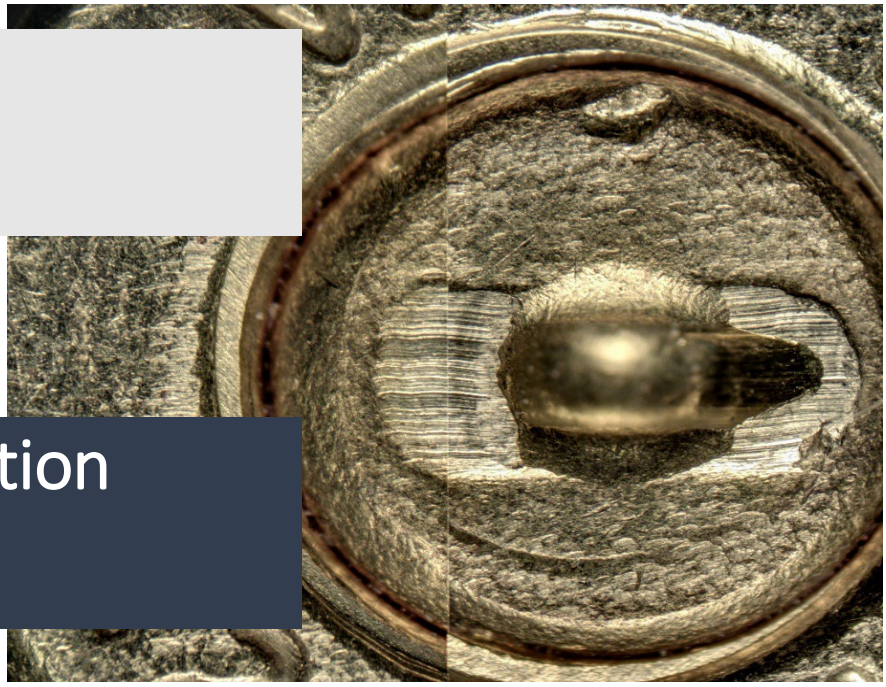
Criminalistics Section

Louisiana State Police Crime Lab



Firearm Examination

Firearms Unit

WHAT

The firearms unit uses comparison microscopy to determine whether or not bullets and/or cartridge cases were fired from the same firearm. The firearms unit also examines firearms for operability to determine if they function as designed.

HOW

When firearms are manufactured, they go through several machining processes. As a result of these machining processes, markings are left behind within each firearm. Microscopically, these markings are very unique. These markings are identified to each other between samples using a comparison microscope. A comparison microscope is actually two microscopes that are connected by an optical bridge, which allows two samples to be viewed at one time.

Firearms are test fired into a large water tank so that bullets may be recovered in a pristine condition. Normally, the guns are fired three times as this allows the operability of the gun to be checked and allows for a suitable number of reference samples to be collected.

Once the operability of the firearm has been checked the test fired bullets and cartridge cases are now ready for comparison. Normally, the references are compared to one another to show reproducibility before they are compared to the evidence samples collected at a crime scene.

Firearms comparison cases only have four possible outcomes: Identification, Elimination, Inconclusive, and unsuitable for comparison. Identifications occur whenever all class and individual characteristics agree. Eliminations occurs whenever there is sufficient disagreement in either class or individual characteristics. Inconclusive occurs whenever all class characteristics agree; however, there is a lack of individual characteristics.

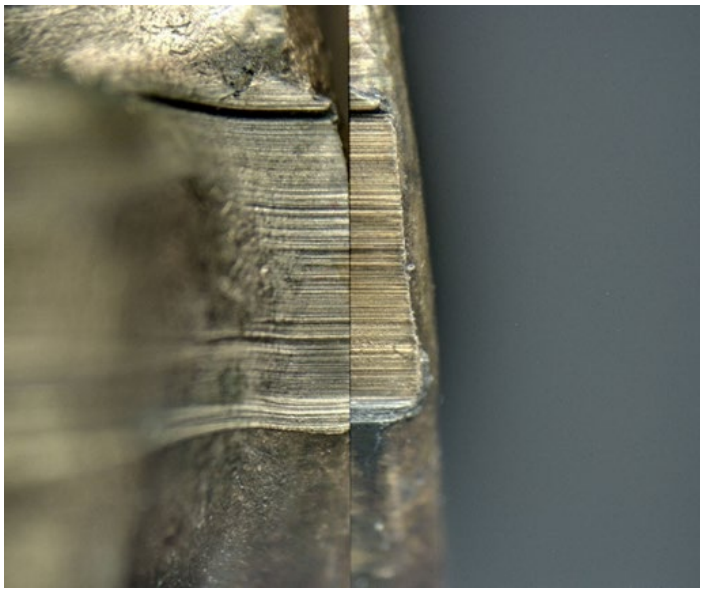
Class Characteristics - Measurable features of a specimen which indicate a restricted group source. They result from design factors and are determined prior to manufacture.

Individual Characteristics - Marks produced by the random imperfections or irregularities of tool surfaces. These random imperfections or irregularities are produced incidental to manufacture and/or caused by use, corrosion, or damage.

WHY

The Firearms Unit routinely provides reports and expert witness testimony across the State of Louisiana in the most serious of crimes. Our work has helped lead to numerous convictions.

Firearm Examination



Staffing

The firearms unit currently has eight full time firearms examiners, eleven NIBIN technicians and one supervisor.

Case Load

Approximately 450-500 cases per year. The firearms unit routinely works evidence that has also been processed by the DNA and Latent Print Units. The firearms unit routinely works cases from around the state but works all the cases from the Baton Rouge and Lake Charles area.

Interesting Facts

Members of the firearms unit are active in the Association of Firearm and Toolmark Examiners (AFTE) and attend yearly training seminars. Three of the four internationally certified Firearm Examiners in the State of Louisiana are employed by the LSP Crime Lab.

Three members of the firearms unit are graduates of the National Firearm Examiners Academy (NFEA) and one member of the unit is an instructor for the NFEA.

The firearms unit houses a very large reference collection of nearly 1,000 firearms. These firearms are kept in a limited access secure vault. The firearms in this collection are all order to be destroyed or used for reference by the court system. Firearm Examiners at the crime lab routinely use them for training or reference parts for broken firearms submitted in casework.