

FEU02 – SOP for Examination of Firearms

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1. Scope

- 1.1. This standard operating procedure is utilized for the examination, reporting and safe handling of firearms.

2. Background

- 2.1. To establish the practices for documenting the examination of firearm evidence to conform to the requirements of the Department of Forensic Sciences (DFS) Forensic Science Laboratory (FSL) *Quality Assurance Manual*, the accreditation standards under ISO/IEC 17025:2005, and any supplemental standards.

3. Safety

- 3.1. For proper handling of firearm see the *FEU01 - SOP for the Safe Handling of Firearms*.

4. Materials Required

- 4.1. Comparison Microscope; Stereo zoom binocular microscope; Calipers; Rulers; Gunsmith tools; Bullet recovery tank; Forensic Buddy Portable bullet recovery system; Indoor Range; Eye and ear protection

5. Standards and Controls

- 5.1. Test fires from a known firearm are control specimens which are used for comparison purposes.

6. Calibration

- 6.1. Not applicable

7. Procedures

- 7.1. Firearms Safety Examination

- 7.1.1. An initial safety examination must be conducted prior to any examination of a firearm by an FEU member. A firearm will be considered loaded until it has been inspected and rendered safe by an FEU member using the following safety inspection procedures:

- 7.1.2. Revolver – The following will be conducted:

- 7.1.2.1. Open cylinder, check all chambers
 - 7.1.2.2. Remove any cartridges/cartridge cases
 - 7.1.2.3. Visually and physically inspect the chamber(s)
 - 7.1.2.4. Visually inspect the bore for obstructions

- 7.1.3. Pistol - The following will be conducted:

- 7.1.3.1. Engage safety and remove the magazine if applicable
 - 7.1.3.2. Open action and visually and physically inspect the chamber and magazine
 - 7.1.3.3. Remove any cartridges/cartridge cases remaining in the chamber or magazine
 - 7.1.3.4. Visually inspect bore for obstructions

- 7.1.4. Shotgun - The following will be conducted:

- 7.1.4.1. Engage manual safety, if available

7.1.4.2. Remove magazine, if applicable

7.1.4.3. Magazine tubes will be visually and physically inspected to ensure the absence of shotshells

7.1.4.4. Open action and lock open, if possible

7.1.4.5. Visually and physically inspect the chamber

7.1.4.6. Visually inspect bore for obstructions

7.1.5. Rifle - The following will be conducted:

7.1.5.1. Engage safety and remove the magazine if applicable

7.1.5.2. Magazine tubes will be visually and physically inspected to ensure the absence of ammunition

7.1.5.3. Open action and lock open, if possible

7.1.5.4. Visually and physically inspect the chamber and magazine well and remove any cartridges/cartridge cases remaining in chamber or in magazine tube

7.1.6. BB/Pellet Weapons - The following will be conducted:

7.1.6.1. Engage safety and remove magazine, if applicable

7.1.6.2. Open action and lock open, if possible

7.1.6.3. Visually and physically inspect the chamber and magazine well area and remove any bb/pellets

7.1.7. After the initial safety inspection, anytime a firearm is out of the direct control of the FEU member, the firearm should be re-inspected to confirm that it is safe.

7.2. Firearm Function Examination

7.2.1. A function examination will be conducted to determine the condition of a firearm. The operation of the firearm shall follow manufacture specification of operability. If any modifications are observed it will be documented

7.2.2. The firearms should be test fired using established safety guide lines to determine the functionality of a firearm. At the discretion of the FEU member, the bullet recovery tank, indoor range or the forensic buddy can be used for testing.

7.2.3. Test firing should be done utilizing the magazine, which was provided with the firearm. If a magazine is not provided, a Reference Firearms Collection (RFC) magazine should be substituted if available.

7.2.4. Firearms will be test fired utilizing all firing modes in which the firearm is capable of discharging.

7.3. Collecting Test Fired Specimens

7.3.1. The firearm should be test fired utilizing the bullet recovery tank following established safety guidelines to obtain the known fired bullet(s) and cartridge case(s).

7.3.2. In cases where the bullet recovery tank cannot be utilized, the firearm should be test fired using the Forensic Buddy or the indoor range to retrieve the fired ammunition.

7.3.3. Test fire bullet(s) and cartridge case(s) are considered secondary evidence. Secondary evidence items will be marked with the FEU member initials and FEU Number. Secondary evidence is maintained within the FEU Laboratory

7.4. Accidental Discharge Test

7.4.1. Accidental discharge testing will be conducted in the FEU indoor range when specifically requested by the contributor or when a firearms specialist determines such a test is necessary.

7.4.2. Prior to any test being conducted, the firearms specialist will inform the contributor of the potential risk of significant damage to the firearm.

7.4.3. The accidental discharge test will be conducted in all firing modes and utilizing a primed cartridge case. This test should be conducted after all other examinations have been completed. (Document on communication activity log)

7.4.4. All testing undertaken in order to attempt to duplicate the conditions under which the firearm discharged is left to the discretion of the examiner which can include but not limited to the plane test. While the firearm is being held it will be struck with a rawhide or similar styled mallet on its six planes: front of muzzle, butt plated, top of breech and chamber, bottom of trigger guard and frame and both sides of the receiver/frame.

7.5. Firearm Drop Test

- 7.5.1. The firearm drop test will be conducted in the FEU indoor range when specifically requested by the contributor or whenever a specialist determines such a test is necessary.
- 7.5.2. Prior to the drop test being conducted, the specialist will inform the contributor of the potential risk of significant damage to the firearm. This test should be conducted after all other examinations have been completed. (Document on communication activity log)
- 7.5.3. The drop test will be conducted using a primed cartridge case.
- 7.5.4. Absent specific information provided by the contributor concerning the discharge of the firearm, the method of testing to be used is left to the discretion of the specialist. If known, the conditions surrounding the discharge of the firearm at a shooting scene, such as height or type of surface, should be duplicated as closely as possible. If these details cannot be obtained, a standard height of 36 inches will be used, with the firearm being dropped a minimum of five times each with its safety on and off and in single and double action modes.

8. Sampling

- 8.1. Not applicable

9. Calculations

- 9.1. Not applicable

10. Uncertainty of Measurement

- 10.1. When quantitative results are obtained, and the significance of the value may impact the report, the uncertainty of measurement must be determined. The method used to determine the estimation of uncertainty can be found in the *FSL Quality Assurance Manual – Estimation of Uncertainty of Measurement (Section 5.4.6)* and in the **FEU Appendix A, Uncertainty of Measurement Guidelines**.

11. Limitations

- 11.1. Due to damage or other factors, some or all of the above examinations might not be possible. It is at the discretion of the firearms examiner as to what examinations are necessary and if they should be conducted.

12. Documentation

12.1. FEU Examination Worksheets

12.2. FEU Report of Results

13. References

- 13.1. Mathews, J.H., Firearms Identification, Vols. I-III, Charles C. Thomas, Springfield, IL (1962)
- 13.2. Gunther, J.D., and Gunther, C.O., The Identification of Firearms, John Wiley, New York (1935)
- 13.3. FBI, General Rifling Characteristics File, (2000)
- 13.4. Kirk, Paul, Crime Investigation, 2nd Edition, John Wiley and Sons, (1974)
- 13.5. Brownell, F.R., Encyclopedia of Modern Firearms, Volume 1, (1966)
- 13.6. Ezell, Edward C., Small Arms of the World, 11th Edition, Stackpole Books, Harrisburg, PA (1977)
- 13.7. *Forensic Science Laboratory Quality Assurance Manual* (Current Version)
- 13.8. *FSL Departmental Operations Manuals* (Current Versions)
- 13.9. *FSL Laboratory Operations Manuals* (Current Versions)
- 13.10. *FEU01 – SOP for Safe Handling of Firearms* (Current Version)
- 13.11. *FEU04 - SOP for Test Fire* (Current version)
- 13.12. Cyber National, Inc., *Bullet Recovery System & Remote Firing Platform Operating Guide* (2004)
- 13.13. *Forensic Buddy, Savage Arms Operating Guide*, (2008)