San Diego Police Department
Crime Laboratory

Latent Print Unit Manual

Approved by: Katie Boyd, Supervising Latent Print Examiner

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1.0 UNIT OVERVIEW

The Latent Print Unit is located in the Crime Laboratory, on the 6th floor, room 670 of the San Diego Police Department Headquarters building. The Crime Laboratory address is 1401 Broadway, San Diego, CA 92101, Mail Station 725.

The unit is composed of one supervisor, one Latent Print Examiner III (Technical Lead), ten Latent Print Examiners, and three Latent Print Examiner Aides.

The Latent Print Unit is an integral part of the San Diego Police Department Crime Laboratory. The unit is charged with the responsibility of analyzing, comparing, and evaluating latent print evidence while maintaining evidence integrity.

The unit is considered a secure evidence storage room. The door will remain closed and locked at all times. Only the electronic card key will be used to unlock the door.

Latent Print Unit personnel will ensure case evidence in their custody is secured in a manner to prevent the loss or damage of any items. This can be done by packaging the evidence in the original envelope, placing the evidence in a folder, or securing the evidence with a binder or paper clip. Case evidence in progress should be placed in an area accessible to the unit supervisor.

2.0 LATENT PRINT UNIT WORKFLOW

2.1 Latent Print Unit Work Requests

Latent Print Unit work requests can be used for cases that involve the following:

- Manual comparison to a known subject
- Complex ALPS cases
- Collection of Major Case Prints

Work requests are routinely received and processed through the Laboratory's Administration Support Unit via LabOnQ. Requests can also be received and processed by the unit supervisor or supervisor OCA.

Work requests will be initialed, case managed, and assigned by the unit supervisor or supervisor OCA.

Priority of rush work requests must be approved by the unit supervisor or supervisor OCA prior to the commencement of work.

Work requests will be kept as a note page in the examiner's case notes.

2.2 Proactive Program

The Latent Print Unit works all cases proactively with the exception of:

- Cases with a known suspect that requires manual comparison
- Complex ALPS cases
- Homicide Cases

Cases assigned proactively do not require a work request but are managed by the unit supervisor or a supervisor OCA.

Latent Print Unit personnel will send an email notification informing the detective to submit a work request for cases with a known suspect and for complex ALPS cases.

Priority or rush proactive case work must be approved by the unit supervisor or supervisor OCA before the commencement of work.

3.0 EVIDENCE HANDLING

3.1 Incoming Latent Print Evidence

Latent print evidence will be received through the property room or Evidence.com by Latent Print Unit personnel for routine cases.

Latent Print Unit personnel will ensure all evidence received from the property room is sealed. If the evidence is not sealed, property room personnel will be notified.

Latent print envelopes will contain either a barcode label or a property tag number.

Latent print evidence with a barcode label will be scanned by property room personnel indicating that the evidence was checked out to the examiner receiving it. For cases with property tag numbers, examiners will follow property room procedures to receive the evidence (sign the property room check-out log, sign the back of the property tag, etc.)

Latent Print Unit personnel will initial and date the latent print envelope when evidence is received from the property room.

Latent Print Unit personnel will upload Evidence.com images onto the local network.

For routine proactive case assignment, unit personnel will:

- Re-initial and include an additional date on the envelope if the evidence is not assigned the date it was received
- Scan the barcode label indicating that the evidence was received in the unit
- Scan the barcode label from the unit to the examiner, indicating that the evidence has been assigned to the examiner
- Distribute the latent print evidence to the assigned examiner either in-person, in their inbox, or by email for Evidence.com images

Latent print evidence associated with urgent requests can be provided directly to the Latent Print Unit by a detective or officer and will include:

- Supervisor approval prior to the commencement of work
- Documentation of the transfer of evidence in the case notes. This documentation will include the individuals transferring and receiving the evidence; a description or barcode number of the evidence being transferred; the date of the transfer; and the condition of the evidence (sealed or unsealed)
- A barcode number and work request. These will be provided by the requestor as time permits but prior to the completion of the case

3.2 Documentation of Incoming Latent Print Evidence

3.2.1 Latent print envelopes with incomplete or incorrect documentation will be completed as followed:

Unit personnel will ensure the envelope containing latent print evidence will be identified by a unique barcode number or property tag number.

Unit personnel will ensure the following information is documented on the latent print envelope. If the information is missing or incorrect, Latent Print Unit personnelwill write in the correct information. If this is not possible, Latent Print Unit personnel will

notify the officer to come to the unit and add the correct documentation on the envelope, to include:

- Case/incident number
- Name of the victim (if applicable)
- Contents (number of latent print cards, elimination prints, discs, images, scans, etc.)
- Barcode number on the barcode label
- Incident number on the barcode label

Latent Print evidence will be repackaged if the evidence is not properly secured to prevent any loss or damage. The original packaging will be kept inside the new envelope and the case information listed above will be written on the new envelope.

3.2.2 Latent print evidence with incomplete or incorrect documentation will be completed as followed:

The examiner will ensure the correct case/incident number is documented on the latent print evidence (latent print cards, elimination prints, discs, etc.). If the case/incident number is missing or incorrect, the examiner will write in the correct information.

The examiner will ensure the following information is documented on the latent print evidence in order to proceed with an examination:

- Name of the lifting officer
- Date of recovery
- Location from which the lifts were taken

Latent print evidence that does not have the required documentation listed above cannot be examined unless:

- The examiner can acquire the information by contacting the lifting officer or from a case record management system (FileOnQ or NetRMS). Case information acquired by any of these means will be included in the case notes along with supporting documentation when applicable (email or communication log)
- The case results in a no value opinion and interpretation. However, if the latent print evidence has no case information (blank), the examiner will write in the case/incident number and the barcode number on the evidence
- Latent Print Unit personnel notify the officer to come to the unit to complete the required documentation

In addition to the unique barcode or property tag number on the latent print envelope, each latent print card will be uniquely identified with a sequential number. Sequential numbering of latent print cards will be marked as 1, 2, 3, etc. or 1 of 3, 2 of 3, etc. (not 1, 1a, 2, 2a, etc.).

Latent print cards that are numbered incorrectly will be re-numbered by the examiner.

Latent print cards taped together will be numbered by the examiner if not already numbered by the officer.

Latent print cards with hinge lifters that are received securely attached on top of one another (taped or stapled) will be considered as one latent print card.

Non-latent print evidence (shoe impression lifts, fabric impression evidence, etc.) that contains friction ridge detail will be inventoried in the report and case notes. Latent Print Unit personnel will notify the officer of the additional evidence in the latent print envelope.

Non-latent print evidence that does not contain any friction ridge detail requires Latent Print Unit personnel to notify the officer to come to the unit, repackage, and re-impound the non-latent print evidence into the property room.

3.2.3 Documenting incoming latent print evidence

The examiner will mark all latent print evidence that is examined with their initials and exam date.

Subsequent examinations by the initial examiner requires re-marking the evidence with their initials and new exam date.

3.3 Latent Print Evidence Disposition

The disposition of latent print evidence will be included in the report and case notes.

There is no disposition for Axon images. Axon images are viewed on the local network.

Latent print evidence will be sealed prior to being returned to the property room. The seal will include the examiner's initials and date and flow from the tape to the envelope.

The examiner will place the latent print evidence in the Latent Print Unit file for return to the property room or return the evidence to the property room in person.

Latent print evidence being returned to the property room from the Latent Print Unit file will be scanned from the examiner to the Latent Print Unit, then returned to the property room by Latent Print Unit personnel in person.

Evidence will not remain in the possession of an examiner for greater than one year unless the unit supervisor approves an extension.

4.0 TECHNICAL RECORD

4.1 Latent Print Opinions and Interpretations

4.1.1 Suitability for comparison

The examiner will perform a visual examination of the latent print evidence and use the following suitability guideline to determine which impressions are of sufficient quality to compare. This guideline was implemented as a quality assurance measure to provide a minimum standard for determining suitability.

A latent print will be determined to be suitable for comparison if it contains a minimum of eight clear minutiae that are easily discernible in a finger, toe, or phalange (middle and lower joints) and a minimum of twelve clear minutiae that are easily discernible in a palm or footprint These minutiae are located during analysis, prior to comparison. In addition, the latent print must meet one or more of the following criteria:

- Discernible source area
- Discernible orientation
- At least one focal point (core, delta, crease, scar)
- At least one target area (a target area is the friction ridge detail in the latent print that has been selected for search to the known exemplar)

Latent prints that do not meet this guideline may be compared at the discretion of the examiner. The reason(s) to compare must be documented in the case packet.

4.1.2 Suitability for exclusion

The examiner will perform a visual examination of the latent print evidence and use the following suitability guideline to determine which impressions are of sufficient quality to exclude. This guideline was implemented as a quality assurance measure to provide a minimum standard for determining suitability.

A latent print will be determined to be suitable for exclusion if it meets all of the following criteria:

- Discernible source area
- Discernible orientation
- At least one focal point (core, delta, major crease, scar)
- First and second level detail (second level detail around a focal point is required)
- More than one target area (a target area is the friction ridge detail in the latent print that has been selected for search to the known exemplar)

Latent prints that do not meet this guideline may be excluded at the discretion of the examiner. The reason(s) to exclude must be documented in the case packet.

4.1.3 Annotating comparison quality impressions:

The examiner will annotate, in red, each comparable impression with:

- A letter to indicate the impression on the latent print card/image has been analyzed. This can be done on each latent print card (corresponding with the matrix) or consecutively when there is one lift attached to multiple latent print cards
- An arc over the top of fingers, fingertips, or toes
- Two lines, one on either side of phalanges (middle and lower joints)
- A line at the base of palm prints and footprints
- A circle when the orientation and/or source area is not discernible

Any impression that is incidental to the lifting process (lifting officer print), at a minimum, will be marked in the case notes (possible lifting officer prints, possible officer prints, etc.).

4.1.4 Using the ACE-V process

ACE-V is an acronym that stands for Analysis, Comparison, Evaluation, and Verification. This process will be used by examiners during their examination of latent print evidence.

Analysis:

The examiner will perform a visual analysis of the latent print evidence to determine which impressions have sufficient quantity and quality of friction ridge detail to compare. The analysis is conducted prior to comparison and can include:

- First level detail-includes overall pattern, source area, ridge flow, orientation, core and delta placements, and ridge count
- Second level detail – includes ridge characteristics (bifurcations, ridge endings, dots), their locality and spatial relationship, clarity, and direction
- Third level detail – includes ridge structure, shape, width, relative pore location, and any creases or scarring

If the latent print evidence is determined to be of no value (not suitable for comparison), no further examination is performed.

Comparison:

The examiner will perform a side-by-side comparison of the latent and known impressions to determine correspondence between them. The comparison is performed by:

- Choosing target area(s)
- Examining first, second, and third level detail for similarities and dissimilarities

Evaluation:

The examiner formulates an opinion and interpretation based on the analysis and comparison between the latent and known impressions. This evaluation is based upon the significance of agreement or disagreement of friction ridge detail. An examiner can come to the following opinions and interpretations:

Identification: Due to corresponding friction ridge detail, the latent and known impressions were determined to have originated from the same source.

Exclusion: Due to non-corresponding friction ridge detail, the latent and known impressions were determined to have not originated from the same source.

Inconclusive: There was insufficient quality and/or quantity of friction ridge detail present in the latent impression to identify or exclude. Reasons for an inconclusive determination can include:

- Orientation (OR): The orientation of the impression could not be determined
- Source area (SA): The source area of the impression could not be determined
- Orientation/Source area (O/S): The orientation and source area of the impression could not be determined
- Insufficient clarity and/or detail (ICD): The impression lacks sufficient clarity and/or detail to identify or exclude
- Reliability is uncertain (RU): The reliability of the friction ridge detail in the impression is uncertain
- Not suitable for exclusion (NSE): The friction ridge detail observed does not meet the suitability for exclusion guideline

Incomplete: Known exemplars are needed to complete the examination (major case prints, palm prints, footprints, fingertips, additional fingerprints).

Verification:

All identifications and exclusions will be verified by a second qualified examiner.

The verifier will complete the "ACE" portion of the ACE-V process. The examiner performs an independent analysis, comparison, and evaluation of the latent and known impressions.

4.1.4.1 Consultations

A consultation is an interaction between examiners regarding one or more questioned impressions which takes place prior to the technical review. Consultation is a separate process from verification. The consultant shall not be used as the technical reviewer or verifier for the examination.

Consultations for evaluation decisions (identification, inconclusive, or exclusion) will be documented in the case notes and will include the following:

- The consultant on the chain of custody
- Consultant's opinion/interpretation
- Consultant's initials and date of the consultation

Consultations during the analysis phase do not need to be documented but should be directed to the Technical Lead. Examples of consultations that may occur during the analysis include: suitability for comparison, suitability for computer search, anatomical region, orientation, target group selection, variability in appearance, and distortion interpretation.

4.1.5 Documenting identifications on evidence and known exemplars

Latent Print Evidence:

Identifications will be documented in red and placed as close as possible to the identified latent impression without interfering with any other latent impression(s). The following information will be included:

- Name of the individual that was identified

- Area of friction ridge skin that was identified, to include the finger number or palm. The description can be abbreviated or written out (RT #1, #1 right thumb, LP, Left palm)
- Initials of the examiner that made the identification
- Date of the identification

Known Exemplars:

Known exemplars used for identifications will be documented in red and include the following:

- Initials of the examiner that made the identification
- Date of the identification (if there are multiple identifications in the case to the same known exemplar and source area, only the first identification date is needed)

Verifier:

The verifier, if in agreement, will document, in red, their initials and date of verification on the latent print evidence and the known exemplars as close to the case examiner's notations without interfering with any other latent impression(s).

4.1.6 Latent to latent comparisons and documenting multiple lifts or images

When a latent-to-latent comparison is performed, and the opinion and interpretation is that the two impressions have been identified as coming from the same source due to corresponding features, the following will occur:

- The examiner will generate a side-by-side comparison which will be included in the case notes. This side-by-side will include the words "latent to latent," corresponding features, and the date the comparison was performed
- The technical reviewer will handwrite "I agree" on the case examiner's side-by-side comparison
- At their discretion, the examiner can mark the evidence (impression A comes from the same source as impression A on latent print card 2)

Multiple tape lifts or images of the same impression can be documented on the latent print card(s) or images if not already indicated by the individual recovering the evidence. No side-by-side comparison or verification is required. The evidence can be marked as:

- Impression A appears to be the same as impression B on latent print card 3
- Impression A appears to be the same as impression B on image 5

4.2 Automated Latent Print System (ALPS)/Automated Fingerprint Identification System (AFIS)

4.2.1 Suitability for determining ALPS quality impressions

The examiner will perform a visual examination of the latent print evidence and use the following suitability guideline to determine which impressions are ALPS quality and suitable for a computer search in ALPS. This guideline was implemented as a quality assurance measure to provide a minimum standard for determining suitability.

Latent prints that do not meet the below suitability guidelines may be searched at the discretion of the examiner. The reason(s) to search must be documented in the case packet.

FINGERS:

Local Database Search: A fingerprint will be determined to be suitable for a computer search in the Local ALPS database if it contains at least eight clear minutiae that are easily discernible, form a cluster, and are not scattered throughout the print. These minutiae are located during the analysis. In addition, the fingerprint must meet one or both of the following:

- Discernible orientation
- Approximate core location

Due to repeatability factors, if the following areas are searched, then the fingerprint must include at least twelve clear minutiae that are easily discernible, form a cluster, and are not scattered throughout the print:

- Only the delta
- Only the area below the pattern area (when the core and/or orientation is not discernible)
- Only the area above the pattern area (when the core and/or orientation is not discernible)

FBI Database Search: A fingerprint will be determined to be suitable for a computer search in the FBI ALPS database if it contains at least twelve clear minutiae that are easily discernible, form a cluster, and are not scattered throughout the print. These minutiae are located during the analysis. In addition, the fingerprint must meet both of the following:

- Discernible orientation
- Discernible core

PHALANGES:

Local Database Search: A phalange (middle and lower joints) will be determined to be suitable for a computer search in the Local ALPS database if it contains at least twelve clear minutiae that are easily discernible, form a cluster, and are not scattered throughout the print. These minutiae are located during the analysis.

Phalanges will be searched as palm prints in the database due to their placement on the known record. An additional search as a finger in the database is at the examiner's discretion.

FBI Database Search: It is at the discretion of the examiner to search phalanges in the FBI ALPS database.

PALMS:

Local Database Search: A palm print will be determined to be suitable for a computer search in the Local ALPS database if it contains at least twelve clear minutiae that are easily discernible, form a cluster, and are not scattered throughout the print. These minutiae are located during the analysis.

For large palm prints with abundant minutiae, examiners should use their discretion to ensure all areas with sufficiently clear minutiae are searched (i.e., interdigital, hypothenar, and/or thenar areas or searching the entire impression).

FBI Database Search: A palm print will be determined to be suitable for a computer search in the FBI ALPS database if it contains at least sixteen clear minutiae that are easily discernible, form a cluster, and are not scattered throughout the print. These minutiae are located

during the analysis. In addition, the palm print must meet both of the following:

- Discernible orientation
- Discernible area of the palm (interdigital, hypothenar, thenar)

For large palm prints with an abundance of minutiae, examiners should use their discretion to ensure all areas with sufficiently clear minutiae are searched (i.e., interdigital, hypothenar, and/or thenar areas or searching the entire impression).

4.2.2 Annotating ALPS quality impressions

The examiner will annotate, in red, each finger impression searched with:

- A letter to indicate the finger impression on the latent print card/image has been analyzed. This can be done on each latent print card or consecutively when there is one lift attached to multiple latent print cards
- An arc over the top of fingers or fingertips
- A circle when the orientation and/or source area is not discernible
- A "P" number to indicate the finger impression was searched in ALPS

The examiner will annotate, in red, each phalange or palm impression searched with:

- A letter to indicate the phalange or palm impression on the latent print card/image has been analyzed. This can be done on each latent print card or consecutively when there is one lift attached to multiple latent print cards
- A line at the base of palm prints
- Two lines, one on either side of phalanges (middle and lower joints)
- A circle when the orientation and/or source area is not discernible
- A "PP" number to indicate the phalange or palm impression was searched in the ALPS database

4.2.3 ALPS Database Searches

All ALPS quality impressions, for property and person crime cases, will be searched, at minimum, in the Local and FBI ALPS databases.

It is at the discretion of the examiner to search additional databases to include Datasets or DOJ. If a Dataset search is performed, the following will apply:

- If an impression is searched in a dataset which results in a Hit, no additional database searches are required
- If an impression is searched in a dataset which results in a No Hit, additional database searches are required

The examiner will communicate the extent of the database(s) searched (Local, DOJ, FBI, Dataset) in the case notes.

The examiner will include a minimum of ten candidates for all database searches when available.

The examiner will perform an on-screen side-by-side comparison of the latent impression that was searched to the candidate's known exemplar.

- A Hit is determined when a candidate cannot be eliminated on screen. A Hit is a preliminary, unconfirmed result

- A No Hit is determined when a candidate can be eliminated on screen

If a search results in a Hit, the case notes will include:

- A side-by-side of the latent impression that was searched and the candidate's known exemplar (Search Confirmation page)
- The candidate list which is a list generated by the database of the known exemplars.

If a search results in a No Hit, the case notes will include:

- The candidate list which is a list generated by the database of the known exemplars.

4.2.4 Enrolling ALPS quality impressions

If an impression meets the ALPS suitability guideline and does not result in a hit, the impression will be enrolled in the unsolved database.

The examiner, at their discretion, can search an impression that does not meet the ALPS suitability and determine if the impression will be enrolled in the unsolved database.

4.2.5 Tenprint/Palm Print to Latent Inquiry (TLI/PLI/ULM)

TLI/PLI/ULM's are known impressions that are automatically searched against an unsolved database when an individual is printed via live scan at a detention facility.

The examiner will perform an on-screen side by side comparison of the latent impression that was searched to the candidate's known exemplar.

If a TLI/PLI/ULM results in a Hit, the examiner will:

- Delete the registered impression(s)
- Print a side-by-side of the latent impression that was searched and the candidate's known exemplar (Search Confirmation page)
- Document the side-by-side with the words "TLI Hit," "PLI Hit," or "ULM Hit," initial, date, and note which registered impressions were deleted from the database(s)
- For ULM's, print out the Summary Output and include it with the side-by-side

All Hits will be forwarded to the unit supervisor for case management.

4.3 Known Exemplars

4.3.1 Known exemplars electronically generated

The examiner retrieving electronically generated known exemplars from the San Diego County Document Archive System, the California Department of Justice Automated Archive System, or the Federal Bureau of Investigation's known repository will:

- Stamp each page of the known exemplars using the appropriate stamp (Local, DOJ, or FBI)
- Sign and date the stamp
- Mark multiple page known exemplars as 1 of 4, 2 of 4, etc.
- Be retained in the case notes

Known exemplars printed from archive systems do not need a barcode as they can be repeatedly reproduced electronically.

Receipt of known exemplars received via email or fax will be included in the case notes.

4.3.2 Known exemplars not generated electronically (original evidence)

Known exemplars collected by an examiner (major case prints) will include a barcode label. These known exemplars are considered original evidence.

The examiner will include the following on each exemplar sheet:

- Case/incident number
    - Examiner's handwritten initials
    - Date of collection
    - Name of the individual printed
    - Page number if multiple exemplars are collected (1 of 2, 2 of 2, etc.)
    - Barcode label

Postmortem prints collected by an examiner should be packaged in clear plastic sleeves.

The examiner will place the known exemplars in an envelope with an additional barcode label placed on the outside of the envelope. These exemplars will be sealed and impounded in the property room.

Original evidence not collected by the examiner (inked victim postmortem prints, inked suspect finger and palm prints) will include the following on each exemplar:

- Case/incident number
- Examiner's handwritten initials
- Date
- Page number if there are multiple exemplars (1 of 2, 2 of 2, etc.)

A copy of all known exemplars used during comparison will be retained in the case notes (elimination prints, inked victim postmortem prints, major case prints, etc.).

4.3.3 Known to known comparisons

Known print to known print (K to K) comparisons are conducted when multiple known exemplars are used for the same subject from the following sources:

- Electronically generated known exemplars from different archive systems (Local,DOJ, FBI)
- Major Case Prints
- Elimination Prints
- Inked finger/palm prints

Known to known print comparisons are not required for exemplars generated from the same archive system, if the SID#, FBI#, or MAIN# are the same, the date of birth is the same, and the names are the same or significantly similar as to associate to the same individual.

Known to known comparisons must be verified and will only be conducted in the latent print unit. They will not be performed in a courtroom or in the District Attorney's Office.

If there is no identification, the examiner will indicate in the case notes that no K to K identification was made.

If there is an identification, the examiner will document the known exemplars in red with "K to K ID," the identification date, and their initials. The verifier will document the identification in red near the primary examiner's documentation with the verification date and their initials.

4.4 Case Notes

Each page of the case notes will contain the following:

- Case/incident number
- Date
- Examiner's handwritten initials
- Page number

The first page of the case notes will include the date of examination and the technical reviewer's handwritten initials and date of review.

Methods used during the examination will be included in the case notes and only referred to as "methods used." The following will be listed in case notes when applicable:

- Visual analysis performed by the examiner/examiner aide
- Manual comparison performed by the examiner
- Automated Latent Print System (ALPS) computer search
- Dataset computer search
- Digital processing
- Collection of known exemplars using (black powder and adhesive sheets, ink and a tenprint card, mikrosil, etc.)
- Friction ridge recovery techniques (boiling, sodium hydroxide, Dodge, etc.)

A copy of all analyzed latent print evidence will be included in the case notes to include the latent print envelope(s), latent print card(s), and image(s) from disc(s).

A contact sheet of all images will be generated and include the file name for each image (barcode number, image description, image number). Any images determined to be suitable for further examination will be printed in a larger format and identified with the file name.

Latent print cards taped together will be documented in the case notes (latent print cards 1 and 2 taped together, latent print cards 1 and 2 are attached, etc.) if not visually represented.

All annotated impressions require a documented analysis which will be included in the case notes. The analysis, at a minimum, will include the features examined. This can be documented in the form of an analysis sheet or a Cogent print out.

All opinions and interpretations must be included in the case notes.

Identifications, exclusions, and inconclusive opinions and interpretations will be documented as followed:

Identification:

- Examiners will generate a side-by-side comparison for identifications which will be included in the case notes. This side-by-side will include the word "identification," corresponding features, and the date the identification was made.
- The examiner verifying an identification will generate a side-by-side comparison

which will be included in the case notes. This side-by-side will include the words "verification" and "identification," corresponding features, and the date the verification was made.

Exclusion:

- The examiner verifying an exclusion will handwrite "I verified the exclusion" or for multiple exclusions "I verified all exclusions" on any note page that includes an exclusion opinion and interpretation (matrix).

Inconclusive with similarities:

- Examiners will generate a side-by-side comparison for inconclusive with similarities which will be included in the case notes. This side-by-side will include the word "inconclusive" or the reason for the inconclusive, the corresponding features, and the date the opinion and interpretation was made.
- The technical reviewer will handwrite "I agree" on the case examiner's side-by-side comparison for inconclusive opinions and interpretations that contain similarities to a known exemplar.

Inconclusive:

- The examiner will include a reason for inconclusive opinions and interpretations in the case notes.

Records of pertinent communication will be documented in the case notes to include communication logs or emails. Refer to the Quality Assurance Manual Policy on Process Requirements for more details if needed.

The examiner will write the case/incident number on photographs or papers that are not standard letter size and attach them to a standard letter size (8½" x 11") blank sheet of paper.

The internal chain of custody between the examiner, the verifier, and the technical reviewer will be included in the case notes. The following information will be provided:

- A description or barcode/property tag number of the evidence being transferred
- Condition of the evidence (sealed or unsealed) upon initial receipt
- Individuals transferring and receiving the evidence
- Location the evidence was transferred to (in-person or via inbox)
- Date of the transfer
- Disposition of barcoded evidence (to the Latent Print Unit file or to the Property Room)

4.5 Reports and Notifications

4.5.1 Reports

A latent print unit report is written after the completion of all laboratory activities.

All opinions and interpretations must be included in the report.

Identification and exclusion opinions and interpretations will not be released prior to verification. Additional opinions and interpretations will not be released prior to technical review (no value, inconclusive, etc.).

Identifications must include the following statement to qualify the significance of association: Identifications are based on the friction ridge detail observed to be in agreement between the latent and known impressions. This level of agreement is not expected to be observed in impressions originating from different sources.

Elimination prints shall not be compared without the approval of the unit supervisor unless a work request specifically states to compare the elimination prints.

The examiner will communicate the extent of the Automated Latent Print System computer database(s) searched (Local, DOJ, FBI, Dataset) in the report.

Refer to the Laboratory Quality Manual policy on Reporting Results for the required elements to include in the report. In addition to this policy, reports will include the following unit specific requirements:

- Instances where required information for the header is not available, the words "Not Listed" will be used
- Use a Suspect Header for all manual cases
- Use the Background Report Body Heading for TLI and LPE Aide HIT reports
- Use the Evidence Collected Report Body Heading for Major Case Print reports
- Use the Exemplar Report Body Heading for all cases in which a manual comparison is performed to an exemplar generated from an archive/repository

The Latent Print Unit Report Appendix will be attached to all reports except for the following:

- No Value cases
- Non-ALPS cases

Technical and Administrative reviews are performed on all reports prior to issuance.

For report corrections, refer to the Laboratory Quality Manual policy on Issuing Corrections.

4.5.2 Notifications

Notifications are issued on unconfirmed TLI/PLI/ULM hits in which no further work is going to be conducted. Reports are issued on confirmed TLI/PLI/ULM hits.

The side-by-side printout(s) of the unconfirmed TLI/PLI/ULM is initialed and dated by the Examiner who evaluates the unconfirmed hit.

The notifications are issued via email by the Latent Print Unit supervisor or supervisor OCA.

The Detective is informed that there was an unconfirmed TLI/PLI/ULM hit and that no further work will be conducted.

The Unconfirmed Tenprint-to-Latent Inquiry (TLI) Database Notification and printouts are scanned into the case file.

4.6 Latent Print Unit Cover Sheet

The coversheet is used by the Latent Print Unit supervisor to gather statistical data and will be retained for monthly statistics and the ALPS Recognition Program.

The examiner will complete all the required fields in the coversheet.

The coversheet is reviewed during technical review.

4.7 Technical and Administrative Reviews

All cases will be technically and administratively reviewed.

The examiner who performs the technical review does not have to be the verifier on the case.

When discrepancies in the analysis or opinions and interpretations are found, the reviewer must address corrections directly with the case examiner. The technical reviewer should not initial paperwork until corrections have been made.

Refer to the Laboratory Quality Manual policy on technical and administrative review for elements of the technical and administrative review processes. In addition to these, while performing reviews, refer to the following unit specific procedures:

- The technical reviewer will determine if opinions and interpretations reached were reasonable and are supported in the report and case notes
- All identifications and exclusions will be verified
- The technical reviewer will review all reports, case notes, and evidence to ensure lab and unit policies and procedures were followed

4.7.1 Conflict Resolution

If disagreements are found, the technical reviewer will notify the primary examiner and provide an opportunity to correct the information:

- If the primary examiner changes an opinion and interpretation based on the review, all original documentation must be kept, and the appropriate notations of the new opinion and interpretation must be documented. The new information will be reviewed by the same examiner performing the original technical review. If the original technical reviewer is no longer available, the entire record will be reviewed by another competent examiner.
- If the primary examiner maintains their original opinion and interpretation, a discussion between the primary examiner and technical reviewer will take place. If no resolution can be made, the unit supervisor and technical lead will be notified. The supervisor, technical lead, or designee (chosen by the supervisor or technical lead) will be utilized to resolve the conflict and formulate a resolution.

4.8 Reworking Cases Previously Examined

Additional work may be requested on cases previously examined by examiners unable to continue the work. The Latent Print Unit supervisor will determine what work will be performed prior to assignment and will advise the new examiner.

If the new examiner does not agree with the opinion and interpretation of the previous examiner, they may consult with another examiner which will be included in the case notes. The Latent Print Unit supervisor and QA manager will be notified of the discrepancy.

The numbering and/or lettering system used at the time of the original request will be continued with the exception of the known exemplars. The name of the subject will be used instead of the "K #" (K number refers to known exemplars). In one system, Q #s were used. The "Q" stands for Questioned. The cards were documented as Q1-5, meaning envelope #1, card #5. In another system, the envelopes were numbered sequentially. For example, if

more than on envelope was received in a case, the first envelope would be labeled #1 (1-7), the next envelope would be #2 (8-20), etc. If Q #s were used in the original report, refer to Q #s in the current report.

Only the latent print evidence (latent print cards, photos, known exemplars, etc.) being used for the new examination needs to be initialed and dated. A copy of the evidence used for the examination will be included in the examiner's case notes.

All other latent print evidence (not examined), documents, negatives, etc. included in the latent print envelope will be inventoried and included in the examiner's case notes (the latent print envelope also contained latent print envelopes Q2 though Q6, miscellaneous documents, and photographs).

Reports and case notes issued by the new examiner will follow current reporting procedures.

5.0 RECOVERY AND RECORDING OF FRICTION RIDGE SKIN

When requested, Latent Print Unit personnel will assist in the identification of unknown decedents and in the recovery of friction ridge skin. This occurs when advanced decomposition prevents the routine collection of known exemplars or circumstances require expertise from a latent print examiner.

The examiner will record:

- Fingerprints from unknown decedents for identification purposes (John/Jane Does)
- All friction ridge skin (major case prints) from the hands (fingers and palms) for comparison with latent print evidence recovered from crime scenes
- Footprint impressions when the found body was recovered barefoot

Only by request and the Chief's approval will latent print examiners assist in the identification of decedents in major disasters.

Techniques for recovering and recording friction ridge skin may not be limited to just one technique. The examiner will determine which procedure would yield the best results based on the conditions of the fingers/hands/feet before starting with the following recovery technique(s):

- Black Printer's Ink
- Black Powder and adhesive lifts
- Mikrosil (silicone casting material
- Boiling Technique
- Sodium Hydroxide Rehydration Technique
- Metaflow and Restorative Rehydration Technique

Black Printer's Ink

1. Visually examine the friction ridge skin to determine if all fingers and toes are present. The examiner will note any missing digits
2. Carefully remove any loose contaminants that may be present and clean the friction ridge skin with liquid soap and water using either a sponge or gloved finger if needed
3. Dry the hand with a cloth towel. Use Isopropyl Alcohol to dry out the skin further if needed
4. Apply black printer's ink to a smooth surface (metal or glass) and spread it out evenly using a roller
5. Either roll the fingers onto the inked surface or apply a thin layer of printer's ink to the friction ridge skin directly using the roller
6. Roll the inked skin onto a finger or palm print card

Use black printer's ink when the friction ridge skin is sloughing off:

7. Remove the friction ridge skin and slip it over your gloved finger/hand
8. Apply black printer's ink to a smooth surface (metal or glass) and spread it out evenly using a roller
9. Roll the fingers onto the inked surface
10. Roll the inked skin onto a finger or palm print card

Black Powder and Adhesive Lifts:

1. Visually examine the friction ridge skin to determine if all fingers and toes are present. The examiner will note any missing digits
2. Carefully remove any loose contaminants that may be present and clean the friction ridge skin with liquid soap and water using either a sponge or gloved finger if needed
3. Dry the hand with a cloth towel. Use Isopropyl Alcohol to dry out the skin further if needed
4. Powder the friction ridge skin using black fingerprint powder and a fingerprint brush
5. Use adhesive lifts to record the friction ridge detail. Place the adhesive lifts onto a transparency/clear acetate sheet. Using a black sharpie, label the adhesive lifts with the proper hand/finger designation

Mikrosil (silicone casting material):

Mikrosil is best to use when friction ridge skin is wrinkled, charred, or desiccated (dry).

1. Visually examine the friction ridge skin to determine if all fingers and toes are present. The examiner will note any missing digits
2. Carefully remove any loose contaminants that may be present and clean the friction ridge skin with liquid soap and water using either a sponge or gloved finger if needed
3. Dry the hand with a cloth towel. Use Isopropyl Alcohol to dry out the skin further if needed
4. Powder the friction ridge skin using black fingerprint powder and a fingerprint brush or black printer's ink
5. Mix the mikrosil per manufacture directions
6. Spread the mikrosil over the friction skin and allow it to dry
7. Remove the mikrosil lift(s) and place on card stock with clear lifting tape
8. Ensure the mikrosil lift(s) is/are laterally reversed when comparing and/or searching the known exemplar

The Boiling Technique

The boiling technique is best to use when friction ridge skin is macerated (wet) or putrefied (advanced decomposition).

1. Disarticulate the hand(s),finger(s), feet from the body
2. Visually examine the friction ridge skin on the hands to determine what damage has been made. Carefully remove any loose contaminants from the hands that may be present and clean the friction ridge skin with liquid soap and water using either a sponge or gloved finger
3. Fill an electric water kettle with tap water and turn it on. Once the water starts to boil (30 seconds to 1 minute), pour the boiling water into an appropriate size container that can accommodate the whole hand. Fill the container ¾ of the way with the boiling water. Make sure the container you are using is safe to hold boiling water
4. Place the hand into the boiling water for 5-10 seconds (first trial)
5. Dry the hand with a cloth towel first, then use the Isopropyl Alcohol to dry the hand out further
6. Powder the hand using black fingerprint powder and fingerprint brush

7. Use the adhesive lifts to record the friction ridge detail. Place the adhesive lists onto a transparency/clear acetate sheet. Using a black sharpie, label the adhesive lifts with the proper hand/finger/foot designation
8. Dry the hand with Isopropyl Alcohol if needed
9. Obtain a second lift repeating steps #6-#7
10. If needed, place the hand into the boiling water for an additional 5-10 seconds (second trial)
11. Repeat steps #5-#9
12. If needed, place the hand into the boiling water for an additional 5-10 seconds (third and final trial). No more than three trials should be completed. Extended exposure to heat can destroy friction ridge detail
13. Repeat steps #5-#9

The Sodium Hydroxide Rehydration Technique:

The sodium hydroxide rehydration technique is best to use when friction ridge skin is putrefied (advanced decomposition), desiccated (dry), or when hands may be stuck in a clenched position due to rigor mortis.

1. Disarticulate the hand(s), finger(s), feet from the body
2. Visually examine the friction ridge skin on the hands to determine what damage has been made. Carefully remove any loose contaminants from the hands that may be present using care not to disturb any of the friction ridge skin
3. If using the purchased, pre-diluted 3 % sodium hydroxide solution, go to step #5. If preparing the 3 % sodium hydroxide solution, fill a container with approximately 2 liters of tap water, and under a fume hood, slowly add 60 grams of sodium hydroxide pellets to the water. Do not add the pellets all at once
4. Let the sodium hydroxide solution cool for approximately 24 hours, **uncovered**, prior to use
5. Add the hands to the solution. If the hands begin to float, wad up a cloth towel and place it between the lid and the hands to keep them submerged in the solution
6. Allow the hands to soak for approximately 24 hours at room temperature. After 24 hours, remove the hands from the solution. Evaluate them for suppleness and pliability. If the hands are unable to be unclenched or tissue has not softened to the satisfaction of the examiner, return the hands to the solution for an additional 24 hours
7. Since the sodium hydroxide solution is time-sensitive, care should be taken to notover soak the hands in the solution. The hands should be closely monitored whilesoaking in the solution, checking more frequently after the first 24 hours. If left unattended for 72 hours or more, the friction ridge skin could be in danger of dissolving making collection of ridge detail impossible
8. After the hands are removed from the solution, they will be coated with a slick, oily substance. Under running tap water, gently rub this substance off using a sponge or gloved hand. Liquid dish soap may also be used in conjunction with tap water to attempt to clean off the hands. Be careful not to disturb any friction ridge detail
9. Once the oily substance is removed, dry the hands using a cloth towel first, then Isopropyl Alcohol to dry the hands out further
10. Powder the hands using black fingerprint powder and a fingerprint brush

11. Use the adhesive lifts to record the friction ridge detail. Place the adhesive lifts onto a transparency/clear acetate sheet. Using a black sharpie, label the adhesive lifts with the proper hand/finger/foot designation
12. Dry the hand with Isopropyl Alcohol if needed
13. Obtain a second lift repeating steps #10-#11
14. If quality exemplars are not obtained, place the hands back into the solution and monitor frequently
15. Repeat steps #8-#14 until quality exemplars are obtained

Metaflow and Restorative Rehydration Technique

The Metaflow and Restorative Rehydration Technique is best to use when friction ridge skin is putrefied (advanced decomposition) or desiccated (dry).

1. Disarticulate the hand(s), finger(s), feet from the body
2. Visually examine the friction ridge skin on the hands to determine what damage has been made. Carefully remove any loose contaminants from the hands that may be present using care not to disturb any of the friction ridge skin.
3. Fill a plastic container with equal parts of the Metaflow and Restorative chemicals. Ensure there is enough of the solution to submerge the hands. If the hands begin to float, wad up a cloth towel and place it between the lid and the hands to keep them submerged in the solution
4. Allow the hands to soak for approximately 24-72 hours at room temperature. After 24 hours, remove the hands from the solution. Evaluate them for suppleness and pliability. If the hands are unable to be unclenched or tissue has not softened to the satisfaction of the examiner, return the hands to the solution
5. Periodically check on the hands until the friction ridge skin is pliable and/or a white film develops
6. After the hands are removed from the solution, dry the hands using a cloth towel first, then Isopropyl Alcohol to dry the hands out further
7. Powder the hands using black fingerprint powder and a fingerprint brush
8. Use the adhesive lifts to record the friction ridge detail. Place the adhesive lifts onto a transparency/clear acetate sheet. Using a black sharpie, label the adhesive lifts with the proper hand/finger/foot designation
9. Dry the hand with Isopropyl Alcohol if needed
10. Obtain a second lift repeating steps #7-#8 until quality exemplars are obtained

Using the Metaflow and Restorative Rehydration Technique for rehydrating and photographing small sections of friction ridge skin:

11. Remove the skin above the first joint (pattern area) of the finger
12. Place the skin in a plastic container and label
13. Soak the skin in the solution until it looks like living tissue (flesh color)
14. Excess tissue on the underside of the skin may need to be scraped away to allow solution to permeate the skin
15. Clean, dry, and mount the skin by placing it between two glass slides
16. Photograph the slides using transmitted light; friction ridge skin will photograph tonally correct (black ridges)

17. If needed, use black printer's ink or powder the friction ridge skin using black fingerprint powder and a fingerprint brush

General Comments:

1. Receiving disarticulated hand(s), finger(s), feet from the Medical Examiner's Office:
    a. Sign the chain of custody at the Medical Examiner's Office to receive the evidence and retain a copy to include in the case notes
    b. Transport the evidence in a secure container
    c. All processing will take place in the Crime Scene Unit of the Crime Laboratory
    d. If not immediately processing, store in the Crime Scene Unit refrigerator
    e. When processing is complete or if the Medical Examiner's Office has requested the return of the hands/fingers/feet, transport back in a secure container
    f. Sign the chain of custody at the Medical Examiner's Office to return the evidence and retain a copy to include in the case notes

2. Known inked prints of the victim will not always be available for comparison purposes. In this situation, objects from the victim's residence can be processed for latent print evidence.

6.0 OUTSIDE EXPERTS

The unit supervisor will give approval prior to an in-house examination by an outside expert. Refer to the Laboratory Quality Assurance Manual policies on Outside Experts in the Lab and Request for Viewing or Release of Evidence, Space, or Equipment.
Any request for a copy of the latent print evidence (latent print cards, discs, etc.) will be provided through the Quality Manager.

An examiner that has received a request to make the original evidence available for an in-house examination will:

- Retrieve the latent print evidence from the property room
- Perform an inventory of the evidence prior to viewing
- Inventory the evidence at the completion of the examination in the presence of the outside expert
- Ensure an internal chain of custody is documented by the examiner and the outside expert. The existing chain of custody in the case notes can be used or a new chain of custody can be added to the original case notes
- Ensure the chain of custody and any additional note page(s) are technically and administratively reviewed

7.0 LATENT PRINT UNIT EQUIPMENT LIST

7.1 The Automated Fingerprint Identification System (AFIS)/Automated Latent Print System (ALPS)

The Automated Fingerprint Identification System/Automated Latent Print System is used to store, search, and retrieve latent and known finger and palm print files.

7.1.1 The Cogent System is contracted and maintained by the County of San Diego.

- Maintenance of the Cogent System shall be performed by a certified service or trained professional provided by the County of San Diego
- The contracted vendor through the County of San Diego provides initial training. Internal training on the AFIS/ALPS System and procedures is provided in the AFIS/ALPS training module
- A hard copy of the Cogent User manual is located in the Latent Print Unit and an electronic version is available on each system

7.1.2 The Quality Control Check is located in the unit. A quality control check will be performed for the following reasons:

- Quarterly checks which will be uploaded to the San Diego Regional AFIS User Group Sharefile
- When there are software updates
- When repairs are made that may affect the searching capabilities in the Cogent database
- After validation, when there is a new contracted vendor

7.1.3 For all other Cogent issues, the following steps will be performed:

- The Cogent Coordinator will be responsible for tracking open issues. Examiners shall notify the Cogent Coordinator of any issue(s)
- The Cogent Coordinator will contact Cogent Support to resolve the issue(s)
- When a ticket is generated, it will be tracked via the County of San Diego Sharefile
- If the issue cannot be resolved in a timely manner, the Cogent Coordinator will escalate the issue to the San Diego County CAL-ID Administrator

7.2 Recovery and Recording of Friction Ridge Skin Equipment

Rehydration chemicals and supplies are located in the Chemical Storage Room.

A chemical weighing scale is located in the Chemistry Unit.

Fingerprint powder, fingerprint brushes, lifting tape, latent print cards, and mikrosil are located in the Crime Scene Unit.

Black printer's ink, known fingerprint cards, adhesive lifts, clear acetates, and sheet protectors are located in the Latent Print Unit.

8.0 PROFICIENCY TEST PROGRAM

Latent Print Examiners who have successfully completed training and are independently working cases will be required to participate in annual external proficiency testing.

Latent Print Examiner Aides who have successfully completed training and are independently working cases will be required to participate in annual intralaboratory testing.

Latent Print Examiners and Latent Print Examiners Aides that have successfully completed a competency test in the same year as the required proficiency or intralaboratory test will be exempt from taking the test for that year.

Proficiency and intralaboratory tests are completed similar to independent casework, following all laboratory and unit policies and procedures.

Test results will be evaluated against published results with consideration to unit policy and procedures. Test results will be reviewed by the Latent Print Unit supervisor.

If an examiner is unable to complete the proficiency or intralaboratory test due to poor quality images, photographs, or scans, the examiner will confer with the Latent Print Unit supervisor and Quality Manager to determine the course of action.

9.0 LATENT PRINT UNIT ABBREVIATION LIST

*	=	SEE NOTES
A	=	ALPS QUALITY
ALPS	=	AUTOMATED LATENT PRINT SYSTEM
AMP	=	AMPUTATED FINGER/TOE
BC	=	BARCODE
BSI	=	BIOMETRIC SET IDENTIFIER
COC - C of C	=	CHAIN OF CUSTODY
DEC'D	=	DECEASED
DOE	=	DATE OF ENTRY
E	=	EXCLUSION
EXMR	=	EXAMINER
HYPO	=	HYPOTHENAR
ICD	=	INSUFFICIENT CLARITY AND/OR DETAIL
IMP(S)	=	IMPRESSION(S)
K TO K	=	KNOWN TO KNOWN
LI	=	LEFT INDEX
LL	=	LEFT LITTLE
LM	=	LEFT MIDDLE
LO	=	LIFTING OFFICER
LP	=	LATENT PRINT/LEFT PALM
LPC(S)	=	LATENT PRINT CARD(S)
LR	=	LEFT RING
LS	=	LEFT SLANT
LT	=	LEFT THUMB
MC-MCP'S	=	MAJOR CASE PRINTS
NAF	=	NEED ADDITIONAL FINGERS
NAMC	=	NEED ADDITIONAL MAJOR CASE PRINTS
NAP	=	NEED ADDITIONAL PALMS
NC	=	NOT CONSIDERED/NOT COMPARED
NFT	=	NEED FINGER TIPS
NSC	=	NOT SUITABLE FOR COMPARISON
NSE	=	NOT SUITABLE FOR EXCLUSION
NP	=	NEED PALM PRINTS
NR	=	NO FRICTION RIDGES
OR	=	ORIENTATION
O/S	=	ORIENTATION/SOURCE AREA
P	=	COMPARABLE PALM PRINT
PLI-P/LI	=	PALM PRINT/LATENT INQUIRY

PPI	=	PIXELS PER INCH
P/P-PP	=	PALM PRINT
Q-Q#	=	QUESTION (EXHIBIT)
REC'D	=	RECEIVED
REG	=	REGISTRATION
RI	=	RIGHT INDEX
RL	=	RIGHT LITTLE
RM	=	RIGHT MIDDLE
RP	=	RIGHT PALM PRINT
RR	=	RIGHT RING
RS	=	RIGHT SLANT
RT	=	RIGHT THUMB
RU	=	RELIABILITY IS UNCERTAIN
SA	=	SOURCE AREA
S/A/A	=	SAME AS ABOVE
TLI - T/LI	=	TENPRINT/LATENT INQUIRY
UCN	=	UNIVERSAL CONTROL NUMBER
ULM	=	UNSOLVED LATENT MATCH RESPONSE
UTL	=	UNABLE TO LOCATE
X	=	COMPARABLE PRINT

10.0 LATENT PRINT UNIT TRAINING PROGRAM

10.1 Duration, Responsibilities, and Course of Training

The unit supervisor is responsible for the administration of the training program.

The Latent Print Examiner I training program is approximately one year in duration. The Latent Print Examiner Aide training program is approximately six to eight months in duration. These durations are subject to change based on the needs of each trainee and the unit.

Training outlines and modules will be used to document the training process. The trainer is responsible for the completion of the training, associated documents, and testing (if applicable) for their designated module(s).

Latent Print Examiner Aide and Latent Print Examiner I trainees will receive training modules A-M. The modules can be completed in any order and will be based on the needs of the unit. The significant variation in training between the Aide and Examiner trainees occurs in the ACE-V module, in which evaluation determinations are expanded to include identification, exclusion, inconclusive, and incomplete opinions and interpretations. These determinations are only required for Examiner trainees.

An experienced trainee may complete the training modules in a more abbreviated form, based upon past training, but will complete a competency test prior to performing independent casework.

The training outline and modules will be provided by the unit supervisor. Supporting documents, practicals, and applicable testing materials will be provided by the trainer.

The trainer, trainee, and supervisor will initial and date the following:

- The completion of modules
- The completion of tests
- The completion of competency tests

Approval from the Quality Manager is needed prior to the start of independent casework and validations.

After successfully completing all required training modules, newly qualified/authorized examiners will be assigned a qualified examiner as a mentor during initial independent casework. Newly qualified/authorized examiners are encouraged to consult with the mentor throughout the analytical, report writing, and technical review processes to assist with the transition to independent casework.

10.2 Trainees Requiring Retraining

If additional instruction on one or more modules is required, trainees will be provided targeted training. Targeted training is supplemental instruction, which may be in the form of additional required reading, lectures, or practical assignments as determined by the trainer and technical lead or unit supervisor.

Trainees that do not successfully pass a module will undergo this training followed by retest, if applicable, before moving on to subsequent modules within the training program.

The trainer and unit supervisor will develop a targeted training plan based on the deficiency. The trainer or technical lead will be responsible for the completion of the retraining, associated documentation, and retesting of the designated module.

10.3 Examiners Requiring Retraining

If a need for retraining is identified as a result of casework deficiencies, the unit supervisor or technical lead will develop a training plan based on the nature of the deficiencies.

10.4 Maintenance of Skills and Expertise

Opportunity for ongoing training will be provided to all qualified examiners dependent upon availability of resources, staffing, and funding.

REQUIRED READING:

Ashbaugh, D. (1999, Oct 27), *Quantitative-Qualitative Friction Ridge Analysis: An Introduction to Basic and Advanced Ridgeology*
Cower, J. (1992, Nov 30), *Friction Ridge Skin: Comparison and Identification of Fingerprints*
Cummins, H. & Midlo, C. (1976), *Fingerprints, Palms and Soles*
NIJ, *The Fingerprint Source Book*
NIJ, *Latent Print Examination and Human Factors: Improving the Practice through a SystemsApproach*

RECOMMENDED COURSES:

"Analysis of Distortion in Latent Prints," Evolve Forensics
"Palm Print Comparison Techniques," Ron Smith & Associates
"Ridgeology," Ron Smith & Associates

MODULE A: LABORATORY AND UNIT OVERVIEW

OBJECTIVES:

- Obtain a general understanding of Forensic Science
- Obtain a general understanding of how each unit in the Crime Laboratory functions
- Become familiar with how the Department operates
- Become familiar with how the Crime Laboratory operates
- Become familiar with how the Latent Print Unit operates
- Read the Quality Assurance Manual
- Read the Laboratory Code of Conduct
- Read the Latent Print Unit Manual

LECTURE: PowerPoint presentation

1. Forensic science overview
2. Department and Crime Laboratory overview
    a. Department overview and tour
    b. Crime Laboratory overview and tour
    c. Latent Print Unit overview
3. Latent Print Unit workflow
    a. Case management
    b. Proactive versus requests
    c. Rush verses priority cases
    d. Court priorities
    e. Person crimes
    f. Property crimes
4. Quality Assurance and accreditation
    a. Quality assurance measures
    b. Impartiality and bias
    c. Internal and external audits
    d. Power DMS
        i. Controlled forms
        ii. Training and court evaluations

iii. Curriculum Vitae
iv. Quality Assurance Manual
v. Latent Print Unit Manual

5. Safety and Chemical Storage Room
    a. Chemical storage room
    b. Safety Data Sheets - binder locations
        i. Crime Scene Unit
        ii. Chemical Storage Room
    c. Safety bulletins - Power DMS
    d. Location of personal protection equipment (PPE)

REQUIRED READING:

- NAS Report CH. 7, Accreditation
- Quality Assurance Manual
- Laboratory Code of Conduct
- Latent Print Unit Manual
- Laboratory Safety Manual
- Safety Data Sheets (SDS)

PRACTICAL ASSIGNMENT(S): Crime Laboratory and Department tours

TEST: Not Applicable

MODULE B: ADMINISTRATIVE DUTIES

OBJECTIVES:

- Become familiar with how the latent print unit functions
- Learn and perform the latent print unit administrative duties
- Learn the applications utilized to perform latent print unit administrative duties
- Understand the chain of custody procedures
- Read the latent print unit administration guide

LECTURE:

1. Latent print unit workflow
    a. Casework -proactive versus requests
    b. General administrative duties
        i. Daily, weekly, monthly, yearly
2. Procedures for receiving latent print evidence
    a. Chain of custody
    b. Retrieving sealed latent print evidence from Property and Evidence
    c. Barcode and property tag procedures
    d. Evidence.com images
3. Procedures for returning latent print evidence
    a. Returning sealed latent print evidence back to Property and Evidence
    b. Court evidence receipt for barcodes (via EvidenceOnQ) vs. property tags (via papercourt evidence receipt)
4. Applications utilized for administrative duties
    a. FileOnQ (EvidenceOnQ and LabOnQ)

b. CRMS/NetRMS
c. PD Enterprise

5. Reports
    a. Scan completed reports and case notes
    b. Send completed reports to assigned detectives and officers
    c. File completed reports and case notes
6. ALPS Awards
    a. Overview of the program
    b. Procedures for tracking HITS
    c. Location of the ALPS awards

REQUIRED READING:

Latent Print Unit Administrative Guide
ALPS Award Guide

PRACTICAL ASSIGNMENT(S): Job shadowing

TEST: Not Applicable

MODULE C: HISTORY

OBJECTIVES:

- Understand the historical aspects of how fingerprints evolved into being used for identification purposes. Become familiar with fingerprint pioneers who contributed to the science of fingerprints, and the classifications systems and their uses
- Obtain a general understanding of the science of friction ridge identification

LECTURE:

1. The history of fingerprints
2. Earliest recorded awareness of fingerprints
3. Early anatomical observations
4. Scientific observations and uses leading to modern fingerprint identification
5. Awareness of fingerprint pioneers who contributed to the science of fingerprint comparison
6. Awareness of classification systems and their uses

REQUIRED READING:

Chapter 1-The Fingerprint Source Book
Chapter 2–History, Ashbaugh

PRACTICAL ASSIGNMENT(S): Not Applicable

TEST: Written (80% passing)

MODULE D: BIOLOGY

OBJECTIVES:

- Understand the scientific basis for fingerprints - unique and persistence
- Understand the biological basis on the formation and structure of friction ridge skin
- Understand pattern formation, and individual friction ridge characteristics
- Understand the effects of scarring, burns, wound healing, and aging of friction ridge skin

LECTURE: PowerPoint presentation

1. Structure - Persistence: gain an understanding of the different layers of skin, the effects of scarring, burns, wound healing, and aging
2. Formation - Uniqueness: gain an understanding of the significance and biological basis of uniqueness, including the formation of friction ridge skin during fetal development, internal and external stresses and strains that form patterns, ridge characteristics, and ridge flow

REQUIRED READING:

Chapters 2 & 3-The Fingerprint Source Book

PRACTICAL ASSIGNMENT(S): Interactive question and answer assignment

TEST: Written (80% passing)

MODULE E: HUMAN FACTORS AND ETHICAL ISSUES

OBJECTIVES:

- Obtain a basic understanding of the human visual system
- Obtain a basic understanding of the nature of visual expertise
- Obtain a basic understanding of the sources of human error
- Understand 'error rates' as it applies to the latent print discipline
- Understand the various types of bias
- Understand ethical issues as they pertain to Forensic Science

LECTURE: PowerPoint presentation

REQUIRED READING:

- Chapter 15-The Fingerprint Source Book
- Chapters 1-3-Human Factors Report
- Langenburg, Glenn. A Performance Study of the ACE-V Process: A Pilot Study to Measure the Accuracy, Reproducibility, Repeatability, and Biasability of Conclusions Resulting from the ACE-V Process. JFI 59(2):219-257,2009
- Why Experts Make Errors – Dror
- When Emotions Get the Better of Us: The Effect of Contextual Top- down Processing on Matching Fingerprint – Dror, Charlton, Peron and Hind

TEST: Written (80% passing)

MODULE F: COLLECTION OF KNOWN EXEMPLARS

OBJECTIVES:

- Understand the reasons for collecting exemplars from living subjects (victim, witness, suspects, etc.)
- Understand the reasons for collecting exemplars from decedents (victim morgue prints)
- Understand the reasons for collecting exemplars from decedents in difficult cases (decomposition, mummification, maceration)
- Learn how to obtain known exemplars using black printer's ink
- Learn how to obtain known exemplars using black fingerprint powder and adhesive lifts
- Learn how to obtain known exemplars using Mikrosil
- Learn how to obtain known exemplars using various rehydration techniques
- Learn the location of PPE, morgue kits, rehydration supplies and chemicals

LECTURE: PowerPoint presentation

1. Known exemplars from living subjects
    a. Methods to collect and record fingerprints and palm prints
        i. Black printer's ink
        ii. Black powder and adhesive lifts
    b. Overview of major case prints
2. Known exemplars from decedents
    a. Back printer's ink
    b. Black powder and adhesive lifts
    c. Mikrosil
3. Known exemplars from decedents-in difficult cases
    a. Photography
    b. Black printer's ink
    c. Black powder and adhesive lifts
    d. Mikrosil
    e. Removing skin from fingers/palms and inking
    f. Rehydration techniques
        i. Metaflow and Restorative
        ii. Boiling
        iii. Sodium Hydroxide

REQUIRED READING:

- Chapter 4-The Fingerprint Source
- Boiling Technique Validation
- Sodium Hydroxide Technique

PRACTICAL ASSIGNMENT(S):
Part 1: Collection of known exemplars from living subject's using printer's ink, black powder and adhesive labels, and mikrosil

Part 2: Collection of known exemplars from decedent's using printer's ink, black powder and adhesive labels, and mikrosil

Part 3: Collection of known exemplars from decedent's in difficult cases (e.g., decomposition, mummification, maceration) using rehydration techniques (boiling, dodge chemicals, sodium hydroxide

TEST: Written (80% passing)

MODULE G: LATENT PRINT PROCESSING

OBJECTIVES:

- Understand the commonly used chemicals and powders used in the Crime Scene Unit for latent print processing
- Understand how to choose latent print processing techniques based on the type of surface/evidence
- Understand the physiology and chemical composition of sweat and the components of latent prints that are targeted by the various physical and chemical processing techniques
- Understand factors that can affect latent prints (matrix, substrate, touch, processing technique, transfer conditions, and environmental)
- Understand the use of sequential processing
- Understand proper evidence handling
- Become familiar with the Crime Laboratory equipment (cameras, scanners, and printers)

LECTURE: PowerPoint presentation

REQUIRED READING:

- Chapter 7-The Fingerprint Source Book
- Latent Print Recovery Conditions-Triplett

PRACTICAL ASSIGNMENT(S): Physical and chemical recovery techniques

TEST: Written (80% passing)

MODULE H: FORGERY AND FABRICATION

OBJECTIVES:

- Understand the forgery and fabrication of latent prints
- Understand the different methods used to fabricate and forge latent prints
- Understand how examiners can detect the forgery and fabrication of latent prints

LECTURE: PowerPoint presentation

REQUIRED READING

Detection of Forged and Fabricated Latent Prints - Wertheim

PRACTICAL ASSIGNMENT(S): Physical techniques

TEST: Written (80% passing)

MODULE I: DIGITAL PROCESSING

OBJECTIVES:

- Become familiar with basic and advanced functions in Adobe Photoshop
- Understand the policies and procedures for digital capture, storage, retrieval, display, and transmission of latent print images retained as evidence
- Understand how to choose digital processing techniques based on the type of latent print image examined
- Understand the importance of image quality, image integrity, and required casework documentation of latent print images that have been digitally processed in Adobe Photoshop

LECTURE:

1. Original vs Working Images
    a. Imported images
    b. Image Size/Resolution/File Format
        i. Upsizing vs downsizing
        ii. Resolution & Resolution for AFIS Entry
        iii. File Formats-TIFF/RAW
2. Calibrating 1:1 Images
3. Using Layers
4. Adjustments
    a. Rotating
    b. Cropping
    c. Contrast (shadow/highlights & levels)
    d. Black & White
    e. Color Channels
    f. Invert
5. Processing Techniques:
    a. Calculations
    b. Using Actions (Automated Processing Techniques)
6. Fast Fourier Transform (FFT)
    a. Printing out the Adobe Photoshop History Log
7. Using "ACE-V" in Adobe
    a. Marking friction ridge detail
    b. Tracing ridges
    c. "Zoning Out" distortion
    d. Tile images side-by-side
    e. Note pages using Adobe Photoshop/Power point/Bridge

REQUIRED READING:

Standard for Friction Ridge Impression Digital Imaging – SWGFAST Document #6

PRACTICAL ASSIGNMENT:

Process an image in Adobe Photoshop using various techniques
Process an image in Adobe Photoshop using Fast Fourier Transform and Actions

TEST: Written (80% passing)

MODULE J: ACE-V AND DOCUMENTATION

OBJECTIVES:

- Understand the philosophy of friction ridge identification
- Learn how to efficiently determine anatomical origin of friction ridge impressions based on shape of the impression, ridge flow, and crease patterns
- Understand the elements of analysis, including first, second and third level detail, threshold for suitability for comparison, exclusion, computer search
- Understand the mechanics of touch and recognizing distortion
- Understand variation in appearance in latent prints from the same source skin
- Understand the comparison process
- Understand the evaluation phase of the process
- Understand how to properly document results and write reports

LECTURE: PowerPoint presentations

Analysis:

- Suitability criteria (ALPS, Non-ALPS, No Value)
- Appearance of latent impressions (orientation and ridge flow)
- Levels of detail
- Quantitative/qualitative information
- Distortion Factors
- Latent print processing (distortion, tonal/lateral reversal)

Comparison:

- Search clues
- Target areas
- Focal points
- No minimum number of minutiae
- Incipient ridges

Evaluation:

- Identification
- Exclusion
- Inconclusive
- Incomplete

Verification (Examiner Trainees):

- Different procedures and documentation for each conclusion
- Blind verifications
- Annotating evidence
- Marking of lifts, photographs, images, CDs, and DVDs

DOCUMENTATION, NOTES, AND REPORTS

- Note packets-Required elements
- Scans/copies of all evidence physically examiner
- Chain of custody form
- Reviewer initials – when/where

- Worksheets
- Comparison matrix
- Analysis pages
- Case management cover sheet
- Technical and administrative reviews
- Conflict resolution and documentation
- Reports-Required elements
- Header information
- Description of evidence examined
- Type of examination was performed
- Conclusions
- Initials of technical and administrative reviewers

REQUIRED READING:

- SWGFAST – Standards for Examining Friction Ridge Impressions and Resulting Conclusions (Latent/Tenprint)
- Chapter 9-The Fingerprint Source Book
- Ulery, Bradford; Hicklin, Austin; Buscaglia, JoAnn; and Roberts, Antonia Maria. Repeatability and reproducibility of decisions by latent fingerprint experts. PloS ONE March 2012 7(3):e32800. doi:10.1371/journal.pone.0032800
- Ulery, Bradford; Hicklin, Austin; Buscaglia, JoAnn; and Roberts, Antonia Maria. Accuracy and Reliability of forensic latent fingerprint decisions. PNAS 2011 doi:10.1073/pnas.1018707108

PRACTICAL ASSIGNMENT(S): Analysis, comparison, and evaluation exercises

TEST(S): (80% passing for both)

- Suitability - Analysis
  Latent Print Examiner Aides
  Latent Print Examiners
- Manual - Comparison
  Latent Print Examiners

MODULE K: AFIS/ALPS AND DOCUMENTATION

OBJECTIVES:

- Understand the historical development of AFIS
- Understand the basic operations of AFIS
- Understand the SDPD search criteria for entering latent prints
- Learn how to search latent prints through various AFIS databases (local and FBI)
- Understand how to properly document AFIS cases and write reports

LECTURE:

1. Cogent System
   a. CABIS equipment/history and overview
   b. Search criteria
   c. LT/PL enrollment (demographics)

d. Transaction queue
e. Search options (finger and palm)
    i. Other: FBI palms / Finger Segments / Side of thumb as a palm
f. Retrieve candidates list for LT/PL and FBI
g. Remote searches other (DOJ and FBI)
h. Exemplar retrieval (local/DOJ/FBI)
i. Registration/Deletion
j. TLI
k. Datasets
    i. Create from archive records
    ii. Create from known exemplars
    iii. Importing images
    iv. Create from archives
l. Cogent DVD/CD
m. Enhancement Tools
n. Printouts
o. Quality Assurance

2. Documentation, Notes, Reports
    a. Note packets (Refer to ACE-V module)
    b. Cogent/ALPS printouts

REQUIRED READING:

Cogent manual
Chapter 6-The Fingerprint Source Book

PRACTICAL ASSIGNMENT(S): Analysis, searching, comparison, and evaluation exercises

TEST: Written (80% passing)

MODULE L: PRACTICAL MOCK CASEWORK:

OBJECTIVES:
Latent Print Examiner Aide Trainees:

- Demonstrate competency in determining suitability:
    - No Value
    - Non-ALPS
    - ALPS
- Demonstrate the ability to perform practical mock casework to include:
    - Proactive Cases (No Value, Non-ALPS, ALPS)
    - ALPS Requests

Latent Print Examiner Trainees:

- Demonstrate competency in determining suitability for:
    - No Value
    - Non-ALPS
    - ALPS
- Demonstrate competency in determining opinions and interpretations:
    - Identifications
    - Exclusions
    - Inconclusive
    - Incomplete

- Demonstrate the ability to perform practical mock casework to include:
  - Proactive Cases (No Value, Non-ALPS, ALPS)
  - ALPS Requests
  - Manual Requests

MODULE M: LEGAL ISSUES AND EXPERT TESTIMONY

OBJECTIVES:

- Understand the Federal Rules of Evidence (FRE)
- Understand the Frye Standard, Frye v. US 1923
- Understand the impact of Daubert v. Merrell Dow Pharmaceuticals 1993, General Electric Co. v. Joiner 1997, and Khumo Tire v. Carmichael 1999 on expert testimony
- Understand the basis of criticisms of the latent print discipline and other forensic sciences
- Learn the different court systems in which laboratory employees can testify to (superior, federal, etc.)
- Understand how discovery motions, court orders, and outside experts are handled by the SDPD Crime Laboratory
- Courtroom etiquette
- Courtroom appearance and attire
- Learn how to prepare a demonstrative court exhibit
- Understand Voir dire
- Learn how to present qualifications, present the basis and method of latent print examination, introduce evidence, present conclusions, and articulate the basis for conclusions
- Be able to articulate laboratory accreditation standards and quality assurance policies and procedures
- Be able to articulate general lab policies and procedures

LECTURE: PowerPoint presentation

1. Preparation for court testimony
   a. Jury's perception
   b. Research current issues (Daubert, NAS report, error rates)
   c. Oral preparation prior to court (pre-trial conference)
2. Preparing court exhibits
   a. Purpose
   b. Creating a PowerPoint
3. Prepare questions and answers for expert testimony
   a. Voir dire
   b. Basic scientific principles
   c. Defense questions
4. Discuss and demonstrate expert witness testimony
   a. Court room etiquette
   b. Communication with prosecutors and defense attorneys
   c. Audio/video recording of testimony
   d. Discuss and review testimony

REQUIRED READING:

- Vanderkolk, Chapter 1 Objectivity-Subjectivity
- National Academy of Sciences. Strengthening Forensic Science in the United States: A Path Forward. National Academies Press 2009

PRACTICAL ASSIGNMENT(S): Moot court preparation

TEST: Moot Court (Pass/Fail)

FINAL COMPETENCY TEST: (Pass/Fail)

Demonstrates competency in analysis, comparison, and evaluation.

ADDITIONAL READING:

FBI, The Science of Fingerprints: Classification and Uses

MODULE C: HISTORY:

A fingerprint fable, Will and William West case
Cummins & Midlo, History
Faulds, Nature – On the Identification of Habitual Criminals by Finger-prints
Faulds, Nature – On the skin-furrows of the Hand
Galton, Nature – Finger Print Evidence
Galton, Nature – Identification
Galton, Nature – Method of Indexing Finger Marks
Galton, Nature – Patterns in Thumb and Finger Marks
Herschel, Nature – Skin Furrows of the Hand
Moenssens, CH. 1 Fingerprint Techniques

MODULE D: BIOLOGY:

Ashbaugh, Premises of Friction Ridge Identification, Clarity, and the Identification Process
Babler, Embryologic Development of Epidermal Ridges and Their Configurations
Babler, Prenatal Origins of Human Variation in Friction Ridge (Presentation)
Maceo & Wertheim, Critical Stage of Friction Ridge and Pattern Formation
Maceo & Wertheim, Friction Ridge and Pattern Formation Presentation
Maceo, Analysis of Distortion in Latent Prints
Swofford, Ontogeny of Friction Ridge – Explanation of Epidermal Ridge Development
Maceo, Alice. Palm Prints. 2013
Ashbaugh, Palmar Flexion Crease Identification
Cowger, Palm Prints and Sole Prints
Johnson, Ridge Flow of the Feet
Ron Smith and Associate's Palm Print Comparison Technique Class

MODULE E: HUMAN FACTORS AND ETHICAL ISSUES:

Budowle, Bruce; et. al. A perspective on errors, bias, and interpretation in the forensicsciences and direction for continued advancement. JFS July 2009 54(4):798-809
Busey, Tom and Vanderkolk, John. Behavioral and electrophysiological evidence forconfigural processing in fingerprint experts. Vision Research 45:431-448, 2005
Gutowski, Steve. Error rates in fingerprint examination: The view in 2006. TheForensic Bulletin, Autumn 2006:18-19

U.S. Department of Justice. A review of the FBI's handling of the Brandon Mayfieldcase. Office of Inspector General, January 2006
Journal of Forensic Sciences: Letter to the Editor The Bias Snowball and the Bias Cascade Effects: Two Distinct Biases that May Impact Forensic Decision Making –Dror May 2017
Journal of Forensic Sciences: Human Factors Effecting Forensic Decision Making: Workplace Stress and Well-being-Jeanguenat January 2018

MODULE F: COLLECTION OF KNOWN PRINT EXEMPLARS FROM LIVING AND DECEASED SUBJECTS:

Cowger, CH. 2 Taking Inked Prints
Wertheim, Pat. *Inked Major Case Prints, JFI*
FBI. *Proper procedures for taking Major Case Prints*

MODULE G: LATENT PRINT PROCESSING:

Tuthill, Life of a Latent Impression
Almog, Joseph et al. Fingerprint's Third Dimension: The Depth and Shape of Fingerprints
British Home Office, Police Scientific Development Branch, Manual of Fingerprint Development Techniques, 2000
Champod, Christophe et al. Fingerprints and Other Ridge Skin Impressions, CRC, NewYork 2004. Chapters 3 & 4
Davis, Phil. Photography. W.C. Brown Company, 1983; Chapters 4- 7
FBI, Processing Guide For Developing Latent Prints, 2004
Jasuja, Om et al. Dynamics of latent fingerprints: The effect of physical factors onquality of ninhydrin developed prints – A preliminary study. Science and Justice. 2009 49:8-11
Langenburg, Glenn. Deposition of Bloody Friction Ridge Impressions, JFI 2008 58(3):355-387
Lee, H.C. and Gaensselen, R.E. (eds). Advances in Fingerprint Technology, CRC Press,New York 2001;Chapter 3 – Composition of Latent Print Residue by Robert Ramotowski, p. 63-104
Raymond, M.A. et al. The Physical Properties of Blood – Forensic Considerations.Science & Justice 1996 Vol. 36 pp. 153-160

MODULE H: FORGERY AND FABRICATION:

Wertheim, Integrity Assurance
Wertheim, Latent Fingerprint Fabrication

MODULE I: DIGITAL PROCESSING:

SWGFAST Document #6, Standard for Friction Ridge Impression Digital Imaging
Foray Technologies, "Calibrating Your Images"
Foray Technologies, "Image Processing Guidelines"
Adobe, "Image Side and Resolution"
Photoshop Essentials, "Image Resolution and Print Quality"
Luminous-Landscape, "Understanding Resolution"
Reis, George. Photoshop CS3 for Forensic Professionals. Wiley Publishing, 2007;Chapters 1 – 8, 10, 15, 19 -22
Kelby, Scott. The Photoshop CS2 Book for Digital Photographers (Voices That Matter),New Riders Press, 2005; Chapters 1, 3, & 4

MODULE J: ACE-V and DOCUMENTATION:

Ashbaugh Chapters 2, 4-7
Champod, Christophe –*Fingerprint examination: Toward More Transparency*
Champod, Christophe –*Edmund Locard – Numerical Standards and "Probable" Identifications*
Champod, C – *A Probabilistic approach to Fingerprint Evidence*
Evett & Williams. *Review of the Sixteen Point Standard in England and Wales*
Galton, Francis – *Fingerprints*
Neumann, Cedric – *Computation of Likelihood Ratios in Fingerprint Identification for Configurations of Any number of Minutia*
Wertheim, Kasey; Langenburg, Glenn; Moenssens, Andre. *A report of latent print examiner accuracy during comparison training exercises.* JFI 56(1):55-93, 2006. *Letter tothe Editor* JFI 56(4):493-510, 2006
Wertheim, Detection of Forged and Fabricated Latent Prints
Wertheim, Integrity Assurance
Wertheim, Latent Fingerprint Fabrication
Ashbaugh, Defined Pattern, Overall Pattern, and Unique Pattern
Ashbaugh, CH. 4 The Identification Process
Ashbaugh, CH. 5 Poroscopy and Edgeoscopy
Ashbaugh, Incipient Ridges – Clarity Spectrum
Ashbaugh, Level 1, 2 and 3 Details
Black, The Application of ACE-V to Simultaneous Impressions
Busey & Parada, The Nature of Expertise in Fingerprint Examiners
Cowger, CH. 7 Comparison Prints
Huber, IAI Document Seminar – St. Louis
Langenburg, Glenn. *Pilot Study: A statistical analysis of the ACE-V methodology – Analysisstage.* JFI 45(1):64-79, 2004
Langenburg, A Performance Study of the ACE-V Process
Leo, Distortion versus Dissimilarity in Friction Skin Identification
Leo, Friction Skin Identification a Scientific Approach
McRoberts, Fingerprints – What they Can and Cannot Do
McRoberts, Is Friction Ridge Identification a Science
Okajima, Dermal and Epidermal Structures of the Volar Skin
Triplett, ACE-V
Vanderkolk, Forensic Individualization of Images Using Quality-Quantity
Wertheim, Comparison and Identification of Fingerprint Evidence

<u>MODULE M: LEGAL ISSUES AND EXPERT TESTIMONY:</u>

1995 CTS Test
A Year in Review – 40 Significant Fingerprint Events of 2010
Ashlock, Expert Witness Effective Courtroom Testimony
Bergeron, Identification versus Individualization
Budowle, A Perspective on Errors, Bias, and Interpretation in FS and Direction for advancement
CPLEX, Full Daubert Hearing is Not Always Required to Admit Expert Testimony
Daubert Card
Dror & Charlton, Contextual Information Affects Fingerprint Experts
Edwards, NAS – What it Means for the Bench and Bar
Gutowski, Error Rates in Fingerprint Examination – The View in 2006
IAI Resolution, July 2010
Illsley, Jurors Attitudes Toward Fingerprint Evidence and the Witness

Lockheed-Martin 50K Study
NAS Report, Chapter on Friction Ridge Analysis
Smith, Specific Tactics of Cross-Examination
Spinney, The Fingerprint
Srihari & Srinivasan & Fang, Discriminability in Fingerprints of Twins
Stacey, Report on Erroneous Identification in Madrid Bombing
Thorton, Letter to the Editor – A Rejection of Working Blind
Triplett, Admissibility Criteria, Cases, and Critics
USA v. Mitchell, Post-Daubert Hearing Memo
Vanderkolk, CH. 1 Objectivity-Subjectivity
Wertheim, Qualifying as an Expert Fingerprint Witness
NAS Executive SUMMARY
Federal Rules of Evidence, 2011
Moenssens, Andre et al. Scientific Evidence in Civil and Criminal Cases. FoundationPress, 2007;Chapters 1 & 10
Moenssens, Andre and Meagher, Steve. Friction Ridge Sourcebook, Chapter 13- *Fingerprints and the Law*
National Institute of Justice 2011
PCAST and the PCAST Addendum