



# ARKANSAS STATE CRIME LABORATORY



## *LATENT PRINT SECTION* *QUALITY MANUAL*

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## **Section 1: Introduction**

The purpose of this Quality Manual is to establish general guidelines for the handling of latent print, footwear and tire impression evidence; the examination of latent print, footwear and tire impression evidence; the reporting of latent print, footwear and tire impression examination results; and the response to court commitments.

### **1.1 Latent Prints**

The basic principles of latent print identification are that fingerprints (palm prints, Footprints and toe prints as well) are unique to an individual; they are not shared by any other person nor are they repeated anywhere else on that individual's body, and permanent; they do not change from birth until after death except normal growth and barring injury.

Positive identification is established by the presence of sufficient individual friction ridge characteristics in both the latent and the known prints, having the same unit relationship and relative position to each other, and lacking any unexplainable differences between the two prints.

### **1.2 Footwear Comparison**

The basic principles of footwear identification are that items of footwear produced by the same method share common class characteristics, and that through wear, these items of footwear acquire accidental, or individualizing, characteristics that are unique to that item. Because the individualizing characteristics are wear-related, it must be recognized that some items may not have acquired sufficient characteristics to be identified to a single shoe, or other items may have acquired additional characteristics (if worn during the time span between the incident and the recovery of the footwear) that will preclude identification to a single shoe.

### **1.3 Tire Track Comparison**

The basic principles of tire impression identification are that tires produced by the same method and on the same molds share common class characteristics, and that through use and wear the tires acquire accidental characteristics that are unique to each individual tire. Because these accidental, or individualizing, characteristics are wear-related, it must be recognized that some tires may not have acquired a sufficient number of accidental characteristics to allow them to be positively identified as the source of an impression. Conversely, tires that are used for a significant period of time between the occurrence of the crime and the time of recovery may acquire additional accidental characteristics that would preclude identification.

## **1.4 Goal**

It is the goal of the Latent Print Section of the Arkansas State Crime Laboratory to insure the quality, integrity and accuracy of the examinations as set forth in the Latent Print Mission Statement and to:

1. Provide such services to the Criminal Justice System in accordance with the policies of the laboratory.
2. Provide expert witness testimony for criminal judicial proceedings in accordance with the policies of the laboratory.

## **1.5 Objective**

It is the objective of the Quality Assurance program to:

1. Monitor, on a routine basis, the examinations of the latent print examiners by means of quality control standards and proficiency tests.
2. Verify that all section protocols and procedures are within established performance criteria, that the quality and validity of the examinations are maintained.
3. Ensure that problems are noted and that corrective action is taken and documented.

## 1.6 Individual Character Database

The Known finger and palm prints of the Automated Fingerprint Identification System (AFIS) are entered and controlled by the Arkansas State Police Identification Bureau. The records are stored by State Identification Numbers (SID). The Arkansas State Crime Laboratory has no control over these records.

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## **Section 2: Personnel Qualifications and Training**

### **2.1 Chief Latent Print Examiner**

A four year degree from an accredited college or university with a major in forensic science, criminalistics, or in a physical or natural science, or equivalent and five years of professional experience as a Latent Fingerprint Examiner in a forensic laboratory or identification division. Should be an IAI Certified Latent Print Examiner. In addition, completion of the FBI Administrative Advanced Latent Fingerprint School is required.

Professional experience as a latent fingerprint examiner in a recognized forensic laboratory, institution, or an identification division may be substituted on a one year work time for one year of the required educational background. The individual must have testified as an expert in the field of latent fingerprint identification in a court of law.

### **2.2 Latent Print Examiner**

A four year degree from an accredited college or university with a major in forensic science, criminalistics, or in a physical or natural science or equivalent and one year of professional experience as a Latent Fingerprint Examiner in a forensic laboratory or identification division. In addition, completion of the Arkansas State Crime Laboratory Latent Print Examiner Training Program or a comparable program from another forensic laboratory or institution is required.

Professional experience as a latent fingerprint examiner in a recognized forensic laboratory, institution, or an identification division may be substituted on a one year work time for one year of the required educational background. The individual should have testified as an expert in the field of latent fingerprint identification in a court of law.

### **2.3 Latent Print Examiner Trainee**

Individuals with a four year degree from an accredited college or university with a major in forensic science, criminalistics or in a physical or natural science may be considered qualified for a latent print analyst trainee position.

An individual selected as a latent print analyst trainee must be able to successfully complete the Arkansas State Crime Laboratory Latent Fingerprint Training Program.

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## Section 3: Facilities

The latent print section consists of six office areas, conference room, Morehits® Imaging room, IAFIS/ACIC/printer room, AFIS room, powder processing room, cyanoacrylate and chemical processing room, laser/ALS room and a footwear/tire impression processing/ File room room.

The main portion of the latent print section which incorporates all but the footwear/tire impression / File room and three offices is access controlled by security card. Access requires a security card.

Access to all of the office areas, footwear/tire impression room, file room and AFIS room requires a key.

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## Section 4: Evidence Control

### 4.1 SCOPE:

Evidence must be preserved to prevent significant deleterious change or alteration during the examination through the completion of analysis. Evidence must be kept secure and the chain of custody must be maintained once an examiner from the Latent Print Section has assumed custody of that evidence.

### 4.2 BASIS:

In order to maintain the security, chain of custody and to prevent change, all evidence must be stored under proper seal, in the proper packaging and in a secure area.

### 4.3 PROCEDURES FOR EVIDENCE HANDLING:

Evidence will be checked out from Evidence Receiving by the examiner assigned to the case in accordance with evidence policies.

#### 4.3.1 Evidence handling upon initial examination:

- Be aware of all the sections and testing that involves the evidence. Take the necessary precautions to preserve the integrity of the evidence.
- Descriptions of evidence containers, sealing, initials (this includes both outer and inner packaging) and evidence that is to be examined will be recorded in the case notes. Any discrepancies should be noted.
- When evidence containers are opened for examination, opening through the seals of other individuals who handled the evidence should be avoided, if at all possible.
- When evidence containers are opened for examination, the contents should be inventoried. This inventory should be matched to the Crime Laboratory Submission Sheet. The evidence will be marked according to Latent Print Section protocol.
- Discrepancies shall be noted in the examiner's notes. If deemed necessary, the submitting officer or agency will be notified. All case-related communication will be documented on the proper form.
- Evidence in progress may be stored in the examiner's office and secured.
- Whenever the examiner is away from his work area for any extended period of time, evidence being worked on must be placed in a secure area.

- Each piece of evidence or its most appropriate proximal container must bear the following identifiers:
  1. Laboratory number (e.g. YYYY-00000)
  2. Item number
  3. Examiner's initials
  
- After evidence is examined and latent prints of value for identification purposes are developed or noted, the latents will be preserved from change. A permanent record of all latent prints of value will be made by lifting, photography or by digital imaging. In the case of latent lifts or inked prints on checks a photocopy is sufficient.
  
- If the developed latent impression can only be recorded or collected by photography or digital imaging and the image itself is not recoverable, the photograph or negative of the image must be treated as evidence.
  
- The Morehits® Forensic Imaging System will be used for imaging of latent impressions.
  
- If reusing the original container is impractical, a new evidence container may be used. It shall also be marked and sealed according to laboratory procedures and the original evidence packaging shall be maintained, either inside the second evidence container or complete documentation along with a picture of original packaging. Documentation of the change in packaging along with description must be input into the computer for future reference.
  
- The evidence will be returned to Evidence Receiving in a timely manner after completion.
  
- All pertinent information about the evidence will be recorded in the examiner's notes. Case documentation must be sufficient to allow a technical peer review to be conducted.
  
- Drug evidence will be separated prior to examination by the Latent Print Section, except under special circumstances.

## Section 5: Analytical Procedures

### 5.1 Friction Ridge Comparison Procedures

- 5.1.1 All items submitted for examination will be analyzed using a variety of visual, chemical, physical and photographic methods depending on the type of evidence presented and the facts of the case in point.
- 5.1.2.1 All friction ridge detail observed or developed on an item of evidence will be examined to determine if the ridge detail is suitable for identification. This determination of suitability may be accomplished by visual examination using the unaided eye, magnification, photographic reproductions, or latent lifts.
- 5.1.2.2 All latent prints which are determined to be suitable for identification will be preserved, by digital imaging, lifting, or photocopying in the case of lifts or inked prints on checks and retained in the Laboratory for comparison purposes.
- 5.1.2.3 All latent prints suitable for identification will be compared to such known or recorded prints as are available. It is the responsibility of the submitting agency to provide the recorded or known finger and palm prints of the individuals to be compared. The examiner will retrieve known fingerprint records from the Automated Fingerprint Identification System (AFIS) or in some instances known fingerprint cards from Arkansas State Police Identification files.
- 5.1.2.4 A side-by-side comparison of the latent print to the known print will be conducted looking at the type, relative position and unit relationship of the friction ridge characteristics present in each print.
- 5.1.2.5 All comparisons resulting in the identification of a latent print will be verified by another qualified latent print examiner. The examiner verifying the identification will initial and date the item, or the reproductions of the latent print and the known print, that are retained in the case file.
- 5.1.2.6 Unidentified developed latent fingerprints suitable for identification will be searched through the Arkansas Automated Fingerprint Identification System (AFIS) at the latent print examiner's discretion.
- 5.1.2.7 Other laboratory techniques and variations of techniques may be employed, when deemed necessary by the examiner or a laboratory supervisor. The complex nature of these tests may require changes in the general procedure. All

- deviations from standard procedure will be documented and rationalized in the case file as appropriate.
- 5.1.2.8 An identification is established when the friction ridge characteristics present in the latent print and the known print agree in type, relative position and unit relationship, and there are no unexplainable differences between the two prints.
  - 5.1.2.9 A non-identification is established when the friction ridge characteristics in the latent print do not agree in type, relative position, and unit relationship with the characteristics present in the known print.
  - 5.1.2.10 Known prints that are of poor quality or are incompletely reproduced may preclude the identification or non-identification of a latent print that is suitable for identification. The latent print examiner will notify the submitting agency that completely rolled prints are needed to conduct a complete comparison.

## **5.2 Footwear Comparison Procedure**

- 5.2.1.1 All items submitted for examination will be analyzed using a variety of visual, chemical, physical and photographic procedures depending on the type of evidence presented and the facts of the case in point.
- 5.2.1.2 Every footwear impression observed or developed on an item of evidence will be marked and examined. This analysis may be accomplished by visual examination using the unaided eye, visual examination with magnification, photographic reproductions, or latent lifts.
- 5.2.1.3 All footwear impressions observed will be preserved, preferably by photography and/or a lifting technique, and retained in the laboratory for comparison purposes.
- 5.2.1.4 All footwear impressions will be compared to such footwear, or the recorded exemplars of footwear, as are submitted pertaining to the case. It is the responsibility of the submitting agency to provide the footwear, or recorded exemplars of footwear, to be compared.
- 5.2.1.5 A side-by-side comparison or an overlay comparison of the footwear impression to the known footwear, or exemplars produced from that footwear, will be conducted looking at the class, wear and individual characteristics present in each. The latent print examiner will choose the comparison technique to be used.
- 5.2.1.6 All comparisons resulting in the identification of a footwear impression will be verified by another qualified latent print examiner. The examiner verifying the

- 5.2.1.7 Other laboratory techniques and variations of techniques may be employed, when deemed necessary by the examiner or a laboratory supervisor. The complex nature of these tests may require changes in the general procedure. All deviations from standard procedure will be documented and rationalized in the case file as appropriate.
- 5.2.1.8 An elimination is established when the class, wear and individual characteristics present in the footwear impression do not agree with the class, wear and individual characteristics present on the submitted footwear or exemplars.
- 5.2.1.9 An identification is established when the class, wear and individual characteristics present in the footwear impression and the submitted footwear or exemplars agree in sufficient quantity, and there are no unexplainable differences between the impression and the known.
- 5.2.1.10 A footwear impression that has agreement in class and wear characteristics and some individual characteristics in agreement with a specific footwear item, but these individual characteristics are of poor quality or few in number, the footwear impression may be determined to be highly probable that it was made by the specific shoe.
- 5.2.1.11 A footwear impression that has agreement in class and wear characteristics with a specific footwear, but is lacking sufficient individual characteristics to be identified to that footwear item, may be determined to be consistent with that footwear item.
- 5.2.1.12 A footwear impression that has limited agreement in class and wear characteristics to a specific footwear item, and is lacking sufficient characteristics to eliminate said footwear item as the source of the footwear impression, may be determined to be similar to that footwear item.
- 5.2.1.13 A footwear impression that lacks class, wear and individual characteristics is of too small an area, or lacks the corresponding areas of the footwear may be determined to lack an established correlation between the footwear impression and the submitted footwear.

### 5.3 Tire Track Comparison Procedure

- 5.3.1.1 All items submitted for examination will be analyzed using a variety of visual, chemical, physical and photographic procedures depending on the type of evidence submitted and the facts of the case.
- 5.3.1.2 Every tire impression observed or developed on an item of evidence will be marked and examined. This analysis may be accomplished by visual examination using the unaided eye, visual examination with magnification, photographic reproductions, or latent lifts.
- 5.3.1.3 All tire impressions observed will be preserved, preferably by photography and/or a lifting technique, and retained in the Laboratory for comparison purposes.
- 5.3.1.4 All tire impressions will be compared to such tires, wheels, or the recorded exemplars of the same, as are submitted pertaining to the case. It is the responsibility of the submitting agency to provide the tires, wheels or exemplars that are to be compared.
- 5.3.1.5 A side-by-side comparison or an overlay comparison of the tire impression to the known tire, or the exemplars produced from the tire, will be conducted looking at the class, wear and individual (accidental) characteristics present in each. The latent print examiner will choose the comparison technique to be used on a case by case basis.
- 5.3.1.6 All comparisons resulting in the identification of a tire impression to a specific tire will be verified by another qualified latent print examiner. The examiner verifying the identification will initial and date the photographs or lifts of the tire impression and the exemplars of the tire that are retained in the case file.
- 5.3.1.7 Other laboratory techniques and variations of techniques may be employed, when deemed necessary by the examiner or a laboratory supervisor. The complex nature of these tests may require changes in the general procedure. All deviations from standard procedure will be documented and rationalized in the case file as appropriate.
- 5.3.1.8 An elimination is established when the class, wear and individual characteristics present in the tire impression do not agree with the class, wear or individual characteristics present on the submitted tires or exemplars.
- 5.3.1.9 An identification is established when the class, wear and individual characteristics present in the tire impression and the submitted tire or exemplars agree in

sufficient quantity, and there are no unexplainable differences between the impression and the known.

- 5.3.1.10 A tire impression that has agreement in class and wear characteristics with some individual characteristics in agreement with a specific tire, but the shared individual characteristics are of poor quality or few in number, then the tire impression may be determined to be highly probable that it was made by that specific tire.
- 5.3.1.11 A tire impression that has agreement in class and wear characteristics with a specific tire, but is lacking sufficient individual characteristics to be identified to that tire, may be determined to be consistent with that tire.
- 5.3.1.12 A tire impression that has limited agreement in class and wear characteristics to a specific tire, and is lacking sufficient individual characteristics to eliminate that tire as the source of the tire impression, may be determined to be similar to that tire.
- 5.3.1.13 A tire impression that lacks class, wear and individual characteristics may be determined to lack an established correlation between the tire impression and the tire.

## **5.4 Processing Methods**

The purpose and scope of the following procedures is to provide a guide for the selection of latent print processing and the use of equipment. The methods listed are but a few of the more popular techniques used by latent print examiners, and is not meant to exclude other recognized or published methods of processing.

The selection of a particular method or techniques for processing items of evidence is left up to the discretion of the latent print examiner.

Waste chemicals will be discarded in appropriate waste containers.

### 5.4.1 Cyanoacrylate (Superglue) Fuming Chamber

This provides the procedure for processing evidence by the Cyanoacrylate (Superglue) Fuming process.

#### 1. APPARATUS and EQUIPMENT

- Cyanoacrylate Fuming Chamber
- Evidence rack
- Mug warmer
- Aluminum weighing Boat
- Timer
- Magnifying glass

#### 2. PROCEDURE

- Place evidence in chamber using evidence rack for support. Air needs to circulate around evidence.
- Check that beaker has sufficient hot water in it.
- Add appropriate amount of liquid cyanoacrylate (superglue) to aluminum weighing boat.
- Place aluminum weighing boat with cyanoacrylate (superglue) on the mug warmer.
- Close and latch door.
- Set the timer for 30 minutes.
- Open the doors and evacuate the chamber and then remove evidence.
- Close door.
- Examine evidence with magnifying glass.
- Enhance the developed latent prints if necessary with powder or dye stains as needed. Lift and/or photograph/digital image the developed latent prints.



## 5.4.2 Visual Examination

This provides the procedure for the visual examination of latent print evidence.

### 1. APPARATUS and EQUIPMENT

- Room Light
- Forensic light source (Omnichrome)
- Magnifying glass

### 2. PROCEDURE

- Room Light: The piece of evidence is rotated under room light and examined for development of friction ridge prints. The latent prints will become visible due to the difference in the reflection of the light by the latent print when compared to the reflection of the light by the background.
- Forensic light source: In addition to white light, the Forensic light source can also use light of different colors.

### 3. INTERPRETATION OF RESULTS

- Examine any developed latent prints with magnifying glass.
- Digital image with Morehits®

### 5.4.3 Patent Print Examination

This provides for the procedure to examine evidence for patent prints.

1. APPARATUS and EQUIPMENT:

- Room light
- Magnifying glass

2. PROCEDURE:

- The patent print is observed in room light.

3. INTERPRETATION OF RESULTS

- Examine any patent prints with magnifying glass.
- Digital image with Morehits®

#### 5.4.4 Inherent Fluorescence Examination

This provides for the procedure for examining evidence for latent prints by inherent fluorescence.

##### 1. APPARATUS and EQUIPMENT

- Forensic Light Source with goggles (Omnichrome)
- Magnifying glass

##### 2. PROCEDURE

- The evidence is examined with the forensic light source while the examiner is wearing the appropriate goggles.

##### 3. INTERPRETATION OF RESULTS

- Examine any latent prints with magnifying glass.
- Digital image with Morehits®

### 5.4.5 Electrostatic Dustprint Operation

The Electrostatic Dustprint Lifter is a kit that is used in the detection and recovery of impressions in dust.

#### 1. APPARATUS and EQUIPMENT

Electrostatic Dustprint Lifter kit

1. "Directions for the Use of the Kinderprint Electrostatic Dustprint Lifter"
2. Power unit
3. Metal ground plate
4. Ground leads
5. Alligator clip
6. Antenna ground
7. Static Neutralizing cloth
8. Flashlight
9. Insulated hand roller
10. Tube with metalized lifting film

B. Flat boxes, i.e. unused pizza boxes, for preservation and transportation

#### 2. SAFETY CONSIDERATIONS

- Keep power unit dry.
- Should not be used by persons with pacemakers.
- Follow manufacturer's safety guidelines in accompanying manual.

#### 3. PROCEDURE

- Refer to manufacturer's booklet- "Directions for the use of Kinderprint Electrostatic Dustprint Lifter"- located in carrying case.
- Lift will be placed into flat box, metallic side down, and taped at corners.

#### 4. QUALITY CONTROL

- Power Light On

- Electrical Activity (sparking) between Probe and Metalized Lifting Film when contact is made with power "On"
- Quality Control Testing of the Instrument will be as follows:
  1. At an area not in the immediate area of the area to be examined.
  2. The examiner will step in an area or accumulation of dirt or dust.
  3. Step on a clean piece of paper (loose leaf or newspaper).
  4. Perform the procedure per "Directions for Use Kinderprint Electrostatic Dust Print Lifter" located in carrying case.
  5. Examine the lifting film for the impression lifted from the paper.
  6. If no transferred impression is observed, repeat test procedure.
  7. If fails again check, "Directions for Use Kinderprint Electrostatic Dust Print Lifter" located in carrying case.

### 5.4.6 Lifting of Prints

Procedure for using lifting tape as a recovery method for developed latent prints, footwear and tiretrack impressions.

#### 1. APPARATUS and EQUIPMENT

- Lifting tape, comes in various widths, from 1 inch to 4 inches, and is either clear or frosted
- Lift backs, either shiny black card stock, shiny white card stock, or clear plastic
- 

#### 2. SAFETY CONSIDERATIONS

- Safety precautions will be determined by the nature of the item(s) being examined. Physical, chemical, and biological hazards may be present on any given item. Fume hoods, protective clothing, gloves, and safety glasses/face shields are available and will be used as needed.
- Care should be taken to avoid severe eye, hand and ear strain when conducting examinations over extended periods of time.

#### 3. PROCEDURE

##### A. Tape and lift back methods

1. For flat or smooth surfaces:
  - a. Unroll sufficient tape from roll to completely cover impression.
  - b. Place one end of tape down on surface beyond impression and be sure tape adheres to surface.
  - c. Slowly press the tape across the impression.
  - d. Remove the tape and apply to plastic or card stock of contrasting color.
2. For curved or irregular surfaces:
  - a. Unroll sufficient tape from roll to completely cover impression.
  - b. Adhere the adhesive at the center or the best part of the print.
  - c. Slowly press the tape over the impression in an ever-widening circle.

- B. Mark lift as to laboratory case number, exhibit number and initials of examiner and date.

#### **5.4.7 Use of Forensic Light Sources**

Procedure for operating the Forensic Light sources available in the laboratory.

##### **1. APPARATUS and EQUIPMENT**

- Omnicrome Model 1000 Alternate Light Source
- Omnicrome Model 9000 Alternate Light Source

##### **3. SAFETY CONSIDERATIONS**

- Safety precautions will be determined by the nature of the item(s) being examined. Physical, chemical, and biological hazards may be present on any given item. Fume hoods, protective clothing, gloves, and safety glasses/face shields are available and will be used as needed.
- Care should be taken to avoid severe eye, hand and ear strain when conducting examinations over extended periods of time.
- The Omnicrome Light Sources are electrical appliances. Electrical hazards exist.
- The Omnicrome Light Sources are high intensity light sources. Do not look directly into the light beam. Eye damage or blindness could result.
- Ultraviolet light is available from the Omnicrome 1000 and 9000. Ultraviolet light will damage the skin and eyes. Avoid exposing skin or eyes to ultraviolet light.
- When examining items with any light source ensure that the proper protective goggles for that wavelength of light are being utilized.

##### **4. PROCEDURE**

- Set up light source according to manufacturer's manual.
- Plug in electrical cord.
- Push "POWER" toggle switch to on position. Wait 30 seconds.
- Push "LAMP" toggle switch to on position. Light will illuminate.
- Adjust intensity and wavelength as per manual.
- View evidence with proper goggles to observe fluorescence.
- Vary the wavelength of light and use appropriate goggles to enhance area of interest.
- Mark area of interest.

- Photograph area of interest using same wavelength of light and appropriate filters.

#### 5.4.8 DFO Processing

Procedure for Diazafluorenone (DFO) processing of latent print evidence.

##### 1. REAGENTS

- DFO stock solution- see Chemical Formulas and Processing Guide for Developing Latent Prints, FBI, 1994, pg. 27-28
- Petroleum Ether or Pentane

##### 2. APPARATUS and EQUIPMENT

- Wash bottle
- Fume hood
- Drying oven
- Magnifying glass
- Forensic Light Source (Omnichrome)

##### 3. SAFETY CONSIDERATIONS

- Due to the highly flammable nature of the solvents, caution should be exercised in the use and storage of these items.
- Additional safety precautions will be determined by the nature of the item(s) being examined. Physical, chemical, and biological hazards may be present on any given item. Fume hoods, protective clothing, gloves, and safety glasses/face shields are available and will be used as needed.
- Care should be taken to avoid severe eye, hand and ear strain when conducting examinations over extended periods of time.
- Beware of oven as it is operated at high temperature.
- The Drying oven and the Forensic Light Sources are electrical appliances, electrical hazards exist.
- The Omnichrome light sources are high intensity light sources. Do not look directly into the light beam. Eye damage or blindness could result.
- Ultraviolet light is available from the Omnichrome 1000 and 9000. Ultraviolet light will damage the skin and eyes. Avoid exposing skin or eyes to ultraviolet light.
- When examining items with any light source ensure that the proper protective goggles for that wavelength of light are being utilized.



- Review of MSDS for relevant substances.

#### 4. PROCEDURE

- Apply DFO working solution to item in fume hood. Allow to dry.
- Let item dry.
- Examine with Forensic Light Source and magnifying glass while wearing appropriate goggles.
- Photograph developed latent prints using same light and goggles that were used for examination.

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### 5.4.9 Morehits® Forensic Imaging System

Procedure for using the Morehits® Forensic Imaging System.

#### 1. APPARATUS and EQUIPMENT

- Morehits® Forensic Imaging System

#### 2. PROCEDURE

- Log onto Morehits® Forensic Imaging System.
- Place item to be scanned on scan bed.
- Follow procedure as described in the Morehits® manual.
- When entering case number use the complete laboratory case number (E.g. YYYY-XXX-00000).
- If needed the image may be enhanced and printed.
- All cases entered will be archived to CD/DVD (compact disk) on a regular basis.
- CD/DVD's will be filed and maintained near the Morehits® system.

#### **5.4.10 Automated Fingerprint Identification System (AFIS)**

Procedure for using the Automated Fingerprint Identification System.

##### **1. APPARATUS and EQUIPMENT**

A.F.I.S. workstation

##### **2. PROCEDURE**

1. Operation according to Motorola Users Manual.

#### **STATEMENT:**

The Arkansas State Crime Laboratory is not the custodian of 10 print records in the AFIS System. The custodian of those records is the Arkansas State Police Identification Bureau.

### 5.4.11 Ninhydrin Processing

Procedure for using Ninhydrin to process latent print evidence.

#### 1. REAGENTS

- Ninhydrin working solution.

#### 2. APPARATUS and EQUIPMENT

- Wash bottle
- Fume hood
- Humidity chamber
- Magnifying glass
- 

#### 3. SAFETY CONSIDERATIONS

- Due to the highly flammable nature of the solvents, caution should be exercised in the use and storage of these items.
- Additional safety precautions will be determined by the nature of the item(s) being examined. Physical, chemical, and biological hazards may be present on any given item. Fume hoods, protective clothing, gloves, and safety glasses/ face shields are available and will be used as needed.
- Laboratory coats, non-porous gloves, and protective eyewear must be worn when using Ninhydrin.
- Care should be taken to avoid severe eye, hand and ear strain when conducting examinations over extended periods of time.
- Review of MSDS for relevant substances.
- The humidity chamber is an electrical appliance and there is an electrical hazard.

#### 4. PROCEDURE

- Apply ninhydrin working solution to item in fume hood. Allow to dry. Latents will develop over time. Processing time can be decreased if heat and humidity are added to evidence. One method of adding heat and humidity is steam iron.
- Heat with steam iron to develop prints.
- Examine for developed latent prints ~~with magnifying glass.~~

- Digital image with Morehits®

#### 5.4.12 Physical Developer Processing

Procedure for using Physical Developer to process latent print evidence.

##### 1. REAGENTS

- Maleic Acid
- One Physical Developer Kit or
- Ferric Nitrate
- Ferrous Ammonium Sulfate
- Citric Acid
- N-Dodecylamine Acetate
- Synperonic-N
- Silver Nitrate
- Distilled Water

##### 2. APPARATUS and EQUIPMENT

- Three clean glass trays
- Dark Bottles
- Clear bottles
- Magnifying glass

##### 3. SAFETY CONSIDERATIONS

- Safety precautions will be determined by the nature of the item(s) being examined. Physical, chemical, and biological hazards may be present on any given item. Fume hoods, protective clothing, gloves, and safety glasses/ face shields are available and will be used as needed.
  - Care should be taken to avoid severe eye, hand and ear strain when conducting examinations over extended periods of time.
  - Laboratory coats, non-porous gloves, and protective eye wear must be worn when using Physical Developer.
  - Review of MSDS for relevant substances.
- 
- If the reagents are repeatedly splashed over the hands or if the hands are immersed in the solution without wearing gloves, some individuals may

develop an allergic skin reaction to some of the ingredients of Physical Developer. This will occur most frequently to people with allergic skin reactions to household detergents.

- Several of the reagents are irritants, corrosive, or toxic.
- Physical developer will cause black staining on skin and clothing.

#### 4. PROCEDURE

- See Physical Developer solutions, pg. 35-37, FBI, Chemical Formulas and Processing Guide for Developing Latent Prints, 1994.
- Examine evidence with magnifying glass.
- 
- Digital image with Morehits®

### 5.4.13 Powder Processing

Procedure for using fingerprint powder to process latent print evidence.

#### 1. REAGENTS

N/A

#### 2. APPARATUS and EQUIPMENT

- Fingerprint powder (Black, White, or colored)
- Magnetic fingerprint powder (Black, White, or colored)
- Fiberglass fingerprint brushes
- Feather fingerprint brushes
- Magnetic fingerprint applicator
- Magnifying glass
- Lifting tape
- Fume Hood or Ductless Downflow Workstation (DWS)

#### 3. SAFETY CONSIDERATIONS

- Safety precautions will be determined by the nature of the item(s) being examined. Physical, chemical, and biological hazards may be present on any given item. Fume hoods, protective clothing, gloves, and safety glasses/ face shields are available and will be used as needed.
- Care should be taken to avoid severe eye, hand and ear strain when conducting examinations over extended periods of time.
- Laboratory coats, or disposable suits, non-porous gloves and /or clothe exam gloves, and protective eye wear must be worn when using Fingerprint powders.
- Review of MSDS for relevant substances.

#### 4. PROCEDURE

Conventional and Magnetic powder processing will be done under the fume hood or in the Ductless Downflow Workstation (DWS).

- Conventional powder
  - a. Carefully dip the brush into a container of powder.
  - b. Remove excess powder by tapping the handle against the inside of the rim of the container.
  - c. Apply the powder to the evidence with a light brushing action.
  - d. As prints appear, brush in the direction of the ridge flow.
  - e. Developed prints may become more visible if examined with a flashlight from an oblique angle.
  - f. Examine evidence with magnifying glass.
  - g. Lift the developed latent prints using clear tape and place on lift card.
  - h. Mark lift with case number, item number, initials and date.
  - i. Lifts may be digital imaged, photographed, or photocopied.
  
- **Magnetic powder**
  - a. Dip the magnetic applicator, with the magnet activated, into a container of magnetic powder.
  - b. Shake slightly to remove excess powder.
  - c. Move the applicator over the evidence with the powder coming in contact with the evidence. **DO NOT** let the tip of the applicator come in contact with the evidence.
  - d. As prints appear, move applicator in the direction of the ridge flow.
  - e. Hold applicator over powder container and deactivate magnet and powder will fall into container.
  - f. Reactivate magnet and pass over evidence as closely as possible without touching evidence. This will remove excess powder.
  - g. Examine evidence with magnifying glass.
  - h. Lift the developed latent prints using clear tape and place on lift card. Mark lift with case number, item number and initials. Lifts may be digital imaged, photographed, or photocopied. Return lift to the submitting agency with the evidence lift was taken from.



#### 5.4.14 Fluorescent Dyes

Procedure for using fluorescent dyes to process latent print evidence that has been processed with cyanoacrylate fuming.

##### 1. REAGENTS

See Fluorescent dye solutions, pg. 19-21, 49-52, 55-56, FBI, Chemical Formulas and Processing Guide for Developing Latent Prints, 1994.

##### 2. APPARATUS and EQUIPMENT

- See Fluorescent dye solutions, pg. 19-21, 49-52, 55-56, Chemical Formulas and Processing Guide for Developing Latent Prints, FBI, 1994.
- Forensic light source (Omnichrome)
- Forensic light source eye protection
- 
- Magnifying glass

##### 3. SAFETY CONSIDERATIONS

- Safety precautions will be determined by the nature of the item(s) being examined. Physical, chemical, and biological hazards may be present on any given item. Fume hoods, protective clothing, gloves, and safety glasses/ face shields are available and will be used as needed.
- Care should be taken to avoid severe eye, hand and ear strain when conducting examinations over extended periods of time.
- Laboratory coats, non-porous gloves, and protective eyewear must be worn when using fluorescent dyes.
- The Omnichrome light sources are high intensity light sources. Do not look directly into the light beam. Eye damage or blindness could result.

- Ultraviolet light is available from the Omnichrome 1000 and 9000. Ultraviolet light will damage the skin and eyes. Avoid exposing skin or eyes to ultraviolet light.
- The Omnichrome light source is an electrical appliance, electrical hazards exist.
- When examining items with any light source ensure that the proper protective goggles for that wavelength of light are being utilized.
- Review of MSDS for relevant substances.
- Solvents involved are highly flammable.

#### 4. PROCEDURE

- Dye stain solution can be applied by dipping or using a squirt bottle, and allowing the solvent to evaporate.
- Examine evidence with a forensic light source wearing appropriate eye wear.
- Examine developed latent prints with magnifying glass.
- Digital image with Morehits®

#### 5.4.15 Amido Black

Procedure for using Amido Black to process latent print evidence.

##### 1. REAGENTS

- See Amido Black solutions, pg. 9-12, FBI, Chemical Formulas and Processing Guide for Developing Latent Prints, 1994.

##### 2. APPARATUS and EQUIPMENT

- See Amido Black solutions, pg. 9-12, FBI, Chemical Formulas and Processing Guide for Developing Latent Prints, 1994.
- Magnifying glass
- 

##### 3. SAFETY CONSIDERATIONS

- Safety precautions will be determined by the nature of the item(s) being examined. Physical, chemical, and biological hazards may be present on any given item. Fume hoods, protective clothing, gloves, and safety glasses/face shields are available and will be used as needed.
- Care should be taken to avoid severe eye, hand and ear strain when conducting examinations over extended periods of time.
- Laboratory coats, non-porous gloves, and protective eyewear must be worn when using Amido Black.
- Review of MSDS for relevant substances.
- Some chemicals are caustic or flammable.

##### 4. PROCEDURE

- Evidence will be processed in a well-ventilated area.
- Apply developer to evidence by dipping or using a squirt bottle. Completely cover the target area then apply rinse.
- Repeat process until maximum contrast is achieved then apply final rinse.
- Examine developed latent prints with magnifying glass.
- Digital image with Morehits®

#### 5.4.16 Gentian Violet

Procedure for using Gentian Violet to process the adhesive side of tape for latent prints.

##### 1. REAGENTS

See Gentian Violet solutions, pg. 29-30, FBI, Chemical Formulas and Processing Guide for Developing Latent Prints, 1994.

##### 2. APPARATUS and EQUIPMENT

- See Gentian Violet solutions, pg. 29-30, FBI, Chemical Formulas and Processing Guide for Developing Latent Prints, 1994.
- Resin coated photo paper
- Magnifying glass
- 

##### 3. SAFETY CONSIDERATIONS

- Safety precautions will be determined by the nature of the item(s) being examined. Physical, chemical, and biological hazards may be present on any given item. Fume hoods, protective clothing, gloves, and safety glasses/ face shields are available and will be used as needed.
- Care should be taken to avoid severe eye, hand and ear strain when conducting examinations over extended periods of time.
- Laboratory coats, non-porous gloves, and protective eye wear must be worn when using Gentian Violet.
- Review of MSDS for relevant substances.

- Water-soluble adhesive tapes cannot be processed by this method.
- Steam Iron is an electrical appliance, electrical hazard is present.
- Steam Iron can be very hot. High heat can quickly damage or destroy evidence, clothing, or skin.

#### 4. PROCEDURE

- Gentian Violet can be applied by dipping or painting. When dipping, place the evidence in the Gentian Violet solution for approximately 1-2 minutes then rinse under cold tap water. If painting, paint the evidence and let stand for 1-2 minutes and then rinse under cold tap water.
- When processing black tape, the latent can be transferred to resin coated photo paper by placing the adhesive side of tape on the photo paper, covering with a paper towel on the non-adhesive side and ironing with a dry iron, iron set on delicate setting.
- Examine developed latent prints with magnifying glass.
- Digital image with Morehits®

### 5.4.17 Sticky-side Tape Powder

Procedure for using Sticky-side tape powder to process the adhesive side of tape for latent prints.

#### 1. REAGENTS

- Sticky-side Powder (Lightning Powder Co.)
- Photo-flo 200
- Water

#### 2. APPARATUS and EQUIPMENT

- Teaspoon
- 500 ml beaker
- Small paint brush
- Magnifying glass

#### 3. SAFETY CONSIDERATIONS

- Safety precautions will be determined by the nature of the item(s) being examined. Physical, chemical, and biological hazards may be present on any given item. Fume hoods, protective clothing, gloves, and safety glasses/face shields are available and will be used as needed.
- Care should be taken to avoid severe eye, hand and ear strain when conducting examinations over extended periods of time.
- Laboratory coats, non-porous gloves, and protective eyewear must be worn when using Sticky-side Powder.
- Review of MSDS for relevant substances.

#### 4. PROCEDURE

- Approximately one teaspoon of sticky-side powder is mixed with a 1:1 solution of photo-flo in water until the consistency is of thin paint.
- Paint the liquid mixture on the adhesive side of the tape or dip the adhesive side of the tape in the liquid.
- Leave the liquid on the adhesive for approximately 10-15 seconds.
- Rinse either under running water or by gently agitating in a bowl of water (preferred method).
- Examine developed latent prints with magnifying glass.
- Digital image with Morehits®

#### 5.4.18 **Leuco Crystal Violet**

Procedure for using Leuco Crystal Violet to process evidence for latent impressions deposited in blood.

##### 1. REAGENTS

- 10 g. 5-Sulphosalicylic Acid
- g. Sodium Acetate
- g. Leuco Crystal Violet
- 500 ml. 3% Hydrogen Peroxide

##### 2. APPARATUS and EQUIPMENT

- Scale
- Weigh boats
- Graduated cylinder (500 ml)
- 500 ml wash bottle or beaker
- Magnifying glass

##### 5. SAFETY CONSIDERATIONS

- Safety precautions will be determined by the nature of the item(s) being examined. Physical, chemical, and biological hazards may be present on any given item. Fume hoods, protective clothing, gloves, and safety glasses/face shields are available and will be used as needed.
- Care should be taken to avoid severe eye, hand and ear strain when conducting examinations over extended periods of time.
- Laboratory coats, non-porous gloves, and protective eyewear must be worn when using Leuco Crystal Violet.

- Review of MSDS for relevant substances.
- Some chemicals are caustic or flammable.

## 6. PROCEDURE

- Mix Leuco Crystal Violet Developer in a fume hood or well ventilated area.

Place 250 ml of 3% Hydrogen Peroxide in the 500 ml. wash bottle or beaker, add and dissolve 10 g. of 5-Sulphosalicylic Acid. Add and dissolve 1.1 g. Leuco Crystal Violet to the solution. Add and dissolve 4.4 g. Sodium Acetate to the solution. Add 250 ml. of 3% Hydrogen Peroxide to solution and mix thoroughly.

- Evidence will be processed in a well-ventilated area.
- Apply developer to evidence by dipping or using a wash bottle. Completely cover the target area. A fresh water rinse may be applied, but not necessary unless there is pooling of the developer.
- Examine the developed latent impressions with a magnifying glass if necessary.
- Photograph developed impressions.

### 5.4.19 **Gun Blueing**

Procedure for using Gun Blue to process latent print evidence.

#### 3. REAGENTS

- Gun Blue (Perma Blue)
- Water

#### 4. APPARATUS and EQUIPMENT

- Tray or Beaker
- Tweezers (rubber tipped)
- Magnifying glass

### 3. SAFETY CONSIDERATIONS



- Safety precautions will be determined by the nature of the item(s) being examined. Physical, chemical, and biological hazards may be present on any given item. Fume hoods, protective clothing, gloves, and safety glasses/face shields are available and will be used as needed.
- Care should be taken to avoid severe eye, hand and ear strain when conducting examinations over extended periods of time.
- Laboratory coats, non-porous gloves, and protective eyewear should be worn when using Gun Blue.
- Review of MSDS for relevant substances.
- Some chemicals are caustic or flammable.

#### 4. PROCEDURE

- Evidence will be processed in a well-ventilated area.
- Apply gun blue to evidence by dipping. Dip only the sides of the cartridge case not the base (primer end).
- Dip case and remove watching for the reaction, use fresh water to stop the reaction.
- Examine developed latent prints with magnifying glass.
- May be repeated if further development is required.
- Digital image with Morehits®

## **Section 6: Instrumentation/Equipment: Calibration/Maintenance**

### **6.1 Printrak Omnitrak ORV**

The AFIS Operational Readiness Verification (ORV) consists of the entry of an image, and the plotting of minutiae in special locations for a search. The ORV is a calibration check of the AFIS system and should be run monthly on each workstation.

#### **Procedure:**

Capture known test impression in manner described in Omnitrak users manual.

Launch the search of this impression.

Check respondent list to insure that the test impression is on the candidate list.

Log results for each workstation into the ORV log.

### **6.2 Balance**

The calibration of the balance will be checked daily (if used) with traceable standards before any measurements are made. If the calibration is off then the balance must be recalibrated. The acceptability range for an analytical balance using a 100 gram calibration mass is 99.9998-100.0002grams.

A record of these calibration checks will be maintained in the reagent logbook.

## **Section 7: Proficiency Testing**

### **7.1 PROFICIENCY TESTING – PURPOSE AND DEFINITIONS**

The purpose of proficiency testing is to monitor the performance both of individual examiner and of the laboratory as a whole. Proficiency tests provide a mechanism for critical self review and a means by which others, such as the American Society of Crime Laboratory Directors/Laboratory Accreditation Board (ASCLD/LAB), may evaluate the laboratory's performance on an on-going basis.

Because proficiency tests are intended to monitor work as normally performed in the laboratory, they are to be conducted using the currently approved procedures being applied on casework samples. Work is to be done independently by the examiner, supported by notes, photographs, and other documentation, and summarized in a written report as required for casework. Prior to reporting the proficiency test results, the work is to receive the same level of technical review require for casework.

Proficiency/competency tests are given to an examiner after completion of basic training and practice with a procedure to demonstrate that the examiner is capable of conducting independent work using the procedure.

Proficiency tests may be "internal" (i.e., samples prepared in-house and/or results not reported to an external body) or "external" (i.e., samples acquired from, and results reported to, an independent outside source). Samples may be retained from previously completed external tests and re-issued to other examiner as unknowns in subsequent internal tests. In any case, the "correct results" are to be unknown to both the examiner and the technical reviewer until after the tests are completed and the results are reported.

Proficiency tests may be "open" (i.e., the fact the samples are part of a test is known to the examiner) or "blind" (i.e., the examiner is unaware the samples are a test).

### **7.2 PROFICIENCY TESTS – ASSIGNMENT, FREQUENCY, AND DOCUMENTATION**

The laboratory subscribes to external tests from Collaborative Testing Services. In general, it is expected that the laboratory will complete and return results within the applicable deadlines in each of the forensic disciplines (latent print & Footwear). The Section Chief shall ensure that the test results are reported within applicable deadlines.

Each examiner will successfully complete a series of competency tests prior to being assigned to work independently.

Each examiner will complete at least one Latent Print proficiency test per year and at least one proficiency test per five year cycle in each sub-discipline they are qualified to perform case work in.

An electronic file is created for each proficiency test. The proficiency test file contains all analytical data (notes, photographs, run sheets, etc.) generated in the analysis, a report of the examiner's conclusions, and signature and comments of the technical reviewer if applicable. In any situation where the results of the tests are not satisfactory, significant discrepancies and appropriate corrective action are documented in this file. For external tests, the file also contains the summary report of the test provider regarding the particular test.

An Individual Proficiency Test Record maintained in each examiner's Training File lists proficiency tests assigned and completed, results summary, and notes of satisfactory performance. Any corrective action required as a result of an individual's test will also be documented in the training file.

### **7.3 PROFICIENCY TESTS – VERIFICATION OF PERFORMANCE, CORRECTIVE ACTION**

The Section Chief will review all test materials and compare results to information supplied by the manufacturer of the test to determine if test performance is satisfactory. The examiner will be notified in a timely fashion as to whether or not the performance is satisfactory.

The Section Chief will report in a timely manner to the Scientific Operations Director and the Quality Assurance Manager any significant discrepancy in a proficiency test.

Discrepancies found to be a result of administrative error (e.g., clerical, sample confusion, improper storage, or insufficient documentation) may be handled by counseling, remedial training, and other supervisory techniques. Significant discrepancies found to be the result of a systemic error (equipment, material, and environment) may require a review of related casework since the analyst's last successfully completed proficiency test. Once the cause of the problem has been identified, all examiners should be made aware of any corrective action taken to minimize the recurrence of the discrepancy.

Any significant discrepancy determined to be the result of an analytical/interpretive problem will prohibit the individual(s) involved from further examination of case evidence until the cause of the problem is identified and corrected. Depending on the nature of the problem, an audit of prior cases may be required. Before resuming casework, the individual(s) responsible for the discrepancy must satisfactorily complete an additional set of proficiency samples.

## **Section 8: Case Records**

### **8.1 Examination Documentation**

Examination Documentation is any documentation generated by the examiner (e.g. notes, worksheets, photographs, latent lifts, known fingerprint cards or copies of known print cards, test impressions, and other supporting information).

The Date the case was started will be written on the first page of case notes. Each worksheet will be dated when that examination or process was performed. The date the examination was completed will be written on the first page of case notes.

All other documentation in the case file will be considered administrative documentation.

All documents, forms, notes, worksheets, and other data supporting the examination conclusions will be scanned into Justice Trax.

- 8.1.1 Digital images of latent prints will be maintained in the Morehits® forensic imaging system.
- 8.1.2 Handwritten notes and observations must be in ink. Nothing in the handwritten information will be obliterated or erased. Any corrections will be made by a single strikeout (so that what is stricken can still be deciphered) and initialed. Correction fluid or correction tape may not be used.
- 8.1.4 The unique Arkansas State Crime Laboratory (ASCL) case number (YYYY-00000).

### **8.2 Report Policy**

- 8.2.1 When analytical conclusions and/or opinions are made on evidence submitted for analysis, written reports will be prepared. One (1) original report will be generated and issued to the investigating officer.
- 8.2.2 Investigative lead information may be released to the submitting law enforcement agency. After being verified by another qualified examiner and documented in the case file.
- 8.2.3 Each analyst/examiner will proofread and electronically sign their reports ensuring the typed report is accurate and error-free information.

- 8.2.4 Final results, conclusions, reports or case information will be released after required administrative and technical review of the case file has been completed and documented. Pursuant to Arkansas State Statute 12-12-312, the records, files, and information kept, obtained, or retained by the State Crime Laboratory shall be privileged and confidential and released only under and by the direction of a court of competent jurisdiction or the prosecuting attorney having criminal jurisdiction over the case.
- 8.2.5 Laboratory reports will include the name of the submitting officer and the name and address of the submitting agency, the laboratory case number, agency case number (if available), date received, how received, a listing of exhibits and results of examination(s) conducted. Remarks may be added when necessary for clarity or explanation.

### **8.3 Case Review**

#### **8.3.1 Technical Review**

All cases will be technically reviewed by the section chief and/or his designee.

The technical review will include a thorough review of examiner's bench notes to ensure that the documentation supports the results on the report.

The technical review does not shift the responsibility for the forensic findings to the reviewer, but the reviewer is responsible to ensure that the documentation does reflect adequate basis for the conclusion.

The technical review is to include but not necessarily limited to: bench notes, external telephone conversation records, investigative reports, sketches, diagrams and laboratory reports. The documentation must reflect adequate basis for the conclusion.

AFIS search match reports are not required to be contained in the case file.

#### **8.3.2 Administrative Review**

An administrative review will be done on all cases by the section chief and/or his designee.

The administrative review of the case file will include review of spelling, grammar, case number, date, and initials on appropriate pages, description of evidence and seals and other appropriate documentation.

### **8.3.3 Responsibilities**

It is the responsibility of the technical reviewer (if not the section chief) to report serious or repetitive deficiencies and corrective actions to the section chief.

### **8.3.4 Errors**

There are several types of errors, some of which are very minor and do not raise immediate concerns regarding the quality of the analyst/examiner's work product. Others do reflect the quality of the analyst/examiner's work.

#### **8.3.4.1 Types of Errors**

Administrative Errors:

Minor errors detected under administrative review of the case file.

Systemic Errors:

Errors such as problems with procedures, equipment, and/or materials

Analytical/Interpretative Errors:

Minor errors are those due to a problem, which may affect the quality of work, but is not persistent or serious enough to cause immediate concern for the overall quality of the analyst/examiner's work (e.g. clerical errors).

Major errors are those that raise immediate concerns regarding the quality of the examiner's work (e.g. erroneous identifications, continual missed identifications).

#### **8.3.4.2 Corrective Action**

Administrative Errors:

- Correct error and take appropriate action to help prevent reoccurrence

Systemic Errors:

- Review of procedures and instrumentation and take appropriate action to help prevent reoccurrence

Analytical/Interpretative Errors:

- Remove analyst from casework pending investigation
- Reanalysis by another qualified analyst, if deemed necessary by the Section Chief and/or Quality Manager
- Review of procedures
- Analysis of new sample(s) as determined by Quality Manager
- Review by Quality Manager and Section Chief to determine if retraining and/or discontinuance of that type of analysis is warranted.
- If retraining is required, competency testing must be passed before employee can be returned to that type of analysis.



## Section 9: Safety

### Good Laboratory Practices

- Proper safety procedures, as described in the Safety Manual, will be adhered to at all times.
- When handling items of evidence, examiners should wear protective clothing as provided. Examples are lab coats, gloves.
- A ventilated work bench with proper air flow across the surface should be used for all powder processing. In the event these benches are not available, dust particle masks may be worn to prevent inhalation of the powders by the examiner.
- All work benches and work areas should be properly illuminated to prevent personal injury or eye strain.
- All work benches and work areas will be cleaned after the examiner has finished processing.
- Chemicals should be used properly and in accordance with the recommendations of the manufacturer and the Material Safety Data Sheet (MSDS). Chemical processing will be performed in designated areas, normally in a ventilated area, when using and handling laboratory chemicals and reagents.
- All chemicals will be maintained in a fresh condition. All prepared chemical reagents will be properly identified and labeled with the following information: reagent name and carrier, date prepared, initials of preparer, and expiration date if applicable. The chemical composition and strength of all reagents should be clearly marked.
- Safety goggles must be worn when mixing chemicals or reagents.
- When using a forensic light source, the operator will insure that all persons in the immediate area are wearing proper eye protection. The high intensity light beam will be directed onto the examination table or item of evidence being examined and will not be directed toward any person in the processing room.

- Doors leading into the forensic light source room should be kept closed while the forensic light source is being operated.
- In the event of any question regarding the proper processing method or chemicals to be used, the section supervisor, or a designated representative, will be consulted. In all cases of safety, when not covered by the Safety Manual, the laboratory safety officer will be contacted for a recommendation.

Also see ASCL Laboratory Safety Manual.

COPY

## Section 10: Audits

See section 11 of the ASCL Administrative Quality Manual.

COPY

## Section 11: Glossary

### 11.1 Definitions

**Automated Fingerprint Identification System (AFIS)** - a computer based system for reading, cataloging, searching, matching and storing fingerprints and related data.

**Casting** - a method of recovering three-dimensional latent prints or questioned tracks with plaster, rubber, waxes or other non-shrinking substances for the purpose of preservation, transporting and comparative examination.

**Characteristics** - the pattern design formed by friction skin and the individual details of ending ridges, bifurcations, and dots, and the unique marks present on items of footwear and tires as a result of design, manufacture and usage.

**Comparison** - the process by which an examiner compares characteristics in a latent print, inked print, or questioned track to characteristics in a known inked print, item of footwear, or tire for the purpose of establishing identity.

**Court Charts** - photographic enlargements in a side-by-side relationship of a latent print/inked print or questioned track/known track (or item of footwear or tire). Identifying characteristics are plotted in such a manner as to assist the examiner in demonstrating the method of identification to members of a court during legal proceedings.

**Evaluation** - a determination by a qualified examiner that a latent print or questioned track contains sufficient characteristics to be compared to a known inked print, item of footwear or tire for comparison purposes.

**Forensic Light Source** – any light source used to excite luminescence of latent prints, footwear impressions, tire impressions, body fluids, etc. on items of evidence, e. g., ultraviolet lights, Omnichrome, etc.

**Identifications** - an opinion developed by an examiner when a sufficient number of characteristics are found to agree in both type and spatial relationship during the comparison of a latent print or inked print to a known inked print: or a questioned track to a known item of footwear or tire.

**Impressions** – objects or materials which have retained the characteristics of other objects or materials which have been impressed against them such as latent prints, footwear and tire track evidence, latent lifts, etc.

**Inked Print** - a deliberate and intentional recording of the friction ridge details present on the fingers, hands, and feet for the purpose of comparison to the latent prints or for personal identification records. This recording is normally accomplished by applying a substance such as black printer's ink to the friction ridge area and then bringing it in contact with a suitable receiving surface such as a fingerprint card or a piece of paper. Inked print will be a generic term used for known standards of friction ridge skin which includes, but is not limited to, photographic copies, photostatic copies, livescan, as well as conventional inked prints.

**Latent Print** - an unintentional transfer by contaminants, natural body substances or pressure of friction ridge details present on the fingers, hands and feet when an object is touched. These prints may be visible or be made visible by special lighting or the application of physical and chemical techniques.

**Lifting Materials** - materials with adhesive qualities, either transparent or opaque, used to recover two-dimensional latent prints or questioned tracks from a surface for the purpose of preservation, transportation, and comparative examination.

**Non-recoverable image-** Image(s) developed on items of evidence as a result of forensic processing by methods which are considered non-recoverable such as development by powders; chemicals; light source enhancements; and test impressions such as sandbox standards.

**Preservation** - a method by which a latent print or questioned track is recovered for comparison with known inked prints, items of footwear or tires. Preservation can be accomplished by proper handling, photography lifting, casting or any other acceptable method.

**Recoverable Image-**Image(s) developed on items of evidence as a result of forensic processing by methods which are considered recoverable such as latent lifts and inked standards.

**Track** - a mark left by an item of footwear or a portion of tire when it comes in contact with a receiving surface. The track may be two or three dimensional depending on the nature of the substrate.

**Verification** – the independent opinion of another examiner as to an identification effected by a qualified examiner.

## Section 12: Revision History

### February 22, 2006:

Added Procedure for checking Printrak Omnitrak ORV	6-1
Added requirement to document starting and ending dates of analysis	8.1.4
Added additional abbreviation to Glossary	11.2

### September 7, 2006:

Moved "good laboratory practices" statements section 5 to Safety section 9	
Changed examination documentation section removed affixing pages to folder	8.1
Added section for Individual Character Databases	1.7

### February 23, 2007

Removed page numbering requirements.	
Changed Case number designation.	
Removed case file order. Now paperless.	Section 8

### May 30, 2007

Correct table of contents	Entire Manual
Correct page numbering	Section 5
Correct Section numbering	2.3
Reword Latent Print Examiner Trainee	7.3 & 8.1.4
Correct wording	
Removed Approval page	

### October 2007

Added to glossary	
Change frequency and wording proficiency testing	7.2
Added balance calibration check	6.2