



NSP CRIME LABORATORY CRIME LABORATORY MANUAL LATENT PRINTS



I. Examinations

Latent print impressions are chance or accidental impressions left on a surface of an item by friction ridge skin which can be found on the fingers and palms of hands, and toes and soles of the feet. These impressions are made up of foreign substances (such as grease or blood) and/or natural secretions of the human body: water, oils and amino acids. As such, they can be easily destroyed. Even though the term "latent" implies that these impressions are invisible, in forensic science, this term encompasses any chance impression, regardless whether it was visible or invisible at the time of deposition.

Because of the flexibility of friction ridge skin, no two fingers or palm print impressions are ever exactly alike. Pressure applied during the deposition of the impression and the nature of the surface may cause distortion, slippage, and swiping. Detail left behind may also be either too faint, too dark or smudged. However, due to permanence and persistence qualities of friction ridge skin, fingerprint impressions are unique, and to this date, no two people have been found to have the exact same fingerprint.

Latent impressions generally contain only a small portion of the surface of the friction ridge skin, and they usually contain less clarity (quality) and less content (quantity) of friction ridge detail than the purposely rolled impressions. For this reason, latent print identification is a very complex process that requires a great level of expertise and training.

Fingerprint identification is a process of comparing two instances of friction ridge skin impressions based on the three levels of detail, following the ACE-V methodology. The comparison is conducted under controlled conditions, and involves a qualified latent print examiner who, based on a sufficient quality and quantity of the friction ridge detail, establishes an individualization (identification), or with the lack of detail in agreement, establishes an exclusion.

In the event where the available ridge detail is determined to be not of sufficient quality and/or quantity to reach one of the two previously listed conclusions, the results of the examination will be listed as "Inconclusive". In this case, an additional set of exemplars, to include all of the friction ridge areas necessary for complete comparison, will be requested from the submitting agency. The legible, fully captured impressions can be submitted to the NSP Crime Laboratory as a additional submission to the same Lab case number. An additional report with the results of the comparison with the newly submitted set of known impressions will be released upon completion of the Latent examination.

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- A. General types of evidence items that can be **processed** for presence of latent impressions:
1. **Porous items** (paper, cardboard, raw wood, etc.)
 2. **Non-porous items** (metal, plastic, glass, fiberglass, finished wood, etc.)
 3. **Semi-porous items** (paper with a glossy finish, varnished wood, latex gloves, etc.)
 4. **Surfaces with adhesive sides** (various types of tapes including electrical and duct tape, labels, envelopes, stamps, etc.)

When submitting evidence for latent print processing, several things should be kept in mind:

- The sequence of laboratory processing:
 - latent examination is usually conducted **after** DNA has been collected, question document examination has been completed, drugs have been removed from the packaging, and any fiber, trace and accelerant evidence has been collected;
 - latent examination is usually conducted **prior** to firearms/ tool marks examination.

Deviations from the processing order are possible upon request by the submitting agency and/or prosecutor, with the approval of the laboratory sections involved. Deviations are also possible when deemed necessary, by the laboratory sections involved. When asking for a deviation, it is important to know that certain latent processes can be destructive to other types of evidence. For example, chemicals and dyes used in latent processing can destroy DNA evidence, or wash off any trace evidence. Also, the application of RUVIS (Reflective Ultra Violet Imaging System) or FSIS (Full Spectrum Imaging System) on an item needing DNA analysis for a prolonged time period will degrade and eventually destroy DNA. Pros and cons of processing deviations should be discussed with the laboratory sections involved, prior to any examination taking place.

- The value (whether monetary or sentimental) of items being submitted for latent processing should be ascertained prior to their submission to the Crime Laboratory. Chemical processes used by the latent print section can cause permanent damage to electronics, collectibles, antiques, etc.
- Porous (paper) items should **NOT** be processed with fingerprint powders. Application of Ninhydrin, DFO or similar chemicals produces better results. These chemical processes are conducted at the Crime Laboratory by the latent print section examiners.
- Officers should refrain from making marks or notations on items of evidence (i.e. circling latent impressions, marking weight on the drug bundle, etc.). Latent impressions are often invisible to the naked eye, and the markings can

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destroy or obliterate friction ridge detail that could have been of value for comparison purposes.

B. The following items can be **examined** for presence of friction ridge detail:

1. **Latent lifts** (please refrain from marking or writing on or around the lifted impressions);
2. **Printed photographs** (must be a high resolution printout, in focus and must include a legible scale with markings denoting either metric or inch scale visible);
3. **Digital images on CD/DVD** (must be high resolution file in .tiff file format; image must be in focus and must include a legible scale with markings denoting either metric or inch scale visible). Evidentiary photographs (distance shots) and .jpeg file format images will not be accepted for latent examination);
4. **Items that have been partially processed** by the submitting agency for the presence of friction ridge detail (powdered, superglued, etc.). However, it is the Crime Laboratory's policy not to re-examine the evidence for characteristics which have previously been examined by another laboratory or examiner and reported on. Refer to Crime Laboratory SOP 83-2 01-05-01 Consultation/Case Re-examination Policy;
5. **Out of state requests** for local AFIS database search of latent impressions.

C. The NSP Latent Print Discipline will also examine **inked impressions** for the purpose of establishing the identity of an individual:

1. **Postmortem fingerprints**;
2. **Habitual criminal verifications** – “pen packet” verification;
3. **False information**;
4. **Out of state requests** for local AFIS database search of tenprint impressions.
5. **Unknown individual** (e.g. amnesia victim, missing child, etc.)

NOTE: Poor quality photocopies or faxed known impressions are not suitable for fingerprint comparison due to the pixilation of images and the introduction of artifacts during the printing process (detail that is not present in the impression

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under normal circumstances). Either ink rolled or Livescan captured known impressions should be submitted for comparison purposes.

D. The NSP Latent Print Discipline has access to two fingerprint databases:

1. **Nebraska AFIS** (Automated Fingerprint Identification System) that contains civil and criminal fingerprint, palm print and major case records of those individuals fingerprinted in the State of Nebraska.
2. **FBI's NGI (Next Generation Identification) system**, formerly known as IAFIS (Integrated Automated Fingerprint Identification System), is a national fingerprint database maintained by the Federal Bureau of Investigation. The NGI database contains both fingerprint and palm print records.

Every value latent impression (whether developed or received) is routinely submitted to the Nebraska AFIS for comparison purposes. The impression will remain in the Nebraska AFIS database until the statute of limitations in the case is expired or an identification has been made. Subsequent searches of the unidentified latent impressions are conducted periodically.

Submissions of latent impressions to the NGI database will be performed routinely in all cases, when the local Nebraska AFIS search resulted in no identification being made.

E. There are three possible conclusions that can be reached in fingerprint identification. They are:

1. **Identification (individualization)** – the decision by an examiner that there are sufficient features in agreement to conclude that two areas of friction ridge impressions originated from the same source.
2. **Exclusion** – the decision by an examiner that there are sufficient features in disagreement to conclude that two areas of friction ridge impressions did not originate from the same source.
3. **Inconclusive** – the decision that occurs when an examiner is unable to individualize or exclude due to an absence of complete and legible friction ridge detail in either the latent impression or the known prints. The inconclusive conclusion may mean that the impression needs to be reexamined/re-compared using clearly and completely recorded known impressions.

II. Collection and Packaging of Evidence:

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The handling of any type of latent print evidence should be kept to a minimum. Do not touch the evidence with bare fingers – always wear gloves! Keep in mind, latent prints are fragile and can easily be destroyed.

- A. Whenever packaging porous evidence, such as paper, the items of evidence may be placed in either paper or plastic containers.
- B. Non porous items of evidence such as glass, aluminum cans, or plastic bags should **NOT** be placed in a plastic bag or plastic container. A paper bag or paper container is better suited as this will allow the moisture to escape the packaging.

Non porous items should not be packaged with cotton or cloth placed next to them, as this may destroy (rub off) any value latent impressions on the item(s) of evidence.

Non porous evidence items should not come in contact with other items of evidence. Safely secure items so that they do not tumble inside the packaging during transportation, as this may destroy any value latents that may be present.

- C. If submitting digital images of the latent impressions to the Latent Print Section for examination, the digital media (CD/DVD) should be placed in a hard plastic case.

The impressions should be captured in .tiff lossless file format if at all possible. Images captured in .jpeg or .jpg file formats are lossy compression formats. Any digital processing of .jpeg or .jpg file formatted images will result in pixilation of the image and in a loss of image quality.

The latent impression image should fill up the camera frame as much possible, while still allowing for the scale to be present.

The scale should be placed in the same plane (height) with the impression being captured. Both the latent impression and the scale should be in focus. The scale (preferably metric) should show both long and short lines, as to indicate the type of scale being used (inch or metric). This will allow for proper calibration of the images for AFIS and NGI database submissions.

- D. Some examples of items that are not suitable for latent processing because of the **surface area being too small** to contain value friction ridge information:
 - .22 cal bullets / cartridge casings
 - Paper clips, wire, etc.
 - Nails, screws, bolts and washers, etc.

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- E. Some examples of items that are not suitable for deposition of value latent impressions due to a **textured surface** that would obscure friction ridge information:
- Sponges
 - Fabric
 - Rough surface rocks / concrete / bricks
 - Corrugated metal surfaces
 - Rough surfaced dashboard
 - Suede leather
- F. Items covered in grease, oil, or similar residues are not suitable for latent processing. Also, Items (drugs) wrapped in saran wrap generally do not contain value latent impressions due to folding and creasing of the saran wrap.
- G. Be sure when sending evidence by mail to put only one case in a package. Complete an Evidence Submittal form (NSP 750) for that case and place it in the envelope on the outside of the packaging. The evidence should be sent via certified mail, return receipt requested.
- H. At a minimum, name and date of birth should be noted on the Evidence Submittal Form NSP750, for all victims, suspects, eliminations, and any other individual in contact with the evidence. If known, please list any aliases, Nebraska SID, and FBI# for the listed individuals.
- I. Elimination prints of anyone in contact with the evidence should be submitted for comparison purposes, whether or not there is a suspect in the case. This allows for identification of all latent prints developed on the evidence submitted.

Elimination prints that were previously not in the Nebraska AFIS database or have poor quality images in the database will be added to the database by the NSP Latent Print Discipline examiners if value latent impressions are observed in the case. The elimination prints will be entered under a non – criminal **Elimination** profile, and will be retained in the Nebraska AFIS database for future comparison purposes.

- J. The Latent Print Discipline will photograph any developed or received latent prints of value for preservation purposes, and the created CD or DVD will be returned to the troop area evidence technician with the rest of the evidence. A copy of the created CD or DVD will also be retained in the case file.
- K. If you have general questions about evidence packaging or the submission of a case, the NSP Crime Laboratory may be contacted at (402) 471-8950. For specific questions regarding latent print evidence, please ask for the Latent Print Discipline or

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you may contact the Latent Print Discipline Supervisor, Mariana Ward, directly at (402) 471-8918.