Form	Deviation Request Form
Title	Friction Ridge Analysis and Comparison DRF
Laboratory Location	Lab-wide
Discipline/Section	Latent Evidence
A. Requested deviation applies to:	Technical Procedure for Friction Ridge Analysis and Comparison- Section 10.0 Results Statements
B. Requested deviation:	10.2 Replace with "All results of examination shall be written according to the Results Statements work instruction." Remove 10.2.1 through 10.2.18.
C. Necessity for the deviation:	To have an up-to-date document with the approved results statements that shall be used in casework.
D: Technical Review and Authorization	
Technical Authorization	Yes - Authorized
Technical Authorizer	☐ Daugherty, Leslie
Duration	1 year / next procedure revision
E: Quality Assurance Authorization	
Acceptable within general QA guidelines and good laboratory practice?	Yes
Significant negative impact to Crime Laboratory Quality System?	No
QA Authorization	Yes - Authorized
QA Authorizer	☐ Suggs, Timothy
Effective Date:	5/7/2025
Attachments	Results Statements(2).pdf

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Last modified at 5/2/2025 11:24 AM by ☐ Suggs, Timothy

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Technical Procedure for Friction Ridge Analysis and Comparison

1.0 Purpose – This procedure shall be followed for the analysis, chemical and physical processing, comparison, and documentation of cases submitted for friction ridge examination.

2.0 Scope – This procedure applies to all friction ridge cases in Latent Evidence.

3.0 Definitions

- **ACE-V** – Friction ridge examination methodology.
- **Of Value/Sufficient –** A friction ridge impression that contains sufficient qualitative and quantitative data to be utilized for comparison purposes.
- **Identification –** A determination by a forensic scientist that there are sufficient features in agreement to conclude that two areas of friction ridge impressions originated from the same source. An identification is reached when the friction ridge impressions have corresponding ridge detail and the forensic scientist would not expect to see the same arrangement of details repeated in an impression that came from a different source.
- **Exclusion –** A determination by a forensic scientist that there is sufficient data and disagreement present within a friction ridge impression to conclude that it was not made by the same source as a set of known exemplars.
- **Inconclusive –** A determination by a forensic scientist that an identification or exclusion cannot be determined based upon a lack of sufficient data/detail present within a set of known exemplars.
- **Verified/Verification –** The indication of agreement with an examiner's conclusion as a result of an independent application of the ACE methodology.
- **Latent Resubmission** – A previously analyzed latent lift or photograph that contains one or more prints of value for comparison purposes that is resubmitted in order for a comparison to be conducted with a new set of known impressions not previously submitted or available, or a search of the SAFIS/FBI databases based upon SAFIS search policy.
- **Latent Re-examination** – A previously analyzed lift or photograph that is resubmitted in order for a new analysis of the lift or photograph.

4.0 Equipment, Materials, and Reagents

4.1 Equipment and Materials

- Latent Evidence Image Processing System (LEIPS)
- Comparator, Magnifier, Dome
- Forensic Advantage (FA)
- Scanner
- Photoshop (currently utilized version)
- SAFIS Latent Search Station
- Photographic equipment
- SAFIS/FBI Database computer station
- SAFIS/FBI Databases printers

5.0 Analytical Approach

5.1 Examine evidence to determine if physical and/or chemical processing is required. If so, process the items of evidence according to the Technical Procedure for Latent Evidence Processing.

5.2 If physical and/or chemical processing is not required, follow the Friction Ridge Comparison procedure as outlined below.

6.0 Foundations for Comparison

6.1 All comparisons performed within the Latent Evidence discipline shall be independent with conclusions based on scientifically sound premises. The Laboratory recognizes the following concepts:

6.1.1 No two individuals have been found to have the same fingerprint.

6.1.2 The fingerprint does not change naturally from before birth until after death, barring scars or mutilation.

6.1.3 An identification is effected when sufficient unique identifying characteristics are present in both the known and questioned impressions without any unexplained differences.

6.1.4 There is no scientific requirement of a minimum number of identifying characteristics in order to effect a positive identification.

7.0 Friction Ridge Comparison Procedure – Analytical Approach

7.1 Friction ridge impression examinations in Latent Evidence are conducted utilizing the Analysis, Comparison, Evaluation, and Verification (ACE-V) methodology. All ACE-V examinations involve the gathering and use of both qualitative and quantitative data present within a friction ridge impression in order to reach a conclusion. These examinations include comparisons of developed impressions captured photographically or via a scanner, impressions submitted on latent lifts, impressions submitted in photographs, impressions submitted via digital media (CDs, DVDs, and portable storage devices), SAFIS, FBI Database, and reverse SAFIS hits, as well as Latent CODIS fingerprint verifications.

7.2 Forensic scientists in Latent Evidence have multiple tools available for conducting comparative examinations. Based on the training and experience of each individual forensic scientist an optical comparator, any of the various magnifying magnifiers/glasses available, and/or a comparison on a computer may be used.

7.3 All comparisons that fall into the criteria set forth in 6.1 shall be documented in the Latent worksheet. The Latent worksheet shall be retained in the case record object repository (CROR).

7.4 ACE-V

7.4.1 **Analysis** includes the assessment of each individual friction ridge impression to determine its suitability/sufficiency for comparison. The assessment includes examination and documentation of the matrix (if known), substrate (if known), and the presence of level 1, level 2, and level 3 detail. The forensic scientist may document any additional relevant information that is deemed pertinent to the comparison, to include,

but not limited to: impression type (finger, palm, and impression), scars, creases, distortion, movement, pressure differentials, and background interference.

During the analysis phase the forensic scientist shall determine and document if the friction ridge impression is sufficient (of value) for comparison purposes. Any friction ridge impression that is determined to be insufficient for comparison (not of value) will end the ACE-V process for that particular impression.

7.4.1.1 The analyst shall digitally annotate all latent prints determined to be of value for comparison purposes. This shall be conducted in the Latent Evidence Image Processing System (LEIPS). Information that shall be annotated includes: the "of value for comparison" symbol (O), print designation, and the charting of level two minutia for illustrative purposes (see Work Instructions for EVR and Case Documentation).

7.4.1.2 The analysis phase is completed prior to entering the comparison phase.

7.4.2 **Comparison** of a friction ridge impression is a side-by-side, direct comparison of the impression with a known standard. Known standards may be submitted by a law enforcement agency and/or obtained via SAFIS/FBI Databases. See segment **8.0** below for instructions on how to obtain known exemplars via SAFIS/FBI Databases.

Forensic scientists shall conduct the comparison in order to determine if the quantitative and qualitative data observed in the friction ridge impression agrees with the quantitative and qualitative data present within a known standard. The forensic scientist examines the latent and the known exemplar simultaneously for the presence and agreement of unique identifying characteristics, in the same relative position, and containing the same spatial relationship to each other. Each friction ridge impression that is deemed "of value" shall be compared to all available known exemplars until the impression is either identified to one of the individuals compared, it is excluded as having been made by all available involved individuals, or a determination of inconclusive comparison is reached.

7.4.3 **Evaluation** is when the forensic scientist compiles all data that was observed in the analysis and comparison phases and then reaches a conclusion. The conclusions that may be reached and documented in the Latent worksheet are exclusion, identification, no additional comparison is required, and inconclusive due to a lack of sufficient detail in the available known exemplars. In cases where multiple subjects are submitted for comparison, or are developed through SAFIS/FBI Database searches, and an identification is made, the forensic scientist shall document a result for the remaining/developed subjects on a latent by latent basis. In such cases it is up to the individual conducting the comparison as to which of the following comparison results are appropriate based on the definitions provided:

No additional comparison is required: The latent print has been identified; therefore, the remaining subjects were not compared.

Negative results/exclusion: the remaining subjects were eliminated/excluded prior to the identification.

All conclusions shall be documented in the Latent worksheet.

All identifications shall be clearly marked on the digital image of the latent lift, photograph, and/or scanned image in LEIPS. Information to be recorded shall include: the print designation, the identification symbol (Ø), the finger/palm identified, the complete name from the known fingerprint standard used, and the working analyst's initials.. If no name is present, a state identification number and/or FBI number, SAFIS incident number, or other personal identification number (social security number, date of birth, etc.) may be used. Additionally, the identification symbol shall be placed next to the identified finger/palm on the known standard.

Additionally, in each comparison case, all friction ridge impressions that were determined to be "of value," and where no identification is effected, shall be charted in LEIPS and imported into the Latent worksheet. For all identifications, the friction ridge impression and the corresponding known impression shall be charted and imported into the Latent worksheet. The charting of an identification shall satisfy the requirement of having the charted "of value" impression entered into the Latent worksheet. In instances of a large number of identifications, it is acceptable to retain the charted identifications in a separate document in the CROR and reference that document in the Latent worksheet.

7.4.4 **Verification** is an independent application of the analysis, comparison, and evaluation phases of ACE-V by another qualified examiner. All friction ridge impression value, identifications, exclusions, and inconclusive determinations shall be verified. For cases where physical evidence was processed and no sub-items were created, the value determination verification is based on the review of the evidence after the last applicable processing step.

All verification reviews shall be scheduled and completed in FA prior to scheduling any additional reviews. This includes value determination verifications as well as evaluation verifications. .

When the verifying forensic scientist approves the value determination verification review in FA it means that the verifier has conducted an independent analysis, and the verifier agrees with the value determination conclusion reached by the forensic scientist assigned to work the case. When the verifying scientist approves the evaluation verification review in FA it means that the verifier has conducted an independent examination utilizing the ACE methodology and that the verifier agrees with the conclusion reached by the forensic scientist assigned to work the case. The verifier shall complete the evaluation verification review.. For all identification verifications, the verifier shall mark the number of identifications verified and his or her initials on the digital image of the item(s) of evidence in LEIPS.

Conflicts of opinion between the assigned forensic scientist and the verifying forensic scientist shall be resolved as provided in the lab-wide **Procedure for Reviewing Laboratory Reports.**

8.0 State Automated Fingerprint Identification System (SAFIS) Searches, Reverse SAFIS searches, SAFIS Migration Searches, and FBI Database Searches

8.1 The SAFIS/FBI Database computer interfaces are tools by which forensic scientists can perform state-wide and national searches of unknown/unidentified fingerprints and palmprints as well as search for and obtain known exemplars that are available through the state fingerprint database. The systems are maintained by the North Carolina State Bureau of Investigation Criminal Information and Identification Section (CIIS) and the manufacturer IDEMIA.

8.2 All friction ridge impressions that are determined to be of value for comparison shall be searched through the SAFIS/FBI Database if they have not already been identified

8.2.1 If a SAFIS search is negative, the friction ridge impression shall be searched through the FBI Database.

8.3 Detailed instructions as to the operation and functionality of the SAFIS/FBI Database computer terminal may be found in the **Technical Procedure for SAFIS/FBI Databases.**

8.4 **SAFIS Hits – SAFIS** hits shall be verified in accordance to 7.4.4 and reported in accordance with the **Laboratory Procedure for Reporting Results.**

8.5 Copies of known exemplars may be obtained through the SAFIS system, via communication with the CIIS, and/or via the most current method available for requesting fingerprint cards from the Federal Bureau of Investigation. All communication regarding the request of known exemplars and/or State Identification Numbers (SID) shall be documented in the case record in FA.

8.6 Steps for retrieving known exemplars from SAFIS/CIIS:

8.6.1 A search through the SAFIS for known exemplars shall be performed of listed victims and suspects with any provided demographic information, SID number, etc.

8.6.2 No name searches will be performed through the SAFIS of listed “persons of interest” or “witnesses” for known exemplars.

8.6.3 If known exemplars are utilized for comparison purposes, enter a scanned copy of the known exemplars into the LEIPS (see Work Instructions for Foray Utilization for EVR and Case Documentation).

8.6.4 When the examination is complete, package the known exemplars in an envelope, mark the envelope with the appropriate identifiers and return to the submitting agency with all other evidence.

8.7 **Reverse SAFIS Hits and SAFIS Migration Hits** – Reverse SAFIS hits and SAFIS Migration hits shall be reported using the Latent Evidence Reverse SAFIS Search memo.

8.7.1 In some instances, SAFIS entries made prior to the migration to the current SAFIS naming convention may not be able to be linked to a North Carolina State Crime Laboratory case record. After exhausting all search methods in Forensic Advantage and legacy LIMS records the reverse hit shall be dispositioned from the SAFIS system. No further action shall be taken.

9.0 Recording of All Analytical Data

9.1 Information required in Every Case File:

9.1.1 All examination activities.

9.1.2 Activities include the development techniques applied, control or reagent checks used in development techniques, photography/digital imaging used, Image Processing history logs, any SAFIS/FBI Database searches conducted, known exemplar capture and/or retrieval, comparisons conducted, and conclusions reached. Refer to the **Technical Procedure for Latent Print Processing** for evidence processing documentation requirements.

9.1.2.1 All latent lifts submitted or created by analyst shall be retained in LEIPS (see Work Instructions for Foray Utilization for EVR and Case Documentation).

9.1.2.2 Photographs and/or scans generated by the forensic scientist shall be retained based upon the following guidelines:

9.1.2.2.1 All photographs taken during evidence processing shall be retained in LEIPS.

9.1.2.2.2 The one photograph utilized for determining value and/or for conducting the latent comparison shall be documented in the Latent worksheet. The remaining photographs shall be retained for documentation purposes only.

9.1.2.2.3 The number of photographs taken shall be notated during the appropriate processing step on the processing page of the Latent worksheet.

9.1.2.2.4 Any photograph taken that contains friction ridge detail that is determined to be of value for comparison, regardless of enhancement, shall be created as a sub-item.

9.1.2.2.5 Any scan of a latent lift containing of value friction ridge detail, which also contains enhancement, shall be created as a sub-item.

9.1.2.2.6 Any photograph or scan that is enhanced and subsequently determined to contain friction ridge detail of no value for comparison, shall not be retained as a sub-item. These photographs/scans shall be retained for documentation purposes only.

9.1.2.3 The necessity for taking a photograph shall be determined by the forensic scientist based on his/her training and experience and based on the nature of the evidence.

9.1.2.4 When an identification is made, a digital copy of the latent lift or photograph and the known exemplar used shall be retained in LEIPS.

9.1.2.5 If the known exemplar is retrieved from the CIIS Fingerprint Repository, then the Latent worksheet shall be annotated with the SID and the date of arrest of the known exemplar used (if indicated).

9.1.2.6 If the known exemplar was submitted as evidence, then a copy shall be scanned into the LEIPS if it was utilized for comparison purposes.

9.1.2.7 Upon conclusion of the examination, an Asset Details Report (ADR) shall be created that contains all the images from LEIPS that required enhancement to make the print(s) conducive for comparison, and their original image(s). The report shall be retained in the CROR.

9.1.2.8 A Contact Sheet shall be created with all images from LEIPS and retained in the CROR (See Work Instructions for EVR and Case Documentation).

9.1.2.9 SAFIS/FBI Database Match Reports shall be entered into the CROR.

10.0 Results Statements

10.1 Results statements shall cover all items submitted whether or not processed. In instances where an item of evidence contains multiple pieces and/or additional contents, the scientist shall use the "Edit Custom Description" function in FA to fully describe the individual pieces. Example: One (1) pocketbook, one (1) wallet, one (1) driver's license, one (1) pack of gum, etc.

10.2 Results statements shall include the methodology used in the examination and an accurate interpretation of the actual results of the examination. The results may include one or more of the following statements or a variation approved during the technical review process.

10.2.1 Methodology

10.2.1.1 **Processing Case:** The methodology utilized includes: visual examination, chemical and physical processing, viewing with an alternate light source, digital retention, and ACE-V.

10.2.1.2 **Comparison Case:** The methodology utilized includes: visual examination, viewing with an alternate light source, digital retention, and ACE-V.

10.2.2 There were no latent prints noted or developed on Item (Item number).

10.2.3 There were no latent prints noted on Item (Item number).

10.2.4 There were no identifiable latent prints noted or developed on Item (Item number).

10.2.5 There were no identifiable latent prints noted on Item (Item number).

10.2.6 (Number of identifiable latent prints) identifiable latent (fingerprint(s)/palmprint(s)/impression(s)) was/were noted/developed on Item (Item number).

10.2.7 The identifiable latent (fingerprint(s)/palmprint(s)/impression(s)) was/were compared to Item (Item number) and was/were excluded as having been made by the same source.

10.2.8 The identifiable latent (fingerprint(s)/palmprint(s)/impression(s)) was/were compared to Item (Item number) and was/were identified as having been made by the (finger of subject).

An identification is a determination by a forensic scientist that there are sufficient features in agreement to conclude that two areas of friction ridge impressions originated from the same source. An identification is reached when the friction ridge impressions have corresponding ridge detail, and the forensic scientist would not expect to see the same arrangement of details repeated in an impression that came from a different source.

10.2.8.1 For identifications to multiple fingers and/or multiple subjects, a list format may be used.

10.2.9 No known inked palmprint impressions were submitted; therefore, no comparison with Item (Item number) could be conducted.

10.2.10 A search of the SBI Identification Files (or FBI Database), based on the information provided, failed to disclose known inked impressions of (subject's name); therefore, no comparison could be conducted between this individual and the (number) identifiable latent (fingerprint(s)/palmprint(s)/impression(s)) noted on Item (Item number).

10.2.11 The identifiable latent/inked (fingerprint(s)/palmprint(s)/impression(s)) was/were of sufficient value for entry into the State Automated Fingerprint Identification System (SAFIS) or the FBI Database.

10.2.12 The identifiable latent/inked (fingerprint(s)/palmprint(s)/impression(s)) was/were of insufficient value for entry into the State Automated Fingerprint Identification System (SAFIS) or the FBI Database.

10.2.13 The identifiable latent (fingerprint(s)/palmprint(s)/impression(s)) was/were searched on the SAFIS (FBI Database) with (results of search).

10.2.14 The (number) identifiable latent/inked (fingerprint(s)/palmprint(s)/impression(s)) was/were entered into and searched by the SAFIS/FBI Database with no identification being effected.

10.2.15 The identifiable latent (fingerprint(s)/palmprint(s)/impression(s)) was/were compared to Item (Item number) with no identification(s) being effected. However, the known inked impressions submitted on or on file for (subject) are of insufficient detail to conduct a conclusive comparison; therefore, this cannot be considered a conclusive comparison with the unidentified latent (fingerprint(s)/palmprint(s)/impression(s)). Major case inked

impressions, with emphasis on (area needed), will be required to conduct a conclusive comparison.

10.2.16 The identifiable latent (fingerprint(s)/palmprint(s)/impression(s)) remain(s) unidentified.

10.2.17 A records check through the Administrative Office of the Courts (AOC) database and a check with the submitting agency on (date) indicate that this case has been dispositioned. The evidence in this case is being returned unworked. If you have any questions concerning this action, please contact the forensic scientist listed below.

10.2.18 Pursuant to a request from (officer and date), no further analysis was conducted on the above listed evidence.

11.0 Latent Resubmissions and Re-examinations

11.1 For all resubmissions, the case record shall be assigned to the original working analyst if at all possible. If the original analyst is no longer available, then the case may be assigned to the original reviewer or an analyst currently working in the laboratory where the case originated.

11.1.1 Approval of a cold case for resubmission is not an automatic approval for a re-examination. Unless otherwise noted, all cold case re-submissions shall adhere to the prohibition of re-evaluation of "value" determinations.

11.1.2 Latent resubmissions (cases originally worked once the value verification took effect): in the instance that a new analyst, including the original reviewer, is assigned the case, then the new analyst shall not re-evaluate the "value" determinations of the original analyst (and reviewer). All latent prints that were previously determined to be "of value" shall be compared to any new known standards and/or entered into and searched in the SAFIS/FBI databases, when applicable.

11.1.3 Latent resubmissions (cases that were originally worked prior to the value verification policy): all resubmissions that are assigned to an analyst that did not originally work the case shall initially be treated as a standard resubmission. In the instance where the original analyst's markings are no longer visible or there is a latent print whose initial non-value determination differs from what is readily observed by the working analyst, then the working analyst shall consult with the Latent Print Technical Leader to determine the most appropriate course of action based on the current laboratory policy and procedure for re-examinations.

11.2 Pursuant to NCSCL lab-wide **Procedure for Ensuring the Quality of Test Results (4.7.1)**, all re-examinations shall require approval of the Laboratory Director or a court order. See the lab-wide policy for additional reporting and review requirements.

11.3 In a case with multiple submissions where there is an identification effected as a result of a SAFIS or FBI database hit and the fingerprint card is not resubmitted, the fingerprint card shall be pulled from the database for comparison purposes in the subsequent submissions and given a new item number.

12.0 Limitations – N/A

13.0 Safety

13.1 Working Cases with Putrefied Evidence - The purpose of this section is to minimize the health risk to anyone who may be exposed to biohazards within the Section.

13.1.1 Evidence that is putrefied, wet, or otherwise in a state of decomposition (e.g., a coffin, hands, items that contain body fluids, or the presence of insects related to decomposition) shall be treated as a biohazard. To minimize exposure and time in the section and State Crime Laboratory, the case shall be worked as a PRIORITY. The case shall be worked immediately, and the evidence shall be returned to the submitting agency as soon as possible. The forensic scientist shall make arrangements with the submitting agency to have the evidence in question picked up at the conclusion of processing.

13.1.2 For extremely contaminated, hazardous and/or putrid evidence, every effort shall be made to process the item(s) at the crime scene. Should the evidence need to be brought to the State Crime Laboratory for processing, the Forensic Scientist Manager or designated In-Charge shall be notified immediately. The Forensic Scientist Manager or designated In-Charge shall ensure that all resources (including additional forensic scientists) within the Section are provided to the forensic scientist to expedite processing of the evidence.

13.1.3 Additional guidance for handling evidence which may carry infectious disease may be found in the Procedure for Evidence Management.

14.0 References – See associated procedures and instructions for use.

15.0 Records

- Latent Worksheet

16.0 Attachments – N/A

Revision History		
Effective Date	Version Number	Reason
04/01/2025	9	7.4.1.1- add paragraph "The analyst shall digitally… for illustrative purposes (see Work Instructions for EVR and Case Documentation)". 7.4.3- add "on the digital image of the latent lift, photograph, and/or scanned image in LEIPS". 7.4.4- changed to All verifications and named value and evaluation verification reviews. - added "analysis, and the verifier…an independent examination." - "For all identification verifications…in LEIPS". 8.2- changed to "that are determined to be of value for comparison shall be searched through the SAFIS/FBI Database if they have not already been identified". 8.2.1 removed wording about search suitability 8.6.3- added into LEIPS 9.1.2.1 added "All latent lifts submitted… (see Work Instructions for Foray Utilization for EVR and Case Documentation)". 9.1.2.2.4 and 9.1.2.2.5- added clarification for sub-items 9.1.2.7- added paragraph "Upon conclusion…retained in CROR". 9.1.2.8- added statement A Contact Sheet… in the CROR (See Work Instructions for EVR and Case Documentation)".