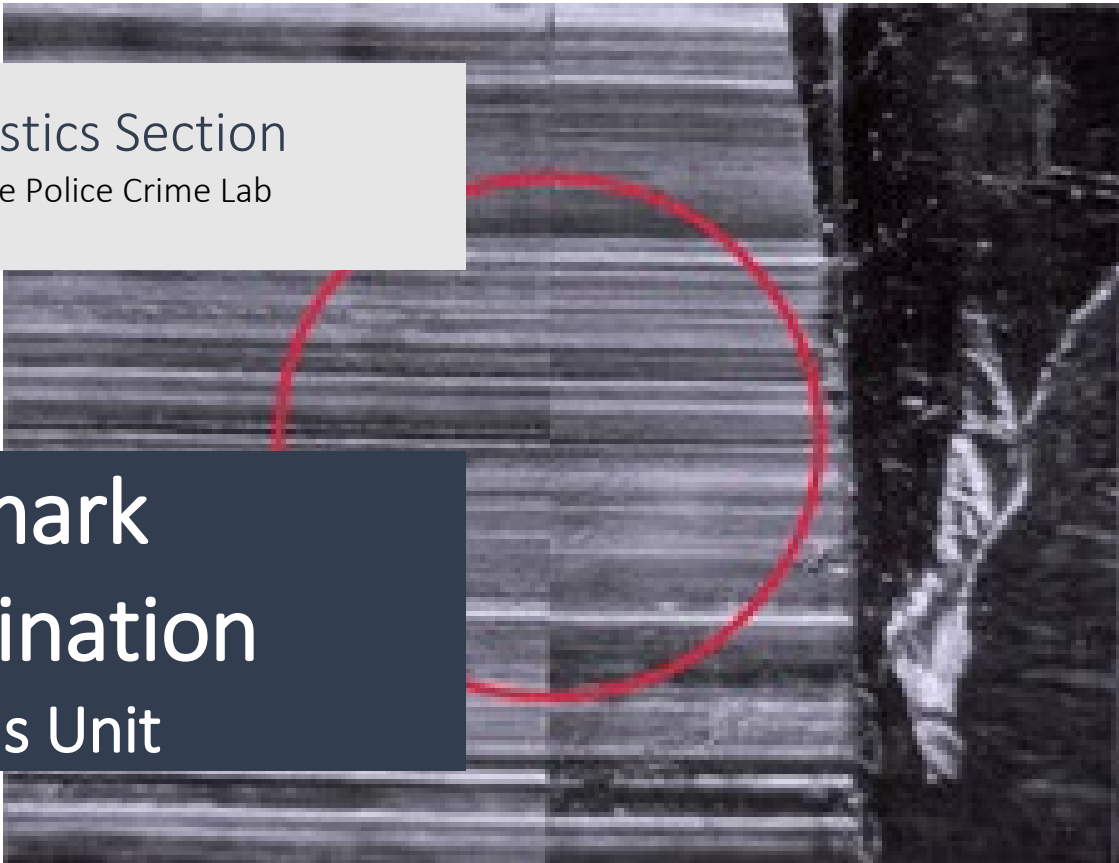




Criminalistics Section

Louisiana State Police Crime Lab

Toolmark Examination Firearms Unit

WHAT

Toolmark examinations and comparisons represent the core area of study for firearm and toolmark examiners. The conceptual and practical aspects of toolmark identification provide the skills necessary for firearms examination: firearm identification is a specialized subset of toolmark identification. There are potentially many more variables in terms of the marks to be examined.

HOW

As a forensic discipline, microscopic comparison and potential identification of striated or impressed Toolmarks, as having been made by the same tool, are central to the identification of toolmarks.

The foundation for this technique is based on the following concepts:

- A tool is defined as the harder of two objects which, when brought into contact with each other, results in the softer object receiving a toolmark.
- Tools (e.g., screwdrivers, firearms, bolt cutters, etc.) will bear unique microscopic characteristics due to the manufacturing processes they undergo, as well as, use and abuse.
- These characteristics will mark surfaces (e.g., locks, cut wires, fired bullets, fired cartridge cases, etc.) with class and individual characteristics.
- These class and individual characteristics are reproducible and identifiable to a particular tool.

WHY

Both impressed and striated toolmarks may be produced by objects designed, manufactured, and marketed as task-specific tools or such tools misused for another purpose. Marks may be produced by other objects used as tools to gain a temporary mechanical advantage.

Toolmark Examination



Staffing

Two Analysts currently authorized for testing, method development, technical and administrative review. Two others authorized to conduct reviews.

Interesting Facts

Firearms Examination is actually a subset of Toolmark Examination.

Toolmark examination can also involve the comparison of fractured items, typically brittle metal, plastic, and other materials thought to have once been joined as a single continuous object. Fractured knife blades, broken screwdriver tips, motor vehicle components (except glass), and many other similar items fall within this category. Examination and comparison of fractured items are not toolmark examinations within the narrow definition. However, they often involve the same evidence items that bear and produce toolmarks.



Striated toolmarks (also called striae, friction marks, abrasion marks, or scratch marks) – produced when a tool is placed against another object and moved parallel to and across the object with pressure applied. The striations consist of the resulting surface contour variations.

Impressed toolmarks (also called compression marks) – produced when a tool is placed against another object and sufficient force is applied to the tool to leave an impression. These impressions are contour variations left on the surface of the object by this interaction
