



Criminalistics Section – 2007

B92 Does the Recovery Method Affect the Quality of Test-Fired Bullets?

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After attending this presentation, attendees will learn the different physical alterations that are experienced by hollow point ammunition when fired into a water tank and a cotton box.

This presentation will impact the forensic community and/or humanity by providing information that will be useful for agencies that employ a water tank or a cotton box to retain test-fire ammunition. These bullet recovery systems have damaging effects on test-fired bullets, which will be discussed in order to understand how it may compromise the examination process.

The goal of this presentation is to study the physical alterations of hollow point ammunition when fired into a water tank and a cotton box.

The purpose of this study is to observe how the physical properties of a hollow point bullet are affected when using different ammunition collection devices. The two common devices that are used are the water tank and the cotton box. The test-fired bullets are subsequently collected and compared to any bullets recovered from the crime scene in order to determine if they can be associated to the firearm collected at the crime scene. The test-fired bullets can also be compared to bullets collected from previous crime scenes in order to possibly link the recovered firearm to prior crimes.

The bullet will experience land impressions when it travels down the barrel of the gun. The individual characteristics that are transferred onto ammunition after being fired allow for that bullet or cartridge case to be linked back to the particular firearm from which it was discharged. These marks are different for each firearm and are caused by the rifling of the gun barrel, a manufacturing process that allows the fired projectile to gain accuracy and gyroscopic stability. The quality of the markings on the test-fired ammunition is critical to its examination with a comparison microscope or the Integrated Ballistics Identification System (IBIS).

The water tank and cotton box both create problems when they are employed as a collection device for hollow point ammunition. The water tank causes a mushroom effect to the tip of the bullet. This distorts the physical shape of the bullet, making examination of the land impressions more difficult. Unlike the water tank, the cotton box can ensure that the physical shape of the recovered bullet is intact. However, the cotton fibers can be abrasive to the outside of a fired bullet, causing unwanted striation marks, and distorting the marks and impressions caused by the firearm.

This study compares the effects that each ammunition collection device has on the same type of ammunition. The comparison microscope and IBIS are used to evaluate the bullets qualitatively and quantitatively.

Bullet Recovery, Firearms, IBIS