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## 8.0 ACE-V

### 8.1 Philosophy

Friction ridge identification is based on the agreement of friction ridge formations in sequence having sufficient uniqueness to individualize.

### 8.2 Methodology

Identifications are effected utilizing the ACE-V methodology, using Level I, II & III detail. Level III detail and occasional features are used to support Identifications, but should not be used as the only support for an identification.

#### 8.2.1 Analysis

Analysis includes the methodical assessment of a friction ridge impression to determine suitability for comparison. A latent print is considered to be "of value" for comparison when the examiner determines that a sufficient quantity and quality of ridge detail exists to make a determination of source. For the purposes of this standard, "latent print" refers to a questioned friction ridge impression and "known print" refers to exemplars of friction ridge skin. Anatomical source (e.g. fingerprint, palm print) and anatomical orientation (e.g. distal direction) shall be documented in the case record. Analysis may also include documentation of additional factors such as matrix, deposition pressure, lateral movement, or other friction ridge skin detail such as creases or scars.

8.2.1.1 The latent print shall be analyzed prior to comparison to the known impressions.

#### 8.2.2 Comparison

Comparison is the observation of friction ridge impressions for similarities or differences and includes a determination of the sequence and spatial relationship of friction ridge details. The comparison stage can be broken down into three basic levels of comparison. The first level of detail is pattern or ridge configuration which is a class characteristic. The second level of detail is the type and position of minutiae. The third level of detail is the shape of minutiae, the shape of individual ridges and the presence and location of pores. Occasional features include ridge formations such as warts, creases, and scars. When known, the medium (e.g. original, photocopy) and the origin (e.g. MSP or FBI Archive, submitted by agency) of the known prints shall be documented within the case record. Known prints that are determined to be insufficient for a complete comparison, or contain any factors that adversely affect the comparison, shall be documented and included in the laboratory report. If latent prints of comparison value are annotated on a case then all subjects listed in the latent print case record shall be compared on the case if possible. If a subject name and date of birth are submitted without known prints, the subject information shall be searched in LEIN to locate a SID or FBI number. If a SID or FBI number exists, the known prints shall be obtained and compared to the latent prints of comparison value on the case. If analysis is requested in multiple disciplines on a case, relevant subject information developed in another discipline may be added to the latent print case record for additional subject comparisons.

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### 8.2.2.1 Complex Comparisons

Complex latent print comparisons shall be contemporaneously plotted using Adobe Photoshop actions. Complex comparisons may be determined by the case analyst by applying the SWGFAST quality chart and sufficiency graph located in the Quick Reference Guides. Plotting the analysis and/or comparison of non-complex latent prints should be completed at the case analysts discretion. Plots shall be acquired and saved in the Foray Adams system under the laboratory number. Plots may be technically reviewed in ADAMS or printed for retention in the latent case jacket and technically reviewed in hard copy form. Printed copies shall be added to the evidence breakdown in Forensic Advantage for chain of custody documentation.

### 8.2.3 Evaluation

Evaluation is the formulation of a conclusion based upon analysis and comparison of friction ridge impressions. From the evaluation stage, one of the following conclusions can be reached and shall be documented:

#### 8.2.3.1 Identification

Identification is the result of the comparison of two friction ridge impressions containing sufficient quality and quantity of friction ridge detail that is in agreement. Identification occurs when a latent print examiner, trained to competency, determines that two friction ridge impressions originated from the same source. This determination is an opinion and does not indicate the exclusion of all others.

#### 8.2.3.2 Exclusion

Exclusion is the result of the comparison of two friction ridge impressions containing sufficient quality and quantity of friction ridge detail that is not in agreement. Exclusion occurs when a latent print examiner, trained to competency, determines that two friction ridge impressions originated from different sources. When comparative examinations result in the elimination of an individual, the laboratory report shall clearly communicate the elimination. Preliminary exclusion results that are documented in case notes prior to being attributed to a different source do not require verification.

##### 8.2.3.2.1 Latent Prints of Exclusionary Value

Latent prints of value for exclusionary purposes shall contain suitable Level I information to determine absolute orientation and morphological location on the fingers, palms, soles or toes. Some Level II detail discrepancy is required. Latent fingerprint/toe exclusion shall include some Level II detail discrepancy using an anchor point. Typically pattern areas, cores, or delta's will assist with orientation and location determination. Cores and deltas may be used as an anchor point. Latent fingertips (without any part of the core) and latent tri-radii (delta area only) shall not be excluded. Latent palm and sole print exclusions shall include sufficient surface area and ridge flow to determine absolute orientation and morphological location and some Level II detail discrepancy. In cases where analysis results in a conclusion that latent prints were deposited simultaneously, the information in total may be used to determine absolute orientation and morphological location in the absence of focal areas such as pattern, cores, or deltas. Some Level II discrepancy is required.

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### 8.2.3.3 Inconclusive

Inconclusive is the result when a latent examiner, trained to competency, is unable to identify or exclude the source of an impression. Inconclusive results shall not be construed as a statement of probability. Latent prints that are consistent in Level 1 and Level II, and possibly Level III, detail with a particular known impression but lack sufficient quantity and/or quality (or have discrepancies in addition to a high level of consistency) to conclude identification may be annotated with the persons initials followed by the friction skin that is consistent and a question mark, ie "JD#8?". These comparison should be plotted in Adobe Photoshop Actions, marked as inconclusive, and retained as part of the case record. Incomplete or unclear known prints may result in the inability to reach either an identification or exclusion evaluation and will be reported when applicable.

When no definitive conclusion can be reached, the test report shall clearly communicate the reason(s) for the inconclusive evaluation. If the reason can only be attributed to a lack of sufficient quantity and or quality of friction ridge detail available in the latent impression(s) or the known impression(s) it shall be reported. If the reason is attributed to a lack of sufficient quantity and or quality of friction ridge detail available in the known impression(s), all available known impressions for the subject in the MSP and FBI archives shall be reviewed.

### 8.2.3.4 Verification

Verification is the confirmation of an examiner's conclusion by another competent examiner. All identifications and exclusions shall be verified prior to being reported. Inconclusive results may be verified. Blind verification is the confirmation of an examiner's conclusion by another competent examiner who has no expectation or knowledge of the prior conclusion.

#### 8.2.3.4.1 Full Case Verification

All latent print conclusions, including inconclusive conclusions, will be verified by a second latent examiner that is trained to competency on homicide cases. This full verification will be documented in the case record worksheet in the actions sections to include the name of the verifier. Any case may include a full case verification at the discretion of the examiner or Supervisor.

### 8.2.3.5 Deferred Examination

#### 8.2.3.5.1

Evidence submitted for latent print analysis associated with homicide, kidnapping, Felonious Assault, and CSC investigations are exempt from deferment. See 8.2.3.5.7 for the AFIS reverse search exception.

#### 8.2.3.5.2

Deferred examinations require agency agreement and notification. See 8.2.3.5.7 for the AFIS reverse search exception.

#### 8.2.3.5.3

An entry in the latent print worksheet actions section will record that a latent print examination concluded with deferment and shall include the investigator contacted and their response. Notations in the worksheet, or on the FS-95 form, shall indicate which latent prints were compared and which were not compared.

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#### **8.2.3.5.4**

Latent prints determined to be suitable for comparison from "in process" evidence being analyzed shall be recorded (lift, photograph, cast) prior to the evidence being sealed for return.

#### **8.2.3.5.5**

All latent prints submitted or generated on the case shall be annotated for value and included in the report.

#### **8.2.3.5.6**

Reporting of the deferred examinations shall include the standard latent print deferred examination reporting phrase advising that there are latent prints of comparison value that have not been compared and further comparisons can be conducted upon request. The report should include the reporting statement for a cancellation of work when relevant.

##### **8.2.3.5.6.1**

The report shall be clear which latent prints were, and were not, compared.

#### **8.2.3.5.7 Registered Latent Print Database Deferment**

##### **8.2.3.5.7.1**

Latent prints that have been previously registered in a latent print database (AFIS and/or NGI) that generate a suitable candidate for comparison shall follow the below deferred exam protocol:

1. All latent prints on the case that have been registered in the database(s) shall be compared to the suitable AFIS candidate.
2. The latent prints remaining on the case that were not searched and registered in AFIS shall not be compared. Agency approval is not required.
3. The report shall clearly indicate which latent prints were compared and shall follow the reporting requirements in LPU-PM 8.2.3.5.6 to include the deferred examination statement.
4. Single latent print identification to the AFIS candidate on the case shall be documented following the requirements in LPU-PM 6.4.6.1.

## **8.3 Verification for Outside Agencies**

### **8.3.1**

Latent prints that have been identified by an outside agency and are submitted to the laboratory for the sole purpose of verification shall adhere to laboratory submission and reporting standards.

### **8.3.2**

Procedures identified in section 8.2.3.4 of this manual are also required for verification of latent images submitted by an outside agency.

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### 8.3.3

Criteria for returning latent images, section 2.4.1.2 of this manual, will be considered fulfilled with a notation in the comments of the FSD-7.

### 8.3.4

A reproduction or copy of the latent image(s) verified shall be placed in the case file as examination documentation. The reproduction or copy should be suitable for a technical review. Laboratories that participate in routine verifications for outside agencies should encourage submission of an additional copy of latent image(s) to be verified at the time of the request for retention by the laboratory.

### 8.3.5

A photocopy of the FSD-7 or electronic equivalent, requesting return of the latent image(s), shall be included in the case record.

## 8.3 Simultaneous Impression Examination

### 8.3.1 Philosophy

A latent print examiner, trained to competency, can assess two or more friction ridge impressions to determine if they were deposited on an object as a single act of touch, referred to as a simultaneous impression.

Specific circumstances within a case may permit an examiner to offer an opinion as to how the simultaneous impression relates to the touch or grasp of an object, which subsequently may support or refute the circumstances of touch.

Simultaneous impressions, sometimes referred to as "cluster prints", may be considered as having been made by a single touch if they appear in a natural relationship to each other. The factors used during analysis to determine natural relationship are listed under 2.12.3 in this standard.

### 8.3.2 Analysis

An analysis of the impressions must occur before concluding simultaneity. The analysis shall include the determination whether the friction ridge impressions are consistent with a simultaneous impression. The use and documentation of simultaneous impressions will be limited to instances where the analyst concludes there is investigative value. There must be sufficient information to determine that latent prints were made with a single touch and those reasons must be documented in the case notes.

#### 8.3.2.1

Conclusions of simultaneous impressions shall be verified prior to conducting a comparison and shall be reported as simultaneous/single touch. The separate latent print(s) identified and verified within the simultaneous grouping shall be clearly reported.

#### 8.3.2.2

An aggregate of information across the simultaneous impressions to reach a conclusion of identification is not permitted. Each latent print must be identified stand-alone.

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### **8.3.3 Standards**

The following factors will be analyzed to confirm or refute that the impressions are consistent with having been deposited concurrently:

#### **8.3.3.1 Object(s)**

Determines that one or more friction ridge impressions are present on a single, or multiple, objects.

#### **8.3.3.2 Substrate**

Determines that the aggregate of the friction ridge impressions is consistent with the surface(s) on which it appears.

#### **8.3.3.3 Orientation**

Determines that the orientation is consistent between (1) friction ridge impressions within the aggregate, (2) each friction ridge impression and the hand morphology, and (3) the hand morphology and the object.

#### **8.3.3.4 Spatial Relationship**

Determines that each friction ridge impression within the aggregate is within anatomical spatial tolerances.

#### **8.3.3.5 Anatomical Features**

Determines that finger height, span, and impression size are consistent with simultaneity.

#### **8.3.3.6 Skin Features**

Determines that ridge width, ridge flow, and creases are consistent with simultaneity.

#### **8.3.3.7 Processing Technique and Matrix**

Determines that each friction ridge impression within the aggregate has similar and consistent appearance for the matrix or specific processing technique(s) used to visualize it.

#### **8.3.3.8 Distortion**

Determines that the friction ridge impressions have consistent appearance in deposition pressure, lateral pressure, and twisting.

### **8.3.4 Controls**

Simultaneity evaluations by an examiner shall be recorded in the latent print worksheet when significant in determining the source of the latent impressions.

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## 8.3.5 Annotation and documentation of verification of Simultaneity

### 8.3.5.1

The simultaneous impressions shall be annotated as simultaneous on the lift or photograph in conformance with the annotation requirements in LPU 2.8.

### 8.3.5.2

The simultaneous annotation on the lift will be marked "Sim" and initialed and dated by both the analyst and the verifier.

The verification shall be documented in the worksheet.

## 8.4 Consultations

Consultations are defined as significant interaction between examiners regarding impressions in question. Significant consultations shall be documented and include the specific impressions reviewed, examiner(s) consulted, and the date of the consultation. If examiners have significant interaction on a particular print, the consulted examiner(s) shall not be used as the verifier for that particular print. Consultations may occur at the request of the reporting analyst or may occur during Technical Review or an Internal Audit. If the consulting or reviewing analyst(s) and the reporting analyst do not come to an agreed consensus opinion then the procedure for conflict resolution will be followed. MSP laboratories with fewer assigned Latent Print Analysts will coordinate with other MSP laboratories for consult and conflict resolution. This may be done by sending the latent prints through the mail, electronically by email, or by commuting in person (recommended).

## 8.5 Conflicting Conclusions

A conflicting conclusion occurs when the verification process does not confirm the previous conclusion.

### 8.5.1 Resolution of Conflicting Conclusions

When examiners have conflicting conclusions during verification or Technical Review, additional examiners shall be consulted. Failure to reach a consensus opinion requires a quality review be conducted by the Unit Supervisor. The Unit Supervisor will determine if the conflicting conclusion is severe enough, or has occurred frequently with a single analyst, to be sent to the Technical Leader. All conflicting conclusions that are found after a report has been released to an agency shall be forwarded to the Technical Leader for a quality review. The Technical Leader quality review will determine if and what corrective action is appropriate. The Technical Leader may use consensus opinion, in the absence of a ground truth answer, to determine the appropriate decision. Consensus opinion is the collective judgement of a group of examiners trained to competency when making determinations or conclusions with respect to one or more impressions. The size of the consensus panel and method used to reach consensus must be defined prior to the evaluation.

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## 8.5.2 Types of Conflicting Conclusions

A conflict may include identification, exclusion, or inconclusive conclusions.

### 8.5.2.1

If the quality review reveals that "identification" is the conclusion to be reported, then an erroneous inconclusive conclusion or "missed I.D." may have occurred. These errors should be reviewed by the Unit Supervisor and forwarded to the Technical Leader for further action as deemed appropriate. If the quality review reveals that "exclusion" is the conclusion to be reported, then an erroneous inconclusive conclusion may have occurred. These errors should be reviewed by the Unit Supervisor and forwarded to the Technical Leader for further action as deemed appropriate. Appropriateness for forwarding these errors to the Technical Leader shall be based on the complexity of the comparison (or lack thereof) and the frequency of errors from a single analyst.

### 8.5.2.2

If the quality review reveals that "inconclusive" is the conclusion to be reported, then either an erroneous identification (false positive) or an erroneous exclusion (false negative) may have occurred. A false positive is a type I error. These are serious errors that require a Technical Leader quality review and corrective action. A false negative is a type II error. A false negative error that should have been an identification may be elevated to a type I error. These are serious errors that require a Technical Leader quality review and corrective action as deemed appropriate.

### 8.5.2.3

A review of case documentation.

### 8.5.2.4

Re-examination of the friction ridge impressions by the original examiners, independent internal examiner(s) or independent external examiner(s).

### 8.5.2.5

#### **Determination of the conclusion to be reported.8.5.2.6**

Determination of the root cause(s) for the conflicting conclusions (individual or systemic) which may include:

- A review of training records
- A review of the training program
- A review of prior work performance

### 8.5.2.7

Determination of the seriousness of the conflicting conclusions.

### 8.5.2.8

Determination of corrective action if deemed appropriate.