Firearms Section

Quality Assurance Policy

1. Scope

The Firearm and Tool Mark Section will ensure the laboratory, equipment, reagents, and examination processes are maintained, and current methodologies utilized with integrity and accuracy. The section supervisor will ensure that laboratory-wide and section quality assurance and safety guidelines are followed.

2. Safety

2.1 Examiners will wear appropriate PPE when examining evidence.

2.2 The other examiner in the section will be notified when entering the firing range.

2.3 The range ventilation system must be on when test firing.

2.4 The examiners will be trained on how to safely test fire various firearms in the range.

2.5 A remote firing device will be utilized when deemed necessary by the examiner.

3. Laboratory and Firing Range cleaning

3.1 The laboratory will be cleaned and maintained per the Cleaning Chart, which is kept in the laboratory. At the end of the year the chart will be replaced with a new one and the old one will uploaded into Paradigm for reference.

3.2 The Cleaning Chart will be initialed and dated in the appropriate place on the chart as each task is completed.

3.3 The Lab and Range will be wiped down and mopped with a bleach solution as needed.

3.4 Pens, micrometers, calipers, and scope mounts will be cleaned regularly; and after use on potentially infectious material to protect the scientist and prevent contamination.

3.5 The Section Supervisor will periodically review the Cleaning Chart to ensure that cleaning and maintenance are being completed.

4. Contamination Prevention

4.1 When a swab for DNA is requested on an item, it should be done prior to any examinations and in the original packaging, if possible. This will minimize the possibility of contamination.

4.2 When an item needs to be taken out of the original packaging to swab, then the bench top should be wiped clean and covered with brown paper prior to processing the item.

4.3 Sterile water and swabs will be used to collect DNA evidence. The container that holds that water will not touch the swab tip. When using disposable water, it will be used for one case only and any remaining water will be discarded.

5. Chemicals and Reagents

5.1 The section will maintain a Reagent Log of all reagents purchased or prepared in the laboratory.

5.2 All reagents prepared in the laboratory will be assigned a lot number that will be placed on the label. The number will consist of the date the reagent is made and the examiner's initials, for example: Lot# 022609KDS

5.3 All reagents in the laboratory will have an expiration date placed on the label. If there is no expiration date then the expiration will read, EXP: N/A or None.

5.4 All reagents will be tested prior to use on evidence to ensure they are working properly; this will be documented along with the reagent number in the case notes.

5.5 Reagents will be tested in the same manner that they will be used in case work.

5.6 Chemicals will be tracked in the Chemical/Reagent Logbook. The manufacturer, lot number, and date received will be documented in the Log. The examiner will write the date received and their initials on the label of the chemical. When the reagent is opened, the examiner will write their initials and the date they opened it.

6. Handling of Evidence

6.1 Evidence will be kept in neatly on shelving in laboratory. Unless the size of the object dictates otherwise.

6.2 Evidence may also be stored and processed in a garage or other location if necessary.

6.3 Known and questioned samples will be kept separate and marked as such.

6.4 Known samples are considered tests. They are reference samples. Test fired bullets and cartridge cases will be marked with a "T" for test and placed in a container identifying

the case number, firearm manufacturer or brand name, model, and serial number, if available. The tests will be stored for preservation in the firearms locker and sealed.

6.5 Test fired samples are tracked in a spreadsheet on the Crime Laboratory's network.

6.6 The tests fires from each firearm will be packaged separately from the other firearms in the same case.

6.7 Test tool marks will not be retained and are returned with the original evidence.

6.8 Documentation of the examinations will sufficiently support the reported conclusions.

6.9 The documentation will allow another qualified examiner to follow and understand the procedures used and the examination results.

6.10 This section does not perform sampling.

7. Equipment Maintenance and Calibration

7.1 After the equipment has been put into service, it will be cleaned and/or calibrated. The following is a list of the items that are cleaned and/or calibrated, by an approved service provider, along with the acceptable tolerances.

7.2 Records of maintenance are kept in the electronic file in Paradigm in the Quality Records folder for Firearms. A sticker is placed on the equipment to show the date of service and the service provider.

7.3 Check standards are not listed here.

Equipment/Instrument	Tolerance Specifications	Frequency
Firing Range-Gauges (If gauges read < .9 when vent is on, the range filter must be changed)	appropriate air flow reading	Yearly
Firing Range-Vent	Total air exchange < 2 min	Yearly
Sentry Fume Hood	>100 CFM	Yearly
Leica Macro scopes	Cleaning	Yearly
Unitron MP	+/- .005"	Yearly
6" Mitutoyo Dial Micrometer	+/- .005"	Yearly
6" Starrett Digital Micrometer	+/- .005"	Yearly
Mitutoyo Dial Caliper	+/- .005"	Yearly
Mitutoyo Digital Caliper	+/- .005"	Yearly
Ainsworth Scale	+/- .02g	Yearly
Leica Disto D2 laser	K2, 95%	Biennial

7.3 Training will be given on the proper use of the equipment in the laboratory. Instructions are also available next to the equipment and/or available in Paradigm.

7.4 Only trained personnel will use the calibrated measuring devices to prevent misuse.

7.5 Instruction manuals will be in Paradigm and next to instrumentation when feasible.

7.6 This section does not perform calibrations.

7.7 All measuring devices are calibrated by an outside vendor prior to being placed into service.

8. Correction Factors for Equipment

8.1. Correction factors for equipment will be maintained in the electronic quality records for the section as these are listed on the calibration certificates.

8.2 In the event a device does not meet and the specification tolerance and cannot be adjusted to meet specifications, it will be replaced.

9. Check Standards/Intermediate Checks

9.1 Check Standards will be used for intermediate checks to ensure all the measuring devices and scales are within the calibrated specifications each day prior to measuring items for cases work. This will be documented in the case notes for that day.

9.2 If a device falls outside the acceptable range when using a check standard, it will be taken out of service and be recalibrated or replaced as needed.

9.3 Check standards are calibrated before use and then will not be calibrated again unless there is damage or a need for another calibration.

9.4 Check standards include measuring rods, 36-inche ruler, gage blocks and brass milkcan weights. The calibration certificates and serial numbers (when known) are in Paradigm.

10. Reference Materials

The section maintains reference collections for firearms, samples of ammunition, and test fires from firearms examined. These are not considered evidence but will be tracked by

the firearms section. These reference materials are not part of the measurement process in this section.

11. Test fires

11.1 Test fires are not considered evidence. They are references samples obtained from a firearm when tested in the section. Additional tests can be taken from that firearm upon re-submission. If the gun is no longer available or has been destroyed, the test fires will then become the best evidence and follow the same chain of custody as evidence. Test fires are sub-itemized in the Laboratory Information System and their location tracked. Test fires are stored in the Firearms Laboratory and filed numerically by lab case number. They are tape sealed and initialed in the same manner as evidence; however, the seal is a security seal to prevent loss. It is not necessary for the seal to be labeled with the "Evidence" nomenclature.

11.2 The tests are tracked on an Excel Spreadsheet. The spreadsheet is maintained on the Laboratory Network and is password protected to prevent deletions from unauthorized users. The spreadsheet allows for search of firearms that have been tested. The firearm make, model, caliber, serial number, and type are documented when available and any one of these can be searched.

12. Ammunition reference

Ammunition references are kept in filing cabinets in the Firearms Lab. Information obtained from these samples aids in determining the manufacturer of an ammunition component received as evidence.

13. Display Firearm

Firearms on display can be used as a training aid and reference for serial number location, serial number font or utilized for parts, research or another aid as needed. The displayed firearms are tagged with a number that corresponds with the number on an excel spreadsheet that is maintained on the laboratory network. The spreadsheet lists the make, model, caliber, and serial number when available. Any one of these descriptors can be searched.

14. Quality Control

14.1 Technical Review and Verification

14.1.1 Technical review is an inspection by a peer of the technical bench notes, data and/or other documents that formed the basis for the scientific conclusion.

14.1.2 The technical reviewer signs the Case File Review Form when the file contains all the properly and accurately completed notes, worksheets, photographs, print outs and other data required to satisfactory documents the scientific conclusion that is acceptable within the discipline.

14.1.4 Technical review is separate and different from a verification.

14.2 Verification is also an impartial review of the case by a peer, but this review is specific to the conclusions reached when a comparison is conducted. The verifier will review all identifications, inconclusive and eliminations made when a comparison between a known or unknown or any other type of microscopic comparison is conducted to determine the source and the conclusion is reported.

14.2.1 The verifier will determine if the examiner's conclusion is based on objective data, demonstrable, and justifiable to the point of consensus within the discipline. Documentation which supports the conclusion has been provided, (consulting and/or bind testing) were completed to arrive at the conclusion and if any such steps could be taken to achieve more accurate results.

14.2.2 The verifier scrutinizes the comparisons and should arrive at the same conclusion or within the acceptable range before signing the case file review.

14.2.3 Comparisons and their conclusions that are not clearly apparent may be verified prior to the completing the case for the technical review.

14.2.4 The results of the comparison may be disseminated after the evidence has been verified and prior to the technical review.

14.2.5 Additional verifications may be needed for difficult comparisons. This is at the discretion of the examiner completing the case.

14.3 One hundred percent (100%) of the firearm cases completed are reviewed for technical correctness and/or verified prior to dissemination of results.

14.3.1 Exceptions may be made when there is only one trained analyst in the section, then only 10% of the case work is required to have a technical review. However, the section will strive for 100% even in these circumstances.

14.3.2 Technical review and/or verification is *not* required when information is needed quickly for investigative purposes. This primarily includes, but not limited to, examinations of a bullet(s) to determine caliber, and to provide a list of possible firearms that could have fired the bullet(s), and a determination on how many firearms may be involved in the shooting event.

14.3.2.1 These results are preliminary, and the completed case will go through the normal technical review and/verification prior to dissemination of the official report.

14.3.2.2 Agencies are made aware of the limitations of a preliminary examination as it is possible the preliminary results may differ from the final conclusions after more information is obtained from the evidence.

14.4 Conflict Resolutions

14.4.1 Consultation between the examiners will be conducted to discuss the basis for their differences in opinion. If the matter can be resolved, no further review is necessary.

14.4.2 If the examiners cannot resolve the conflict this will be reported to the Supervisor or Quality Manager who will determine what action will follow, this may include:

14.4.2.1 Requesting additional consultation from other examiners which can include a separate independent or blind review may be necessary.

14.4.2.2 External agency review. External review requires management approval.

14.4.2.3 If conflicting conclusions cannot be resolved and are determined to be supported by objective detail, demonstrable and found to be justified by a consensus they will be included in the report along with explanations of the differing opinions. Reports with conflicting conclusions must be approved by the Supervisor and/or the Quality Manager.

14.4.3 For significant, unresolved, or repeated errors that are found during technical review or verification, will be handled according to the Crime Laboratory Policy: Nonconforming Work and Corrective Action.