**Raleigh/Wake City-County**

**Bureau of Identification**

**Crime Laboratory Division**

**FORENSIC PHOTOGRAPHY UNIT**

**TECHNICAL PROCEDURES MANUAL (2018)**



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# Chapter 1: Administration

**1.1 Purpose**

The purpose of these procedures is to establish procedures and guidelines for the photography, scanning, and photo reproduction services offered by the CCBI Forensic Photography Unit.

**1.2 Scope**

The Forensic Photography Unit will provide thorough and professional photography services to the CCBI Crime Laboratory Division staff by qualified personnel.

**1.3 Organization**

The Forensic Photography Unit shall be a component of the CCBI Crime Laboratory Division and under the direction of the Crime Laboratory Division Deputy Director.

**1.4 Forensic Photography Services**

**1.4.1** Personnel in the Forensic Photography Unit will provide the following photography services upon request by a CCBI Latent Print Examiner or other CCBI staff member, other law enforcement agencies, or the District Attorney’s Office:

**1.4.1.1** Photography of fingerprints located using an alternate light source and reproduction of these photographs for comparison by Latent Print Examiners

**1.4.1.2** Photography of shoe impressions

**1.4.1.3** Reproduction of photographs containing shoe impressions at 1:1 scale for comparison by Latent Print Examiners

**1.4.1.4** Scanning of latent fingerprints at a 1:1 scale for comparison by Latent Print Examiners

**1.4.1.5** Reproduction of crime scene photographs or evidence item photographs containing latent fingerprints at a 1:1 scale for comparison by Latent Print Examiners

**1.4.1.6** Copies of all photography, video, 360 camera, and/or FARO files, when applicable, or discovery packets to CCBI Central Records Manager

**1.4.1.7** Creation of court displays to the specifications of the District Attorney’s Office

**1.4.1.8** Facial Recognition and Morphological Comparison services to law enforcement agencies for case related examinations

**1.4.1.9** Services as the Forensic Evidence Custodian in the absence of the Forensic Evidence Custodian

**1.4.2** Upon CCBI Crime Laboratory Division Deputy Director approval, the Forensic Photography Unit will provide related training to CCBI employees.

**1.5 Forensic Photography Unit Case Records**

The Forensic Photography Unit may retain case records on cases in which evidence is actively being examined and will ensure that such case records are maintained securely during such possession.

**1.6 References**

CCBI Crime Laboratory Administrative Procedures Manual

CCBI Forensic Science Quality Manual

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| **Revision History** | | |
| Effective Date | Version  Number | Reason |
| 3/1/18 | 1 | New Restructured Tech Procedure Manual |
| 7/11/19 | 2 | 1.4 added facial recognition, court displays, and other work duties to list of responsibilities |
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# Chapter 2: Equipment Maintenance

**2.1 Equipment Maintenance**

**2.1.1** All equipment is to be maintained in accordance with the manufacturer’s specifications and recommendations as per operating and warranty manuals.

**2.1.2** In the event that repairs or modifications are performed on equipment, a performance check will be conducted before the system or any of its components are utilized for casework purposes. This documentation will be maintained.

**2.2 Laboratory Conditions**

Other than standard laboratory conditions, no other factors influence quality of services in the Forensic Photography Unit.

**2.3 References**

CCBI Laboratory Administrative Procedures Manual

CCBI Forensic Science Quality Manual

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| **Revision History** | | |
| Effective Date | Version  Number | Reason |
| 3/1/18 | 1 | New Restructured Tech Procedures Manual |
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# Chapter 3: Minimum Processing Standards

**3.1 Purpose**

This section describes an overview of the processing methodology.

**3.2 Scope**

This is information defining the structure of the processing methodology.

**3.3 Processing Request**

Forensic Photography Unit personnel should communicate with the requestor to determine the focus and parameters of the services.

**3.4 Evidence Preservation**

Items submitted for processing must be maintained in such a way that the integrity of the item is preserved. Items must be handled in a manner preventing cross contamination. If other forensic processing will be conducted, the Digital Image/Graphics Specialist should consult with Latent Print Examiners in the appropriate disciplines.

**3.5 Documentation**

While documentation may vary, the following items may be included in the CCBI case record:

**3.5.1 Chain of Custody**

The chain of custody must include a description of the item and a documented history of each transfer.

**3.5.2 Notes**

**3.5.2.1.** Notes stemming from the processing shall include, at a minimum, the procedural steps of the processing, with a minimum of the start and end dates of the work. These steps should be written in sufficient detail to allow another Digital Image/Graphics Specialist, competent in the same area of expertise, to be able to identify what has been done and to assess the work independently.

**3.5.2.2** Each page of notes must be marked with the unique CCBI case number and the Digital Image/Graphics Specialist’s initials or signature. Two-sided documents must contain the unique case identifier and the Digital Image/Graphics Specialist’s initials or signature on both sides.

**3.5.2.3** If multiple Digital Image/Graphics Specialists are working on the same case and producing combined notes, the initials of the Digital Image/Graphics Specialist performing each procedural step shall be included.

**3.6 Approved Software**

The Digital Image/Graphics Specialist may use any software necessary, in his/her discretion, to complete the processing. This includes freeware, shareware, "trial-ware," and retail software. The Digital Image/Graphics Specialist should document what software, including what version number, was used during the processing in his/her notes.

**3.7 References**

CCBI Crime Laboratory Administrative Procedures Manual

CCBI Forensic Science Quality Manual

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| **Revision History** | | |
| Effective Date | Version  Number | Reason |
| 3/1/18 | 1 | New restructured technical procedure manual |
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# Chapter 4: Photographing ALS Latent Prints

**4.1 Purpose**

This section describes an overview of the methodology used in photographing latent fingerprints located using an alternate light source.

**4.2 Scope**

This is information defining the structure of the processing methodology.

**4.3 Photographing ALS Latent Prints**

**4.3.1** The Digital Image/Graphics Specialist receives the item(s) of evidence to be photographed using an alternate light source from Evidence Receiving Unit personnel, from a CCBI Crime Scene Investigator, or from Locker 71 in the evidence vault. The Digital Image/Graphics Specialist fills out the applicable chain of custody form for this evidence.

**4.3.2** The Digital Image/Graphics Specialist photographs the evidence using an alternate light source and camera filter to best visualize and document the latent print(s).

**4.3.2.1** The Digital Image/Graphics Specialist will use a scale, if possible.

**4.3.2.2** The Digital Image/Graphics Specialist will use the back of the camera as a sensor plane and place this sensor plane parallel to the surface containing the latent fingerprint.

**4.3.2.3** The scale will be placed at the same level and angle as the latent print and on the same plane as the latent print.

**4.3.2.4** The Digital Image/Graphics Specialist will use a depth of field appropriate for obtaining the best documentation of the latent print.

**4.3.3** The Digital Image/Graphics Specialist will load the digital photographs into the CCBI Digital Crime Scene system.

**4.3.4** The Digital Image/Graphics Specialist will return the item(s) of evidence to the Evidence Receiving Unit or to the CCBI Crime Scene Investigator.

**4.3.5** The Digital Image/Graphics Specialist will print a Photo Log of the photographs for the Latent Print Examiners to use to indicate the photographs that need to be reproduced for comparison purposes. The Photo Log will be given to the appropriate Latent Print Examiner or deposited in locker 69 in the evidence vault.

**4.3.6** The CCBI Digital Crime Scene system assigns unique numbers to each photograph and scan imported into it as well as to any enhancements to those photographs and scans. This unique number will be used to identify the particular photograph or scan used for comparison purposes. Upon receipt of the Photo Log, or a copy of it, from the Latent Print Examiners, the Digital Image/Graphics Specialist will transfer digital copies of the requested photographs, and their enhancements, if applicable, to the Latent Print Examiners using the SPEX Latent Share folder and/or USB drives. These copies will be labeled in the following format: CCBI Case Number Digital Crime Scene number (ex. Xxxxxxxx DCS xxxxxxx). When copying files to a USB drive, the Digital Image/Graphics Specialist must ensure that the USB drive is blank before copying any files to it. The USB drive will be given to the requesting Latent Print Examiner, if applicable. An empty Latent Jacket will be filled out by the Digital Image/Graphics Specialist and given to the requesting Latent Print Examiner for filing in Latent Evidence Control.

**4.3.7** The Digital Image/Graphics Specialist will create 1:1 scaled physical copies of the digital photographs, and their enhancements, if applicable, only upon request of the Latent Print Examiner.

**4.3.8** The Digital Image/Graphics Specialist will create a case file folder and place his/her notes therein. The case file folder will then be routed to Central Records.

**4.3.9 References**

CCBI Crime Laboratory Administrative Procedures Manual

CCBI Forensic Science Quality Manual

Camera user manual

Software user manuals

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| **Revision History** | | |
| Effective Date | Version  Number | Reason |
| 3/1/18 | 1 | New restructured tech procedures manual |
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# Chapter 5: Photographing Shoe Impressions

**5.1 Purpose**

This section describes an overview of the methodology used in photographing shoe impressions.

**5.2 Scope**

This is information defining the structure of the processing methodology.

**5.3 Photographing Shoe Impressions**

**5.3.1** The Digital Image/Graphics Specialist receives the item(s) of evidence from Evidence Receiving Unit personnel or from Locker 71 in the evidence vault. The Digital Image/Graphics Specialist fills out the applicable chain of custody form for this evidence.

**5.3.2** The Digital Image/Graphics Specialist photographs the evidence using appropriate lighting.

**5.3.2.1** The Digital Image/Graphics Specialist will use a scale, if possible.

**5.3.2.2** The Digital Image/Graphics Specialist will use the back of the camera as a sensor plane and place this sensor plane parallel to the surface containing the shoe impression.

**5.3.2.3** The scale will be placed at the same level and angle as the shoe impression and on the same plane as the shoe impression.

**5.3.2.4** The Digital Image/Graphics Specialist will use a depth of field appropriate for obtaining the best documentation of the shoe impression.

**5.3.3** The Digital Image/Graphics Specialist will load the digital photographs into the CCBI Digital Crime Scene system.

**5.3.4** The Digital Image/Graphics Specialist will create a case file folder and place his/her notes therein. The case file folder will then be routed to Central Records.

**5.3.5** The Digital Image/Graphics Specialist will return the item(s) of evidence to the Evidence Receiving Unit.

**5.4 References**

CCBI Crime Laboratory Administrative Procedures Manual

CCBI Forensic Science Quality Manual

Camera user manual

Software user manuals

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| **Revision History** | | |
| Effective Date | Version  Number | Reason |
| 3/1/18 | 1 | New restructured tech procedure manual |
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# Chapter 6: Scanning Items for Latent Comparison

**6.1 Purpose**

This section describes an overview of the methodology used in scanning latent fingerprints for comparison purposes by Latent Print Examiners.

**6.2 Scope**

This is information defining the structure of the processing methodology.

**6.3 Scanning Items for Latent Comparison**

**6.3.1** The Digital Image/Graphics Specialist receives the item(s) of evidence to be scanned from Evidence Receiving Unit personnel, from a CCBI Crime Scene Investigator, or from Locker 71 in the evidence vault. The Digital Image/Graphics Specialist fills out the applicable chain of custody form for this evidence.

**6.3.2** The Digital Image/Graphics Specialist scans the evidence into the CCBI Digital Crime Scene system at the appropriate resolution for latent comparison, using a scale if possible.

**6.3.3** The Digital Image/Graphics Specialist will print a Photo Log of the scans for the Latent Print Examiners to use to indicate the scans that need to be reproduced for comparison purposes. The Photo Log will be given to the appropriate Latent Print Examiner or deposited in locker 69 in the evidence vault.

**6.3.4** The Digital Image/Graphics Specialist will return the item(s) of evidence to the Evidence Receiving Unit or to the CCBI Crime Scene Investigator.

**6.3.5** The CCBI Digital Crime Scene system assigns unique numbers to each photograph and scan imported into it as well as to any enhancements to those photographs and scans. This unique number will be used to identify the particular photograph or scan used for comparison purposes. Upon receipt of the Photo Log, or a copy of it, from the Latent Print Examiners, the Digital Image/Graphics Specialist will transfer digital copies of the requested scans, and their enhancements, if applicable, to the Latent Print Examiners using the SPEX Latent Share folder and/or USB drives. These copies will be labeled in the following format: CCBI Case Number Digital Crime Scene number (ex. Xxxxxxxx DCS xxxxxxx). When copying files to a USB drive, the Digital Image/Graphics Specialist must ensure that the USB drive is blank before copying any files to it. The USB drive will be given to the requesting Latent Print Examiner, if applicable. An empty Latent Jacket will be filled out by the Digital Image/Graphics Specialist and given to the requesting Latent Print Examiner for filing in Latent Evidence Control.

**6.3.6** The Digital Image/Graphics Specialist will create 1:1 scaled physical copies of the digital scans, and their enhancements, if applicable, only upon request of the Latent Print Examiner.

**6.3.7** The Digital Image/Graphics Specialist will create a case file folder and place his/her notes therein. The case file folder will then be routed to Central Records.

**6.3.8 References**

CCBI Crime Laboratory Administrative Procedures Manual

CCBI Forensic Science Quality Manual

Camera user manual

Software user manuals

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| **Revision History** | | |
| Effective Date | Version  Number | Reason |
| 3/1/18 | 1 | New restructured tech procedure manual |
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# Chapter 7: Reproduction of Photographs of Latent Prints from Crime Scene

**7.1 Purpose**

This section describes an overview of the methodology used in reproducing crime scene photographs containing latent fingerprints for comparison purposes by Latent Print Examiners.

**7.2 Scope**

This is information defining the structure of the processing methodology.

**7.3 Reproducing Photographs of Latent Prints for Comparison**

**7.3.1** The Digital Image/Graphics Specialist will print a Photo Log of the photographs for the Latent Print Examiners to use to indicate the scans that need to be reproduced for comparison purposes. The Photo Log will be given to the appropriate Latent Print Examiner or deposited in locker 69 in the evidence vault.

**7.3.2** The CCBI Digital Crime Scene system assigns unique numbers to each photograph and scan imported into it as well as to any enhancements to those photographs and scans. This unique number will be used to identify the particular photograph or scan used for comparison purposes. Upon receipt of the Photo Log, or a copy of it, from the Latent Print Examiners, the Digital Image/Graphics Specialist will transfer digital copies of the requested photographs, and their enhancements, if applicable, to the Latent Print Examiners using the SPEX Latent Share folder and/or USB drives. These copies will be labeled in the following format: CCBI Case Number Digital Crime Scene number (ex. Xxxxxxxx DCS xxxxxxx). When copying files to a USB drive, the Digital Image/Graphics Specialist must ensure that the USB drive is blank before copying any files to it. The USB drive will be given to the requesting Latent Print Examiner, if applicable. An empty Latent Jacket will be filled out by the Digital Image/Graphics Specialist and given to the requesting Latent Print Examiner for filing in Latent Evidence Control.

**7.3.3** The Digital Image/Graphics Specialist will create 1:1 scaled physical copies of the digital photographs, and their enhancements, if applicable, only upon request of the Latent Print Examiner.

**7.3.4** The Digital Image/Graphics Specialist will create a case file folder and place his/her notes therein. The case file folder will then be routed to Central Records.

**7.3.5 References**

CCBI Crime Laboratory Administrative Procedures Manual

CCBI Forensic Science Quality Manual

Camera user manual

Software user manuals

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| **Revision History** | | |
| Effective Date | Version  Number | Reason |
| 3/1/18 | 1 | New restructured tech procedures manual |
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# Chapter 8: Reproduction of Photographs and/or Scans of Latent Prints from Items of Evidence

**8.1 Purpose**

This section describes an overview of the methodology used in reproducing photographs or scans of items containing latent fingerprints for comparison purposes by Latent Print Examiners.

**8.2 Scope**

This is information defining the structure of the processing methodology.

**8.3 Reproducing Photographs of Latent Prints for Comparison**

**8.3.1** The Digital Image/Graphics Specialist will print a Photo Log of the photographs and/or scans for the Latent Print Examiners to use to indicate the photographs and/or scans that need to be reproduced for comparison purposes. The Photo Log will be given to the appropriate Latent Print Examiner or deposited in locker 69 in the evidence vault.

**8.3.2** The CCBI Digital Crime Scene system assigns unique numbers to each photograph and scan imported into it as well as to any enhancements to those photographs and scans. This unique number will be used to identify the particular photograph or scan used for comparison purposes. Upon receipt of the Photo Log, or a copy of it, from the Latent Print Examiners, the Digital Image/Graphics Specialist will transfer digital copies of the requested photographs and/or scans, and their enhancements, if applicable, to the Latent Print Examiners using the SPEX Latent Share folder and/or USB drives. These copies will be labeled in the following format: CCBI Case Number Digital Crime Scene number (ex. Xxxxxxxx DCS xxxxxxx). When copying files to a USB drive, the Digital Image/Graphics Specialist must ensure that the USB drive is blank before copying any files to it. The USB drive will be given to the requesting Latent Print Examiner, if applicable. An empty Latent Jacket will be filled out by the Digital Image/Graphics Specialist and given to the requesting Latent Print Examiner for filing in Latent Evidence Control.

**8.3.3** The Digital Image/Graphics Specialist will create 1:1 scaled physical copies of the digital photographs and/or scans, and their enhancements, if applicable, only upon request of the Latent Print Examiner.

**8.3.4** The Digital Image/Graphics Specialist will create a case file folder and place his/her notes therein. The case file folder will then be routed to Central Records.

**8.3.5 References**

CCBI Crime Laboratory Administrative Procedures Manual

CCBI Forensic Science Quality Manual

Camera user manual

Software user manuals

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| **Revision History** | | |
| Effective Date | Version  Number | Reason |
| 3/1/18 | 1 | New restructured tech procedures manual |
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# Chapter 9: Scanning Post-Mortem Prints

**9.1 Purpose**

This section describes an overview of the methodology used in scanning post mortem prints into CCBI Digital Crime Scene System.

**9.2 Scope**

This is information defining the structure of the processing methodology.

**9.3 Scanning Post Mortem Prints**

**9.3.1** The Digital Image/Graphics Specialist receives the post mortem prints from Latent Evidence Control or from a Latent Print Examiner or Latent Print Supervisor. The Digital Image/Graphics Specialist fills out the applicable chain of custody form for this evidence.

**9.3.2**The Digital Image/Graphics Specialist scans the post mortem prints overall and individually into the CCBI Digital Crime Scene system at the appropriate resolution for latent comparison, using a scale if possible.

**9.3.3** The Digital Image/Graphics Specialist will return the post mortem prints to the appropriate location in Latent Evidence Control with a copy of the chain of custody. The original chain of custody will be sent to Records.

**9.3.4** The Digital Image/Graphics Specialist will create a journal entry in the CCBI Digital Crime Scene System under the Call ID containing the scans with details of this process.

**9.3.5 References**

CCBI Crime Laboratory Administrative Procedures Manual

CCBI Forensic Science Quality Manual

Camera user manual

Software user manuals

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| **Revision History** | | |
| Effective Date | Version  Number | Reason |
| 1/1/2020 | 1 | Archived chapter about Reproduction of Shoe Impressions and added this chapter concerning Scanning Post-Mortem Prints |
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# Chapter 10: Handling of Digital Submissions of Ten Print Cards from External Agencies for Comparison Purposes

**10.1 Purpose**

This section describes an overview of the handling of digital submissions of Ten Print cards from external agencies for comparison purposes by the Latent Print Examiners.

**10.2 Scope**

This is information defining the handling of digitally submitted ten print cards from external agencies.

**10.3 Handling Digital Submissions of Ten Print Cards**

**10.3.1** Digital ten prints cards will be submitted for comparison through the secure URL as described in Chapter 14: Digital Submission of Evidence.

**10.3.2** The Digital Image/Graphics Specialist print out the CCBI-002 Laboratory Examination Request that is uploaded with the ten print card. An item number will be assigned to the ten print cards and those digital files will be imported into Digital Crime Scene. The assigned item number will be added to the Image Description text box in Digital Crime Scene. Any digital copies of the ten print cards sent to a USB drive or to the SPEX Latent Share folder will be labeled in the following format: CCBI Case number Item number (ex. Xxxxxxxx Item x). When copying files to a USB drive, the Digital Image/Graphics Specialist must ensure that the USB drive is blank before copying any files to it.

**10.3.3** Any digital copies of the ten print cards sent to a USB drive or to the SPEX Latent Share folder will be labeled in the following format: CCBI Case number Item number (ex. Xxxxxxxx Item x). When copying files to a USB drive, the Digital Image/Graphics Specialist must ensure that the USB drive is blank before copying any files to it. Printed versions of the ten print cards can be created upon request from the Latent Print Examiner(s) and Supervisor(s) and will be sealed in an evidence envelope with a Chain of Custody for that item. The envelope will become a derivative item of evidence (item x-1).

**10.3.4** The Digital Image/Graphics Specialist will attach the digital version of the CCBI-002 Laboratory Examination Request to the Digital Crime Scene Call under the Documents tab. The printed version will be given to one of the Latent Print Supervisors.

**10.3.5 References**

CCBI Crime Laboratory Administrative Procedures Manual

CCBI Forensic Science Quality Manual

Camera user manual

Software user manuals

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| **Revision History** | | |
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| 3/1/18 | 1 | New restructured tech procedures manual |
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# Chapter 11: Enhancement of Photographs and Scans

**1.1 Purpose**

This section describes an overview of the methodology used in enhancing photographs contained in the CCBI Digital Crime Scene system.

**11.2 Scope**

This is information defining the structure of the processing methodology.

**11.3 Enhancing Photographs**

**11.3.1** At the request of Latent Print Unit personnel, the Digital Image/Graphics Specialist may enhance a digital photograph contained in the CCBI Digital Crime Scene system. These enhancements may include, but are not limited to:

**11.3.1.1** Brightening or darkening the print

**11.3.1.2** Increasing the contrast of the print

**11.3.1.3** Converting the print to black and white

**11.3.1.4** Flipping the print horizontally

**11.3.1.5** Inverting the print (i.e. creating a “negative” version)

**11.3.2** All enhancements will be done through the CCBI Digital Crime Scene system in order to save a record of the enhancements made. Any record of enhancements will be printed and included with the Digital Image/Graphics Specialist’s notes.

**11.3.3** The CCBI Digital Crime Scene system assigns unique numbers to each photograph and scan imported into it as well as to any enhancements to those photographs and scans. This unique number will be used to identify the particular photograph or scan used for comparison purposes. Any digital copies of these photographs, scans, and enhancements will be labeled in the following format: CCBI Case Number Digital Crime Scene number (ex. Xxxxxxxx DCS xxxxxxx). When copying files to a USB drive, the Digital Image/Graphics Specialist must ensure that the USB drive is blank before copying any files to it. The USB drive will be given to the requesting Latent Print Examiner, if applicable.

**11.3.4** The Digital Image/Graphics Specialist will create 1:1 scaled physical copies of the digital photographs or scans, and their enhancements, if applicable, only upon request of the Latent Print Examiner.

**11.3.5** The Digital Image/Graphics Specialist will create a case file folder and place his/her notes therein. The case file folder will then be routed to Central Records.

**11.3.6 References**

CCBI Crime Laboratory Administrative Procedures Manual

CCBI Forensic Science Quality Manual

Camera user manual

Software user manuals

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| **Revision History** | | |
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| 3/1/18 | 1 | New restructured tech procedures manual |
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# Chapter 12: Video Surveillance Stills and Enhancements

**12.1 Purpose**

This section describes an overview of the methodology used in extracting still images from video surveillance footage.

**12.2 Scope**

This is information defining the structure of the processing methodology.

**12.3 Video Surveillance Stills**

**12.3.1** The Digital Image/Graphics Specialist receives the item(s) of evidence from Evidence Receiving Unit personnel or through the secure URL as described in Chapter 14: Digital Submission of Evidence.

**12.3.2** Using the appropriate software and hardware, the Digital Image/Graphics Specialist will extract still images of requested portions of the surveillance video. These still images will be imported into Digital Crime Scene and the original video files will be attached to that Digital Crime Scene Call under the Documents tab.

**12.3.3** Enhancements to the extracted still images will be completed upon request. Those enhancements will remain in Digital Crime Scene with the original images.

**12.3.4** In the case of physically submitted evidence, the Digital Image/Graphics Specialist will sign the original evidence over to the Evidence Receiving Unit to be returned to the requestor.

**12.3.5 References**

CCBI Crime Laboratory Administrative Procedures Manual

CCBI Forensic Science Quality Manual

CCBI Evidence Submission Guide

Camera user manual

Software user manuals

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| 3/1/18 | 1 | New restructured tech procedures manual |
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# Chapter 13: Facial Recognition Program

**13.1 Purpose**

The purpose of this document is to provide guidelines for the CCBI Forensic Photography Unit with regard to facial image comparison. Practices included in this document are based on accepted and published standards from the Federal Bureau of Investigation (FBI), the Scientific Working Group on Imaging Technology (SWGIT), the Facial Identification Scientific Working Group (FISWG), and the Raleigh/Wake City-County Bureau of Identification. The guidelines presented in this document are intended to address appropriate practices for performing a variety of tasks associated with the acquisition, proper use, storage, comparison of facial images, and reporting of conclusions.

**13.2 Scope**

This document presents best practices for the proper use and treatment of images and for conducting facial recognition searches using the CCBI Facial Recognition (FR) software to search the CCBI arrestee mugshot database. This is done in an effort to assist with the identification of unknown individuals.

**13.3 Personnel**

FISWG recognizes two hierarchically distinct levels of facial comparison: facial review and facial examination (FISWG Approved Standards, Guidelines, and Recommendations - Guidelines for Facial Comparison Methods, version 1.0).

**13.3.1 Facial Review**

* Includes facial comparison situations that are by nature typically undertaken in a relatively short amount of time, such as a traffic stop or one-to-many facial recognition searches, etc.
* CCBI considers one-to-many FR searches as Facial Review level comparisons
* Personnel qualified for Facial Review: Reviewers and Examiners

**13.3.2 Facial Examination**

* More rigorous process than facial review
* Involves morphological comparison
* Requires knowledge of image science, facial anatomy, and the changeability of facial features
* CCBI considers Investigative Leads and other one-to-one image comparisons as Facial Examination level comparisons
* Personnel qualified for Facial Examination: Examiners

**13.3.3 FR Examiner**

*FR Examiner* refers to an individual who has completed the training course outlined in the CCBI Facial Recognition Examiner Training Manual, which includes attending the FBI/CJIS Face Comparison and Identification Training. Upon completion of this training, a Certificate of Competency in FR Examination will be issued.

Examiners have received advanced training in the CCBI FR application and its features. Examiners have a working knowledge of the usefulness and limitations of the CCBI FR application and the ability to use image editing software (such as Adobe Photoshop). They are qualified to assess image quality and appropriateness for FR searches. Examiners perform one-to-many and one-to-one facial image comparisons using the comparison features available in the FR application. Examiners determine if images are suitable for FR searches, enhance images for the purpose of conducting a FR search, and may develop potential investigative leads based on their observations of the results from the FR search. FR Examiners must have thorough knowledge of the usefulness and limitations of the software and applications used for Facial Recognition Examinations. Examiners must submit the conclusions of their analyses that result in a potential candidate for an investigative lead for verification by another FR Examiner.

**13.4 Facial Comparison**

All Facial Comparison will go through a standard series of steps.

**13.4.1 Facial Recognition Application**

An image is submitted to the CCBI for FR searching. It is at this point that the examiner analyzes the submitted image to determine its suitability searching. There may be a need to edit the submitted image to increase the likelihood of acceptance into the search engine. The image(s) is entered into the FR application where it is compared to the database and one of two results is delivered:

* “Probe not accepted.” – The probe image is not accepted into the search engine.
* The search engine supplies a candidate list for review.

**13.4.2 Facial Recognition Review**

A Facial Recognition Review is a basic one-to-many review of the probe image to the candidate list with the sole purpose of filtering through the large galleries of candidates and narrowing those results to candidates that require more detailed examination.

**13.4.3 Facial Recognition Examination**

Once the Facial Recognition Review is complete, the resulting candidates are then compared side-by-side with the submitted image in a Facial Recognition Examination. During this process, individual characteristics of the face are compared between the submitted image and the candidate (FISWG Approved Standards, Guidelines, and Recommendations Facial Image Comparison Feature List for Morphological Analysis, version 1.0). The Facial Recognition Examination determines if a candidate is an investigative lead. These examinations are subject to verification.

**13.5 Acquisition and Storage of Images for Facial Examination**

***Facial images that will be subjected to a* *FR search must be part of a criminal investigation.***

Digital images and video shall be submitted through the secure URL whenever possible. For details concerning the submission process, see Chapter 15: Digital Submission of Evidence.

The examiner should immediately report any images submitted to the CCBI regarding a subject that is not directly related to an ongoing criminal investigation to the CCBI Laboratory Division Deputy Director.

All images submitted for FR should consist of the original image or video in the highest quality format available. If a video is submitted, the examiner should ensure that the appropriate video players or video codecs are submitted along with the video.

Once the image is submitted to CCBI, it shall be entered into the Digital Crime Scene (DCS) system for archiving purposes. Any enhancements or edits of this image shall also be entered into the DCS as a separate file from its original. The FR candidate image that is the result of a FR examination shall also be entered into the DCS.

**13.6 Assessment of Images**

Once the FR examiner has received the image, the image will be assessed for its quality and its usefulness for a FR search. This assessment will include an evaluation of the subject’s pose, the lighting, focus, perspective, possible distortion, image resolution, image rotation, subject’s expression, etc. When the FR Examiner determines that the image quality is unsuitable for the Facial Recognition application, the factors detracting from the quality will be recorded in the case notes. The image will not be submitted to the FR application and no facial examination will occur. A report will be generated, using the template in the Report Writing Manual, stating that the requested service was not performed due to unsuitable image quality.

Optimal images for the FR search will be non-compressed original source images. There may be instances when a submitted image is saved in a format that is excessively compressed (e.g. within a PDF or Word document). Such images may be problematic for FR searches because the aspect ratio and amount of visual information contained within them may have been altered from the original image or they may be of such low resolution that the FR application will have difficulty generating a gallery of candidates. This information will be recorded in the case notes.

**13.7 File Format**

Images to be searched in the FR application must be saved as JPEG files. If the file format of the submitted image is anything other than JPEG, the image must be opened using image editing software (such as Adobe Photoshop) and resaved as a JPEG before submitting it to the FR application. If the change of image file occurs, it will be recorded in the case notes.

**13.8 Rotation**

If a submitted image shows the subject’s face in neutral or near neutral position, but the image of the face within the image is rotated, the rotation can be corrected, using image editing software or the FR application, so the face is oriented properly. If the image must be rotated, the examiner shall ensure the proportions of the image are constrained before it is rotated in order to preserve the integrity of the facial image to be searched. If the rotation of an image file occurs, it will be recorded in the case notes.

**13.9 Cropping**

If a submitted image shows the subject’s face in neutral or near neutral position, but the image shows a large amount of background information or too much of the torso below the shoulders, the image may be cropped, using image editing software or the FR application, to make it more suitable for a FR search. If the image file is cropped, it will be recorded in the case notes.

**13.10 3-D Pose-Correction**

If a submitted image shows the subject’s face in a non-neutral position, the face in the image may be pose corrected using the 3-D model capability within the FR application. Facial image comparison shall not be conducted using a 3-D pose corrected model as the comparative image. Only the originally submitted image shall be used for comparison purposes. If the image file is pose-corrected, it will be recorded in the case notes.

**13.11 Image Enhancements**

If a submitted image shows the subject’s face in a position that is appropriate for a FR search, but portions of the face are obscured or are unsuitable for a FR search (e.g., lines over the face in a passport photo, mouth showing exaggerated expression, eyes not visible, postmortem photo with slack-jaw, closed eyes, etc.), the examiner should take steps to ensure the probe image is made suitable for FR. The examiner should use image editing software to enhance the image and maximize its potential effectiveness for a FR search. All enhancements will be recorded in the case notes. Any comparisons by the examiner shall be between the originally submitted image and the potential investigative lead; the enhanced image shall not be used as the comparative image in a one-to-one comparison.

**13.12 Facial Recognition Search using the Dataworks Plus FACE Plus Facial Recognition Application**

This FR application can only be used by FR Reviewers and FR Examiners. It is the responsibility of the FR Reviewer/FR Examiner to search through a sufficient number of the images provided by the FR application to assess whether there are any candidates that are viable for further investigation. The extent of the gallery review will be set at a minimum of 50 candidates.

**13.13 Comparison of Facial Images**

When comparing images from the galleries provided by the FR application against the probe image, the examiner will look at an array of features to determine whether or not the facial features visible in the returned images have enough similarities with the probe image to warrant further analysis.

When a viable candidate for further investigation is identified, a more intensive morphological comparison is warranted. When conducting a morphological comparison, the FR Examiner will maintain a record of the facial features compared, which will be a part of the case notes. The features compared will vary, depending upon the nature of the images (i.e. not all features will be observable in all images). The examiner shall not make inferences about facial features that are not observable. No morphological comparison shall take place between a 3-D pose- corrected or enhanced probe images to the candidate image. When the FR Examiner determines that one or more of the candidate images are viable as an investigative lead, the FR Examiner will seek verification from another FR Examiner (LAPM 02) (FR Technical Procedures 13.16).

**13.14 Review of FR Search Results**

If the FR Examiner determines the submitted image is unsuitable for a FR search or that there are no viable investigative leads among the candidates generated by the FR search, verification of that conclusion is not required but may be conducted at the discretion of the examiner.

If the FR Examiner determines that any of the candidates returned by the FR search are potential investigative leads, then the facial image comparison is subject to verification (LAPM 02) (FR Technical Procedures 13.16). If the verification confirms the viability of the investigative lead, then the FR examiner will generate an Investigative Lead Report, using the template in the Report Writing Manual. If a candidate is generated for an investigative lead, an inquiry must be performed to determine that at the time the submitted image was captured, the candidate was not incarcerated in a Wake County Detention Facility. For all Investigative Leads, an Arrestee Profile will be printed from the Dataworks Plus Photo Manager database and will be included with the examiner’s notes.

**13.15 Reporting**

Facial Review and Facial Examination are related but are distinct categories of analysis. All facial recognition examinations require that a report be authored and published. For details concerning reporting of Facial Recognition examinations, refer to Chapter 15: Reporting.

**13.16 Verifications**

All FR examinations that result in an investigative lead must be verified by another FR Examiner as part of the technical review.

**13.17 Verification Conflicts**

If there is a disagreement in conclusion between the primary FR Examiner and the verifying FR Examiner, the section regarding Conflict Resolution in the Laboratory Administrative Procedure for Technical and Administrative Reviews will be followed.

**13.18 Administrative Report Review**

All reports must be reviewed for accuracy prior to them being published and disseminated. All crime laboratory employees are authorized to complete Administrative Reviews (LAPM 02).

**13.19 Technical Report Reviews**

Technical Reviews will be performed on 100% of the cases submitted for Facial Recognition. Technical Reviews will be completed by an FR Examiner other than the one who authored the report.

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| **Revision History** | | |
| **Effective Date** | **Version Number** | **Reason** |
| 3/1/18 | 1 | New restructured tech procedure manual |
| 3/19/18 | 2 | 13.14 added for Investigative Leads, an Arrestee Profile will be printed from Dataworks Plus Photo Manager database be included in notes. |
| 7/11/19 | 3 | Removed second sentence from 13.16 and revised 13.7 to be consistent with conflict policy in LAPM; Removed verification requirement and included as part of technical review; 13.19 made facial recognition 100% tech review and removed responsibility of the examiner to flag cases for tech review. Corrected reference in 13.15 to be chapter 15 |
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# Chapter 14: Digital Submission of Evidence

**14.1 Purpose**

The purpose of this procedure is to establish guidelines for the digital submission of evidence.

**14.2 Scope**

This procedure applies to all evidence that is submitted through the secure URL.

**14.3 Equipment**

N/A

**14.4 Procedure**

**14.4.1** A secure URL has been established for the submission of digital files as evidence. The link, username, and password to this secure URL will be provided to requesting agencies as needed to facilitate evidence submission.

**14.4.2** Once in the secure URL, the requesting official can download the CCBI-002 Laboratory Examination Request, which can be filled out digitally and submitted into the secure URL along with the digital files for examination. The CCBI-002 Laboratory Examination Request is required for all submissions to the secure URL. For video submissions, the CCBI-202 CCBI Supplemental Request Form for Video Submissions is required. This form can also be downloaded from the secure URL.

**14.4.3** The secure URL automatically sends an email notification to ccbievidence@wakegov.com.

**14.4.4** The CCBI-002 Laboratory Examination Request will be printed along with the notification email. The Chain of Custody will be signed by the individual importing/attaching the files into Digital Crime Scene.

**14.4.5** Submitted image files will be imported into Digital Crime Scene as a new call. Any other files including, but not limited to, pdf files, word documents, and video files will be added to Digital Crime Scene Call under the Documents tab.

**14.4.6** Once the files are imported into Digital Crime Scene, the appropriate Crime Laboratory personnel will be notified and the CCBI-002 will be transferred to that individual.

**14.5 Limitations**

N/A

**14.6 Safety**

N/A

**14.7 Reference**

N/A

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# Chapter 15: Reporting

**15.1 Purpose**

The purpose of this procedure is to establish guidelines for writing case reports.

**15.2 Scope**

This procedure applies to all reports generated for the forensic photography unit and for facial recognition examinations.

**15.3 Equipment**

N/A

**15.4 Procedure**

**15.4.1** A written report will be completed using the Laboratory General Report Format Template and Entry Descriptions located in the CCBI Report Writing Manual for all services performed by the Forensic Photography Unit with the exception of reports for Facial Recognition examinations. For Facial Recognition examinations, a written report will be completed using the CCBI-209 Facial Recognition Report template located in Sharepoint.

**15.4.2** The “Type of Examination Requested” section of the Laboratory General Report Format template will list “Forensic Photography Service” for all services performed by the Forensic Photography Unit, except for Facial Recognition examinations. The “Type of Examination Requested” section of the CCBI-209 Facial Recognition report template will list “Facial Recognition”.

**15.4.3** The “Processing Details” section of the CCBI-209 Facial Recognition report template will list the details of the examination including any Digital Crime Scene numbers associated with submitted files and whether those files were enhanced and sent to a Facial Recognition search or not.

**15.4.4** The“Results and Conclusions” section of the Laboratory General Report Format templatewill list:

**15.4.4.1** Details concerning the requested service,

**15.4.4.2** Enhancement information, if applicable,

**15.4.4.3** Item number(s) and latent card number(s), if applicable,

**15.4.5** The “Results and Conclusions” section of the Facial Recognition Report template will contain a summary of the results of the Facial Recognition examination using one of the following statements:

**15.4.5.1 “**Unsuitable for Facial Recognition searching” with a short explanation of the reason for this conclusion (ex. “The image was of insufficient quality to yield viable results.”).

**15.4.5.2** “No Viable Candidates: The Facial Recognition search yielded no viable candidates at this time.”

**15.4.5.3** “Investigative Lead: The following candidate is deemed viable for further investigation based on a Facial Recognition search and Morphological Comparison.” Additional information will be supplied with this statement including, but not limited to, the submitted image; the probe image used in the Facial Recognition search; the known image of the individual deemed to be an Investigative Lead; and the name, date of birth, SID number, Local ID number, and date of arrest for the known image that was used for the Morphological Comparison.

**15.5 Limitations**

N/A

**15.6 Safety**

N/A

**15.7 Reference**

N/A

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| **Revision History** | | |
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| 3/1/18 | 1 | New restructured tech procedure manual |
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# Chapter 16: Abbreviation List

The following is a list of abbreviations and acronyms commonly used by the Facial Recognition Program. This list has been generated to assist in the interpretation of case notes and is not a standardized list of required abbreviations. The abbreviations are appropriate written in either lower or upper case and they are appropriate with or without punctuation such as periods. Common chemical formulas, chemical, mathematical, and shorthand abbreviations are equally acceptable and will not be listed here.

A: Aperture Priority, for photography equipment

Admin: Administration

ALS: alternate light source

AOI: Area of Interest

AVI: Audio Video Interleave

BMP: Bit mapped

B/W: Black and White

CCD: Charged Couple Device

CCW: Counter clockwise

CD: Compact disc

CD-R: Recordable compact disc

CD-RW: Re-writable compact disc

CF: compact flash memory card

CMYK: Cyan, Magenta, Yellow, &Black

Cont: Continued

Config: Configuration

CSP: crime scene photographs

CSV: crime scene video

CW: Clockwise

DCS: Digital Crime Scene System

Det: Detective

Dig: Digital

DPI: Dots per inch

DUP: Duplicate

DVD: Digital video disc

DVR: Digital video recorder

DX: Drug Section

EDF: enhanced digital file

ENH.: enhancement or enhanced

Ex: Examiner

FR: Facial Recognition

Freq: Frequency

FX: Firearms/Tool mark Section

GB: Gigabyte

HD: High density

HDR: High Dynamic Range

IMG: Image

IMP: Impression

Inv: Investigator

IR: InfraRed

IS: Image Stabilization

ISO: International Standards Organization

JPG: joint photographic experts group file format

LB: Latent Box

LC: Latent Card

LEC: Latent Evidence Control

LP: Latent Print

LPE: Latent Print Examiner

LX: Latent Print Section

M: manual mode, for photography equipment

MB: Mega Bite

MC: Morphological Comparison

MPEG: Moving Pictures Expert Group

NDQ: Not Database Quality

NEF: Nikon Electronic File

NFA: No further action

NVC: No Viable Candidate

ODF: original digital file

Orig: original

P: Program Mode, for photography equipment

PFF: Proprietary file format

PL: Photo Log

PPI: Pixels per inch

PS: Adobe Photoshop

PSD: PhotoShop Document

PVEDF: printed version of enhanced digital file

PVODF: printed version of original digital file

RAW: Binary file without a specified format

Rec: received

RGB: Red, Green & Blue

S: Shutter Priority, for photography equipment

S/N: Serial number

SD: Secure Digital memory card

SDHC: Secure Digital High Capacity memory card

SPEX: system used by Latent Print Examiners for local searching of finger and palm prints

TIFF: tagged image file format

TTL: Through the lens

UNS: Unsuitable for Facial Recognition Search

USB: Universal Series Bus; type of drive used to transfer files

UV: Ultra Violet

VE: Video Enhancement

VLC: VideoLAN Client

VR: Vibration Reduction

WMP: windows media player

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| **Revision History** | | |
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| 3/1/18 | 1 | New restructured tech procedures manual |
| 10/29/18 | 2 | Changed MC from Memory Card to Morphological Comparison; Removed Mor Com |
| 7/11/19 | 3 | Removed F/T: Forensic Technician |
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