Latent Print Section

Capturing Latent Impressions

1. Scope

Packaging, lifting, digital capture, image processing, and image storage are addressed.

2. Safety

Be mindful of sharp edges on evidence that might cause injury or that may damage the integrity of the examiner's gloves. Chemicals or infectious material could adhere to lifts when obtained from a violent scene. Personal protective equipment should be worn as necessary.

3. Quality Assurance

3.1 The flatbed scanner (glass plate and inner lid surfaces) will be clean prior to scanning.

3.2 GLScan

3.2.1 Ensure the vacuum chamber of the GLScan remains free of dirt and debris.

3.2.2 Ensure the vacuum stage is secure prior to use as it can damage the scanner.

3.2.3 Examiners will be properly trained in the use of this equipment prior to use in casework.

3.3 If there is the potential for subsequent DNA collection, a disposable face mask will be worn when using any procedure that requires the examiner's face to be close to the evidence or to lean over the evidence for any appreciable time. Examples include visual inspection using a magnifying glass or the Leeds Spectral Vision (LSV). This is left to the discretion of the examiner as each case is different.

3.4 Packaging material will be free of contaminants and appropriate for the item

4. Lifting Impressions

4.1 Lifts of impressions may be taken from items of evidence using standard clear tape on a backing card, gel lifts, casts (e.g., Mikrosil, Accutrans or similar), clear glue, electrostatic dust lift, or other standard lifting or casting methods. Examiners are trained on the methods of lifting prior to use on casework. When possible, a developed impression should be photographed prior to attempting to lift.

4.2 Impressions that are collected using a lift and are determined to be suitable for comparison should be photographed or scanned and the image retained for further analysis and comparison.

4.3 All lifts taken in the laboratory will be labeled with case number, item number, and initials. A record should be made indicating where the lift was taken from. This could be a drawing, a photo, a narrative, or some other means left to the discretion of the analyst.

4.4 Any lifts taken in the laboratory will be documented in the case record in such a manner as to clearly associate the lift to the item of evidence from which the lift was taken.

4.5 The creation of lifts, as well as the presence or absence of ridge detail, will be documented in the case record. The creation of the lifts will be included in the case report.

4.6 Gel Lifts

4.6.1 Development of latent impressions is not always necessary when using a gel lift; however, development techniques may be necessary to locate the impressions prior to lifting.

4.6.2 It is recommended to cyanoacrylate fume an item prior to gel lifting. This helps add bulk to any ridge detail and aids in the impression transfer to the gel.

4.6.3 When using the GLScan, black gel lifts are preferred regardless of the color of the substrate, matrix, or development media.

4.6.4 Gel lifts can dry out and should be stored in their original sealed envelopes and removed just prior to use.

4.6.5 On heavily contaminated (dusted and/or dusty) surfaces, it is best to remove as much of the contaminant as prudent prior to the gel lift. This can be done using a gel lift or using an electrostatic dust lift. The gel lift will remove more material while the electrostatic dust lift will remove less. The chosen technique is left to the discretion of the examiner depending on the condition of the evidence. All lifts should be labeled and retained. The labeling should include case number, date, and initials as well as the lift number.

4.6.6 Gel lifts can be swabbed for DNA after they are scanned if no development technique was utilized or if new powder was used to develop the print.

4.6.7 When replacing the acetate on the gel lift, ensure that the side touching the gel is clean and free of dirt or extraneous impressions such as fingerprints from handling.

4.7 Comparable impressions captured using a gel lift or electrostatic dust lift are considered the “best evidence” of that impression. Images of the impression will be logged into LIMS as a separate item of evidence. This can be done by subiteming the image(s) or creating a new evidence number. The image will be labeled with its new evidence number and saved to the ‘Network Drive’ in the case file image folder.

4.8 Lifts taken in the laboratory will be returned to the submitting agency along with the item of evidence from which the lift was taken after the completion of the examinations. If the lifts are

not returned accompanying the item of evidence from which they were taken, the disposition of the lifts will be documented in the case record and report.

5. Digital Capture of Impressions

5.1 The Maine State Police Latent Print Section uses DSLR cameras, digital scanners, and a Leeds Spectral Vision (LSV) to capture digital images of impressions. Digital images of latent impressions must be of sufficient resolution, focus, and depth of field to permit a thorough analysis.

5.2 Photographs can be used to record the condition and description of evidence received by the examiner. These images can be captured in lossy format so long as the image is of sufficient resolution, focus, and depth of field to accurately depict the subject and is suitable for the intended purpose. General images are stored on the laboratory network drive under the case file folder.

5.3 A full-sensor camera with a 60mm macro prime lens is available and should be used for comparison quality photographs. If the full-sensor camera is unavailable, a cropped-sensor DLSR can be used with the lens set as close to normal as possible.

5.3.1 All comparison quality photographs should be taken at a focal length as close to normal for the given lens. (30-35mm for cropped frame sensors, 50mm for full-frame sensors)

5.4 Images taken for analysis and/or comparison purposes will be captured in a lossless file format, and stored on the laboratory network drive under the case file folder. Impressions can be captured through photographs or scans. Scans taken for analysis and/or comparison purposes will be captured at a minimum of 1000 ppi with a scale. All images taken for analysis and/or comparison purposes will be taken with a scale.

5.5 When saving an image using the LSV, the program will automatically save the image as a Leeds vision image file with extension ".lvi." However, this image extension can only be viewed in the Leeds software and needs to be saved in an image format that can be viewed in other software.

5.5.1 To save the image to be viewed using other software, select 'FILE' and then select 'export annotated image' and 'export as RAW'. Export the image to a portable, external drive.

5.6 An image can be processed using off-the-shelf software such as Adobe Photoshop. There is no need to validate off-the-shelf software used for its intended purpose. Custom software programs may not be used without prior validation. Examiners are not permitted to use digital tools that may create false ridge or defect information in the impression such as clone stamp, eraser, healing brush tool, or content aware. Processing is limited to such things as calibration and adjustments necessary to make any preexisting characteristics in the impression more visible.

5.7 An original image shall not be altered. Any processing of an image will be done on a copy of the original and saved as a separate copy with a distinctive file name.

5.8 Any image of an unknown or questioned impression that will be compared to a known impression will be evaluated to identify characteristics suitable for comparison prior to comparison to the known. The examiner will document this in the digital image. Documentation may include annotations, dots on the level two features, or other annotations appropriate for each specific print at the discretion of the examiner.

5.9 All images taken for case work should have a way of identifying that image to the case, the subject/item, the date it was taken, and the person who took or acquired that image. This can be done in several ways, including but not limited to:

5.9.1 All of the information can be in the image itself, such as on a label or written on the scale.

5.9.2 The file name of the image can reflect all this information.

5.9.3 Available in the image metadata.

5.9.4 A combination of 5.9.1, 5.9.2, and 5.9.3

6. Evidence Packaging

6.1 These methods will be followed when packaging or repackaging latent print evidence.

6.2 Latent print evidence should be handled and packaged in such a way as to prevent loss, damage, cross transfer, or a deleterious effect on any physical evidence that might be present.

6.3 All latent print evidence should be dried thoroughly prior to packaging (e.g., after chemical processing)

6.4 Small, loose items that could be lost (e.g., cartridges, casings, lifts) should be packaged in their own container, which can then be placed in the original item container. They do not need to be sub-itemed if placed in the original container with the original evidence.

6.5 Gel lifts are best protected when the acetate is rolled back on after use or examination. These can then be packaged in an envelope or the original gel lift sleeve. If the acetate cannot be rolled back onto a gel lift, then place the gel lift, gel side up, in a flat box and tape the corners of the gel lift down so it does not slide.

6.6 Electrostatic dust lift film is best stored secured, impression side up, in a cardboard box.

6.7 Porous and non-porous items can be packaged in a paper bag or box.

6.8 Smooth, non-porous items should be packaged to prevent the packaging from rubbing against the sides of the item.

6.9 Paper that has been chemically processed can be placed in a new document protector and repackaged in the original item container.

6.10 If the original packaging has become too damaged to properly secure the evidence, the evidence, along with the original packaging, can be repackaged in a new container. The new container should be sealed and labeled per lab policy.

7. Digital Images of Impressions Submitted from Outside Agencies

7.1 The latent print section accepts images of impressions via electronic mail or as evidence items submitted on electronic media storage devices (e.g., flash drives or media discs).

7.2 Should an image of an impression be submitted via email, and it is used for examination, this image, or group of images, will be entered as an item of evidence in LIMS. The secure location for that item becomes 'Network Drive.' Any processing done to an image will be made to a copy of the received original image.

7.3 Physical media containing images must be submitted like any other physical piece of evidence.

8. Storing Digital Images

8.1 Digital images associated with a laboratory case will be stored on the network drive in a folder labeled with the case number. Digital images on the network drive are stored in a permanent manner to include limited access and backups maintained by the State of Maine Office of Information Technology department.

8.2 Digital images as received from an agency or as captured by the laboratory will be stored on the network drive in the case folder and in a sub-folder labeled "Original Images" or a similar variation. All original images, whether from an outside agency or taken in the laboratory, will retain their original file name and be prefixed by the lab number, item number, and examiner's initials. For example, if the original file name is DSC_001, the new file name becomes: L21-001-1_cdh_DSC_001. Digital processing will not be conducted on original images.

8.2.1 Abbreviation of the original digital file name might be necessary in some cases where the original file name is very long. Abbreviation is acceptable if the new file name can be directly linked to the original.

8.3 Digital images that are subjected to any digital processing will be stored on the network drive in the case folder and in a sub-folder labeled “Processed Images” or similar variation. Images will be named with a minimum of the laboratory case number, item number, the examiner’s initials, the file name of the original image, and the word “processed” or something similar, indicating it is no longer the original image (e.g., L21-001-1_cdh_DSC_001_processed). It is not necessary to save images that are subject to exploratory processing. Only the final processed image used for analysis or comparison must be saved.

8.4 Digital images of impressions that are deemed to be suitable for comparison are saved on the network drive in the case folder and in a sub-folder labeled “R#”, “F#”, “T#” as appropriate, or a similar variation. Images will be named with a minimum of the laboratory case number, the R#, F#, or T# of the impression(s), the examiner’s initials, and the file name of the original image.

8.5 Digital images of known prints will be entered as evidence in LIMS and transferred to the laboratory network drive in the case folder and in a sub-folder labeled “Known Images” or similar variation. Known images will be named with a minimum of the laboratory case number, item number, and examiner’s initials.

8.6 Digital file names can include further descriptors of the evidence (e.g., subject names, footwear brand, etc.) but must contain those labels as previously described.

8.7 It is not necessary to retain errant exposures of images captured in the laboratory.