ASCLD/LAB-*International* ®

An ISO 17025 Program of Accreditation

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American Society of Crime Laboratory Directors /
Laboratory Accreditation Board

ASCLD/LAB®

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2006
Supplemental requirements for the accreditation of forensic science testing laboratories

Corresponds to ISO/IEC 17025:2005

Quality Documents Project Version

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Introduction

General requirements for the accreditation of testing laboratories are found in ISO/IEC 17025: 2005, *General requirements for the competence of testing and calibration laboratories.* This document supplements ISO/IEC 17025 and contains supplemental accreditation requirements for forensic science testing laboratories for the examination or analysis of evidence as it relates to legal proceedings.

The numbering scheme in this document follows that of ISO/IEC 17025:2005. Supplemental requirements for accreditation may be found in Sections 4 and 5 of this document. Within those sections, the phrase "*No Supplemental Requirement*" means that the American Society of Crime Laboratory Directors / Laboratory Accreditation Board – International program of accreditation (ASCLD/LAB–*International*) has no requirement for accreditation in addition to the requirements specified in ISO/IEC 17025. Within sections where supplemental requirements do exist, only appropriately numbered supplemental requirements appear in this document.

Throughout this document, "*Shall*" means that compliance with the supplemental requirement is mandatory to achieve accreditation. In some instances, a requirement may not apply to the work conducted in a laboratory. In such instances, the requirement will be regarded by ASCLD/LAB-*International* as "*not applicable*."

In this document, notes (appearing as "**NOTE**") are intended to provide clarification or examples and do not constitute an additional accreditation requirement.

1 Scope

Forensic science refers to the examination of crime scenes, recovery of evidence, laboratory examinations, interpretation of findings and presentation of the conclusions reached for investigative or intelligence purposes or for use in court.

1.1 The broad field of forensic science involves the examination of a wide range of items and substances. ASCLD/LAB-*International* offers accreditation in the disciplines of forensic science listed in the table below as approved by the ASCLD/LAB Delegate Assembly. Accreditation in additional disciplines may be offered by ASCLD/LAB-*International* in the future, but only after a formal extension of scope process is completed in accordance with ASCLD/LAB bylaws and operating procedures. Within each discipline of forensic science, the following table also includes a list of general forensic science sub-disciplines (types of tests) currently accredited by ASCLD/LAB-*International*. The list of sub-disciplines is not intended to be exhaustive. A decision to recognize and accredit laboratory activities in other sub-disciplines may be made by ASCLD/LAB-

International after recognizing an appropriate relationship of the activity to one of the primary disciplines of accreditation administered by ASCLD/LAB-*International*.

The accreditation certificate and scope of accreditation document issued by ASCLD/LAB-*International* will specify the Field, Discipline(s) and Sub-discipline(s) of accreditation.

Field of Accreditation: Forensic Science (Testing)

Discipline	**Sub-Discipline (Types of Tests)** **Not intended to be an exhaustive list** **Note** In some cases, the relationship of a sub-discipline to a particular discipline will vary from laboratory to laboratory. For example, "impression evidence" is not consistently considered a sub-discipline of the Firearms/Toolmarks discipline. ASCLD/LAB-*International* will work with each laboratory at the time of application and assessment to determine appropriate placements of sub-disciplines.
Controlled Substances	General Controlled Substances
Toxicology	General Toxicology Blood/Urine Alcohol Breath Alcohol (Testing)
Trace Evidence	Fire Debris Explosives Gun Shot Residue (Instrumental Analysis) Paint Polymers Fibers and textiles Glass Physical Comparisons Hair (microscopic examination) Analysis of Unknowns Other Materials
Biology	Serology (Body Fluid Identification) DNA Nuclear DNA Mitochondrial
Firearms/Toolmarks	Firearms Toolmarks Impression Evidence
Questioned Documents	General Document Examination

Discipline	**Sub-Discipline (Types of Tests)** **Not intended to be an exhaustive list** **Note** In some cases, the relationship of a sub-discipline to a particular discipline will vary from laboratory to laboratory. For example, "impression evidence" is not consistently considered a sub-discipline of the Firearms/Toolmarks discipline. ASCLD/LAB-*International* will work with each laboratory at the time of application and assessment to determine appropriate placements of sub-disciplines.
Latent Prints	Latent Print Processing Latent Print Comparisons
Crime Scene	General Crime Scene Investigation Crime Scene Reconstruction Clandestine Laboratory Bloodstain Pattern Interpretation
Digital & Multimedia Evidence	Computer Forensics Video Analysis Audio Analysis Image Analysis

1.2 This document applies to testing performed by methods that have been fully documented and validated. This may include regional, national and international standard methods as well as in-house methods. The validation of standard methods, however, should not be taken for granted and laboratories should satisfy themselves that the degree of validation of a particular method is adequate for its purpose. Similarly, laboratories should not feel constrained to use a standard method if an in-house method exists that has been adequately validated as defined in ISO/IEC17025 and in this document.

These quality assurance requirements apply to forensic science testing and this document is not generally intended for research and/or product development laboratories.

2 References

American Society of Crime Laboratory Directors / Laboratory Accreditation Board (ASCLD/LAB), *Accreditation Manual*, 2005.

U.S. Department of Justice (DOJ), Federal Bureau of Investigation (FBI), *Quality Assurance Standards for Forensic DNA Testing Laboratories*, 1998.

U.S. DOJ, FBI, *Quality Assurance Standards for Convicted Offender DNA Databasing Laboratories,* 1999.

International Laboratory Accreditation Cooperation (ILAC), ILAC-P10:2002 – *ILAC Policy on Traceability of Measurement Results*, 2002.

ILAC, *Guide 2 – Traceability of Measurements*, 1994.

ILAC, *Guide 19 – Guidelines for Forensic Science Laboratories*, 2002.

International Organization of Standardization (ISO) / International Electrotechnical Commission (IEC), *ISO/IEC 17025 – General requirements for the competence of testing and calibration laboratories*, 2005.

ISO/IEC, *ISO/IEC 9000 - Quality management systems — Fundamentals and vocabulary*, 2000.

ISO/IEC, *Guide 30 – Terms and definitions used in conjunction with reference materials*, 1992.

3 Terms and definitions

In addition to the following terms and definitions, any relevant terms and definitions given in ISO/IEC 9000:2000 apply.

Administrative documentation - Records such as case related conversations, test item (evidence) receipts, description of evidence packaging and seals, incident reports, service request documentation, correspondence received/sent, and other pertinent information.

Administrative review - A procedure used to check case file documentation and case reports for consistency with laboratory policy and for editorial correctness.

Approved test provider - A proficiency test provider who has complied with the test manufacturing guidelines established by the Proficiency Review Committees.

Analyst - An individual who conducts and/or directs the analysis of forensic casework samples, interprets data and reaches conclusions.

Audit - A review conducted to compare the various aspects of the laboratory's performance with a standard for that performance.

Biology (forensic science discipline) - The identification and comparison of genetic markers from biological fluids (and includes subdisciplines such as DNA and serology).

Case record - Files containing administrative and examination documentation generated or received by a laboratory pertaining to a particular case.

Competency test - The evaluation of a person's ability to perform work in any functional area prior to the performance of independent casework.

Competent - Possessing the requisite knowledge, skills and abilities to perform a job.

Computer Forensics - A subdiscipline of digital & multimedia evidence, which involves the examination, analysis, and/or evaluation of digital evidence.

Computer systems - A complete, working computer to include any software and peripheral devices.

Control (control sample) - A test performed in parallel with experimental samples and designed to demonstrate that a procedure worked correctly; a standard of comparison for verifying or checking the finding of an experiment.

Controlled Substances (forensic science discipline) - The identification of controlled drug substances either in pure, legal or illicit dosage forms.

Crime/forensic laboratory - A laboratory (with at least one full-time scientist) which examines physical evidence in criminal matters and provides opinion testimony with respect to such physical evidence in a court of law.

Crime scene - An area, object or person, external to a laboratory facility, from which evidence is identified, documented, collected, and/or interpreted.

Crime Scene (forensic science discipline) - The identification, documentation, collection, and/or interpretation of material at a location external to a laboratory facility. Scene reconstruction is also a part of this discipline.

Crime scene reconstruction - The process of determining the nature of events that occurred at a scene from an evaluation of physical evidence and other relevant information.

Director - See Laboratory Director

Digital & Multimedia Evidence (forensic science discipline) - Digital Evidence: The analysis of evidence stored or transmitted in binary form. Multimedia Evidence: Analog or digital media, including, but not limited to, film, tape, magnetic and optical media, and/or information contained therein.

Discipline - A major area of casework for which a laboratory may seek accreditation.

Evidence - Equivalent to “test item” as described in ISO/IEC 17025 / Section 5.8.

Environmental conditions - Any characteristic of a laboratory facility that could reasonably be expected to impact the quality of the laboratory’s work product (e.g., lighting, heating, air conditioning, ventilation, plumbing, wiring, adequacy of exhaust hoods/bio-safety cabinets, etc.).

Examination - Equivalent to a test as described in ISO/IEC 17025 / Section 5.4

Examination documentation (*See also* **Notes**) - Includes reference to procedures followed, test conducted, standards and controls used, diagrams, printouts, audioradiograms, photographs, observations and results of examinations.

External proficiency test - A test provided by a source external to the laboratory. In the case of a laboratory system, a test for each laboratory in the system shall be provided by a source external to the laboratory system.

Firearms/Toolmarks (forensic science discipline) - Examination and comparison of evidence resulting from discharge and/or use of firearms; comparison of marks made by various tools.

Forensic Audio - A subdiscipline of digital & multimedia evidence, which involves the examination, analysis, comparison, and/or evaluation of audio.

Image Analysis - A subdiscipline of digital & multimedia evidence, which involves the application of image science and domain expertise to examine and interpret the content of an image and/or the image itself.

Individual characteristic database - A collection, in computerized, searchable form, of features associated with an object or person uniquely or with a high degree of probability.

Individual characteristic database sample - A specimen of known origin from which individual characteristic information originates (e.g., reference blood or biological specimens, fingerprints of known individuals, electronic fingerprint records, test fired ammunition.)

Laboratory director - The highest ranking manager within an individual laboratory.

Latent Prints (forensic science discipline) - Development and/or comparison of latent print impressions.

Management system - The organizational structure, responsibilities, procedures, processes, and resources for implementing quality management; includes all activities which contribute to quality, directly or indirectly.

Manager - A person with the responsibility for directing and controlling an organizational unit or program.

Media - Objects on which electronic data can be stored.

Method - The course of action or technique followed in conducting a specific analysis or comparison leading to an analytical result.

Natural science - Chemistry, biology and physics.

Notes (*See also* **examination documentation**) - The documentation of procedures, standards, controls and instruments used, observations made, results of tests performed, charts, graphs, photos, and other documents generated which are used to support the analyst's conclusions.

Objective - A measurable, definable accomplishment which furthers the goals of the organization.

Policy - A guiding principle, operating practice, or plan of action governing decisions made on behalf of an organization.

Procedure - The manner in which an operation is performed; a set of directions for performing an examination or analysis - the actual parameters of the methods employed.

Proficiency review committee (PRC) - A committee appointed by the Board of ASCLD/LAB, whose role is to evaluate the performance of accredited laboratories in proficiency tests.

Proficiency test - A test to evaluate the continuing capability of analysts, technical support personnel and the performance of a laboratory; in open tests, the analysts and technical support personnel are aware that they are being tested; in blind tests, they are not aware.

Proper seal - A seal that prevents loss, cross-transfer, or contamination while ensuring that attempted entry into the container is detectable. A compliant seal may include a heat seal, tape seal, or a lock with the initials of the person creating the seal being placed on the seal or across the seal onto the container when possible.

Quality assurance - Those planned and systematic actions necessary to provide sufficient confidence that a laboratory's product or service will satisfy given requirements for quality.

Quality control - Internal activities, or activities conducted according to externally established standards, used to monitor the quality of analytical data and to ensure that it satisfies specified criteria.

Quality manager (however titled) - An individual designated by top management who, irrespective of other responsibilities, has the defined authority and obligation to ensure that the quality requirements of the management system are implemented and maintained.

Questioned Documents (forensic science discipline) - Examination of printed, typed or written material for the purpose of identifying the source, determining alterations or other means of gaining information about the item or the circumstances surrounding its production.

Reagent - A substance used because of its chemical or biological activity.

Scientist - A person who employs scientific methods in the examination of evidence in a forensic laboratory.

Secure area - A locked space (for example, cabinet, vault or room) with access restricted to personnel authorized by the laboratory director.

Serology - a sub-discipline of biology, which is concerned with the identification of biological materials through the use of various tests.

Sub-discipline - A specific type of analysis within an accredited discipline of forensic science.

Supervisor - A person directly responsible for overseeing the work in an organizational unit.

Technical review - Review of notes, data and other supporting documents which form the basis for a scientific conclusion.

Technical support personnel - A person who performs casework related duties within the laboratory at the direction of an analyst.

Toxicology (forensic science discipline) - Analysis of biological samples for the presence of drugs and other potentially toxic materials.

Trace Evidence (forensic science discipline) - Any analytical procedure utilizing either chemical or instrumental techniques not specifically covered in other forensic disciplines.

Validation - The process of performing a set of experiments which establish the efficacy and reliability of a technique or procedure or modification thereof.

Video Analysis - A subdiscipline of Digital & Multimedia evidence, which involves the examination, comparison, and/or evaluation of video.

4 Management requirements

4.1 Organization

With specific reference to ISO/IEC 17025 - 4.1.2:

> **NOTE** Whenever DNA operations are a part of the laboratory's scope of accreditation and the laboratory is subject to compliance, the laboratory should comply with all applicable requirements of the *Quality Assurance Standards for Forensic DNA Testing Laboratories* and/or *Quality Assurance Standards for Convicted Offender DNA Databasing Laboratories*.

4.1.4.1 The laboratory shall have a laboratory director, whose responsibilities and authorities shall be defined.

> **NOTE** The laboratory director should have a minimum of a baccalaureate degree in a natural science, criminalistics or a closely related field and at least five years of forensic science experience performing casework in one of the ASCLD/LAB-*International* accredited disciplines. If the director lacks a scientific background, then there should be support within management by personnel with appropriate scientific background. Additional education in management or business administration by college course work or short training courses (or both) is recommended and the laboratory director should have at least two years of experience in management.

4.1.4.1.1 The laboratory director shall possess sufficient authority to make and enforce decisions.

4.1.5. f.1 Each subordinate shall be accountable to one and only one immediate supervisor per function.

4.1.7 The laboratory shall appoint a member of staff as Health and Safety Manager (however named) who, irrespective of other duties and responsibilities, shall have defined responsibility and authority for ensuring that a health and safety program is implemented and followed at all times.

4.2 Management system

With specific reference to ISO/IEC 17025 - 4.2.2:

> **NOTE 2** A written statement of objectives fulfills a need for direction through a careful analysis of what the director and the parent organization believe are the appropriate functions of the laboratory and the direction in which it should be moving. Objectives make a significant contribution to the management process and serve as a basis for a sound management philosophy.
>
> **NOTE 3** Objectives will vary from laboratory to laboratory depending on such things as the size, range of services provided, nature of the parent organization, whether the laboratory stands alone or is part of a system, the size of the population served, and the nature of the area served (e.g., dense urban, dispersed rural). Objectives should be clearly communicated to all employees.

4.3 Document control

No Supplemental Requirements

4.4 Review of requests, tenders and contracts

No Supplemental Requirements

4.5 Subcontracting of tests and calibrations

No Supplemental Requirements

4.6 Purchasing services and supplies

No Supplemental Requirements

4.7 Service to the customer

No Supplemental Requirements

4.8 Complaints

4.8.1 The laboratory policy and procedure for the resolution of complaints shall cover complaints concerning quality related aspects of the management system submitted by laboratory employees.

4.9 Control of nonconforming testing and/or calibration work

No Supplemental Requirements

4.10 Improvement

No Supplemental Requirements

4.11 Corrective Action

No Supplemental Requirements

4.12 Preventive action

No Supplemental Requirements

4.13 Control of records

With specific reference to ISO/IEC 17025 - 4.13.2.1:

NOTE 3 The laboratory case number is usually used as the unique case identifier for identifying and indexing technical case records.

With specific reference to ISO/IEC 17025 – 4.13.2.2:

NOTE 1 Calculations and data transfers which do not form part of a validated electronic process should be checked (See also ISO/IEC 17025 – 5.4.7.1). The case record should include an indication that such checks have been carried out and by whom. It is preferable for a second person to perform the check.

NOTE 2 When a test result or observation is rejected, the reason(s) should be recorded.

4.13.2.2.1 Examination documentation shall reflect the date(s) of examination.

NOTE Date(s) of examination recorded in examination documentation may reflect the date analysis is started and the date analysis is completed.

4. 13.2.3.1 An addition made to examination documentation shall be initialed by the person making the addition.

NOTE In this context, "*addition"* means placing new information in the examination documentation.

4. 13.2.4 The laboratory procedure shall identify what documents will be maintained in case records.

NOTE 1 A laboratory case record consists of both examination documentation and administrative documentation which may be received or generated by the laboratory.

NOTE 2 The information maintained in a case record may include, but is not limited to, records of conversations, evidence receipts, descriptions of evidence packaging and seals, subpoenas, records of observations and test/examination results, reference to procedures used, diagrams, print-outs, autoradiographs, and photographs.

4. 13.2.5 Documentation to support conclusions shall be such that in the absence of the analyst, another competent analyst or supervisor could evaluate what was done and interpret the data.

NOTE 1 Examples of ways to document the basis for conclusions derived from evidence examination, include, but are not limited to: a narrative description of the examination process and observations made, photographs, photocopies, diagrams, drawings, worksheets which provide spaces or sections for the insertion of data or other observations made during various steps of the examination process, or a combination of two or more of these approaches.

4.13.2.5.1 Documentation to support conclusions in the latent print discipline shall meet all applicable requirements in Appendix A - *ASCLD/LAB Latent Print Examination Documentation*.

4. 13.2.6 The laboratory's unique case identifier and the analyst's handwritten initials (or secure electronic equivalent of initials or signature) shall be on each page of the examination documentation in the case record.

4. 13.2.7 When examination documentation is prepared by an individual(s) other than the analyst who interprets the findings, prepares the report and/or testifies concerning the documentation, the initials of that individual(s) shall be on the page(s) of examination documentation representing his/her work.

NOTE 1 The electronic equivalent of handwritten initials or signature are acceptable when the laboratory can demonstrate that the electronic signature is secure and can only be applied by the individual whom the electronic initials or signature represent.

NOTE 2 It should be clear from the case record who has performed all stages of the analysis/examination.

NOTE 3 Examination documentation, such as instrumental data, which bears the appropriate identification (i.e. unique identifier(s) and initials) on an original document, may be copied for filing in multiple places without the necessity of placing original identifiers on each copy.

NOTE 4 It is recommended that when examination documentation consists of multiple pages, a page numbering system indicating total number of pages be used (e.g., page __ of __).

4. 13.2.8 All administrative documentation, received or generated by the laboratory, for a specific case, shall be identified with the unique identifier used by the laboratory.

NOTE The unique identifier may be hand written or machine generated. Multi-paged administrative documents which are bound together, in some manner, may be identified by a unique identifier on the front page of the document.

4. 13.2.9 The unique identifier of each case for which data was generated shall be appropriately recorded on the printout when data from multiple cases is recorded on a single printout.

NOTE The printout may be kept in a single file and referenced in all files for which data was generated.

4. 13.2.10 When examination documentation is recorded on both sides of a page, each side shall be treated (identified and initialed) as a separate page.

4. 13.2.11 Examination documentation shall be of a permanent nature.

NOTE Generally handwritten notes and observations should be in ink. Exceptions may be made when environmental conditions, such as extreme cold or rain, prevent the use of inks. Pencil (including color) may be appropriate for diagrams or making tracings.

4. 13.2.12 When an independent check on a critical finding is carried out, it shall be conducted by an individual having expertise gained through training and experience, and a record of the review shall be made to indicate that the critical finding has been checked and agreed to, by whom, and when the check was performed.

NOTE Such checks, often referred to as "verifications," may be indicated in a number of ways including entries against each finding, entry on a summary of findings or a statement in the case record.

4. 13.2.13 Where abbreviations or symbols specific to the laboratory are used in the examination documentation, the meaning of the abbreviations or symbols shall be clearly documented by the laboratory.

4.14 Internal audits

4. 14.1.1 Internal audits shall be conducted at least annually.

4. 14.1.2 Internal audits shall be documented and the documentation retained for at least one ASCLD/LAB-*International* cycle of accreditation.

4. 14.5 The laboratory shall submit an Annual Accreditation Audit Report to ASCLD/LAB by the laboratory's accreditation anniversary date.

NOTE The ASCLD/LAB-*International* Annual Audit Report is used to verify that operations continue to comply with the requirements of the laboratory's management system and the standards under which ASCLD/LAB-*International* accreditation was granted. The report provides a foundation for surveillance visits.

4.15 Management reviews

4. 15.1.1 Management reviews shall be conducted at least annually.

4. 15.1.2 Management reviews shall be documented and the documentation retained by the laboratory for at least one ASCLD/LAB-*International* cycle of accreditation.

5 Technical Requirements

5.1 General

5.1.3 The laboratory shall establish a documented procedure for routinely checking the reliability of its reagents.

5.1.3.1 Reagents prepared in the laboratory shall be labeled with, at a minimum, the identity of the reagent and the date of preparation or lot number. Records shall be maintained identifying who made the reagent and that its reliability was tested and the reagent worked as expected.

5.2 Personnel

With specific reference to ISO/IEC 17025 - 5.2.1:

NOTE 3 Records should be sufficiently detailed to provide evidence that staff performing particular tasks have been properly trained and that their subsequent ability to perform these tests has been formally assessed.

5.2.1.1 The laboratory shall have a documented training program that will be used to train the individual in the knowledge, skills, and abilities needed to perform the testing. The laboratory's management system shall also include procedures for retraining and maintenance of skills and expertise.

NOTE The training program should be sufficiently comprehensive to cover all aspects of the work performed by a laboratory for each discipline in which the laboratory performs casework.

5.2.1.2 Where applicable, training programs shall also include training in the presentation of evidence in court.

With specific reference to ISO/IEC 17025 - 5.2.2:

NOTE 1 The laboratory's policy on employee development should address the various opportunities available to employees, such as:

- professional organizations and their meetings
- staff development seminars
- technical training courses
- in-house technical meetings, courses, and seminars
- laboratory sponsored seminars and conferences
- college level courses

NOTE 2 The development program should state how employees can participate in it and should identify the procedures to be followed when applying for such training. Any special laboratory criteria for selection of personnel should be stated. It is important that the program demonstrate planning for the development of individual employees, laboratory sections and the laboratory as a whole.

5.2.6 Technical personnel qualifications

5.2.6.1 Education

5.2.6.1.1 Analysts working in the Controlled Substances and Trace Evidence disciplines of forensic science shall possess a baccalaureate or an advanced degree in a natural science, criminalistics or a closely related field.

5.2.6.1.2 Analysts working in the Toxicology discipline of forensic science shall possess a baccalaureate or an advanced degree in a natural science, toxicology, criminalistics or a closely related field.

5.2.6.1.3 Analysts working in the Biology discipline of forensic science shall possess a baccalaureate or an advanced degree in a natural science, criminalistics or a closely related field and, if performing DNA analysis and where applicable, shall meet the education requirements of the *Quality Assurance Standards for Forensic DNA Testing Laboratories* and *Quality Assurance Standards for Convicted Offender DNA Databasing Laboratories.*

NOTE (Reference 5.2.6.1.1, 5.2.6.1.2 and 5.2.6.1.3 except those performing DNA analysis) A qualified individual, whose degree is in a field other than a natural science, criminalistics or a closely related field, but who has taken extensive course work in biology and/or chemistry and has numerous years of experience may meet the educational requirements on a case by case basis as determined by ASCLD/LAB-*International*.

5.2.6.1.4 Analysts working in the Firearms/Toolmarks, Questioned Documents or Latent Prints disciplines of forensic science shall meet the educational requirement(s) specified in the job description.

NOTE While not mandatory, the laboratory should require a baccalaureate degree with two or more science courses for any analyst working in the Firearms/Toolmarks, Questioned Documents or Latent Prints disciplines.

5.2.6.1.5 Personnel working in the Digital Evidence and Crime Scene disciplines and technicians working as technical support shall meet the educational requirement(s) specified in the job description.

NOTE While not mandatory, the laboratory should require a baccalaureate degree with science courses for any analyst working in the Digital Evidence or personnel working in the Crime Scene discipline.

5.2.6.2 Competency testing

5.2.6.2.1 All analysts, regardless of academic qualifications or past work experience, shall satisfactorily complete a competency test prior to assuming casework responsibility in the laboratory.

NOTE 1 Satisfactorily completing a competency test means achieving the intended results. Failure to achieve the intended results would require review or retraining until testing results in achieving the intended results.

NOTE 2 Competency testing should include evaluation of knowledge of existing literature, written and/or oral examinations, examination and identification of known and unknown material, and moot court.

5.2.6.2.2 Crime Scene personnel, regardless of academic qualifications or past work experience, shall satisfactorily complete a competency test prior to assuming primary responsibility for the examination, documentation and processing of a crime scene.

5.2.6.2.3 Technical support personnel, regardless of academic qualifications or past work experience, shall satisfactorily complete a competency test prior to assuming independent responsibility for any task that could reasonably be expected to affect the outcome of any test or calibration reported by the laboratory.

5.2.6.2.4 All analysts working in any sub-discipline of forensic science shall satisfactorily complete competency testing in each sub-discipline prior to assuming casework responsibility in a sub-discipline.

5.2.7 The laboratory shall maintain or provide access to literature resources such as relevant books, journals and other literature dealing with each discipline.

NOTE A forensic library may be located in multiple locations and electronic storage and/or access is permitted as one form of library materials as long as all employees have a reasonable means of access.

5.3 Accommodation and environmental conditions

5.3.4.1 The laboratory shall have written policies or procedures that address laboratory security to ensure that:

a) Access to the operational area of the laboratory is controllable and limited. Visitors shall not have unrestricted access to the operational areas of the laboratory.

b) All exterior entrance/exit points have adequate security control.

c) Internal areas requiring limited/controlled access have a lock system.

d) Accountability of all keys, magnetic cards, etc., is documented and their distribution limited to those individuals designated by the laboratory director to have access.

e) The laboratory is monitored during vacant hours by an intrusion alarm or by security personnel.

f) Evidence storage areas are secured to prevent theft or interference and there is limited, controlled access. The storage conditions shall be such as to prevent loss, deterioration and contamination and to maintain the integrity and identity of the evidence. This applies both before and after examinations have been performed.

NOTE Laboratories should have a fire detection system.

5.3.6 The laboratory shall have and demonstrate use of a documented health and safety program.

NOTE Use of a documented health and safety program could be demonstrated by safety training records, safety inspections, and documentation of preventive action taken by the laboratory management, or action to address safety issues/concerns expressed by laboratory personnel.

5.4 Test and calibration methods and method validation

5.4.1.1 All methods shall be documented and the documents readily available for review by laboratory personnel.

NOTE Although many acceptable procedures may exist to perform a particular examination, considerable variations in case samples require that forensic scientists have the flexibility to exercise discretion in selecting the method most appropriate to the problem at hand. The laboratory director needs to ensure that the procedures used meet acceptable scientific standards (e.g., the use of positive and negative controls)**.**

5.4.1.2 Appropriate controls and standards shall be specified in the methods and their use documented in the case record.

5.4.2 Selection of methods

5.4.2.1 Prior to implementation of a validated method new to the laboratory, the reliability of the procedure shall be demonstrated in-house against any documented performance characteristics of that procedure. Records of performance verification shall be maintained for future reference.

5.4.3 Laboratory-developed methods

No Supplemental Requirements

5.4.4 Non-standard methods

No Supplemental Requirements

5.4.5 Validation of methods

With specific reference to ISO/IEC 17025 - 5.4.5.2:

NOTE 4 Validation studies can be conducted by the scientific community (as in the case of standard or published methods) or by the forensic science laboratory itself (as in the case of methods developed in-house or where significant modifications are made to previously validated methods).

5.4.6 Estimation of uncertainty of measurement

No Supplemental Requirements

5.4.7 Control of data

5.4.7.2.1 Laboratories shall implement appropriate measures to prevent unauthorized access to computer systems used for examining digital evidence.

5.5 Equipment

No Supplemental Requirements

5.6 Measurement traceability

5.6.1.1 Procedures to check calibration of equipment/instrumentation shall be established depending on the specific requirements of the testing or analytical work being carried out. It will normally be necessary to check calibration after any shut down, whether deliberate or otherwise, and following service or other substantial maintenance. In general, calibration check intervals shall not be less stringent than manufacturers' recommendations.

NOTE For many types of analysis, calibration checks may be carried out using synthetic standards containing the analytes under test, prepared within the laboratory from chemicals of known purity and composition, or matrix matched standards. Alternatively, standard solutions may be purchased. Many chemicals can be purchased with the manufacturer's statements or certificates. Wherever possible, laboratories should obtain supplies of chemical standards from ISO compliant suppliers.

5.6.3 Reference standards and reference materials

5.6.3.2.1 Reference collections of data or items/materials encountered in casework which are maintained for identification, comparison or interpretation purposes (e.g. mass spectra, motor vehicle paints or headlamp lenses, drug samples, typewriter print styles, wood fragments, bullets, cartridges, DNA profiles, frequency databases) shall be fully documented, uniquely identified and properly controlled.

5.7 Sampling

With specific reference to ISO/IEC 17025 - 5.7.1:

NOTE 3 The process of sampling submitted evidence is unique for each discipline and, where appropriate, should be documented in the operations and/or analytical procedures of the laboratory. Laboratories should ensure that training programs cover this aspect of their work and that competency/training records are retained.

5.8 Handling of test and calibration items

5.8.1.1 Forensic science laboratories shall be able to demonstrate that the evidence examined and reported on was that submitted to the laboratory. A "chain of custody" record shall be maintained from the time of receipt and reflect all internal transfers. The record shall detail each person taking possession of an item of evidence, or the location of that item.

At a minimum this record shall include:

- A signature, or equivalent identification, of the person/location receiving evidence
- The date of receipt or transfer
- A description, or unique identifier, of the evidence

NOTE Key components of an evidence control system are a documented chain of custody, proper marking of evidence, proper evidence seals, and a secure area for evidence storage. Electronic tracking of evidence is an acceptable alternative to a written record as long as the computerized data is sufficiently secure, detailed and accessible for review and can be converted to a hard copy when necessary. Unique personal identifiers, having individual security, are acceptable in lieu of actual signatures.

5.8.1.1.1 When evidence is subdivided in the laboratory, sub-items shall be tracked through a documented chain of custody record to the same extent that original items of evidence are tracked.

5.8.4.1 Any evidence not in the process of examination that must be placed in a container to protect it from loss, cross-transfer or contamination shall be stored under proper seal.

NOTE 1 Packaged evidence received by a laboratory which does not bear the initials or identification of the person sealing the evidence container is not considered to be properly sealed.

NOTE 2 Evidence which is properly sealed and marked for identification may be placed in unsealed and unmarked containers such as boxes or bags for the purpose of grouping items of evidence or for the convenience of carrying the evidence without that container having to meet the requirements of identification and sealing, as long as evidence security requirements are otherwise met.

5.8.4.2 All evidence not in the process of examination shall be maintained in a secured, limited-access storage area.

5.8.4.3 There shall be documented procedures which describe the measures taken to secure unattended evidence which is in the process of being examined.

5.8.4.3.1 Laboratory policy concerning evidence in the process of examination cannot be open-ended and shall be based upon a justifiable expectation of frequent examination.

NOTE Latent print lifts are an example of evidence that a laboratory may declare to be "in the process of examination." Using latent print lifts as an example, a policy that establishes a time period which is based upon the actual frequency of examination and/or a reasonable period of anticipated comparison activity would not be an "open-ended" policy. A policy that establishes a time period such as five years, which is not based on a justifiable expectation of reexamination would be regarded as an open-ended policy.

5.8.4.4 Each item of evidence shall be marked for identification in such a manner as to ensure that it is uniquely identifiable and traceable to the unique case number. If the evidence does not lend itself to marking, its proximal container or identifying tag shall be marked.

5.8.4.5 When evidence, such as latent prints and impressions, can only be recorded or collected by photography and the image itself is not recoverable, the photograph or negative of the image shall be treated as evidence.

5.8.4.6 Evidence collected from a crime scene by laboratory personnel shall be protected from loss, cross transfer, contamination and/or deleterious change, whether in a sealed or unsealed container, during transportation to an evidence facility. Where appropriate, further processing to preserve, evaluate, document, or render evidence safe shall be accomplished prior to final packaging. Evidence collected from a crime scene shall be appropriately identified, packaged and entered into the evidence control system as soon as practical.

5.8.4.7 The laboratory shall have procedures for the operation of individual characteristic databases.

5.8.4.7.1 The laboratory shall establish whether individual characteristic database samples are treated as evidence, reference materials, or examination documentation.

5.8.4.7.1 a Individual characteristic database samples treated as evidence shall meet chain-of-custody (5.8.1.1), evidence sealing and protection (5.8.4.1), evidence storage (5.8.4.2), and evidence marking (5.8.4.4) requirements.

NOTE Individual characteristic database samples include test fired ammunition produced in the laboratory, known blood or standard biological samples, and the ten print cards (or their electronic image equivalents which are commonly referred to as records) of known individuals.

5.8.4.7.1 b Individual characteristic database samples not treated as evidence shall meet 5.8.4.7.2 through 5.8.4.7.4.

5.8.4.7.2 Each individual characteristic database sample under the control of the laboratory shall be uniquely identified.

NOTE Agencies contributing to individual characteristic databases may use various methods to accomplish uniquely identifying database samples. In the case of automated fingerprint identification systems (AFIS), such methods include state or local identification numbers, arrest/booking numbers, name, dates or other information that in combination accomplishes this goal.

5.8.4.7.3 Individual characteristic database samples under the control of the laboratory shall be protected from loss, cross transfer, contamination and/or deleterious change.

NOTE Changes to electronic fingerprint records that are undertaken for the purpose of improving the quality of information associated with the record (e.g. "rolled print substitutions", consolidation of records) are not loss or deleterious change events under this standard provided that the lab has procedures for meeting examination documentation requirements for fingerprint records used for identifications (not eliminations) in latent print casework.

5.8.4.7.4 Access to individual characteristic database samples under the control of the laboratory shall be restricted to those persons authorized by the laboratory director.

NOTE Such authorized persons may include computer technicians who are not employees of the laboratory or agency, but who are responsible for equipment repair, database maintenance, improvement, etc. of a database that is under the control of the laboratory.

5.9 Assuring the quality of test and calibration results

With specific reference to ISO/IEC 17025 - 5.9:

NOTE 2 Analytical performance should be monitored by operating quality control schemes which are appropriate to the type and frequency of testing undertaken by the laboratory. The range of quality control activities available to laboratories includes the use of:

- reference collections;
- certified reference materials and internally generated reference materials;
- statistical tables;
- positive and negative controls;
- control charts;
- replicate testing;
- alternative methods;
- repeat testing;
- spiked samples, standard additions and internal standards;
- independent checks (verification) by other authorized personnel.

Depending on the particular test being performed, the laboratory may make use of one or several of these examples to demonstrate that the test or examination is "under control."

The quality control procedures necessary in any particular area of work should be determined by the laboratory responsible for the work, based on best professional practice. The procedures should be documented and records should be retained to show that all appropriate QC measures have been taken, that all QC results are acceptable or, if not, that remedial action has been taken.

5.9.3 The laboratory shall have a documented program of proficiency testing.

5.9.3.1 When participating in proficiency testing programs, the laboratory's own approved and documented test procedures shall be used.

NOTE 1 The laboratory's overall performance in proficiency testing programs should be reviewed regularly and, where necessary, corrective action should be taken.

NOTE 2 Proficiency tests should not be subject to policies adopted by the laboratory for efficiency or expediency of casework. All parts of a proficiency test provided by an approved test provider should be examined as completely as the laboratory's analytical capability allows.

5.9.3.2 The laboratory proficiency testing program shall comply with the *ASCLD/LAB Proficiency Review Program*.

NOTE The *ASCLD/LAB Proficiency Review Program* document is available at www.ascld-lab.org.

5.9.3.3 Each employee shall successfully complete at least one internal or external proficiency test per calendar year in his/her forensic science discipline(s).

NOTE 1 Successfully completing a proficiency test means either obtaining the correct response or completing corrective actions pursuant to laboratory policy and/or directives from an ASCLD/LAB Proficiency Review Committee (PRC).

NOTE 2 The laboratory should arrange for each employee to annually complete a proficiency test in each sub-discipline in which the employee routinely completes casework.

5.9.3.3.1 Where applicable, DNA analysts and technical support personnel performing DNA analysis shall comply with proficiency test requirements of the *Quality Assurance Standards for Forensic DNA Testing Laboratories* and *Quality Assurance Standards for Convicted Offender DNA Databasing Laboratories*.

5.9.3.4 The laboratory shall participate annually in at least one external proficiency test for each discipline of forensic science in which it provides services. ASCLD/LAB approved test providers shall be used where available. Whenever there is not an ASCLD/LAB approved test provider available, the laboratory shall locate and use a source of an external test in the discipline.

5.9.3.5 The laboratory shall maintain records of proficiency testing and the documentation of a laboratory's proficiency testing program shall include, at a minimum:

- The test set identifier
- How samples were obtained or created
- Identity of the person taking the test
- Date of analysis and completion
- Originals or copies of all data and notes supporting the conclusions (full details of the analyses/examinations undertaken and the results and conclusions obtained)

- The proficiency test results
- Any discrepancies noted
- An indication that performance has been reviewed and feedback provided to the analyst
- Details of the corrective actions taken (when necessary)

NOTE The laboratory should establish criteria for the evaluation of proficiency tests.

5.9.3.6 Proficiency testing records shall be retained not less than one full ASCLD/LAB-*International* accreditation cycle.

5.9.4 The laboratory shall establish a procedure for the technical review of the examination documentation and reports. The procedure shall ensure that the conclusions of analysts are reasonable, within the constraints of validated scientific knowledge, and supported by the examination documentation. The procedure shall define the scope of the technical review, establish the parameters of the review process, specify how technical reviews are documented, and describe a course of action to be taken if a discrepancy is found.

NOTE Technical review may be carried out on a sample of completed case records (e.g., 25% or "X" number of cases, whichever is less, per examiner per month). The sampling rate may vary depending upon the situation, as defined by the laboratory's policy. For example, a new analyst may have 100% of cases reviewed while a very experienced analyst may have only a few reviewed each month.

5.9.4.1 Technical reviews shall be conducted by individuals having expertise gained through training and experience in the discipline being reviewed.

NOTE 1 An individual conducting the technical review need not be an active analyst in the discipline (sub-discipline) or currently being proficiency tested in the discipline (sub-discipline).

NOTE 2 Technical reviews, while important to the laboratory quality assurance program, should not shift the perceived responsibility for the scientific findings from the analyst to the reviewer.

5.9.5 The laboratory shall establish a procedure which requires administrative review of the case file prior to the release of each report. Laboratory policy shall define the scope of the review, who may conduct administrative reviews, and how the administrative review is documented.

NOTE Administrative reviews, in whole or in part, may be independent of technical reviews or may be combined as one process.

5.9.6 The laboratory shall have and follow a documented procedure whereby the testimony of all testifying personnel is monitored on an annual basis. Each individual shall be given feedback and the monitoring procedure shall prescribe the remedial action that is to be taken should the evaluation be less than satisfactory.

5.9.7 Records of testimony monitoring shall be retained not less than one full ASCLD/LAB-*International* accreditation cycle.

5.10 Reporting the results

NOTE 1 While laboratories must report results (5.10.1), it is accepted that forensic science laboratories may not be able to include all of the items in laboratory reports that are detailed in sub-clauses 5.10.2 and 5.10.3 of ISO/IEC 17025. Forensic science laboratories may therefore elect to adopt one or more of the following means of meeting the requirements in sub-clauses of 5.10.2 and 5.10.3.

- The preparation of a test report which includes all of the information required by ISO/IEC 17025;
- The preparation of an annex to the test report which includes any additional information required by ISO/IEC 17025;
- Ensuring that the case record relating to a specific investigation contains all of the relevant information required by ISO/IEC 17025.

NOTE 2 Analytical work requiring a test report does not include research activities, training exercises, validation studies, or ten print record intercomparisons.

NOTE 3 Activities that a laboratory undertakes for the purpose of constructing an individual characteristic database or maintaining the quality and/or effectiveness of information in such a database (e.g. consolidation of 10 print images in AFIS; DNA profiling of biological reference samples of known individuals for inclusion in an offender database; addition of test fired cartridge case images in NIBIN) are not considered analytical work requiring a test report.

5.10.3.3 The laboratory shall have procedures for controlling the release of case report information.

5.10.3.4 Laboratory personnel who issue findings, including writing reports and providing testimony, based on examination documentation generated by another person(s) shall complete and document the review of all relevant pages of examination documentation in the case record.

NOTE Documentation of the review may be accomplished in a number of ways, such as initialing each page of the examination documentation, the use of a review checklist, or specifying the pages of the records or dates of analysis that were reviewed and relied upon.

5.10.3.5 When associations are made, the significance of the association shall be communicated clearly and qualified properly in the report.

5.10.3.6 When no definitive conclusions can be reached (e.g. results are "inconclusive"), the reason(s) shall be clearly stated in the report and be consistent with laboratory interpretation standards.

5.10.3.7 The author(s) of a test report shall have conducted, participated in, observed, supervised, or technically reviewed the examination or testing.

APPENDIX A

Latent print examination documentation (See 4.13.2.5.1)

In the latent print discipline, the examination documentation should include each examination activity conducted, the sequence of those activities and the results of the activities. The activities can include the development techniques applied, controls or reagent checks used in development techniques, photography/digital imaging used, any automated fingerprint identification system (AFIS) searches conducted, known exemplar[1] capture and/or retrieval, comparisons conducted and conclusions reached.

It is not required that the examination documentation provide a detailed description of the thought process involved in the analysis, comparison or evaluation. However, examination documentation must include which prints were analyzed, compared, evaluated and conclusions reached. Examination documentation must also acknowledge the existence and disposition of any captured latent prints which are not analyzed, compared or evaluated.

When individualization is made, the original or a legible reproduction of the known exemplar must be retained as part of the case record. When the laboratory cannot ensure that the known exemplar used and relied upon for the individualization will be maintained in an individual characteristic database or similar repository, the laboratory must maintain a legible reproduction of the known exemplar in the case record.

Images of the latent prints determined to be of value are needed for another competent examiner to evaluate what was done or interpret the data. Narrative descriptions, diagrams and drawings of latent prints alone are insufficient. Original latent prints, or legible copies must be maintained in the case record. While it is permissible to keep all prints, ASCLD/LAB does not require that original latent prints or legible copies of latent prints which have no value for comparison or which were not examined be maintained in the case record.

Digital images of latent prints electronically stored may be included as examination documentation in the case record, as defined by laboratory policy, as long as the media has the appropriate security to ensure that the images remain unchanged.

When annotations are made on original evidence, latent print lifts or photographs/digital images of latent prints, the lifts and/or photographs/digital images with the annotations or a legible copy thereof must be retained as examination documentation. Annotations may

[1] In this appendix, the word “exemplar” refers to the known friction skin impression/image(s) used to conduct the latent print comparison(s)

include, but are not limited to, designations of latent prints of value, markings regarding an identification, charting, etc.

For those laboratories which maintain custody and control of latent print evidence, the laboratory may, by policy, define latent print lifts and photographs/digital images with annotations, to be both evidence and examination documentation and be included as part of the case record. For laboratories which do not maintain custody and control of annotated latent evidence, legible copies of latent prints, evidence or photographs/digital images must be included as part of the case record.

When laboratory policy and procedure allows latent print evidence to also serve as examination documentation, the laboratory must handle the latent prints in a manner that requirements for evidence are met.