

**SANTA BARBARA COUNTY
SHERIFF'S OFFICE
FORENSICS UNIT
FINGERPRINT SECTION**

FRICTION RIDGE EXAMINATION

1.0 Scope

The friction ridge examination methodology, as defined by the Scientific Working Group for Friction Ridge Analysis, Study, and Technology (SWGFAST), is the recurring application of Analysis, Comparison, Evaluation, and Verification (ACE-V).

2.0 Related Documents

- QA Manual 6.3.6
- Safety Manual

3.0 Definitions

- **Analysis** is the methodical assessment of a friction ridge print to determine suitability for comparison. Factors considered include the following:
 - Quality (Clarity) and Quantity of Level 1, Level 2, and Level 3 Detail:
 - Level 1 Detail is friction ridge flow and general morphological information.
 - Level 2 Detail is individual friction ridge paths and friction ridge events, e.g., bifurcations, ending ridges, dots.
 - Level 3 Detail is friction ridge dimensional attributes, e.g., width, edge shapes, and pores.
 - Anatomical source (finger, palm, foot, toe)
 - Factors influencing quality
- **Comparison** is the observation of friction ridge prints for similarities or differences and includes a determination of the sequence and spatial relationship of friction ridge details.
- **Evaluation** is the formulation of a conclusion based upon analysis and comparison of friction ridge prints.
- **Independent Verification** is the confirmation of an examiner's conclusion(s) by another competent examiner who has no expectation or knowledge of the prior conclusion(s).
 - Some amount of difference in opinion between examiners is possible in the course of comparison. Disagreement between examiners will be resolved according to the Quality Assurance Manual, Policy 6.3.6.
- **Peer Review** is an independent review by another competent examiner of the methods used to come to a conclusion.

4.0 Safety

Safety precautions should be taken to protect against biological or chemical contamination when directly examining items of evidence on which latent prints have been developed. Contaminated (either chemical or biohazard) print cards should be placed in clear protective sheets or gloves may be worn during their handling. Photographs of the developed prints may also be taken and used in the comparison process.

5.0 Sample Delivery

General materials and equipment needed are as follows:

1. Fingerprint glass
2. Latent lift cards
3. Photographic or digital images
4. Exemplars (Known Prints)
5. Automated Fingerprint Integrated Workstations (CAL-ID, ULW)

6.0 General Procedures

Consideration of how the print was developed may assist in the examination. In addition, information regarding the location of the latent on a surface may also assist in determining the orientation and anatomical source of the print.

6.1 Friction Ridge Examination Procedure

- A. Analyze the friction ridge print to determine its suitability for comparison.
- B. If determined to be suitable, compare the unknown print with the known print. The examiner shall determine which prints are to be compared based on the investigative needs of the case. The SBSO Latent Information Report may be all that is required to make that determination. Discussing the needs of the case with the investigating officer or prosecuting attorney may assist in making this determination.
- C. Observe the similarities or differences between the prints and determine the sequence and spatial relationship of the friction ridge details.
- D. Formulate a conclusion based on the analysis and comparison of the friction ridge prints.
- E. Have all evaluations independently verified.
- F. For felony person crime cases (homicides, sexual assaults, robberies, assaults, and kidnappings), have all evaluations independently verified. A third verification may be requested at the discretion of the case examiner or supervisor.
- G. Independent verification of non-identifications shall be completed in all cases.

6.2 Notes on reviews

6.2.1 Erroneous Identifications

- A. An erroneous identification is the marking of a latent print as having originated from a particular known source when, in fact, the print did not come from that source.
- B. In situations where only the position or finger number of the print is incorrect and not the individual identification, it will be considered an administrative error and not an erroneous identification. The verifying examiner should communicate with the original examiner to ascertain whether this is the case.
- C. When another examiner, usually the verifying examiner, discovers what is believed to be a true erroneous identification and an administrative error has been ruled out, the Fingerprint Supervisor will be notified immediately.
- D. The Forensics Supervisor or a designated experienced examiner will examine the latent and exemplar and verify that the identification is erroneous.
- E. The Forensics Supervisor will temporarily reassign the examiner making the error until the matter is fully investigated and all administrative action has been completed.
- F. The Forensics Supervisor will write a memorandum describing the findings in the case.

6.2.2 When the Latent Print is Not Properly Marked

- A. On all comparison assignments requiring Technical Review, the reviewing examiner will return cases to the originating examiner when he/she feels one or more latent prints should be marked as useable or suitable for an AFIS search. The examiner will have the opportunity to re-evaluate the latent print.
- B. Should the originating examiner still feel it is un-useable, both examiners will confer, using an enlarged image of the print in question to determine what features are visible. An agreement will be reached by the two examiners on the question of usability or by the Forensics Supervisor or a designated experienced examiner, if necessary.
- C. If the latent print is found to be useable, the originating examiner will compare the print to all individuals named in the request and adjust his/her conclusions and report to reflect a conclusion of non-identification or inconclusive.

6.3 Examination Documentation

- A. Minimum documentation shall include, but may not be limited to, the following:
 - 1. Starting and ending dates of the examination
 - 2. A unique sequential identifier (1 of _, 2 of _, 3 of _, etc.) of each submitted lift card or photograph
 - 3. Copies of all submitted documents bearing friction ridge prints which were used in an identification or entered into the fingerprint database.
 - 4. Indication on the copies of which prints were analyzed, compared, and evaluated
 - 5. All conclusions formulated as a result of the analysis, comparison, and evaluation (may use SBSO Latent Information Report or tables)
 - 6. Acknowledgement of the existence and disposition of any prints which were not analyzed, compared, or evaluated (ex: If not marked, then the friction ridge area/print was determined to be un-useable)
 - 7. Identifications marked on lift cards, photographs, and documents
 - Markings shall indicate the subject's full name, the finger or palm identified, and the CII number (state identification number) of the person identified
 - 8. All original annotated submitted lift cards, photographs, and documents
 - Since lift cards are treated as evidence, annotated lift cards and photographs must be retained in the case file.

9. Names, and identifying information (i.e. DOB, CII number , Race, Sex, and other identifying numbers) when available, of all subjects compared
 10. Legible reproductions of all known exemplars used in an identification.
 11. Initials and body number of the independent evaluating/comparing examiner indicating concurrence with the case examiner's conclusions
- B. All lift cards, photographs, and documents analyzed, compared, and evaluated, and all submitted exemplars used for comparison, shall be marked as follows:
1. Case number, case examiner's initials/body number, and date
 2. Initials and body number of the verifying examiner
 3. Exemplars also need labels indicating which finger or palm is represented.

6.4 Automated Print Searches

Notes: Results from automated print searches are not considered as identifications or exclusions, but merely a screening tool. AFIS printouts are documents related to an examination to be performed and are not used for the actual examination. Conclusions of identification are determined by the examiner after examining the latent print and the known exemplar.

- A. Refer to the NEC AFIS Workstation Latent User's Guide for directions on entering latent prints into the fingerprint database.
- B. The examiner shall determine which prints are to be searched based on the suitability of the developed prints and the case circumstances. The prints to be searched will be run in the local and state databases. IAFIS entries are generally reserved only for Crimes Against Persons, but is dependent upon the nature of the case and judgment of the examiner assigned to that case. Interpretation of what is suitable for an automated print inquiry is based on the experience and judgment of the examiner conducting the inquiry. Quality and quantity of the latent friction ridge detail may limit the effectiveness of an automated print search. Quality and quantity of the friction ridge detail in the exemplar databases may also limit the effectiveness of an automated print search.
- C. The following databases are available to search:
 1. The DOJ CAL-ID latent print database (AFIS)
 2. The DOJ CAL-ID palm print database (AFIS)
 3. Federal Bureau of Investigation's Integrated Automated Fingerprint Identification System (IAFIS)
- D. For each latent print from a submitted lift card, photograph, or document that is registered in the unsolved latent database, documentation of these shall be made and maintained in the automated DOJ CAL-ID database.
- E. The images of the top twenty-five (25) candidates on the List of Candidates will be compared with the latent print or latent palm print.
- F. All latent prints or palms entered will have the LI & LR (Latent Inquiry & Latent Registration) performed.

6.5 Documentation of Automated Latent Print Searches

- A. Minimum documentation for automated searches shall include:

1. A printout of the 1st screen of the candidate list for each latent print entered. Printouts shall include:
 - Notations made of the candidates compared
 - Results of the comparison
 - Initials of the examiner
 2. If a latent print has been traced for entry, the tracing shall be retained in the latent lift file.
 3. A log shall be maintained of cases in which latent prints are entered. The log shall include:
 - Date the search was initiated
 - Agency conducting the search
 - Body number of the operator/examiner the latent print was entered by
 - Inquiry number (CAL-ID inquiry number)
 - Agency case number
 - Crime type
 - FBI search initiated (this will be noted in the IAFIS log)
 - Databases searched and cases registered
 - Results of the automated search (No Hit / or Hit including the CII number of candidate)
- B. If it is determined that there is a hit, the documentation will include:
1. Screen shot of candidate list showing “Hit” next to the corresponding candidate
 2. The side-by-side printout of the latent print beside the candidate exemplar print.
 3. The "Latent Image Report" will also be printed.
- C. If there is a candidate generated from an LI & LR search, the documentation will include:
1. Screen shot of candidate list showing “Hit” next to the corresponding candidate
 2. The side-by-side printout of the latent print beside the candidate latent print.
 - If the LI & LR search is for an outside agency, another copy of the List of Candidates and the side-by-side printout will be sent to the outside agency

7.0 Interpretation/Reporting

Interpretation and Conclusions which can be reached following the recurring application of Analysis, Comparison, Evaluation, and Verification (ACE-V) are as follows:

1. Identification
2. Exclusion
3. Inconclusive

The examiner formulates a conclusion based upon the analysis and comparison of the source impression and exemplar standard. The evaluation is based upon the significance of agreement or disagreement between ridge data. Conclusions made by examiners are reviewed and are deemed reproducible by other competent latent print examiners.

7.1 Interpretation- Identification

Identification occurs when a latent print examiner, trained to competency, determines that two friction ridge prints originated from the same source. The examiner judged that the latent print and exemplar had sufficient quality (clarity) and quantity of friction ridge detail in agreement to make an identification.

Although not all encompassing, the list below provides possible wording for the reporting of examination results.

If the examination results in an Identification, then the report may be worded:

- The latent print appearing on the submitted lift card was identified as having been made by the right thumb of subject John DOE, DOB 1-1-90, SID A12345678.
- The latent print developed on the submitted item has been identified as being made by the left palm of subject Jane DOE, DOB 12-12-91, SID A08765432.
- The print appearing on the submitted check was made by John DOE, DOB 1-1-90, SID A12345678.
- I compared latent prints from the scene to John DOE. An identification was made to John DOE's right thumb. The latent print was lifted from the "right rear window" by Deputy J. Smith #1234. The latent prints were compared to Ventura County Sheriff's Ten-print card dated 111/00 by Deputy J. Jones #2345.

7.2 Interpretation- Exclusion

Exclusion is the result of the comparison of two friction ridge prints containing sufficient quality (clarity) 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 prints originated from different sources.

Although not all encompassing, the list below provides possible wording for the reporting of examination results.

If the examination results in an Exclusion (Elimination), then the report may be worded:

- John DOE did not make the prints developed on the submitted items.
- John DOE is not the source of the print.
- The print appearing on the submitted documents was not made by the subject submitted for comparison.

7.3 Interpretation- Inconclusive

Inconclusive is the result when a latent print examiner, trained to competency, is unable to individualize or exclude the source of a print. Inconclusive evaluation results must not be construed as a statement of probability. Incomplete or unclear friction ridge evidence prints or exemplars may result in the inability to reach either an identification or exclusion decision.

Although not all encompassing, the list below provides possible wording for the reporting of examination results.

1. If the examination results in an Inconclusive, then the report may be worded:
 - The latent print appearing on the submitted lift card was compared with the known prints of subject DOE, with inconclusive results.
 - The latent print developed on the submitted item was compared with the known prints of subject DOE, and no identification or exclusion was established.
 - The latent print developed on the submitted item was compared with the known prints of subject DOE, who could neither be identified nor eliminated as the source of the print.
2. When results are inconclusive or associations are made, the reason is documented in the case records and are clearly communicated and qualified properly in the report in accordance with contemporary forensic science. The following are examples of wording to communicate the results in the report:
 - The latent print lacks sufficient quantity of detail for an identification; however, several characteristics are in agreement with the right thumb of subject DOE. Therefore, subject DOE cannot be excluded as the source of the print.
 - The fingerprint appearing on the submitted check lacks sufficient quantity and quality of detail to identify or exclude subject DOE as the source of the print.
 - The latent print lacks sufficient quantity and quality of detail to determine the orientation or source of the print; therefore, subject DOE could neither be identified nor excluded as the source.
 - The available known prints of subject DOE lack sufficient quality for comparison purposes.
 - Additional known prints of subject DOE are needed for further examination
 - The latent print is a portion of palm. Since palm prints were not available for subject DOE, a comparison of the latent with this individual could not be conducted.
 - A conclusion of identification or exclusion could not be arrived at due to a lack of orientation reference within the latent prints to clearly establish an area and direction of the fingerprint or palm print that left the print.

7.4 Automated Searches

Although not all encompassing, the table below provides possible wording for the reporting of conclusions made as a result of an automated search:

1. If an automated search results in an Identification, then the report may be worded:
 - As a result of a search through the DOJ CAL-ID (AFIS) database, one latent print appearing on the submitted lift card was identified as having been made by the right thumb of subject John DOE, DOB 1-1-90, CII# A12345678.
 - As a result of a search through the Federal Bureau of Investigation Integrated Automated Identification System (IAFIS), one latent print appearing on the submitted lift card has been identified as being made by the left index finger of subject Jane DOE, DOB: 12-12-91, CII# A08765432.
 - I compared latent prints from Item 1 to the subject, John DOE, whose name was generated from an automated search. An identification was made to John DOE's right thumb. The latent print was lifted from the "bottle" by J. Smith #1234. The latent

prints were compared to California Department of Justice's Ten-print card dated 1/1/00 by J. Jones #2345.

2. If an automated search results in No Hit, then the report may be worded:
 - The latent prints deemed conducive to an automated search were processed through the DOJ CAL-ID (AFIS) database, and no identifications were established. The latent prints were registered into the unsolved database.
 - The print appearing on the submitted check was processed through the DOJ's CAL- ID (AFIS) database, and no identification was established. The latent print was registered into the unsolved database.

3. If an automated search for an outside agency that employs its own latent print examiners results in a possible hit, then the report may be worded:
 - A search of the DOJ CAL-ID (AFIS) database was completed and a possible hit was generated. This possible hit has not been confirmed and is for investigative purposes only. The possible hit is listed in the list of candidates attached to this report.

8.1 References

1. Ashbaugh, D.R., Qualitative-Quantitative Friction Ridge Analysis- An Introduction to Basic and Advance Ridgeology, Boca Raton, FL: CRC Press 1999.
2. Champod, C., Lennard, C., Margot, P., and Stoilovic, M., Fingerprints and Other Ridge Skin Prints, Boca Raton, FL: CRC Press 2004.
3. Scientific Working Group for Friction Ridge Analysis, Study, and Technology (SWGFAST) Guidelines, Friction Ridge Examination Methodology for Latent Print Examiners, version 1.01, 8/22/02.
4. Scientific Working Group for Friction Ridge Analysis, Study, and Technology (SWGFAST) Guidelines, Standards for Conclusions, version 1.0, 9/11/03.
5. Scientific Working Group for Friction Ridge Analysis, Study, and Technology (SWGFAST) Guidelines, Quality Assurance Guidelines for Latent Print Examiners, version 3.0, 9/28/06.

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