

# **TENNESSEE BUREAU OF INVESTIGATION**

## *Forensic Services Division*

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### Firearms/Toolmarks Standard Operating Procedures Manual

#### Introduction

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The Firearm and Toolmark Identification Unit of the Tennessee Bureau of Investigation Forensic Services Division is responsible for conducting forensic firearm and toolmark examinations, which relate to the examination of and comparative analysis of firearms, ammunition components, tools and the markings they produce, and clothing items for muzzle-to-target distance determination. This service is provided to all law enforcement agencies, judicial agencies, and medical examiners in the state of Tennessee, at no cost to the requesting agency (customer).

The Firearm and Toolmark Identification Unit (FTIU) is staffed with trained and skilled forensic firearm examiners who have, at minimum, baccalaureate degrees in a natural or physical science, with a minimum of twenty-four semester hours of chemistry. These examiners have successfully completed extensive formalized training programs under the direct control of the Forensic Services Division and are directly supervised by the Firearms Identification Unit Supervisor and a Training Coordinator. During the training program, the new examiner shall successfully complete competency testing made up of written assignments, oral presentations, and proficiency sample analyses.

The body of knowledge which comprises forensic science and forensic firearm and toolmark identification is a compilation of procedures adapted from other disciplines that encompass many of the physical and natural sciences. During the history of forensic science and firearm and toolmark identification, a multitude of individuals have greatly contributed to the protocols, methods and procedures that have become a routine part of these analyses. All noted references contained in this document are a starting point and should not be considered an all-inclusive list. Many procedures referenced have been adapted from standard laboratory practices and, therefore, no specific reference may be available.

This document encompasses Firearms Examinations, Toolmark Examinations, Muzzle-to-Target Distance (Range) Determination, Serial Number Restorations, and NIBIN entries. This document supersedes all previous documents relating to these examinations and is subject to change according to research, study, and laboratory policy.

The information in this Procedure Manual was collected from the Association of Firearm and Tool Mark Examiners (AFTE) Procedures Manual and other sources. It is presented here for easy reference for forensic scientists and technicians performing casework analysis in the TBI Firearm and Toolmark Identification Units. This manual presents a basic outline and procedures most routinely used to analyze evidence submitted to the FTIU, and the results as they relate to these examinations. Alternative procedures, other than those listed, may be employed with the approval of the FTIU Supervisor/Technical Leader, his or her designee, and/or the TBI Quality Assurance Manager.

This Procedure Manual, in combination with the TBI FTIU Training Manual, FTIU Calibration/ Maintenance Manuals, FTIU Chemical and Reagent Manuals, Laboratory Quality Assurance Manual, and FTIU Quality Assurance Manual, provides the basis for the effective quality management of analyses performed in the TBI Firearm and Toolmark Identification Units in the Nashville and Memphis Regional Laboratories.