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THE SUBMISSION OF FIREARMS TESTS TO POLICE LABORATORIES

Joseph D. Nicol

Joseph D. Nicol is a Firearms Identification Expert with the Chicago Police Scientific Crime Detection Laboratory. Mr. Nicol was appointed to the staff of the Chicago Police Laboratory upon his graduation from Northwestern University in 1941 and for several years has been a member of the editorial board of this Journal. The problem of which he writes—the proper submission of test bullets and shells to the laboratory—confronts all firearms identification technicians who are active in the larger police laboratories.—EDITOR.

The utilization of firearm identification facilities of the few police laboratories by many smaller police departments presents some difficulties if proper procedures are not followed. These same problems are confronted when laboratories exchange tests for purposes of comparison against evidence material. Frequently, the test bullets and cartridge cases submitted in lieu of the weapon are inferior to a degree which makes suitable comparisons impossible. This necessitates considerable delay and correspondence which might be otherwise avoided.

Often the weapon is not properly treated to insure tests which are representative of the gun. Tests should be fired prior to and after cleaning. For example, the barrel of the weapon in question is examined and is found to contain the residue of black powder propellant material. This observation can be made by looking into the bore of the gun under proper lighting conditions. Since it may not be definitely established as to the number of shots fired after the shooting under investigation, removal of this accumulation may remove particles which left identifying marks on the evidence bullets. Therefore, two test shots must be fired before the weapon is cleaned. It is also possible that the evidence shots may have been fired using a clean gun and smokeless powder ammunition and that black powder had been used in firing later shots. In this situation cleaning may restore the barrel to a state where an identification from tests fired after cleaning is possible. Where barrel changes are due to corrosion no amount of cleaning will return the barrel to its previous condition as far as firearms identification is concerned.

In order to enable the firearms technician to ascertain the reproducible characteristics of the weapon upon which an identification may be made duplicate tests should be submitted. Duplication should be made in type, make, and lot, if possible. Where cartridges loaded with lead and metal cased projectiles, such as in .38 Special, are commonly available tests of both types should be submitted since it is difficult to compare lead tests against

metal cased evidence bullets and vice versa. Plated lead bullets are subject to loss of rifling impressions by the flaking of the plating and therefore should not be used as tests.

After the test shots are fired they should be examined by a low power microscope to determine their suitability as standards. If there is evidence of considerable wiping by the collecting material or large areas eroded by the hot gases escaping around the land edges, these tests should be discarded and others fired. It is not sufficient to have one bullet with the rifling removed on one side and another bullet with half rifling on the other side. If several attempts produce only bullets having half a rifling impression and no amount of ingenuity will result in a good test, several tests must be transmitted. It should not be taken for granted that metal cased bullets are inherently good tests; these should be examined as carefully as lead tests. A good test is one which duplicates the bullet fired under normal handling of the weapon. If the cylinder misaligns and there is consistent shearing, this should be considered normal for that weapon; the individual characteristics of the shear area provide a means of identification as well as the actual rifling of the barrel.

A close scrutiny of the cartridge cases should not be overlooked. Lacquered primers are particularly bad for the reproduction of breech block markings, and this lacquer can be removed before the tests are fired. If the set back seems insufficient to produce good breech impressions, a light coating of oil to the sides of the case will often aid in obtaining the desired results. Here considerable caution needs to be exercised, and this method should not be resorted to in high power ammunition due to the hazard of bursting the weapon.

All tests should be marked for identification on the nose or ogive above the rifling with the number of the shot and the initials of the sender. The information concerning the testing and condition of the gun should be relayed with the tests. Needless to say all precautions should be taken to prevent the abrasion of the surface of the tests while in transit. The fired bullets and cartridges may be sent by registered mail or express.

With a reasonable attention to the details discussed here accurate and rapid answers to firearm inquiries should result in most cases. No amount of care will eliminate those instances where the submission of the questioned weapon is imperative; however, it may be possible to keep such cases to a minimum and thus to cut down the risk of loss of valuable evidence.