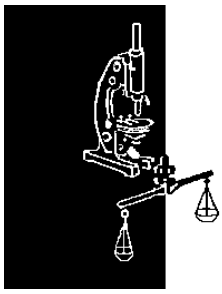
CHARLOTTE-MECKLENBURG CRIME LABORATORY

FIREARM AND TOOLMARK IDENTIFICATION SECTION



STANDARD OPERATING PROCEDURES

Original Date of Issue

March 31, 2000

Revised Edition

CHARLOTTE-MECKLENBURG CRIME LABORATORY

FIREARM AND TOOLMARK IDENTIFICATION SECTION

STANDARD OPERATING PROCEDURES

Table of Contents

3. Caliber Examination
4. Land & Groove Measurement -Air Gap Method
5. Land & Groove Measurement -Stereo Microscope w/ Measuring Reticle Method
6. GRC Utilization
7. Wadding Determination
8. Shot Determination
9. Microscopic Comparison
10. Instrumentation – ISO 17025 – 5.5.4
11. Open Case File (IBIS)
12. References- Fired Evidence

E. Integrated Ballistic Identification System (IBIS)
1. Introduction
2. IBIS Responsibilities
3. Procedures
4. IBIS Quality Control/Calibration and Proficiency Test

F. Possible Results for Firearms Examinations
1. Firearms Operability
2. Fired Evidence

G. Release of Case Related Information

III. Serial Number Restoration Protocol
A. Serial Number Information
1. Introduction
2. Serial Number Locations
3. Hidden Serial Numbers
4. References

B. Metal Restoration Methods
1. Polishing
2. Chemical Restoration Methods
a. Solution B (Fry's Reagent)
b. Solution G (Modified Fry's Reagent)
c. Solution E (Ferric Chloride)
d. Solution C (10% Nitric Acid)
e. 25 % Nitric Acid
f. Cupric Ammonium Chloride (Heyn's Reagent)
3. References
4. Table of Serial Number Chemicals

C. Plastic Restoration Method
1. Polishing
2. Heat
3. References

D. Possible Results for Serial Number Restoration

IV. Residues & Range Determination Protocol
A. Visual & Microscopic Examination Methods
1. Visual Examination
2. Microscopic Examination

B. Chemical Examination Method
1. Modified Griess Test
a. Direct Application Technique
b. Reversed Application Technique
2. Sodium Rhodizonate Test
a. Bashinsky Transfer Technique
b. Direct Application Technique
3. Table of Range & Residues Test Chemicals

C. Test Pattern Method
1. Non-Shot Pellet Test Pattern Production
2. Shot Pellet Test Pattern Production

1. Format
2. Terminology

B. Standards & Controls
   1. Calibration Verification Methods
   2. NIST Traceable Standards
   3. Reagents
   4. Work Sheets

C. Measurement Uncertainty

D. Instruments Used in Analyses

FOREWORD

The body of knowledge, which comprises forensic science, is a compilation of procedures adapted from other disciplines that encompass many of the physical and natural sciences. During the history of forensic science, a multitude of scientists has greatly contributed to the protocols, methods and procedures that have become a routine part of analysis. Every effort has been made in this manual to give proper recognition to the authors of specific procedures; however, in some instances, the original source of forensic procedures has been lost in antiquity. For others, the general procedures belong to the public domain and are recorded in many basic references concerning forensic science. In addition, many of the procedures described in this manual have been adapted from standard laboratory practices, and the citation of thousands of references which deserve credit for aiding in the development of these procedures is neither practical nor possible. To all those scientists who have contributed to the knowledge of forensic science contained herein, we do extend collective recognition and gratitude.

Procedures manuals which offer reliable information that is then combined with corresponding training manuals serve as the foundation for effective quality management of analyses. Extensive effort has been made to ensure that the routine procedures described herein will produce accurate and valid analytical results. However, not all possible analyses that may be encountered in casework can be appropriately covered in a procedures manual, nor can all possible variations to a described procedure be included. Therefore, this manual is written with the understanding that minor variations that do not significantly alter the described procedure may be used. An analyst may use a non-routine procedure not specifically stated in this manual, provided the following conditions are met:

1. The procedure used is based upon documented and scientifically accepted practices.

2. A notation is made on the worksheet indicating the procedure followed is not specified in the procedures manual.

3. The analyst also indicates on the work sheet why the particular procedure was selected over a procedure contained in this manual. Rationale must be detailed sufficiently to withstand close scrutiny by independent examiners.

4. The non-routine procedure used will be documented to a standard such that another scientist of similar skills and experience can understand fully the procedure used and the results obtained.

This manual was compiled with the help and assistance of the Illinois State Police, Suffolk County, NY, North Carolina State Bureau of Investigation, Virginia Department of Forensic Science and Syracuse Police Department Crime Laboratories. Portions of this text were taken directly from the Firearms & Toolmarks and Shoe Print Identification Procedure Manuals used by those laboratories.

REVISION HISTORY FOR FRONT SECTION

Issue Date	History
03/31/00	Original Issue
11/20/06	Combined Front Page and Table of Contents into "Front Section", and added History Page to Front Section to comply with lab's new document control program. No substantive changes to contents.
03/28/08	Updated TOC
05/07/09	Fixed typo, updated TOC for added line (Swabbing Firearms for DNA)
09/13/10	Added Measurement Uncertainty as Appendix C, moved process maps to Appendix D.
03/08/11	Updated TOC for new contents, added Instrumentation to Appendix D and moved process maps to Appendix E, added Virginia DFS to list of content providers.
06/17/11	Updated footer for ISO 17025 and retired process maps.
8/16/11	Updated TOC.

Approval

Director _____ Date:
Matthew C. Mathis

Issuance

Chief Criminalist _____ Date:
Todd J. Nordhoff

Criminalist _____ Date:
Gene C. Rivera

Criminalist _____ Date:

IBIS Technician _____ Date:
Robert E. Moore

Jeffrey S. Taylor

Digitally signed by Jeffrey S. Taylor
DN: cn=Jeffrey S. Taylor, o=CMPD, ou=Crime Laboratory, email=jtaylor1@cmpd.org, c=US
Date: 2011.08.16 13:04:15 -04'00'