

Examination of a 30+ Year-Old Homicide with a Ruger .44 Magnum Carbine That Has No Remaining Physical Evidence

By Bryan Burnett

The victim was shot by her husband while she was asleep on a sofa (Fig. 1). The husband stated that he accidentally shot his wife while he was cleaning his newly-purchased Ruger .44 Magnum Carbine (18 1/2-inch barrel). The shooting occurred in 1973. There was a brief autopsy report by Dr. Irving Root (now deceased) on September 10, 1973 and no autopsy photographs. Dr. Root states:

In the right occiput 3 cms. to the right of the midline, there is an irregular stellate laceration approximately 12 cms in diameter through which is palpable and an irregular fragmented penetrating wound of the skull. There is slight inversion and abrasion of the skin edge of this wound. The wound is through the hair and there is no detectable powder staining or stippling around this. There is extensive irregular stellate laceration through the left frontal, temporal and facial skin exposing the skull, the cranial cavity, through which portions of the brain have been avulsed. There is extensive fracturing of the face with deformity of the left and right sides of the face.

The shooting was ruled accidental at the time. This case was reopened (People v. William New, El Cajon, California, 2006) when that same shooter was accused of the shooting death of his most recent wife.

Mr. Lance Martini, criminalist for the San Diego County Sheriff Crime Laboratory and Dr. Vincent Di Maio, a well-known forensic pathologist examined the sparse discovery of this 1973 homicide. Both issued reports that claim the shot was "contact." In addition, both experts opined that the firing of the Ruger .44 Magnum Carbine will not deposit partially consumed gunpowder on a target. The gunpowder is supposedly totally consumed while within the rifle's barrel. Martini and Di Maio assert that this is the reason there was neither gunpowder-generated skin stippling (but not expected with a contact wound) nor sooting around or in the victim's wound.



Figure 1. The victim. The .44 Magnum bullet entered her head at approximately the location of the arrow. Note that at the location of the entrance wound, the hair does not appear disheveled which would be likely for a contact or near contact wound. The pattern on the pillow is not blood spatter.

Curiously, Di Maio in an apparent attempt to cite literature to support his contention that Ruger 44 Magnum rifles with 18 1/2-inch barrels do not produce partially consumed gunpowder when fired, described the observations of Gonzales et al. (Gonzales, et al., 1951). In Di Maio's review of Gonzales et al. he describes the attributes of black-powder firearm produced wounds, not those from a .44 Magnum rifle. Dr. Di Maio is a well-known authority on gunshot wounds and the firearms that produce them (Di Maio, 1999). His report on this case lacks any citations that are on topic concerning

wounds caused by .44 magnum rifles. In addition, Di Maio noted that ball gunpowder is generally used in .44 Magnum cartridges.

Mr. Martini performed trigger-pull tests on a Ruger 44 Carbine as well as casing ejection pattern tests with three different brand ammunitions. The Ruger 44 Magnum Carbine was from the firearm collection of the San Diego County Sheriff's Crime Lab. He did not perform test firings to confirm the alleged anomaly of no gunpowder debris produced by the Ruger 44 Magnum rifle.

Dr. Vincent Di Maio and Mr. Lance Martini have generated reports in this case that lack supportive literature citations which suggest such literature does not exist. This paper supplies the needed empirical tests that these individuals have failed to perform.

Materials & Methods

A Ruger 44 Magnum Carbine (serial # 740-10890) with an 18 1/2-inch barrel was used. Four different .44 Magnum ammunitions were tested:

Federal 240 grain, hollow point (Hydroshok) P44 HS1, Lot 1 13 H685, ball powder (Fig. 2A).

Remington 180 grain, flattened ball powder (Fig. 3A).

CAL Ammunition 240 grain, Lot (none) - reloads in plastic bag, flake powder (Fig. 4A).

MagTech 240 grain, Lot (4221.7000 4) - extruded powder (Fig. 5A).

Target: 8" squares of white cotton cloth, some covered with carbon paper
10 " square of white foam board

Target distances: Cotton cloth: 6", 12" and 20". The carbon paper covered the 20" target.
Foam board 6" and 20"

Results

The use of foam board targets to approximate the features of close range shots on skin (i.e., stippling and soot deposition) is a standard procedure (Hueske, 2006). The cotton target allows the visualizing of the partially-consumed gunpowder.

Federal 44 Magnum. The powder from a disassembled Federal .44 Magnum cartridge contained ball powder (Fig. 2A). The test firing into the cotton target 6 inches from the Ruger 44 Magnum's muzzle's produced many partially consumed gunpowder fragments (Fig. 2B and 2C). The cotton target at 20 inches from the muzzle also had numerous powder-adherent particles (Fig. 2D) as well as an indication of larger particles of gunpowder hitting the target. This was evidenced by carbon transfer from the carbon paper to the cotton cloth (Fig. 2D, arrows).

The foam board shot at 6 inches (Fig. 2E) showed soot around the bullet hole as well as powder derived defects in and on the paper. The foam board at 20 inches (not shown) had no apparent powder-caused defects. Higher magnification (Fig. 2F) of the foam board shot at 6 inches, within 4 mm of the bullet hole edge, shows numerous relatively large apparent soot particles dispersed amongst the partially consumed gunpowder.

Remington 44 Magnum. The powder from a disassembled Remington .44 Magnum cartridge contained flattened ball powder (Fig. 3A). The test firing into a target 6 inches from the Ruger 44 Magnum's muzzle produced many partially consumed gunpowder fragments (Fig. 3B and 3C). The target at 20 inches from the muzzle also had numerous powder-adherent particles (Fig. 3D).

The foam board shot at 6 inches (Fig. 3E) showed soot around the bullet hole as well as powder derived defects in and on the paper. The foam board at 20 inches (not shown) had a few powder-caused defects. Higher magnification (Fig. 3F) of the foam board shot at 6 inches, within 4 mm of the bullet hole edge, shows fewer large apparent soot particles (compare to Fig. 2F) dispersed amongst the partially consumed gunpowder. The Remington soot debris differs markedly from that of the Federal soot in that it has an additional fine-particle component (a gray-tan "background" to the image).

CAL Ammo 44 Magnum. The powder from a disassembled CAL Ammo .44 Magnum cartridge contained relatively large flake powder (Fig. 4A). The test firing into a target 6 inches from the Ruger 44 Magnum's muzzle produced many partially consumed black gunpowder fragments (Fig. 4B and 4C). The target at 20 inches from the muzzle had fewer powder-adherent particles (Fig. 4D) than those found associated with the 6-inch target.

The foam board shot at 6 inches (Fig. 4E) showed soot around the bullet hole as well as powder derived defects in and on the paper. The foam board at 20 inches (not shown) had many apparent powder-caused defects. Higher magnification (Fig. 4F) of the foam board shot at 6 inches, within 4 mm of the bullet hole edge, shows fine particulate soot particles dispersed amongst the rare (at this magnification) partially consumed gunpowder (not shown in Fig. 4F). The CAL Ammo soot debris differs from that of the Remington soot in that it has only an apparent fine-particle component, somewhat coarser than the Remington's gray-tan "background" particles (see Fig. 4F).

MagTech .44 Magnum. The powder from a disassembled MagTech .44 Magnum cartridge contains the extruded-type gunpowder (Fig. 5A). The test firing into a target 6 inches from the Ruger 44 Magnum's muzzle produced many partially consumed gunpowder fragments (Fig. 5B) as well as soot on the target.

Ruger carbine cleaned prior to test shot. The question was brought up prior to trial that since the Ruger .44 Magnum Carbine may not have been fired previous to the shooting of the victim, the characteristics in terms of sooting and release of partially consumed powder may be different from a shot that was through a previously fired weapon.

Figures 6 through 9 compare targets of the four different ammunitions from a cleaned bore prior to the test shot to a bore that has had shots previous to the test shot.

For a firearm that was either cleaned prior to the test shot or, perhaps, is new, only the Remington cartridge (Fig. 7) did not produce detectable sooting. The other three cartridges, however, produced sooting at the 6 inch muzzle-target distance. All ammunitions produced partially-burned powder debris on the targets.

Discussion

For recently-manufactured .44 Magnum ammunition, a variety of powder types are in use by different manufacturers. However, the newly-purchased Federal .44 Magnum cartridges have ball powder as has been claimed for the .44 Magnum ammunition used in the homicide. Did the Federal .44 Magnum ammunition manufactured in the early 1970s also have ball gunpowder? That vintage ammunition was not available for examination.

"The absence of stippling in this case is attributed to the complete combustion of the gunpowder in the longer 18 1/2 inch barrel of the Ruger rifle" (criminalist Lance Martini). Dr. Di Maio takes the same position as Mr. Martini, "This means that the powder should have been completely consumed traveling down an 18 inch barrel and little or no powder would exit the barrel." Neither of these contributors to this case offer citations to support their position. It appears the belief that gunpowder is totally burned in the .44 Magnum rifles regardless of brand is erroneous in that all brands of .44 Magnum cartridges tested in this study produced partially consumed gunpowder on both the foam boards and cotton targets. The partially consumed powder produced defects on the paper of the foam boards shot at 6 inches (Figs. 2 through 5).

Dr. Di Maio notes, "The amount of soot exiting the barrel would be minimal to absent as it would tend to be deposited on the interior of the 18 inch barrel." The foam board target shot with Federal .44 Magnum at 6 inches shows sooting around the bullet hole (Fig. 2E) as does the Remington and Cal Ammo targets (Figs. 3E and 4E). The form of the soot varies between cartridge brands, but all cartridges produced soot. The sooting for a close-rang shot from a previously clean bore still occurs with Federal (Fig. 6A) but, interestingly, not with Remington (Fig. 7A). The CAL ammunition was anomalous (Fig. 8A) and both the Federal as well as the MagTech ammunitions produced sooting with the previously cleaned bore (Figs. 6A and 9A), but not to the extent as the second shots for these ammunitions that followed the cleaned bores (Figs. 6B and 9B).

The proximity of the Ruger .44 Magnum's muzzle to the victim's head was likely distant enough not to deposit powder or soot on the victim. Sooting and heat damage to the skin, as the result of a contact shot, would likely have been noted by Dr. Root at the victim's autopsy if it these features were present, either around or, perhaps, within the wound. A photograph of the crime scene (Fig. 1) clearly show the victim's hair without the disruption that would likely have been caused by a contact or near contact gunshot. Perhaps this, and the lack of sooting or burning around the periphery of the wound prompted Dr. Root's calling this shooting accidental. In addition, the pillow fabric upon which the victim's head rests (Fig. 1) shows no sign of blood spatter by blowback that would likely occur with stellate wound formation from a contact or near contact wound to the head. The lack of reports of blood on the Ruger Carbine and the cushion, as would be expected for a contact shot (James, et al., 2005), indicates that no blood spatter on these items was observed.

The meager amount of available evidence indicates that the victim's stellate head wound was not caused by a contact or near contact shot. See Di Maio (1999) for a discussion of stellate head gunshot wounds not caused by a contact or near contact gunshot discharge.

References

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James, S.H., Kish, P.E. and Sutton, T.P. 2005. Principles of bloodstain pattern analysis. Taylor and Francis (CRC Press) Boca Raton. 542 pages.

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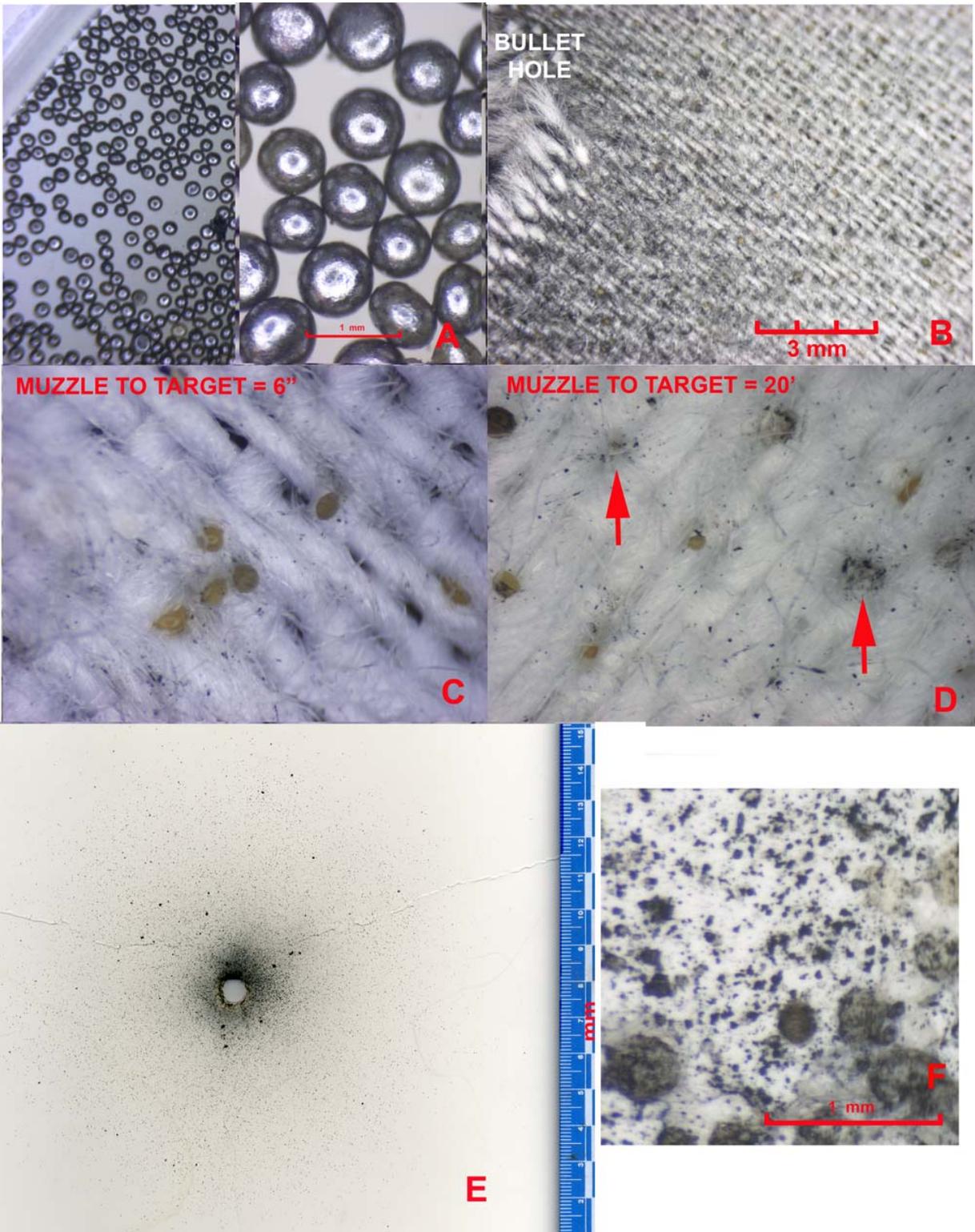


Figure 2. Federal .44 Magnum powder and target images. A: Right, low magnification of unfired gunpowder. Left, higher magnification of the gunpowder. B: Low magnification of the target cotton where the muzzle of the Ruger .44 Magnum Carbine's muzzle was 6 inches from the cotton. C: Higher magnification of the cotton surface on B showing partially burned powder (mustard-colored objects) caught in the cotton fibers. Same scale as A, right. D: High magnification of the cotton surface (muzzle 20" from the target) showing partially burned powder (mustard-colored objects) caught in the cotton fibers. Same scale as A, right. Arrows: apparent powder hits on the carbon paper that did not stay with the fabric target. E: Foam board target shot at 6 inches. F: Higher magnification of foam board surface 5 mm from the bullet hole in E.

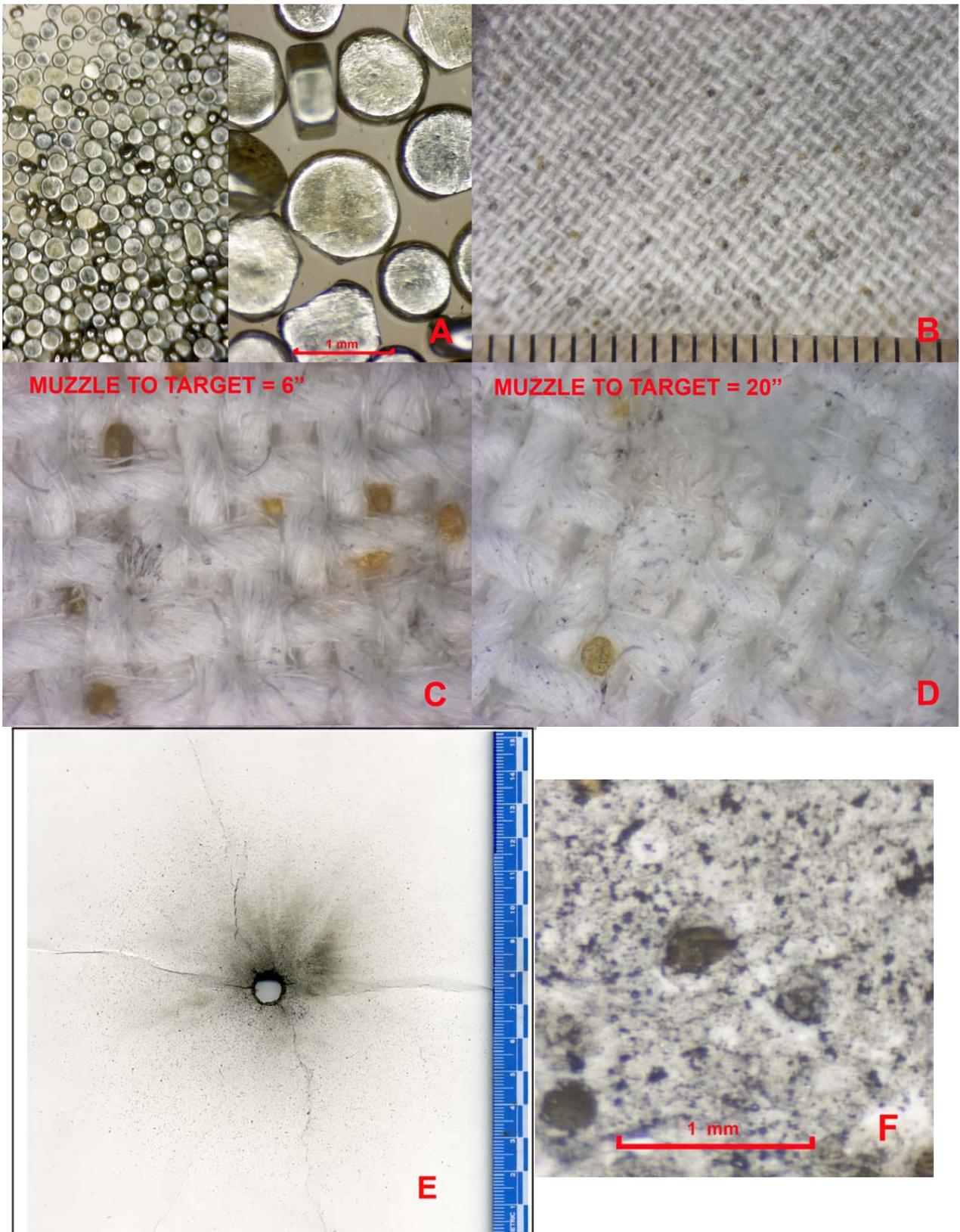


Figure 3. Remington .44 Magnum powder and target images. A: Right, low magnification of unfired gunpowder. Left, higher magnification of the gunpowder. B: Low magnification of the target cotton where the muzzle of the Ruger .44 Magnum Carbine's muzzle was 6 inches from the cotton. C: Higher magnification of the cotton surface on B showing partially burned powder (mustard-colored objects) caught in the cotton fibers. Same scale as A, right. D: High magnification of the cotton surface (muzzle 20" from the target) showing partially burned powder (mustard-colored objects) caught in the cotton fibers. Same scale as A, right. E: Foam board target shot at 6 inches. F: Higher magnification of foam board surface 5 mm from the bullet hole in E.

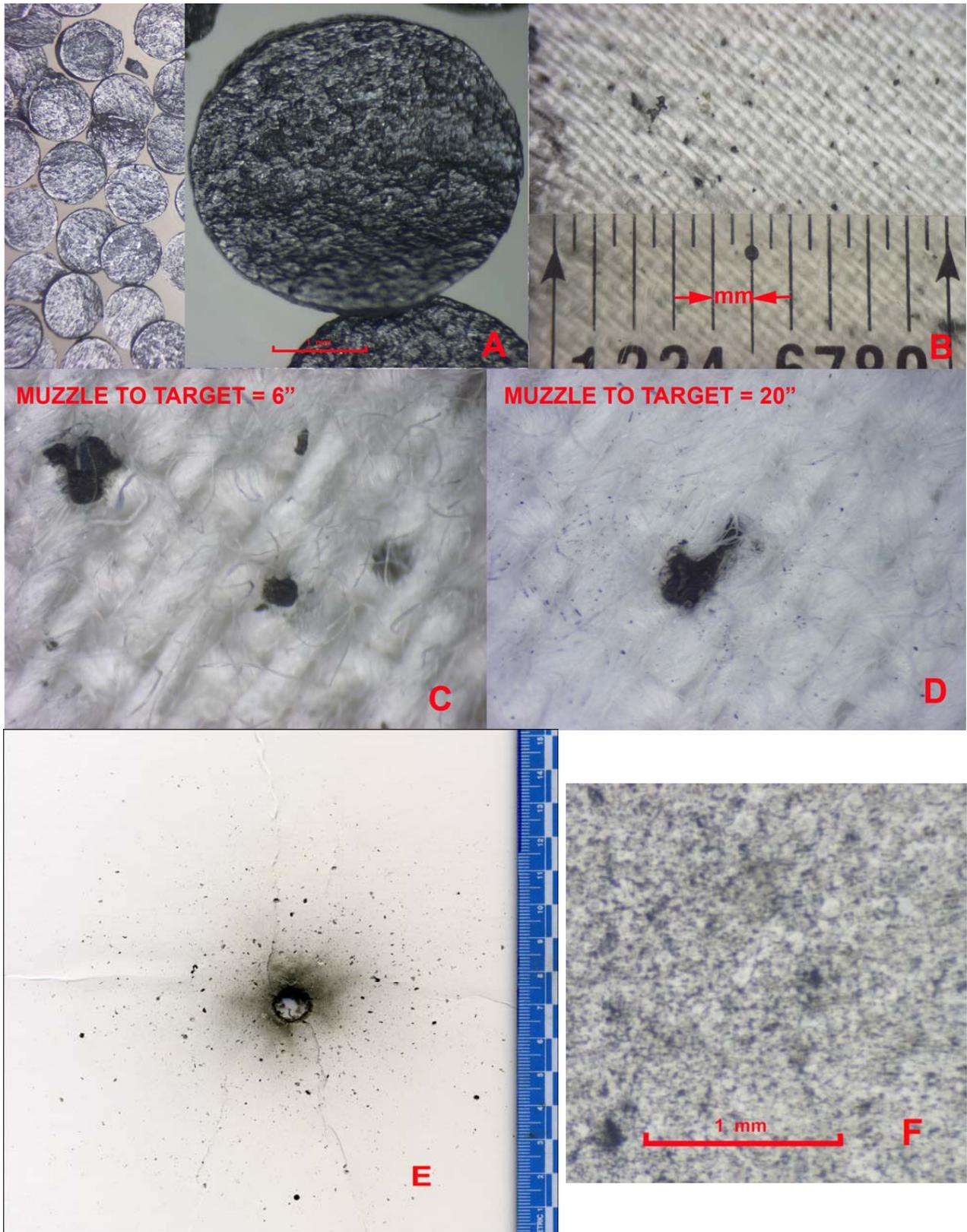


Figure 4. CAL Ammo .44 Magnum powder and target images. A: Right, low magnification of unfired gunpowder. Left, higher magnification of the gunpowder. B: Low magnification of the target cotton where the muzzle of the Ruger .44 Magnum Carbine's muzzle was 6 inches from the cotton. C: Higher magnification of the cotton surface on B showing partially burned powder (black objects) caught in the cotton fibers. Same scale as A, right. D: High magnification of the cotton surface (muzzle 20" from the target) showing partially burned powder (black objects) caught in the cotton fibers. Same scale as A, right. E: Foam board target shot at 6 inches. F: Higher magnification of foam board surface 5 mm from the bullet hole in E.

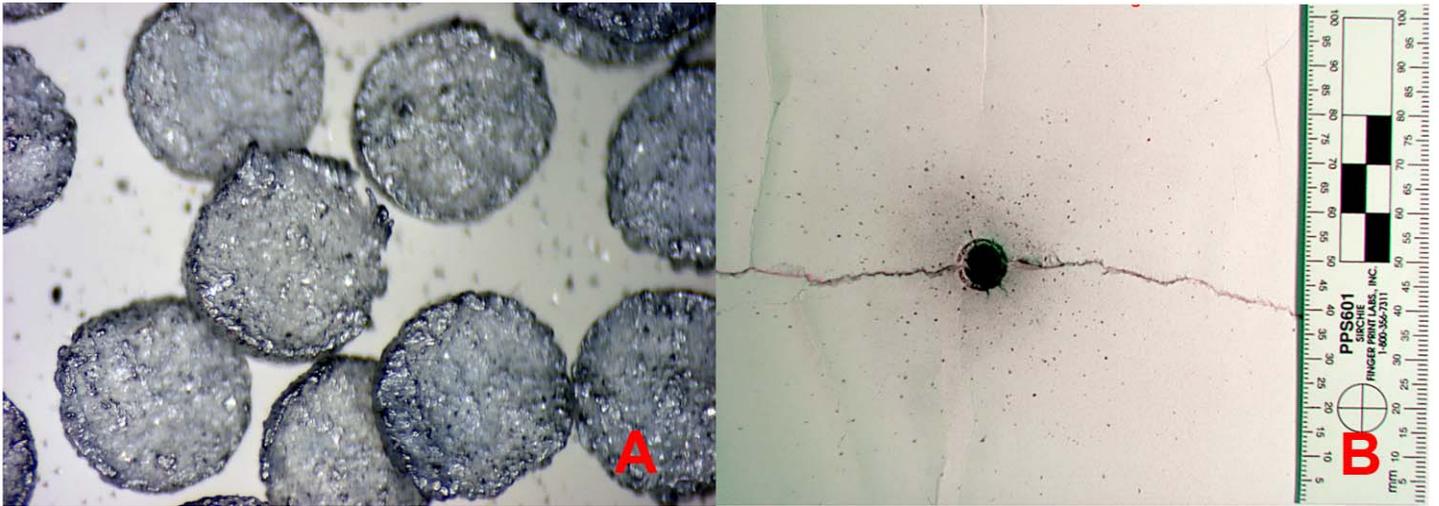


Figure 5. Magtech ammunition extruded powder and foam board that was shot with a six-inch muzzle-target distance.

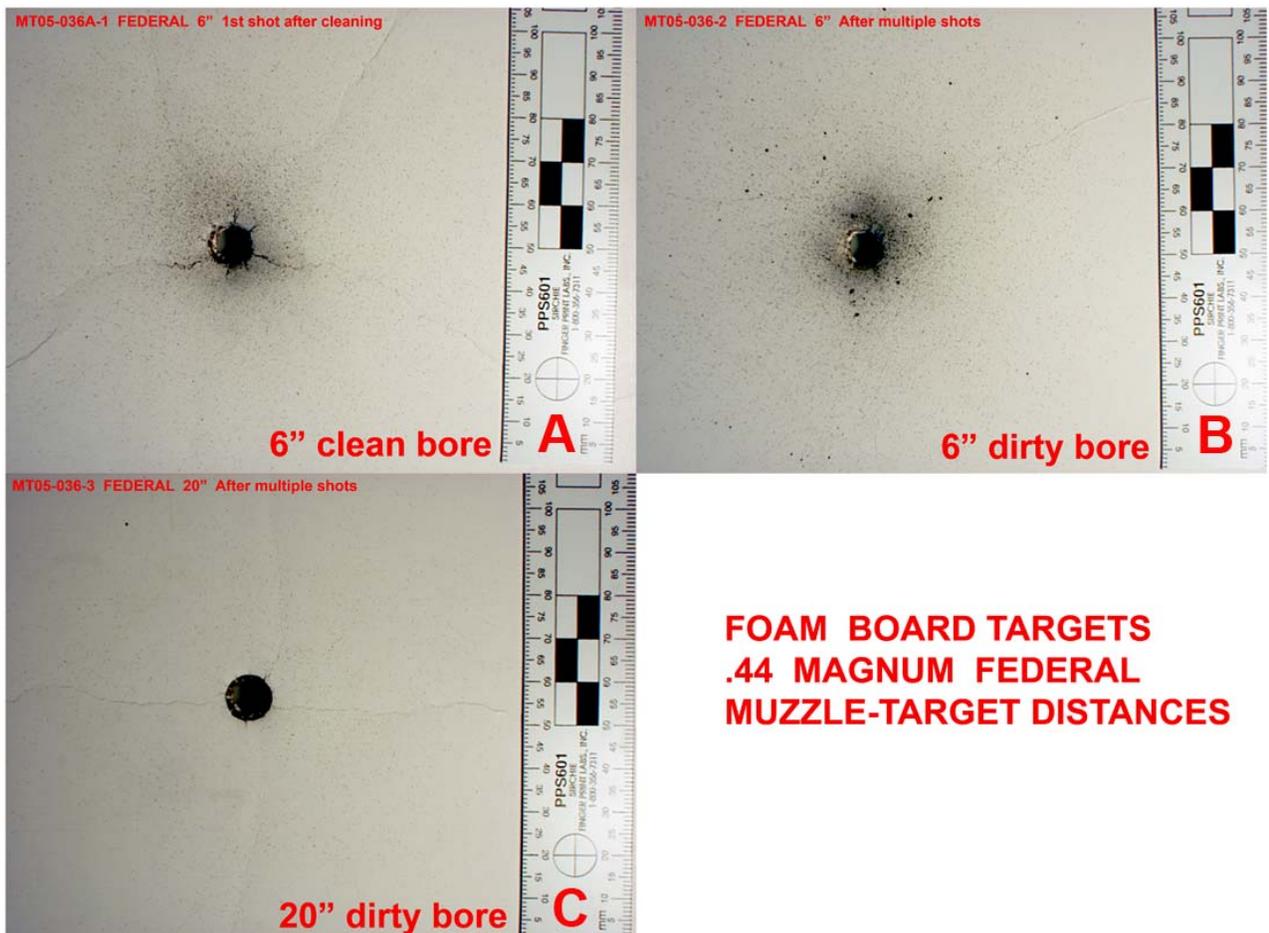


Figure 6. Comparison of foam board targets shot with the Federal ammunition at 6 and 20 inches.

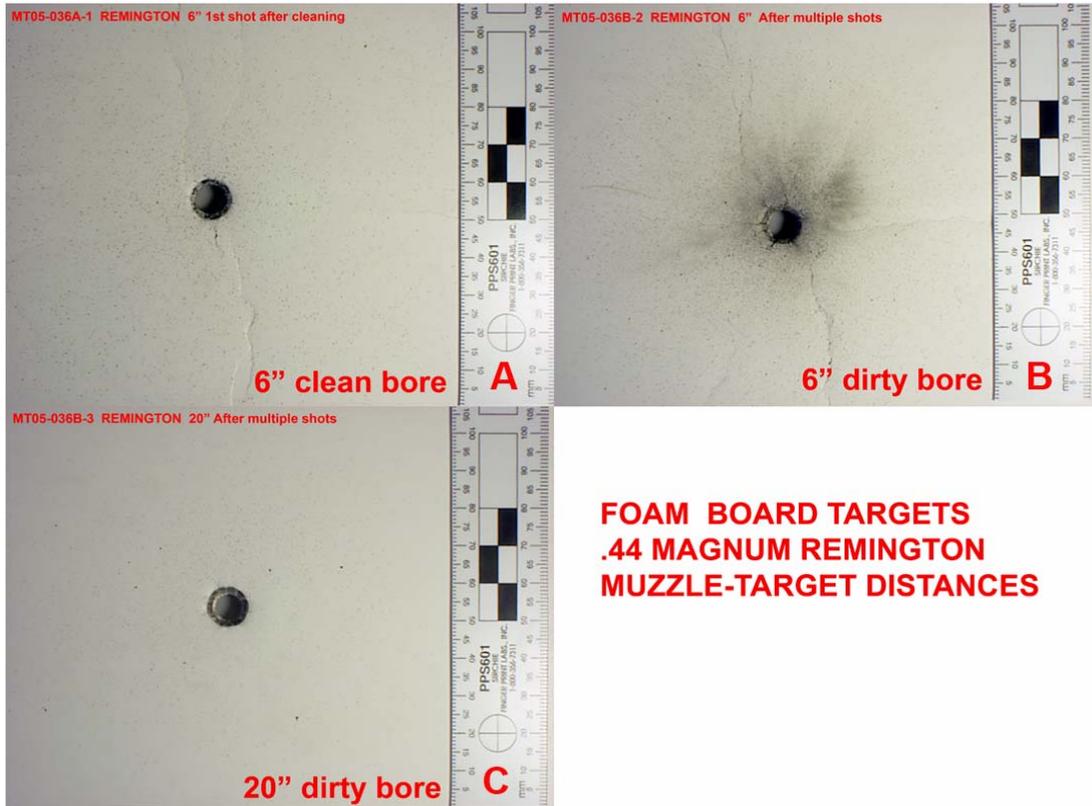


Figure 7. Comparison of foam board targets shot with Remington ammunition at 6 and 20 inches. No sooting occurred on the six-inch foam board where the bore was previously cleaned.

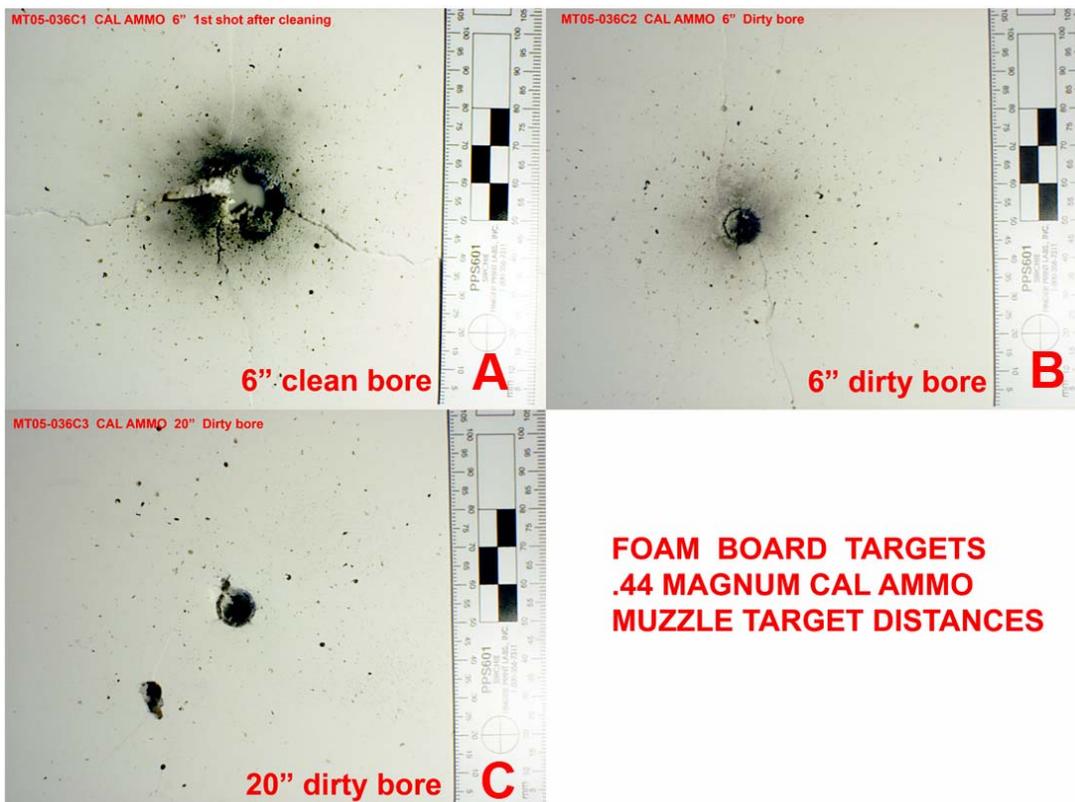


Figure 8. Comparison of foam board targets shot with CAL ammunition at 6 and 20 inches. This was very unusual ammunition that appeared to have had quality control problems. The shot at six inches had substantially more soot with the cleaned bore (A) than the one that had a dirty bore prior to the shot (B). For the 20-inch muzzle to target shot (C), a satellite puncture of the target occurred, which appeared to be from fragmentation of the bullet prior to hitting the target.

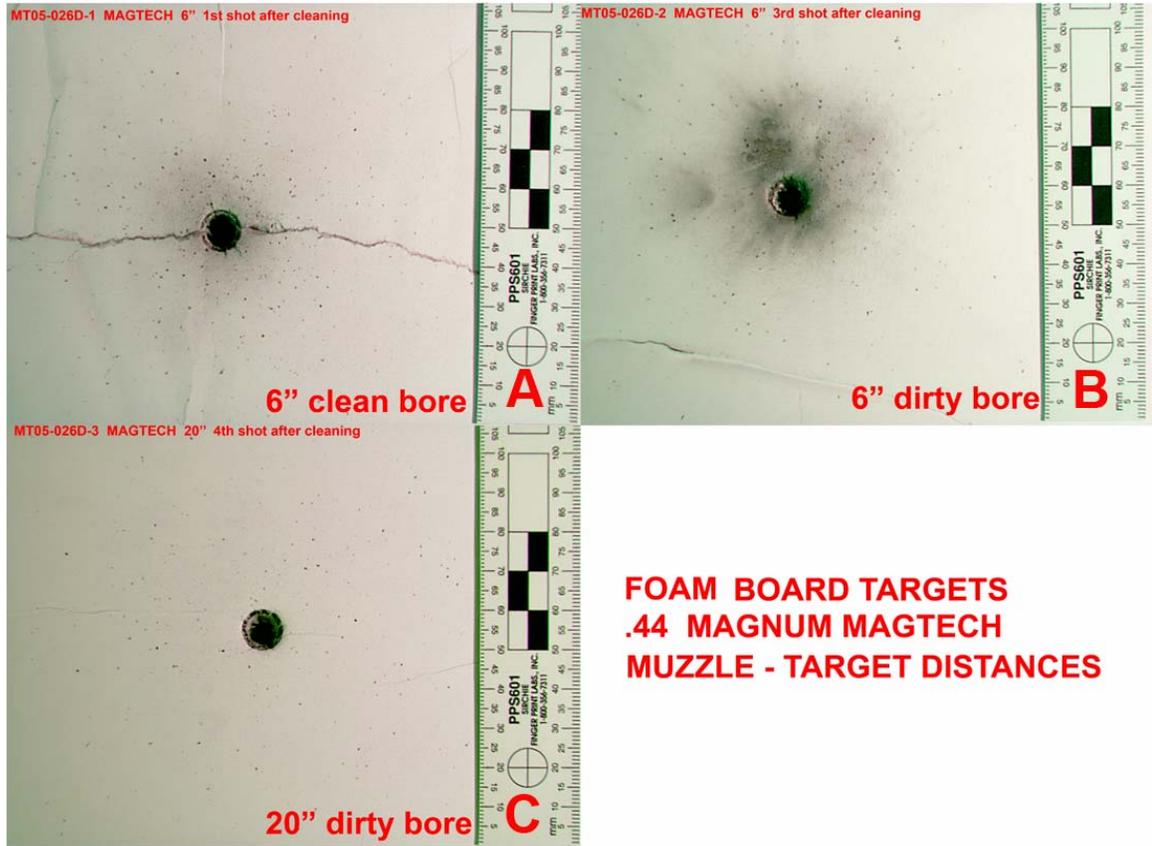


Figure 9. Comparison of foam board targets shot with the Magtech ammunition at 6 and 20 inches.