaded.
- A shooter will keep their finger off of the trigger and out of the trigger guard until they are ready to fire.
- On the command of "cease fire", all shooters will stop firing.
- If the firearm fails to fire a live round after the trigger is pulled, or if a "squib load" is heard, the

shooter will keep the barrel pointed down range until the firearm is checked and made safe.

- Shooters on the firing line will not turn around from the firing position with the firearm in hand.
- Shooters shall not depend entirely on the mechanism of any firearm.
- Shooters will never leave the firing line with live ammunition in a firearm.
- The shooter must know:
    - How the firearm works.
    - Is the firearm loaded?
    - Where is the firearm pointed?
    - Where is the target?
    - What is the target?
    - Where will the bullet go if the target is missed?
- Wash hands thoroughly after firing weapons. Use soap and water if available. If these are not available, use several prepackaged moist towelettes. Package used towelettes in a plastic bag, and discard.

Dry Firing

Dry firing is defined as release of the hammer or striker on an empty chamber, in a manner consistent with the normal operation of the firearm. It is recognized that there are situations in which dry firing a firearm will be necessary. Examples include trigger pull tests; checking indexing; checking mechanism; and pre-firing check.

- Firearms should only be dry fired if necessary for the case examination, due to the possibility of damage to the mechanism or chamber of the firearm.
- Prior to firing, the examiner shall verify that the chamber of the firearm is empty, or loaded with a "dummy" cartridge.
- If the examiner determines that it is necessary, the snail trap or bullet recovery tank may be used as a safety precaution.