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## 5.1 Scope

### 5.1.1

This policy applies to personnel assigned to, or conducting work in, the FSD Latent Print Units. This policy establishes a procedure to preserve the identity, authenticity, integrity and security of digitally recorded friction ridge that is present or developed on evidence.

## 5.2 Responsibilities

### 5.2.1

The unit supervisors and analysts are responsible for ensuring that LPU personnel adhere to the procedures for digital photography, processing, and storage.

## 5.3 Terminology

### 5.3.1

ADAMS (Authenticated Digital Asset Management System) is a computerized software solution created by Foray Technologies that stores, organizes, and maintains an electronic chain of custody on forensic evidentiary photographs acquired into the system.

### 5.3.2

Scale: a measurement device

### 5.3.3

PPI: pixels per inch, resolution of the digital image

### 5.3.4

DPI: dots per inch, resolution of output from an inked jet printer

### 5.3.5

Macro Photography: the image is photographed very close to the lens, film or sensor. The image on the film sensor is nearly as big as the object photographed.

### 5.3.6

NIST (National Institute of Standards and Technology): Agency of the Department of Commerce which is responsible for promoting U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technologies.

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### **5.3.7**

Authenticate: validate the image is true and genuine; was protected from unintentional changes

### **5.3.8**

RAW: the file is a collection of the uncompressed data. Ensures the file has not been altered, compressed, or changed.

### **5.3.9**

TIFF: (Tagged Image File) is an uncompressed image file format used to maintain image integrity and clarity.

### **5.3.10**

JPEG: is a compressed file format used to store a larger number of files by compressing the files to a smaller size. General image files may be jpeg images. The compression algorithm causes some loss of image quality.

## **5.4 Photography**

### **5.4.1**

All photographs and lifts generated by the laboratory shall be uniquely identified to ensure an accurate chain of custody is maintained. (See LPU-PM 2.0).

### **5.4.2**

Examiners shall ensure that photographic images are checked against the original items for sharpness, contrast, and accurate reproduction of friction ridge detail.

### **5.4.3**

A scale shall be included in all latent image(s), captured either by scanner or photography.

### **5.4.4**

All information required for marking the latent print, which is required to be available in the photograph, shall be included in or on the photographic enlargement.

#### **5.4.4.1**

Enlargements may be printed without the scale visible only when a copy of the photograph that includes a scale is also printed and available in the case record.

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## **5.5 Access**

### **5.5.1**

The ADAMS system shall be protected by user name and password for limited access. (See LPU-PM 4.1.8.3)

### **5.5.2**

Each user shall log onto the system with their unique password. Passwords shall not be shared.

#### **5.5.2.1**

Trainees, under the supervision of their trainer, may operate the system when the trainer has logged on.

### **5.5.2**

Each user shall log off the system when finished to ensure security.

## **5.6 Digital Image Capture**

### **5.6.1**

Photography of latent prints in the laboratory shall use a digital image capture device (Digital Camera or Vendor approved digital scanner) to capture the latent print.

### **5.6.2**

Overall photographs depicting the location of the latent prints marked on evidence for collection may be captured in jpeg format.

### **5.6.3**

Comparison value latent print photographs shall be captured in a RAW or TIF format. RAW format should be the used when possible.

### **5.6.4**

Macro photography images and the labeled scale should fill the frame of the camera to ensure the highest possible resolution.

#### **5.6.4.1**

The captured latent print image shall include the latent impression, the required information for marking latent prints (see LPU-PM 2.0), and enough of the scale to see the height of the measuring hashtags and the unit of measurement (such as inch or centimeter).

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### **5.6.5**

The calibrated digital latent print image resolution shall meet or exceed the minimum standard of 1000 ppi.

### **5.6.6**

Scanners shall be set to 1200 ppi for capture of latent prints. Scanners may be set to 600 ppi for capture of known impressions.

### **5.6.7**

Large latent prints, such as hand or sole prints, may result in an overall image resolution of under 1000 ppi once calibrated due to the distance from the latent impressions required to capture the entire impression. In these instances, multiple photographs of sections of the impression shall also be captured to meet the minimum resolution standard.

### **5.6.8**

Submitted digital latent print images that are below 1000 pixels per inch shall still be analyzed. If the quality and quantity of the ridge structure detail present in the image is suitable for comparison, a comparison shall be conducted and the conclusion(s) reported.

#### **5.6.8.1**

Image suitability for comparison is partly determined by the visible presence of pixilation in the image. Magnification of an image that results in a pixelated image shall be deemed unsuitable for comparison.

#### **5.6.8.3**

The actual resolution of submitted latent print digital images that fall below 1000 pixels per inch shall be noted in the worksheet. The agency shall be notified that their submitted images do not meet the minimum NIST standard of 1000 pixels per inch for latent print digital images.

#### **5.6.8.4**

The report shall indicate that the image submitted does not meet the minimum standard resolution.

### **5.6.9**

Submitted digital latent print images should be in an uncompressed format such as RAW or Tiff. Consult with agencies to encourage that they submit photographs in RAW or Tiff file format should occur.

#### **5.6.9.1**

Submitted digital photographs in .jpeg file format shall be converted to .tiff to ensure no further compression of the image file occurs.

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### **5.6.9.2**

Latent print images must be in a photographic image format for acceptance for suitability for comparison. PDF file format, among others, is not a photographic image file and shall not be used for comparison purposes.

NOTE: PDF files use a dual compression of images that is detrimental to the image quality.

## **5.7 ADAMS**

### **5.7.1**

All latent prints that are collected by scanning or photography shall be acquired into ADAMS under the laboratory number associated with the case.

#### **5.7.1.2**

All latent print photographs taken during an MSP laboratory crime scene response shall be acquired into the ADAMS.

#### **5.7.1.3**

Submitted photographs of latent prints shall be acquired into ADAMS. .

### **5.7.2**

The ADAMS software protects the original latent print image acquired from change and authenticates the digital images maintained in the system.

### **5.7.3**

The ADAMS software maintains a chain of custody on the digital image assets acquired and on the processed copies of the original latent print images on the case.

### **5.7.4**

Image processing may be completed to suppress the background and increase contrast.

#### **5.7.4.1**

Latent print images used for comparison shall be calibrated.

#### **5.7.4.2**

All image processing steps are recorded by the software in the order they are performed.

#### **5.7.4.3**

The ADAMS data for all case record images shall be saved as a pdf and imported in the case record object repository in Forensic Advantage.

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#### 5.7.4.3.1

To obtain the data for each asset (to include the latent image):

1. In Digital Workplace: select all the applicable assets
2. Click File → Report  Asset Detail Report
3. A box will appear that will allow you to select what you want to display
  - It should auto populate with everything selected
4. NOTE:
  - a. RAW images from LabKam appear on this document as a broken image; the TIFF image, which is the image we use, can be shared.
  - b. The jpeg images of an uploaded Adobe Actions plot appear on this document as a broken image. Plots must be exported and saved separately.

## 5.8 ADAMS Acquisition and Calibration

### 5.8.1

Digital Image Asset Management Entry:

1. Acquire the overall evidence photograph(s) into ADAMS.
2. Acquire the camera RAW, or TIFF, photographs into ADAMS.
  - a. Each image shall be saved using the laboratory number.
  - b. The item# and/or description of the item it was recovered from, the date the images were captured, and initials of the examiner shall be visible in the photograph.
  - c. The chemical or physical processing step should also be included in the photograph.
3. The asset name should be changed to the unique latent print name.
4. Calibrate the original RAW image, if necessary.

## 5.9 Processing a Latent Image

1. Highlight the original image in case and select the PS (Adobe Photoshop) icon to process the image.
  - a. Choose the "Process as RAW" option if the digital file is a RAW file.
  - b. An option exists to "Process as Tiff".
2. When Adobe Photoshop opens, the camera RAW image will be displayed in a Camera RAW converter dialog box.
  - a. Make sure the bottom of this window is set to 16bit for increased dynamic range for color separation.
  - b. Using the white balance tool, click on a "neutral" area (18% grayscale if available)
 

Note: white balance is not available for file formats other than RAW.
3. Process the image.
  - a. The suggested tools for latent print image processing to suppress the background color values are "color channels", "Black and White" and "Hue/Saturation"

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- b. Calculations and Lab Color may also be useful for suppressing color values, depending on the image.
4. Convert the image to grayscale (Image > Mode > Grayscale)
5. Adjust contrast as necessary.
  - a. The suggested tools for latent print image processing for creating contrast in an image are "Shadows/Highlights", "Curves", and "Apply Image".
  - b. The Levels tool should be used with Lab Color.
 

NOTE: The white and black color value triangles may never be moved into any position under the existing histogram. Other contrast tools are suggested if Lab Color is not used.
  - c. **The brightness and Contrast tool shall not be used.**

Brightness and contrast adjustment may be made in the Shadows and Highlights tool.
6. Convert the image to 8-bit (Image<Mode<8 bit) grayscale.
7. For optimum results when printing, the image may be processed using "Filters > Noise > Dust and Scratches" followed by "Filters > Sharpen > Unsharp Mask"
8. IF NECESSARY: You may rotate the image at this point.
9. Close the image window and save your changes
  - a. When the "Save As" window opens, change the file format to TIFF.
  - b. Do **NOT** change anything else (such as file name, etc.) in the "Save As" dialog box.
10. Click "OK" on the "Return to Digital Workplace" window and the processed image will be returned to the ADAMS case marked as "processed". The image will be a copy of the original image.
11. For quick searching and organization of the case digital images a tag may be used. (Edit > Add Tags, enter one or more tags (separated by comma's).

## 5.10 Printers

### 5.10.1

MSP FSD latent print units shall only use the vendor approved inkjet printers on inkjet photo paper for highest resolution of printed images used for comparison.

### 5.10.2

Due to printer resolution limitations, if a comparison is to be conducted on a printed image it must be completed on a hard copy enlargement.

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## 5.11 Scanners

### 5.11.1

MSP FSD latent print units shall only use the vendor approved scanners for acquiring latent prints and known impressions into the Foray ADAMS computer.

## 5.12 Storage & Archiving

### 5.12.1

**All images, both original and enhanced, will be saved as a TIFF or RAW file format and stored on the hard drive of the computer and on the backup device or server. 5.12.2**

Archiving digital images involves storing digital images onto media suitable for long term storage.

### 5.12.3

The storage media will be marked with the date and initials.

### 5.12.4

Digital images will be archived on a regular basis and stored for future use. ADAMS places a tag on the image and case in the system to reference the name of the archive media to locate the latent prints.

#### 5.12.4.1

A copy of archived images will be forwarded to the Lansing laboratory where it will be maintained as an off-site record.

The Lansing laboratory will forward a copy of their archived images to the Grand Rapids laboratory where it will be maintained as an off-site record.

#### 5.12.4.2

The archiving schedule will be determined locally depending on the volume of images to be archived.

## 5.13 Release of Information Requests

### 5.13.1

All requests must meet the MSP FSD criteria for release of information. (see LOM 1.15)

### 5.13.2

If the request is specific for comparison value latent prints, then the photographic images themselves must be exported and saved to meet the request.

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### 5.13.2.1

The images can be saved as Tiff files on storage media.

### 5.13.2.2

The storage media shall be added to Forensic Advantage for chain of custody to document the final disposition of the storage media.

### 5.13.3

If the request is for all information (not specific for comparison value) then the images and data that was saved in the object repository of the case record in Forensic Advantage meets the request.

## 5.14 Equipment Maintenance & Calibration

### 5.14.1

In accordance with best practices guidelines, the correct user settings must be set on each computer and on each version of Adobe Photoshop. Each analyst shall ensure these settings are correct for their log on. The best settings are available in the Latent Print Discipline Quick Reference Guides.

### 5.14.2

Service requests should be directed to Foray by email to [support@foray.com](mailto:support@foray.com).

### 5.14.3

See LPU-PM 4.1.8.3 for equipment maintenance and security information.

## 5.15 References

National Guidelines for Digital Imaging Processes  
 SWGFAST Friction Ridge Digital Imaging Guidelines  
[Foray Technologies](#)