

## **Firearm, Toolmark & Shoeprint Examination Training Manual**

The training program outlined in this manual is intended to provide the examiner with the knowledge, skills and abilities to perform the testing required by each Firearm & Toolmark discipline/subdiscipline. The training program may also be used for retraining or maintenance of skills and expertise. The examiner will also receive a general overview of the quality policies of the laboratory and specific quality measures associated with each method in use within the Firearm & Toolmark Identification Section. This manual may be used as a complete training program or in parts depending on the training needs of the examiner. The training program may be modified as needed to address changing methods, updated procedures and new equipment.

The level of training provided to each new employee will vary based on the education and previous experience of the individual. An initial assessment of the examiner's level of proficiency will be completed by the Lab Director, Quality Assurance Manager and/or Section Administrator. The assessment may include written or oral examinations, practical exercises and/or a review of relevant training documentation. Prior experience and proficiency in one or more of the FA/TM/SPTT disciplines will be documented in the employee's Staff Qualifications File and may result in abbreviated training. All examiners must successfully complete a comprehensive competency test prior to performing casework in accordance with QM 5.2 and PM 8.

The Section Administrator will serve as the primary trainer for the new examiner unless otherwise designated by the Lab Director. The primary trainer will oversee the training program for the new examiner and may be assisted by others with discipline-specific knowledge and training. The primary trainer will be responsible for documenting the progress of the training program and for notifying the Lab Director and Quality Assurance Manager of the successful completion of training or the need for additional training. Progress meetings may be held with the Lab Director, Quality Assurance Manager, primary trainer and the new examiner to determine the course of action for the training program.

The new examiner will be required to read and become familiar with the Crime Lab's Safety Manual prior to engaging in any laboratory exercises. The new examiner will be provided with a hardcopies or access to the Crime Lab's Quality Manual, Policy Manual, Operations Manual and all relevant Standard Operating Procedures for the assigned section.

The primary trainer or designee will provide operational and safety lessons to the new examiner for each lab function and piece of equipment, if needed, prior to engaging in that activity. Each area of training must be satisfactorily completed before progressing to the next area of training.

The new examiner is responsible for any assigned reading or reference material associated with the individual blocks of training. The primary trainer will identify current books, articles, journals and other literature and materials related to the training topic(s).

For all new examiners, it is the intent of this laboratory to utilize the ATF National Firearms Examiners Academy to provide much of the training for the firearm and toolmark identification disciplines/subdisciplines. The NFEA will be responsible for providing the content, assignments and testing for the content it provides. The trainee will provide the documentation of the content, assignments and test results to the primary trainer as soon as reasonably possible. The primary trainer will verify the successful completion of the assignments and test results and document their completion. Copies of the documentation will be maintained in the training record.

As is the case with the NFEA, the training program for examiners will be based on the most current version of the AFTE Training Manual (currently the March 3, 2001 version). The primary trainer will use this manual as the primary training source. Training modules, assignments and practical exercises from this source (when not provided by the NFEA) will serve as the major components of the training course. Other training content may come from other sources such as the NIJ's National Firearm Training website developed by NFSTC (<http://www.nij.gov/training/firearms-training/index.htm>), SWGGUN or other sources. Documentation will be maintained in the training record.

Shoeprint and Tire Track examination and comparison will be taught via the IAI Training Manual dated 1995. The primary trainer will use this manual as the primary training source. Training modules, assignments and practical exercises from this source will serve as the major components of the training course and the primary source of the content of written tests. It is also strongly desired that the trainee attend at least one of the SP/TT examination training classes presented by Bodziak. Other training content may come from SWGTREAD or other sources. Documentation will be maintained in the training record.

Examinations will be issued during or at the conclusion of each training module to evaluate the competency of the new examiner. The following criteria will be used to determine the successful completion of the training program:

- All written/oral examinations require a passing score of 80%.
- All practical examinations (competency tests) require a passing score of 100%.

Any areas of concern resulting from the examinations will be addressed by the primary trainer through additional training. Failure in a practical examination is defined as the failure to obtain the expected results from the known samples provided by the primary trainer. Failure in a written/oral or practical examination will be reported to the Lab Director. A determination will be made about the extent of re-training prior to the examiner being issued a follow-up examination. The failure of two consecutive examinations may result in additional disciplinary action as determined by departmental directives.

Upon successful completion of the training program, the primary trainer will notify the Lab Director and Quality Assurance Manager of the examiner's competency in writing. A copy of the competency letter will be placed in the examiner's Staff Qualification File. The examiner will be

issued an Authorization to Work letter which will include an effective date stating when the employee is authorized to perform the specific duties. This letter will authorize the employee to perform particular types of tests and/or calibration, to give opinions and interpretations and to operate particular types of equipment. The Authorization to Work letter will be signed by the Lab Director and will be included in the examiner's Staff Qualification File.

The newly trained examiner will be required to complete a period of supervised casework under the direct supervision of another qualified examiner. The period of supervised casework will be used to monitor the examiner's ability to complete the assigned duties related to casework, instrument operation and other required tasks.

Upon successful completion of the supervised casework period, the examiner will be qualified to peer review the work of other examiners in the assigned section.

## **Firearm & Toolmark Training Program Outline**

The following list of training topics may be covered during training. This list is not all inclusive and may be modified by the primary trainer, in consultation with the Lab Director, based on the education, prior experience, previous training, competencies and training needs of the individual. Many of these topics may be covered in general laboratory training.

### **Laboratory Safety**

- Read Safety Manual
- Watch Safety Videos
- General Safety Practices
- Chemical Hygiene Plan
- Material Safety Data Sheets (MSDS)
- Biohazardous Material Handling Practices
- Location of Safety Equipment in the Section/common areas of the laboratory
- Emergency Evacuation of the Building
- Section Inspections and Record Keeping
- Fire Safety
- Protocol for Safety Checking Firearms

### **General Laboratory Administrative Functions**

- Lab security (limited access areas, file room security, and evidence storage)
- Location of Lab Manuals
- Accessing Case files
- File room procedures
- Signing out/returning case files
- Employee qualification file
- Documentation of continued training
- DNA swab for employee database
- Release of case related information
- Familiarize with Department Regulations and Training Academy (Plateau)

### **Quality Control**

- Review of Crime Lab Quality Manual
- Meet with Quality Manager
- Yearly control functions of personal equipment (Balances (and check weights), comparison scopes, micrometers, calipers, etc.)
- Annual control functions of section equipment (trigger pull (arsenal) weights, Chatillon trigger pull tester, measuring devices for firearms, gage blocks)
- Balance calibration
- Instrument calibration
- Point of use (POU) verification
- Reagents (and reagent log)
- Work product (proficiencies, peer review)

Official reports (Reporting requirements, QM 5.10)  
Minimum Acceptable Markings (Lab requirements and CMPD directives)  
Evidence Seals  
Failed calibrations, suspect results and/or out of service equipment  
Validation of instruments, equipment and new testing methods  
Calibration Standards (NIST traceable standards and reference materials)  
Test Reagents (Color tests, POU checks)  
Solution/Reagent Preparation (Verification of prepared reagents & documentation)  
Purchased Supplies (suitability checks)  
Peer Review (Administrative and Technical Reviews as defined by SOP, QM 5.9 and PM 2)  
Other Quality Assurance items

### **Operational Functions**

Processing Evidence Analysis Requests  
Types of Evidence (Firearms, Live Ammunition, Fired Evidence, Tools, Toolmarked Items, Shoes, Shoe Prints, Tires and Tire Tracks)  
Case submissions - Types of submissions (General, Priority)  
Requests for Additional Analysis  
Case File (Required contents, case cover sheet, notes, data, worksheets, printed photos, test prints (shoeprints) copy or copies of lab request forms, final report, property sheet(s), and communications about the case)  
Evidence Handling  
    Explain use of Complaint, Control and "F" numbers  
    Property Control sheet  
    Chain of custody (signing property sheet, initial and date evidence)  
    Receiving/returning evidence in lab  
    Receiving/returning evidence at property control  
LIMS Use (see below)  
Reference Materials (traceable standards, fired standards collection, firearm reference collection, magazine reference collection, sectioned cartridge collection, AFTE Journals, firearms publications/magazines)  
Resource File  
Firearms Section Library

### **Analytical Functions – Firearm & Toolmark Identification**

Background/History of Firearms ID and Current Trends  
Propellants, Firearms, and Ammunition Development  
Modern Firearms Manufacture  
Manufacture of Small Arms Ammunition  
Equipment and Instrumentation  
Examination of Firearms  
Cartridge and Shotshell Examination and Comparisons  
Characterization and Evaluation of Fired Projectiles (including shotshell components)  
Bullet Examination and Comparison

Gunshot Residue Examinations and Distance Determinations  
Toolmark Examinations and Comparisons  
Serial Number Restoration  
Fracture Match/Physical Fit Examinations (See separate training guide)  
Shoeprint & Tire Track Analysis  
Communicating Results

### **Analytical Functions – Shoeprint & Tire Track Examination & Comparison**

History and Introduction to the Value of Footwear and Tire Track Evidence  
Terminology  
Manufacturing Process for Footwear and Tires  
Photography of Track/Mark Evidence  
Introduction to Recovery and Preservation of Footwear and Tire Track/Mark Evidence  
Recovery of Track/Mark Evidence by Lifting and Casting  
Comparative Examinations  
Decision Making in Footwear and Tire Track/Mark Comparisons  
Case Note Preparation and Report Writing

### **Appendices**

Reports  
Calibration Verification Methods  
Measurement Uncertainty  
Instruments Used in Analysis  
Abbreviations

### **LIMS Training**

Evidence log-in when received  
Entering data  
Entering report content  
Locking report after peer review  
Searches  
Court Testimony function

### **Review calibration manual & solution logs**

Balances  
Check weights  
Comparison scopes  
Micrometers  
Calipers  
Trigger pull (arsenal) weights  
Chatillon trigger pull tester  
Measuring devices for firearm and barrel length (yardstick & measuring box)  
Gage blocks

**Courtroom training**

- Observe testimony of qualified examiner
- Meet with ADAs
- Contact Fed AUSAs
- Presentation of evidence in court
- Criminal and Civil law procedures
- Review NC & Federal Firearm-related Statutes (regarding barrel and overall length and operability)
- Review expert testimony statutes (N.C.G.S. § 8C Rule 702 Testimony by experts, Frye, Daubert, Melendez-Diaz, Giglio, etc.)

**Ethics training**

- Ethical practices in forensic sciences
- Review of ASCLD/LAB ethics
- AFTE Code of Ethics

**Review Case files** (list complaint numbers)

- Firearms Operability
- Bullet Comparison
- Cartridge Case Comparison
- No-Gun Fired Evidence (GRC)
- Serial Number Restoration
- Range & Residue Analysis
- Toolmark Comparison
- Shoe & Tire Comparison Cases
- Additional evidence types as needed

**Shadow case work with examiner****Practice cases with reference collection/manufactured evidence****Supervised Casework**

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**Approval**

Director \_\_\_\_\_ Date:  
Matthew C. Mathis

Chief Criminalist \_\_\_\_\_ Date:  
Todd J. Nordhoff