MINIMUM REQUIREMENTS FOR FRICTION RIDGE EXAMINATION

A document for emerging laboratories

International Forensic Strategic Alliance

Version 1

IFSA
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INTERNATIONAL FORENSIC STRATEGIC ALLIANCE

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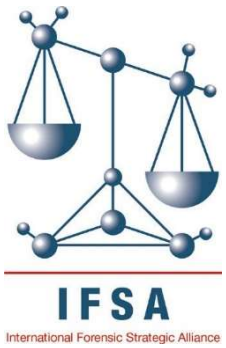
IFSA MRD 6



CONTENTS

INTRODUCTION

The International Forensic Strategic Alliance (IFSA) has developed this document to be minimum requirements which will enable emerging forensic providers in developing countries to produce scientific services to the Criminal Justice System.

The purpose of this document is to establish a baseline or starting point that must be followed to achieve reliable results. Forensic providers should build on this foundation and strive to continually improve the quality of services provided.

This document describes the minimum requirements for Friction Ridge Examination. It addresses the following framework:

1. Competence of Personnel.
2. Equipment and Consumables.
3. Collection, Analysis, Interpretation, Reporting.
4. Procedures, Protocols, Validation.
5. Quality Management.

FOREWORD

The International Forensic Strategic Alliance (IFSA) is a multilateral partnership between the six regional networks of operational forensic laboratories:

- the American Society of Crime Laboratory Directors (ASCLD)
- the European Network of Forensic Science Institutes (ENFSI)
- the National Institute of Forensic Science Australia New Zealand (NIFS ANZ)
- la Academia Iberoamericana de Criminalística y Estudios Forenses (AICEF)
- the Asian Forensic Sciences Network (AFSN)
- the Southern Africa Regional Forensic Science Network (SARFS).

IFSA works closely with its three strategic partners, Leverhulme Research Centre for Forensic Science, United Nations Office on Drugs and Crime (UNODC) and INTERPOL.

IFSA recognises the importance of a quality management framework in forensic laboratories to provide quality and standardised results, be it procedures undertaken in the field or in the laboratory.

In February 2012, at the special IFSA meeting hosted by UNODC and convened in Vienna to discuss the needs of the emerging forensic laboratories in developing countries, a decision was taken to create a set of minimum requirement documents (MRD) filling the gap in recommendations available for the current management of these laboratories.

In October 2014, the first series of three MRD documents were created. These documents have focused on the critical quality areas, using simple terms and illustrations. They were followed by other documents covering different forensic science areas. Further MRDs are still being written and the possibility for new MRDs are constantly considered and evaluated. Documents are being translated to other languages by IFSA membership as well. A glossary to explain common terms used in the document has also been included when appropriate.

These MRDs are meant to act as a start-up guide for emerging forensic laboratories to quickly establish their quality management system and scientific/technical capabilities. Once achieved, the laboratories should continue to build on this foundation and strive to continually improve the quality of services through undergoing accreditations to established standards.

In the drafting of these documents, scientific working groups and experts from the six regional forensic science networks, as well as IFSA strategic partners, made valuable contributions during the various rounds of consultation. The final MRDs presented in this series would not be possible without the involvement of all.

It is IFSA's hope that these documents will play an important role for emerging forensic laboratories in their journey towards building quality forensic services.

IFSA Board

September 2025

1 COMPETENCE OF PERSONNEL

All laboratory staff must have a clear understanding of their duties and responsibilities and should always fulfil these according to a code of ethics[1] adopted by the laboratory (see the examples in the footnote below). A laboratory must have a statement of duties and written standards of competence for each role.

The laboratory must define its roles and articulate the knowledge and experience appropriate for each role.

Specialists should be considered for:

- Development and recording of fingerprints at scenes or in the laboratory
- Analysis, Comparison and Evaluation of latent impressions to known standards (fingerprint forms).

An individual can be trained in both, the development and recording of impressions, and the analysis, comparison, and evaluation of impressions where ability and resources permit.

1.1 EDUCATION

A complete high school education should be a minimum educational requirement. Although tertiary education is beneficial, it is not essential. The very specific nature of friction ridge development and comparison allows for personnel to be trained by way of a specific, supervised, training program delivered by appropriately trained and proficiency tested staff.

1.2 TRAINING

1.2.1 Development and visualization of friction ridge skin impression

A planned and structured training program delivered by experienced practitioners should be available for those involved in processing scenes or laboratory exhibits. The training program may be delivered in-house or by appropriately qualified training organisations.

The program should be practical skills-based training delivered and assessed against defined role profiles and occupational standards. The training program should be supported by practical familiarity and mentoring gained by working with experienced personnel at a variety of crime scenes. Competence must be formally assessed at the conclusion of the program.

Minimum training requirements include:

- Evidence integrity (e.g. chain of custody and evidence contamination/destruction risks)
- Basic light theory and Photography/Imaging
- Scene processing
- Laboratory processing
- Sequencing of examination techniques

[1] Examples of Code of Ethics adopted by regional forensic science networks:

- The American Society of Crime Laboratory Directors (ASCLD) – www.ascld.org
- The European Network of Forensic Science Institutes (ENFSI) – www.enfsi.eu
- The National Institute of Forensic Science Australian New Zealand (NIFS ANZ) – www.anzfss.org
- The Academia Iberoamericana de Criminalística y Estudios Forenses (AICEF) – www.aicef.net
- The Asian Forensic Sciences Network (AFSN) – www.afsn.asia

- Principles of friction ridge science and collection
- Physical evidence collection
- Recording of fingerprints and palm prints from deceased persons
- Quality management
- Health and safety issues; and
- Relevant jurisdictional policies and legislation.

Assessment of competence can be achieved in several ways including:

- Written theory exams
- Practical assessments
- On the job assessments

Once personnel achieve the required level of competence and are authorised to undertake case work, they should be subject to ongoing and regular proficiency testing to ensure standards of competence are maintained. Proficiency testing should be conducted yearly as part of a quality management system.

1.2.2 Analysis, Comparison and Evaluation of friction ridge impressions to known standards (fingerprint forms).

A planned and structured training program delivered by experienced practitioners should be available for those involved in the Analysis, Comparison and Evaluation of friction ridge impressions. The training program may be delivered in-house or by appropriately qualified training organisations.

The program must include theory and practical skills-based training delivered and assessed against defined role profiles and occupational standards. The training program must be supported by significant practical experience and mentoring by experienced qualified personnel.

The minimum training period should be two years full-time. Competence must be formally assessed at the conclusion of the program. A trainee must not be authorised for independent casework until they meet competency requirements.

Minimum training requirements include:

- A detailed knowledge of, and application of the Analysis, Comparison, Evaluation and Verification (ACE-V) methodology for comparing friction ridge skin impressions to known standards (fingerprint forms (All friction ridge detail))
- Cognitive bias as it applies to the ACE-V methodology
- Detailed knowledge of the fundamental principles of the science of fingerprints
- Pattern types and classification
- Factors that affect the detectable life of a friction ridge impression
- Distortion as it relates to friction ridge skin impressions
- Forgery and fabrication of friction ridge impressions
- The operation of friction ridge databases including records management systems and automated fingerprint identification systems (AFIS)
- Judicial systems and the provision of opinion evidence in courts, including the preparation of court reports
- The process of peer review applied to evaluation decisions and court reports
- Quality Management
- Basic history of the origin of friction ridge impressions.

Assessment of competence can be achieved in several ways including:

- Written theory exams
- Practical assessments
- Oral boards and Moot Court assessments
- On the job assessments
- Peer review of work.

Once personnel achieve the required level of competence and are authorised to perform independent case work, they must be subject to ongoing and regular proficiency testing to ensure standards of competence are maintained. Proficiency testing must be conducted yearly as part of a quality management system.

2 EQUIPMENT AND CONSUMABLES

2.1 FACILITIES

Forensic laboratories for the development and recording of friction ridge skin impressions should contain as a minimum:

- an administrative area for general administration and analysis and comparison of impressions, and,
- a separate examination laboratory.

It is important to separate these two areas/rooms to ensure a safe environment for administrative and comparison work away from potentially harmful development techniques including powders, chemicals, and light sources.

Additional areas/rooms will be required in the following circumstances:

- If exhibits are to be stored at the laboratory, a secure property point will be required
- To store bulk chemicals used in development techniques. (This is a health and safety requirement when storing bulk quantities of chemicals).

Administrative areas used for Analysis and Comparison of friction ridge impressions should include:

- A modern computer with a current full featured operating system
- Computer monitor with at least 1080p picture quality
- Sufficient electronic storage infrastructure to safely keep digital friction ridge image evidence over extended time periods
- A computerised forensic case management system is highly recommended.

Forensic laboratory friction ridge examination areas should contain as a minimum:

- Robust benchtops capable of being regularly cleaned (stainless steel is recommended)
- Good ventilation
- Excellent lighting
- A plumbed sink with hot and cold water
- Appropriate waste disposal arrangements.

2.2 EQUIPMENT

2.2.1 Scene Development Equipment

For friction ridge examinations at crime scenes, minimum required equipment includes:

- A bright white light (torch)
- Fingerprint powder brushes (one for each colour of fingerprint powder)
- Black and white fingerprint powder
- Lifting tape (thick book binding adhesive tape or commercial lifters)
- Evidence labels with a scale (preferably with unique identifier)
- Exhibit packaging, including paper and plastic bags
- Evidence tape

- Scale ruler
- Evidence markers
- Digital camera and separate flash (8 megapixels or better) for scene and exhibit photography
- Note taking equipment.

Additional basic equipment to enhance capability includes:

- Small fingerprint brush for improving the clarity of impressions developed with powders
- Additional fingerprint powders including magnetic, bichromatic and fluorescent powders
- Magnetic fingerprint powder applicator
- Blue light source (in the vicinity of 450 - 550 nm) for use with fluorescent powders and for general searching
- Forensic casting material.

Advanced equipment includes:

- Dedicated alternate light source with multiple light bands from Ultraviolet through to infrared
- A cyanoacrylate (superglue) vapor delivery system for large areas including rooms, houses, sheds, shipping containers, etc.
- Delivery systems (high quality spray bottles/units) for chemical reagents such as:
    - Amido Black/Coomassie Blue/Acid Yellow 7 (Stains for blood enhancement)
    - Ninhydrin/Indandione zinc (Amino acid reagents for fingerprint development on porous and semi porous surfaces)
    - Iodine Benzoflavone.

2.2.2 Laboratory Development Equipment

The equipment available within a laboratory will dictate the type and quantity of exhibits that can be examined. Exhibits delivered to a Forensic Facility can be examined in a laboratory using the same basic equipment used at crime scenes. More advanced laboratory examinations require specialized equipment.

As a minimum, a friction ridge laboratory should obtain facilities that allow:

- Superglue fuming (a sealed chamber capable of holding exhibits and an amount of superglue)
- The use of Ninhydrin (full face organic vapor respirator or fume hood to allow for preparation and use).

These two techniques should be viewed as a minimum standard for detection of friction ridge impressions on porous and non-porous exhibits.

Desirable equipment includes:

- A commercial superglue fuming cabinet with temperature and humidity control
- Forensic temperature and humidity-controlled oven for amino acid reagents
- A forensic light source that provides commonly used light wave lengths (white light, U.V., 415, 450, 470, 505,530, 550 nm) and a set of colored glasses and filters for viewing and photography of images
- Laboratory fume hood for chemical reagent preparation and use
- An appropriate iron press (for heating chemically treated porous exhibits without causing damage).

The use of chemical reagents will require a laboratory to possess suitable glassware and scientific equipment for the storage, preparation and use of reagents. These items include:

- Glass beakers
- Glass trays
- Measuring cylinders
- Stirrers
- Scales
- Pipettes
- Chemical storage bottles.

Consideration should also be given to facilities for the safe disposal of chemicals after use. The implementation of a Reagent log to track the use of laboratory chemicals and compounds should also be considered. This log should include fields for tracking expiration dates and lot numbers to maintain quality control, and fields for vendor and catalogue number for expediting reorders.

A forensic laboratory should possess a safety shower and eye wash station for the safety of personnel using the facility who may be exposed to chemical spills or splashes.

2.2.3 Friction Ridge Impression Analysis, Comparison and Evaluation resources

The analysis, comparison and evaluation of friction ridge impressions can, and has been, performed using a magnifiers and fine pointers for many years. This represents the minimum required resources for conducting the analysis, comparison, and evaluation of impressions. With the current ease of access to computers this method is discouraged.

It is highly recommended that forensic friction ridge laboratories utilise computer-based systems for viewing, analysing, comparing, and evaluating impressions. This includes the recording of impressions via digital camera and the subsequent use of imaging software to view images side by side on a computer monitor.

A laboratory should use the following equipment:

- Automated Fingerprint Identification Systems to search against data bases of known impressions
- Imaging equipment (i.e. cameras and stands) and software that allow for capturing impression images and side by side viewing and annotation of those images (specialised forensic software or generic imaging software may be used).

When impressions are analysed and compared on screen, the images can be annotated to identify what the examiner observed. These electronic files can then be printed or saved and represent notes made by the examiner at the time of the source evaluation.

Consideration should be given to appropriate storage of media for recorded friction ridge impressions (i.e. DVD's or secure server) and for the storage of physical photos and lifts (i.e. lockable cabinet in secure facility).

2.3 CONSUMABLES

Friction ridge laboratories use several resources that will require continual replenishment. These include personal protective equipment such as:

- Disposable face masks
- Nitrile/rubber gloves
- Cotton gloves
- Hair nets
- Shoe covers
- Disposable coveralls
- Organic vapor respirator filters.

Other consumables include:

- Fingerprint powders
- Chemical reagents
- Chemical carrier solutions
- Evidence bags
- Evidence tape
- Marker pens.

A comprehensive list of development techniques can be obtained from the U.K. Home Office Fingerprint Source Book [1]. Fingerprint powders and chemical reagents must be sourced from certified and approved suppliers. Consumables with a specified expiry date (shelf life) must be monitored.

3 COLLECTION, ANALYSIS, INTERPRETATION & REPORTING

3.1 COLLECTION

General scene examination procedures can be found in IFSA document *Minimum Requirements for Crime Scene Investigation Version 2*.

The process for friction ridge impression detection and development is determined by several factors including:

- The substrate (e.g., material(s), size, shape, color, porosity, texture, condition)
- The type(s) of mark (e.g., latent, blood, grease)
- The environment to which the item has been exposed (e.g., rain, heat)
- The likely age of the mark(s).

The process for friction ridge impression detection should be conducted from least to most destructive using the following steps:

- Visual examination
- Development process selection (working from least to most destructive)
- Locating, developing, and recovering/recording impressions
- Impression documentation
- Photography.

When collecting friction ridge impressions from scenes it is vital to locate each impression within the scene. This can be achieved using notes and photographs. The use of a scale label to identify each impression is essential. Ideally the scale label will include a unique identifying number allowing for integration with a computerised forensic case management system.

Photographs should identify the location of each impression using:

- A broad scene locating photograph
- A mid-range locating photograph in which a scale label can be viewed
- An examination quality close-up photograph showing the impression and scale label.

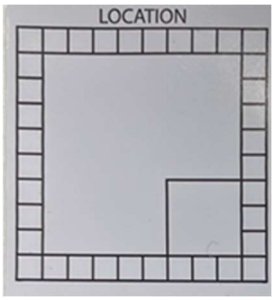
The scale label photographed together with the impression must include the following details:

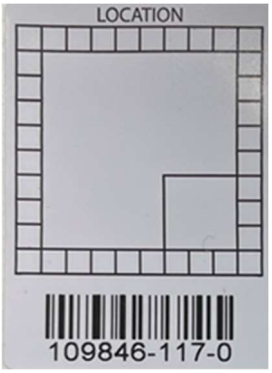
- Case number
- Sequential unique identifying number of the impression (e.g. 1, 2, 3)
- Initials of the examiner

The following information may also be added, but is not necessary:

- Date
- Address of scene
- Location of the impression
- Other identifying particulars (e.g. Complainant, vehicle registration number).

Example of 30mm scale labels with and without a unique identifying number.





For detailed procedures and methods for the development of friction ridge impressions, the open-source publication *Fingermark Visualisation Manual* produced by the United Kingdom Home Office is an excellent resource [1].

3.2 ANALYSIS

STANDARD FOR FRICTION RIDGE IDENTIFICATION.

A laboratory shall define the standard for friction ridge identification. There are two standards:

- Numeric Standard

  The laboratory shall establish the numerical standard (threshold)

  In Europe a widespread numerical threshold is twelve (12) features/minutiae

- Holistic approach (Non-numerical standard).

FRICTION RIDGE COMPARISON METHODOLOGY

The laboratory shall establish the methodology for friction ridge examination. There are two options:

ACE-V (Analysis, Comparison, Evaluation and Verification), methodology which includes both qualitative and quantitative aspects:

- **Analysis Phase**

  This is an information gathering stage where an examiner identifies features of the unknown impression they will use during the comparison and evaluation phases of the methodology.

- **Comparison Phase**

  During this phase the examiner compares the information/features they have located in the unknown impression to those in the known impression. It is important to work from the unknown impression to the known impression to reduce the possibility of cognitive bias effects.

- **Evaluation Phase**

  The evaluation occurs when an examiner forms a conclusion based upon their analysis and comparison of the unknown and known impressions. The evaluation will be Identification, Exclusion, or Inconclusive.

- **Verification Phase**

The verification occurs when an independent, appropriately qualified examiner repeats the ACE steps and forms their own conclusion. The evaluation can be reported when the first and second examiners agree.

Greater detail on the ACE-V methodology can be obtained from the open-source publication *The Fingerprint Sourcebook* produced by the United States Department of Justice [2].

ACEC-V (Analysis, Comparison, Evaluation, Conclusion and Verification)**,** Interpol European Expert Group on Fingerprint Identification methodology [3] [4]:

- ***Analysis Phase.***

  The laboratory shall define the friction ridge impression information able to be used during the analysis. Friction ridge impression information is identified in three levels: First Level, Second Level and Third Level.

  The observations made at the analysis phase must be recorded.

- ***Comparison Phase***

  The comparison phase begins after the examiner has analysed and recorded observations for the impression.

  The objective is to determine whether there is agreement of information in two impressions.

- ***Evaluation Phase***

  After the comparison phase an expert weighs up what they have found in both impressions. This includes all the information about similarity and dissimilarities and possible explanations.

- ***Conclusion Phase***

  The laboratory shall establish the possible conclusions, for example: Identification/Individualization, Exclusion or Inconclusive.

- ***Verification Phase***

  Reproducibility is vital for a scientific process to be valid. A second expert must independently apply the same method and standards and arrive at their own evaluation. When each examiner comes to the same evaluation the outcome can be reported.

  Blind verification is recommended to reduce the possible effects of cognitive bias.

3.3 INTERPRETATION

When a friction ridge impression is identified by an examiner, they can identify the location, orientation, and area of friction ridge skin from which the impression originated (e.g. right thumb on a door facing up). Any interpretation of the activity that caused the impression to be placed upon a surface is an opinion based on observable evidence.

Unless the circumstances of the location and development of the impression are exceptionally definitive in nature, it is not recommended that examiners attribute a particular act as causing the deposition of the friction ridge impression.

3.4 REPORTING [5] [6] [7]

In all instances, the author of a forensic report shall be concerned solely with reporting the results and opinions based on forensic examinations. Reports should be clear to the reader, so that it is readily understood what was done, what was concluded, and any limitations associated with the process.

All written reports must include:

- The date of issue

- The name of the forensic facility
- A unique case identifier
- The name of the person responsible for the report
- A means of ensuring that each page is a part of the report
- A means of identifying the end of the report.

Further, written reports for legal proceedings should also include the following:

- The fundamental principles of the science of fingerprints and an explanation of the methodology used (i.e. ACE-V or ACEC-V)
- The collection and continuity of exhibits (development, recording and storage of impressions/images)
- Analysis and comparison material (unknown and known impressions)
- Results
- Limitations
- Opinions
- Qualification and experience of the author
- Definitions or explanations for technical terms used.

All written reports must be technically and administratively reviewed by an appropriately qualified examiner prior to release.

3.5 DATABASES

It is highly recommended that laboratories store digital images of their known source friction ridge forms and unknown exhibit impressions. This allows for searching by automated systems and the use of digital workflows which allow for significantly faster processing.

There are several commercially available Automated Fingerprint Identification Systems (AFIS). These systems allow for the maintenance of criminal and civil records and enable efficient searching of large databases. AFIS systems range from large systems capable of storing and searching many millions of impressions and known source friction ridge forms, to smaller systems that operate on a single computer searching smaller locally saved databases.

Data bases will consist of:

- Computerized storage of digital images of known source friction ridge forms
- Computerized storage of unknown scene impressions.

Even for small databases, the use of automated systems will reduce searching times from days or weeks to minutes. The use of an automated fingerprint identification system is essential for a modern friction ridge laboratory.

Digital databases allow for efficient searching of:

- Unknown impressions to known impressions (identification of exhibit/scene impressions)
- Known impressions to known impressions (identification of individuals)
- Unknown impressions to unknown impressions (linking of unsolved crime scenes).

4 PROCEDURES, PROTOCOLS AND VALIDATION

4.1 PROCEDURES AND PROTOCOLS

All friction ridge laboratories must develop, maintain, and use standardized procedures to ensure consistent operational capabilities and outcomes. In-house developed procedures shall be tested prior to application to demonstrate they are fit-for-purpose. Procedures shall be documented, tracked, and controlled. Significant changes in protocols or procedures must be verified, documented, and approved by an authorized person before use. Approved changes shall be communicated effectively to all staff. Procedures may be separated into administrative/management procedures and technical procedures.

Administrative/management procedures will cover areas including:

- Friction ridge comparison methodology, implementation, and use
- Conflict resolution protocols
- Operation of databases, including known standard records management and search protocols
- Results reporting
- Preparation of evidence for court
- Scene examination
- Exhibit storage and management
- Equipment maintenance
- Day to day laboratory operations (e.g., Rostering, leave, staff development).

Technical procedures will be specific to each development technique authorized for use by a forensic laboratory. Each procedure must be sufficiently detailed to ensure the processes can be reliably repeated, enabling consistent application of the technique.

4.2 VALIDATION

A laboratory should use validated methods and procedures. Validation is confirmation through examination and objective testing that a method is appropriate for its intended purpose. When a laboratory uses validated methods commonly accepted by the scientific community, it will only be necessary to verify that the method is appropriate for use in a particular environment.

Commonly used techniques for friction ridge impression development are validated for that purpose and procedures for their use are readily available from their manufacturer, in textbooks, or online. Prior to implementation a particular procedure must still be tested locally to validate that it works in that environment.

5 QUALITY MANAGEMENT

A quality management system is essential for all laboratories and ensures that staff are appropriately qualified and maintain a minimum level of competence. A quality management system should regularly audit staff work to ensure compliance with policies and procedures. Implementation of a Quality Management system promotes continual improvement within a laboratory and promotes confidence in results by external parties.

As a minimum, a quality management system should:

- Record staff training and achievements
- Audit examinations at regular intervals (To ensure compliance and foster continual improvement)
- Report and track corrective actions.
- Annual proficiency testing
- Maintenance and calibration of instruments/equipment.

A more developed Quality Management System will additionally include:

- Required professional development
- Court testimony monitoring
- Exhibit management audits

A dedicated quality manager is highly beneficial however it is recognised this is not possible in all laboratories. Staff conducting audits should not audit their own examinations. Where the laboratory only has a single examiner that examiner should periodically review their own work.

No examiner or laboratory is perfect, and it is expected that errors will be identified and investigated through a Quality Management system. The system should not be punitive in nature and instead seek to improve practices. A laboratory demonstrates professionalism by identifying deficiencies and continually improving.

6 GLOSSARY

The following glossary is not to be considered an exhaustive list of terminology encountered in Latent Prints however these terms are widely utilized in the forensic community [8].

COMPETENCE	The standards that should be achieved for the individual to undertake casework.
COGNITIVE BIAS	A systematic error in processing and interpreting information by an individual which affects their decisions and judgments.
EXAMINATION	A focused inspection of an item or surface with the objective of locating types of evidence. This differs from the more cursory inspection that may be part of an initial assessment.
FRICTION RIDGE IMPRESSION	An impression of the friction ridges of all or any part of the fingers, palms, and soles of the feet or toes.
FORENSIC CASE MANAGEMENT SYSTEM	A computer program that allows for storage of all forensic case information including evidence recording and collection, forensic examinations, and digital image storage, and analysis results.
FORENSIC LIGHT SOURCE	Optical searching tool used to detect evidence that may not be visible to the naked eye. A forensic light source is made up of a powerful lamp containing the ultra-violet, visible and infrared components of light. It filters down the light into individual colour bands (wavelengths) that enhance the visualization of evidence by light interaction techniques including fluorescence (evidence glows), absorption (evidence darkens), and oblique lighting (small particle evidence revealed).
ITEM	A general term used to describe all physical material that can potentially be removed from a crime scene for treatment in a laboratory (e.g. plastic bags, knives, documents), as opposed to non-removable parts of the scene (e.g. wall s, ceilings).
MARK	The term used to refer to an area of friction ridge detail from an unknown donor. Usually recovered, enhanced, or imaged from a crime-related item, or directly retrieved from a crime scene
MOOT COURT	A simulation of a court trial conducted to test an examiner's ability to provide forensic testimony in court.
PROCEDURE	An established or official way of doing something. A series of actions conducted in a certain order or manner.
ORAL BOARD	A process of oral questioning of a candidate to identify the level of knowledge a candidate has in a particular area. The questioning will be conducted by at least three qualified examiners.
PROFICIENCY TESTING	An ongoing process where unknown samples are tested on a regular basis by the laboratory and compared with the known/ consensus identities or values. Internal proficiency tests are conducted by the laboratory itself; external proficiency tests are conducted by an independent agency.
SCENE	Location where forensic evidence may be located. A primary scene denotes the original or initial scene, and secondary or tertiary scenes denote

	subsequent scenes or locations containing evidence relating to the primary scene.
VALIDATION	The process of providing objective evidence that a method, process, or device is fit for the specific purpose intended. It is a method to check the reliability of a process and the outcomes of that process

7 REFERENCES

[1] Home Office, United Kingdom, “Fingerprint Source Book v2.0”, (2018), https://www.gov.uk/government/publications/fingerprint-source-book [2] National Institute of Justice, United States Department of Justice, “The Fingerprint Sourcebook” (2012), https://www.ojp.gov/pdffiles1/nij/225320.pdf

[3] Interpol European Expert Group on Fingerprint Identification IEEGFI, “Methods for Fingerprint Identification”. (2000 and 2004)

[4] European Fingerprint Working Group ENFSI, “Best Practice Manual for Fingerprint Examination V.1”. (2015)

[5]Scientific Working Group on Friction Ridge Analysis, Study and Technology SWGFAST, “Standards for Examining Friction Ridge Impressions and Resulting Conclusions (Latent/Tenprint) V.1”. (2011)

[6]Expert Working Group on Human Factors in Latent Print Analysis, “Latent Print Examination and Human Factors: Improving the Practice through a Systems Approach”. (2012)

[7]Standards Australia, “AS 5388.4 Forensic Analysis Part 4: Reporting” (2013)

[8] Scientific Working Group on Friction Ridge Analysis, Study and Technology SWGFAST, “Standard Terminology of Friction Ridge Examination V.3”. (2011)

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