

NYCLAC Report Standardization Project



**BioTWG
Crime Scene TWG
DE TWG
Drug TWG
TWGfire**

**Firearms TWG
Latent TWG
QD TWG
Tox TWG
Trace TWG**

February 2024

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NEW YORK STATE CRIME LABORATORY ADVISORY COMMITTEE



March 10, 2014

RE: NYS Report Standardization Project

REPRESENTING:

Division of Criminal Justice Services

Drug Enforcement Administration
Northeast Regional Laboratory

Erie County
Central Police Forensic Laboratory
Medical Examiner's Forensic Toxicology Lab

Monroe County
Public Safety Laboratory
Medical Examiner's Toxicology Laboratory

Nassau County
Medical Examiner's Toxicology Lab
Medical Examiner's Genetics DNA Lab

N.Y.C. Medical Examiner's Office
Department of Forensic Biology
Forensic Toxicology Laboratory

New York City Police Department
Police Laboratory

New York State Office of
Fire Prevention and Control

New York State Police
Crime Laboratories

Niagara County Sheriff's Department
Forensic Laboratory

Onondaga County
Center for Forensic Sciences-Laboratories
Health Department Forensic Toxicology Lab

Suffolk County
Crime Laboratory
Medical Examiner's Toxicology Lab

Westchester County
Dept. Public Safety Crime Lab
Dept. of Laboratories and Research-
Division of Forensic Science
Division of Forensic Toxicology

Yonkers Police Department
Forensic Science Laboratory

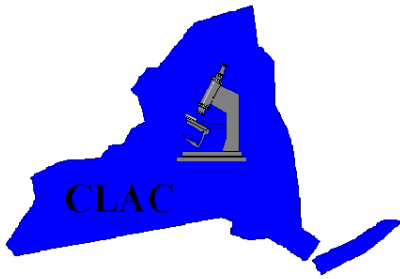
There are 19 accredited publicly funded crime laboratories in the State, now that all four laboratories that comprise the New York State Police system are considered one laboratory. These laboratories are run by state, county and municipal authorities and serve a diverse host of agencies. There is also a significant difference in both size and case volume of the laboratories with the smallest laboratory in the state staffed by three analysts and the largest by 350. While both the variety and diversity of these conditions does a good job of mimicking the conditions nationwide, it has also posed significant, but not insurmountable report standardization challenges which have taken time to overcome.

Over the course of this project there have been many productive discussions about what report standardization actually means and how NYCLAC and the state's Technical Working Groups (TWGs) can improve the reports that are issued in the state of New York. In our view, the laboratory report serves as an essential tool for the criminal justice system to understand the value of the evidence that was examined in our laboratories. However, we do not feel that standardization means that all reports will look the same, but that core aspects of the content of the reports should be standardized throughout the state within each discipline or category of testing.

We also do not believe that a laboratory report will replace the need for discovery. Forensic laboratory reports are not meant to duplicate the case file, but to summarize the work performed in a manner that can be understood by the members of the criminal justice community, yet that still remain scientifically accurate. We feel including additional wording and complexity can lead to misunderstanding and misinterpretation among our users. Duplication of the case file within the report also poses a significant risk in that it will take considerably longer to incorporate this information into the report and to ensure that it is properly reviewed, both technically and administratively. The end result is that each case will take longer to produce, further straining already overworked crime laboratories for no appreciable gain.

With this framework, the TWGs were charged with three overarching tasks:

- 1) Identify standard components that must be present in a report for a given discipline or category of testing.
- 2) Develop standardized reporting language, where feasible, and identify times when qualifiers and/or disclaimers are necessary.
- 3) Develop standardized definitions that will either be included in the report or archived on a website that will be referenced in the report.



The following attachments are the work product of the TWGs with input from NYCLAC members. Since New York is the first state to undertake report standardization, this is not the end of the project, but just the beginning of a continuum. These will be living documents that are reviewed and modified as problems are identified and revised as new testing protocols are implemented and incorporated. Historical records will be archived on a website hosted by the Division of Criminal Justice Services (DCJS).

It is our intention to institute report standardization through voluntary compliance of the participating laboratories throughout the state. We estimate that it will take approximately 6-9 months for laboratories to make the necessary changes to their manuals and report templates to account for these changes. To ensure that these guidelines do not preclude accurate reporting, if a laboratory feels that they have a situation which was not accounted for, they will be able to deviate from the reporting guidelines. Deviations and the reasons for them will be regularly reviewed by the TWGs and NYCLAC. Deviations should be rare events. Should the deviations become a frequent occurrence, the TWGs and NYCLAC will evaluate if the rules require change.

Training will also be necessary for members of the Criminal Justice Community. DCJS has offered to facilitate web based training to allow all end users to understand the changes that will be taking place in reports throughout the state. Through this mechanism it should be possible to reach a large number of users in a fairly short period of time.

As previously stated, while this project took significant effort on the part of the TWGS and everyone involved, it is not considered an end point but rather a starting point that we anticipate will continue to evolve. The laboratories believe it is a step forward towards uniformity and standardization of laboratory reports which will better serve to improve the practice of forensic science in New York State.

New York State Crime Laboratory Advisory Committee
(NYCLAC)

Forensic Biology Report Standardization Materials

Project Area I: Standardized Report Components

1. Unique case identifier on each page of report (such as lab number)
2. Title of the report (such as “report of laboratory analysis”)
3. Identification of the laboratory
4. Submitting Agency Information or at a minimum submitting agency
5. List or explanation of items examined
6. General indication of methodology utilized
7. Results/conclusions
8. Date report issued
9. Signature and title of examiner (or electronic equivalent)
10. Pagination of the report (example page 1 of 2 etc)
11. Statement regarding the report does not constitute the entire case file or equivalent
12. Statement that definitions of terms used in the report can be located at the DCJS website and if applicable on the laboratory website or attached to report

Additional Discipline Specific Report Components:

13. Locus or amplification system indicated
14. A quantitative or qualitative interpretative statement. Calculations are performed and reported on evidentiary DNA profiles that are established as relevant in the context of the case to aid in the assessment of the significance of inclusion.
15. Disposition of evidence

Project Area II: Standardized Report Language/Statements

Body Fluid Testing

a) Positive

All body fluid testing results (with the exception of sperm search and P30) will be reported as “Presumptive,” such as “Presumptive testing for blood was positive.” Positive tests for semen are reported by identifying the component of semen that was tested for. A positive sperm search will be reported as “Spermatozoa identified.” A positive P30 test will be reported as “Prostate Specific Antigen was detected.” If multiple tests for semen are done, all results should be in the report.

b) Negative

Negative results for all body fluids will be reported using the words “Not detected,” such as “No blood detected” or “Blood not detected.” A negative sperm search will be reported as “No spermatozoa identified.” A negative P30 test will be reported as “Prostate Specific Antigen was not detected.” A negative Acid Phosphatase test will be reported using the word “Presumptive,” such as “Presumptive testing for semen was negative.” If multiple tests for semen are done, and some of the results are negative, all results should be in the report.

c) Inconclusive

Inconclusive results for all body fluids will be reported using the words “Inconclusive” or “Cannot be determined”. The report must include a reason why the sample is considered inconclusive.

DNA Analysis

- If a negative quantitation result is obtained and no further analysis is conducted, the phrase “No DNA detected” will be used.
- If a positive but very low quantitation result is obtained and no further analysis is conducted, the phrase “Insufficient DNA” will be used.
- If a sample is amplified and there are no DNA results on the electropherogram, the phrase “No DNA profile/result detected” will be used.
- If a sample is amplified and the DNA results are inconclusive, the phrase “Not suitable for comparison” will be used. The report must include a reason why the sample is considered inconclusive.
- When a single-source DNA profile from an evidence (questioned) sample is the same as a known sample, the word to be used is “Match.” The word “Match” will also be used if the evidence profile is a single-source major component of a mixture or is a single-source profile that is deduced from a mixture.

- If an individual is included as a possible donor to a mixture DNA profile from an evidence sample, it will be reported as either “Cannot be excluded” or “Can be included.”
- If an individual is excluded as a donor to a single-source evidence sample, the phrase “Does not match” will be used.
- If an individual is excluded as a possible donor to a mixture DNA profile from an evidence sample, it will be reported as “Excluded as a possible donor/contributor.”
- If a laboratory is using Probabilistic Genotyping techniques, alternative wording may be used.

Kinship Analysis

a) Inclusion

“X can be included/cannot be excluded as a relative of Y.”

The statement will be specific as to which relative, such as parent, sibling, aunt, uncle, etc.

b) Exclusion

“X is excluded as a relative of Y.”

Identity Statement

In order to utilize an identity statement, the following must be met:

- a) There must be results for at least 9 loci
- b) Conditional probability for the sample must be determined
- c) The conditional probability must be less than $1/1000 \times$ the relevant population (as determined by the lab)

When these conditions have been met, the wording to be used is “X is the source.”

Y-STR/Mitochondrial DNA

The following statements should be included with match statements for Y-STR and Mitochondrial DNA:

- a) Y-STR: “or a paternal relative”
- b) Mitochondrial DNA: “or a maternal relative”

Project Area III: Standardized Terms & Definitions

Body Fluid Testing

Presumptive

A non-confirmatory test used for detecting the possible presence of biological fluids.

Prostate Specific Antigen (PSA)

A protein (also known as P30) produced by the prostate gland and found in semen. PSA concentration in semen is typically in levels far in excess of those found in other fluids.

Spermatozoa

The male reproductive cell that can be found in semen.

DNA Analysis

Allele

An alternative form of DNA markers. Alleles are found in specific areas or locations of the DNA called Loci (Singular: Locus).

Cannot Be Excluded / Is Included

An individual can be a donor to a DNA mixture profile.

Combined DNA Index System (CODIS)

A collection of Local, State and National DNA databases.

Differential Extraction

A procedure in which sperm cells are separated from all other cells in a sample, resulting in a **Sperm Fraction** which is enriched for sperm DNA and a **Non-Sperm/Epithelial Fraction** which contains DNA from other cell types.

Deoxyribonucleic Acid (DNA)

The inherited genetic material found in most cells.

DNA Amplification Kit

A commercial product used to generate a DNA profile.

Excluded

An individual cannot be a donor to a DNA profile.

Inconclusive / Not Suitable for Comparison

An interpretation or conclusion in which the DNA typing results are insufficient or too complex, as defined by the laboratory, for comparison purposes.

Major

Alleles that are present in a higher proportion in a DNA mixture profile.

Match

The alleles detected in a questioned/evidence sample are the same as the alleles detected in another sample.

Minor

Alleles that are present in a lower proportion in a DNA mixture profile.

Mixture

A DNA profile that has more than one donor.

Polymerase Chain Reaction (PCR)

A technique that copies specific areas of DNA.

Probability

A measure or estimation of how likely it is that something would occur.

Profile

A set of alleles detected in a sample during DNA analysis.

Short Tandem Repeat (STR)

DNA loci with a variable number of short repeating segments.

Crime Scene Report Standardization Materials

Project Area I: Standardized Report Components

1. Unique case identifier on each page of report (such as lab number)
2. Title of the report (such as “report of laboratory analysis”)
3. Identification of the laboratory
4. Requesting Agency Info or at a minimum requesting agency
5. List or explanation of items examined
6. General indication of methodology utilized
7. Results/conclusions
8. Date report issued
9. Signature and title of examiner (or electronic equivalent)
10. Pagination of the report (example page 1 of 2 etc.)
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12. Statement that definitions of terms used in the report can be located at the DCJS website and if applicable on the laboratory website or attached to report

Project Area II: Standardized Report Language/Statements

Processing

Positive

The following items indicated a positive reaction for the presumptive presence of blood/semen.

Negative

The following items indicated a negative reaction for the presumptive presence of blood/semen.

Inconclusive

The following items were inconclusive for the presumptive presence of blood/semen (state reason).

Reconstruction

Results

Specific observations defined and any sources of information used to draw conclusions.

Conclusions

Statements made based on observations or other information provided.

Project Area III: Standardized Terms & Definitions

ABFO Scales (American Board of Forensic Odontology scales)

An L-shaped piece of plastic used in photography that is marked with circles, black and white bars, and 18-percent gray bars to assist in distortion compensation and provide exposure determination. For measurement, the plastic piece is marked in millimeters.[1]

Accompanying Drop

A small blood drop produced as a by-product of drop formation.[2]

Altered Stain

A bloodstain with characteristics that indicate a physical change has occurred.[2]

Alternate Light Source

A high powered light source that can control specific wavelengths and/or wavelength ranges of light, to be used for the visualization/localization of possible testing areas.

Angle of Impact

The acute angle (alpha), relative to the plane of a target, at which a blood drop strikes the target.[2]

Area of Convergence

The area containing the intersections generated by lines drawn through the long axes of individual stains that indicates in two dimensions the location of the blood source.[2]

Area of Origin

The three-dimensional location from which spatter originated.[2]

Backspatter Pattern

A bloodstain pattern resulting from blood drops that traveled in the opposite direction of the external force applied; associated with an entrance wound created by a projectile.[2]

Biohazard Bag

A container for materials that have been exposed to blood or other biological fluids and have the potential to be contaminated with hepatitis, AIDS, or other viruses.[1]

Biological Fluids

Fluids that have human or animal origin, most commonly encountered at crime scenes (e.g., blood, mucus, perspiration, saliva, semen, vaginal fluid, urine).[1]

Blood Clot

A gelatinous mass formed by a complex mechanism involving red blood cells, fibrinogen, platelets, and other clotting factors.[2]

Bloodstain

A deposit of blood on a surface.[2]

Bloodstain Pattern

A grouping or distribution of bloodstains that indicates through regular or repetitive form, order, or arrangement the manner in which the pattern was deposited.[2]

Bloodstain Pattern Analysis

The analysis of the distribution patterns/stains at a scene resulting from the shedding of blood. Assessment of their size, shape, and distribution can help provide information as to pattern identity, as well as the possible mechanism of their formation. A useful investigative/reconstructive aid that is often incorporated into crime scene reconstructions.

Bubble Ring

An outline within a bloodstain resulting from air in the blood.[2]

Cast / Casting

A collection procedure often utilized with impression evidence (i.e., footwear). It provides a 3-dimensional real image representation of the impression.

Cast-off Pattern

A bloodstain pattern resulting from blood drops released from an object due to its motion.[2]

Cessation Cast-off Pattern

A bloodstain pattern resulting from blood drops released from an object due to its rapid deceleration.[2]

Chemical Enhancement

The use of chemicals that react with specific types of evidence (e.g., blood, semen, lead, fingerprints) in order to aid in the detection and/or documentation of evidence that may be difficult to see.[1]

Chemiluminescence

The emission of light (luminescence), as the result of a chemical reaction.

Collection / Preservation

The process of securing and protecting those items documented/obtained from the crime scene. Often these methods are evidence specific, with certain methods/requirements to ensure optimal safeguarding of the item(s) in question.

Comparison Samples

A generic term used to describe physical material/evidence discovered at crime scenes that may be compared with samples from persons, tools, and physical locations. Comparison samples may be from either an **unknown/questioned** or a **known** source.[1]

Samples whose source is **unknown/questioned** are of three basic types:

1. Recovered crime scene samples whose source is in question (e.g., evidence left by suspects, victims).
2. Questioned evidence that may have been transferred to an offender during the commission of the crime and taken away by him or her. Such questioned evidence can be compared with evidence of a known source and can thereby be associated/linked to a person/vehicle/tool of a crime.
3. Evidence of an unknown/questioned source recovered from several crime scenes may also be used to associate multiple offenses that were committed by the same person and/or with the same tool or weapon.

Samples whose source is **known** are of three basic types:

1. A **standard/reference** sample is material of a verifiable/documented source which, when compared with evidence of an unknown source, shows an association or linkage between an offender, crime scene, and/or victim (e.g., a carpet cutting taken from a location suspected as the point of transfer for comparison with the fibers recovered from the suspect's shoes, a sample of paint removed from a suspect vehicle to be compared with paint found on a victim's vehicle following an accident, or a sample of the suspect's and/or victim's blood submitted for comparison with a bloodstained shirt recovered as evidence).
2. A **control/blank** sample is material of a known source that presumably was uncontaminated during the commission of the crime (e.g., a sample to be used in laboratory testing to ensure that the surface on which the sample is deposited does not interfere with testing. For example, when a bloodstain is collected from a carpet, a segment of unstained carpet must be collected for use as a blank or elimination sample).

3. An **elimination** sample is one of known source taken from a person who had lawful access to the scene (e.g., fingerprints from occupants, tire tread impressions from police vehicles, footwear impressions from emergency medical personnel) to be used for comparison with evidence of the same type.

Contamination

The unwanted transfer of material from another source to a piece of physical evidence.[1]

Control / Blank Sample

See comparison samples.

Crime Scene

Any location(s)/area(s) determined to have been associated with the commission of a crime.

Crime Scene Processing

The identification, documentation, collection, and/or interpretation of evidence/data at a crime scene.

Crime Scene Reconstruction

A process incorporating the data/information associated with a case in an attempt to provide a description/picture of the event(s) that transpired. The material utilized can be in the form crime scene observations, measurements, results of analyses, autopsy reports, police reports, trajectory analysis, bloodstain pattern analysis, etc.

Directionality

The characteristic of a bloodstain that indicates the direction blood was moving at the time of deposition.[2]

Directional Angle

The angle (gamma) between the long axis of a spatter stain and a defined reference line on the target.[2]

Documentation

The recording of information/data at crime scenes. Forms of documentation may include, but are not limited to, notes, photography, video, sketches, measurements, analysis/testing results, etc.

Drip Pattern

A bloodstain pattern resulting from a liquid that dripped into another liquid, at least one of which was blood.[2]

Drip Stain

A bloodstain resulting from a falling drop that formed due to gravity.[2]

Drip Trail

A bloodstain pattern resulting from the movement of a source of drip stains between two points.[2]

Edge Characteristic

A physical feature of the periphery of a bloodstain.[2]

Elimination Sample

See comparison samples.[1]

Enhancement

Treatment processes that can bring out additional detail(s) in the evidence. Often utilized with forms of impression evidence such as footwear.

Examination / Comparison Quality Photographs

These are images captured in a manner that allows for their use for comparison/measurement purposes.

Expiration Pattern

A bloodstain pattern resulting from blood forced by airflow out of the nose, mouth, or a wound.[2]

Flow Pattern

A bloodstain pattern resulting from the movement of a volume of blood on a surface due to gravity or movement of the target.[2]

Fluoresce

To produce, undergo, or exhibit fluorescence.

Forward Spatter Pattern

A bloodstain pattern resulting from blood drops that traveled in the same direction as the impact force.[2]

Gelatin Lifts

Adhesive pads with a clear plastic sheet cover. Used in the collection of trace/impression evidence. The collected item(s) are placed onto the adhesive sheet, securing them to the pad.

Impact Pattern

A bloodstain pattern resulting from an object striking liquid blood.[2]

Impression Evidence

Objects or materials that have retained the characteristics of other objects that have been physically pressed against them.[1]

Insect Stain

A bloodstain resulting from insect activity.[2]

Known

See comparison samples.[1]

Latent Print

A print impression not readily visible, made by contact of the hands or feet with a surface resulting in the transfer of materials from the skin to that surface.[1]

Measurement Scale

An object showing standard units of length (e.g., ruler) used in photographic documentation of an item of evidence.[1]

Mist Pattern

A bloodstain pattern resulting from blood reduced to a spray of micro-drops as a result of the force applied.[2]

Multiple Scenes

Two or more physical locations of evidence associated with a crime (e.g., in a crime of personal violence, evidence may be found at the location of the assault and also on the person and clothing of the victim/assailant, the victim's/assailant's vehicle, and locations the victim/assailant frequents and resides).[1]

Parent Stain

A bloodstain from which a satellite stain originated.[2]

Perimeter Stain

An altered stain that consists of the peripheral characteristics of the original stain.[2]

Personal Protective Equipment (PPE)

Articles such as disposable gloves, masks, and eye protection that are utilized to provide a barrier to keep biological or chemical hazards from contacting the skin, eyes, and mucous membranes and to avoid contamination of the crime scene.[1]

Pool

A stain resulting from an accumulation of liquid on a surface.[2]

Presumptive Test

A chemical test that provides a simple, quick way in which to effectively screen an area/item for the possible presence or absence of a material, i.e., blood. Different types of evidence require different types of presumptive tests.

Projected Pattern

A bloodstain pattern resulting from the ejection of a volume of blood under pressure.[2]

Satellite Stain

A smaller bloodstain that originated during the formation of the parent stain as a result of blood impacting a surface.[2]

Saturation Stain

A bloodstain resulting from the accumulation of liquid blood in an absorbent material.[2]

Serum Stain

The stain resulting from the liquid portion of blood (serum) that separates during coagulation.[2]

Single-use Equipment

Items that will be used only once to collect evidence, such as biological samples, then discarded to minimize contamination (e.g., tweezers, scalpel blades, droppers).[1]

Sketches

During processing these are often represented as hand drawn schematics depicting items observed at the scene, as well as their spatial relationship(s) to each other. Usually accompanied by a series of measurements accounting for the dimensions of the scene(s) and the items contained therein.

Spatter Stain

A bloodstain resulting from a blood drop dispersed through the air due to an external force applied to a source of liquid blood.[2]

Splash Pattern

A bloodstain pattern resulting from a volume of liquid blood that falls or spills onto a surface.[2]

Standard / Reference Sample

See comparison samples.

Swipe Pattern

A bloodstain pattern resulting from the transfer of blood from a blood-bearing surface onto another surface, with characteristics that indicate relative motion between the two surfaces.[2]

Tape Lifts

The use of adhesive tape strips to collect trace evidence. The application of the strip(s) to the area(s) of interest collects any trace evidence items present.

Target

A surface onto which blood has been deposited.[2]

Trace Evidence

Physical evidence that results from the transfer of small quantities of materials (e.g., hair, textile fibers, paint chips, glass fragments, gunshot residue particles).[1]

Trajectory Analysis

The utilization of bullet holes, bullet impact marks, ricochet marks, etc., to help determine the possible pathway(s) associated with shots fired. Analysis can be used to help establish the possible position(s) of the shooter(s) and/or victim(s). A useful investigative/reconstructive aid that is often incorporated into crime scene reconstructions.

Transfer Stain

A bloodstain resulting from contact between a blood-bearing surface and another surface.[2]

Unknown / Questioned

See comparison samples.

Vacuum Sweepings

A collection method for trace evidence. Use of a vacuum apparatus allows for effective trace evidence collection over larger areas.

Void

An absence of blood in an otherwise continuous bloodstain or bloodstain pattern.[2]

Walk-through

An initial assessment conducted by carefully walking through the scene to evaluate the situation, recognize potential evidence, and determine resources required. Also, a final survey conducted to ensure the scene has been effectively and completely processed.[1]

Wipe Pattern

An altered bloodstain pattern resulting from an object moving through a preexisting wet bloodstain.[2]

[1] DOJ. "Crime Scene Investigation: A Guide for Law Enforcement." (2000). Web. <<https://www.ncjrs.gov/pdffiles1/nij/178280.pdf>>.

[2] FBI. "Scientific Working Group on Bloodstain Pattern Analysis: Recommended Terminology." *Forensic Science Communications*. 11. 2 (2009). Web. <http://www.fbi.gov/about-us/lab/forensic-science-communications/fsc/april2009/standards/2009_04_standards01.htm>.

Digital Evidence Report Standardization Materials

Project Area I: Standardized Report Components

1. Unique case identifier on each page of report (such as lab number)
2. Title of the report (such as “report of laboratory analysis”)
3. Identification of the laboratory
4. Submitting Agency Info or at a minimum submitting agency
5. List or explanation of items examined
6. General indication of methodology utilized
7. Results/conclusions
8. Date report issued
9. Signature and title of examiner (or electronic equivalent)
10. Pagination of the report (example page 1 of 2 etc.)
11. Statement regarding the report does not constitute the entire case file or equivalent
12. Statement that definitions of terms used in the report can be located at the DCJS website and if applicable on the laboratory website or attached to report

Additional Discipline Specific Report Components:

13. Scope of Work as detailed from the original requestor

Project Area II: Standardized Report Language/Statements

Positive

Computer and Mobile Device Forensics

When the scope of work requested is successfully completed reporting will include: the extraction/contents/findings obtained, the items being referenced, and how that information will be provided/displayed.

Audio, Video and Image Analysis

The submitted media (*video, image, files*) was reviewed. *State the examination process applied to the submitted media.* The (*state the work product*) was made available to the submitting agency.

Negative

Computer and Mobile Device Forensics

When the scope of work requested results in NO findings or is not successfully completed reporting will include: the findings or reason/cause of not completing the work requested and the item being referenced.

Audio, Video and Image Analysis

The submitted media (*video, image, files*) was reviewed; no further analysis was conducted due to insufficient detail in the area of interest; or

The submitted media (*video, image, files*) was reviewed; processing steps were performed on the submitted media, no further analysis was performed due to insufficient detail in the area of interest.

Inconclusive

Not deemed necessary.

Qualifying

Not deemed necessary.

Disclaimer

Not deemed necessary.

Project Area III: Standardized Terms & Definitions

Adapted from SWGDE and SWGIT ASTM E2916-13 Standard Terminology for Digital & Multimedia Evidence Examination

- (i) Image Analysis
- (c) Computer Forensics
- (v) Video Analysis
- (a) Forensic Audio

Acquisition

- (c) See “*Image*”

Archiving

The process of storing data in a manner suitable for long term availability and retrieval.

Artifact

(a,i,v) A visual/aural aberration in an image, video, or audio recording resulting from a technical or operational limitation. Examples include speckles in a scanned picture or “blocking” in images compressed using the JPEG standard.

- (c) Information or data created as a result of the use of an electronic device that shows past activity.

Audio Enhancement

Processing of recordings for the purpose of increased intelligibility, attenuation of noise, improvement of understanding the recorded material and/or improvement of quality or ease of hearing.

Authentication

The process of substantiating that the data is an accurate representation of what it purports to be.

Capture

The process of recording data, such as an image, video sequence, or audio stream.

Carve

- (c) The extraction of a portion of data for the purpose of analysis.

Clarification

(i,v) See “*Image Enhancement*”

Cloning

The process of creating a bit stream duplicate of the available data from one physical media to another.

Compression

The process of reducing the size of a data file. (See also, “Lossy Compression” and “Lossless Compression”.)

Computer Forensics

A sub-discipline of Digital & Multimedia Evidence, which involves the scientific examination, analysis, and/or evaluation of digital evidence in legal matters.

Digital Evidence

Information of probative value that is stored or transmitted in binary form.

Digital Image

(i) An image that is represented by discrete numerical values organized in a two-dimensional array. [Taken from the “*Encyclopedia of Photography*” 3rd Edition] When viewed on a monitor or paper, it appears like a photograph.

(c) See “*Image*”

Directory Listing

(c) A list of files contained within an object. It may also contain other information such as the size and dates of the files.

Downloading / Exporting

(i,v) The process of retrieving audio, video, and still images and transactional data from a DVR system. Can be in either the native/proprietary format or an open format.

Duplicate

An accurate and complete reproduction of all data objects independent of the physical media.

DVR (Digital Video Recorder)

(i,v) A stand-alone embedded system or a computer based system used to record video and/or audio data.

Extraction

(c) A method of exporting data from a source (e.g., copying data from EnCase preview, dumping data from a cell phone).

See “*Data Extraction*”

(i,v) See “*Downloading/Exporting*”

File Format

The structure by which data is organized in a file.

File Slack

(c) The data between the logical end of a file and the end of the last storage unit for that file.

Ex:

For the FAT file system, the data between the logical end of the file and the end of the cluster.

File System, Filesystem

A specified method for naming, storing, organizing, and accessing files on logical volumes.

Format

(Noun) The structure by which data is organized on a device.

(v) One or several combined elements that may be used to describe the video recording method. These include tape width (e.g., 8mm, 1/2 inch, 3/4 inch, 1 inch), signal form (e.g., composite, Y/C, component), media (e.g., VHS tape, DVD, CD), data storage type (e.g., analog/digital, AVI/MPEG), and signal standard (e.g., NTSC, PAL, SECAM).

Frame

(v) Lines of spatial information of a video signal. For interlaced video, a frame consists of two fields, one of odd lines and one of even lines, displayed in sequence. For progressive scan (non-interlaced) video, the frame is written through successive lines that start at the top left of the picture and finish at the bottom right.

Hash or Hash Value

Numerical values, generated by hashing functions, used to substantiate the integrity of digital evidence and/or for inclusion /exclusion comparisons against known value sets.

Image

(i,v) An imitation or representation of a person or thing, drawn, painted, photographed, etc.

(c) A bit stream copy of the available data. The result may be encapsulated in a proprietary format (e.g., E01, 001).

Image Analysis

The application of image science and domain expertise to examine and interpret the content of an image, the image itself, or both in legal matters.

Image Comparison (Photographic Comparison)

(i) The process of comparing images of questioned objects or persons to known objects or persons or images thereof and making an assessment of the correspondence between features in these images for rendering an opinion regarding identification or elimination.

Image Content Analysis

(i) The drawing of conclusions about an image. Targets for content analysis include but are not limited to: the subjects/objects within an image; the conditions under which, or the process by which, the image was captured or created; the physical aspects of the scene (e.g., lighting or composition); and/or the provenance of the image.

Image Processing

(i) Any activity that transforms an input image into an output image.

iMessage

A fundamentally different text message in that data is used to send the messages not the text messaging plan you purchase through your wireless carrier.

Integrity Verification

The process of confirming that the data presented is complete and unaltered since time of acquisition.

Log File

A record of actions, events, and related data.

Logical Acquisition

(c) An accurate reproduction of information contained within a logical volume (e.g., mounted volume, logical drive assignment).

Media

Objects on which data can be stored.

Metadata

Data, frequently embedded within a file, that describes a file or directory, which can include the locations where the content is stored, dates and times, application specific information, and permissions.

Mobile Device Forensics

For legal purposes, the utilization of scientific methodologies to recover data stored by a cellular device.

Multimedia Messaging Service (MMS)

MMS messages extend the capability of original text messages, support sending photos, longer text messages, and other content.

Password Recovery

The process of locating and identifying a series of characters used to restrict access to data.

Physical Image / Acquisition

(c) A bitstream duplicate of data contained on a device.

Processed Image

(i,v) Any image that has undergone enhancement, restoration or other operation.

Residue

(c) Data that is contained in unallocated space or file slack.

Short Message Service (SMS)

The original text messages. SMS messages are limited to 160 characters and can only contain text.

Unallocated Space

(c) Data storage areas available for use by the computer. The area may already contain previously stored information.

Validation

The process of performing a set of experiments, which establishes the efficacy and reliability of a tool, technique or procedure or modification thereof.

Verification

1. The process of confirming the accuracy of an item to its original.
2. Confirmation that a tool, technique or procedure performs as expected.

Video

The electronic representation of a sequence of images, depicting either stationary or moving scenes. It may include audio.

Video Enhancement

Any process intended to improve the visual appearance of video sequences or specific features within video sequences.

Video Stabilization

(v) The process of positioning individual frames so that a selected object or person will remain in the same location as the video is played.

Waveform Monitor

(v) An electronic device that provides a graphic display of a video signal.

Working Copy

A copy or duplicate of a recording or data that can be used for subsequent processing and/or analysis.

Write Block / Write Protect

Hardware and/or software methods of preventing modification of media content.

Drug Analysis Report Standardization Materials

Project Area I: Standardized Report Components

1. Unique case identifier on each page of report (such as lab number)
2. Title of the report (such as “report of laboratory analysis”)
3. Identification of the laboratory
4. Submitting Agency Info or at a minimum submitting agency
5. List or explanation of items examined
6. General indication of methodology utilized
7. Results/conclusions
8. Date report issued
9. Signature and title of examiner (or electronic equivalent)
10. Pagination of the report (example page 1 of 2 etc.)
11. Statement regarding the report does not constitute the entire case file or equivalent
12. Statement that definitions of terms used in the report can be located at the DCJS website and if applicable on the laboratory website or attached to report

Additional Discipline Specific Report Components:

13. It is recommended that the laboratory report include the estimated uncertainty for all reported measurements, but at a minimum the laboratory shall report the estimated uncertainty when it impacts evaluation of a specification limit stated by a regulatory body, a statute, case law or other legal requirement. The measurement uncertainty value will be expressed as an expanded uncertainty and include the coverage probability expressed in percent. Uncertainty is *not* required for unanalyzed items that are not associated with a sampling plan.

Project Area II: Standardized Report Language/Statements

Positive

Circumstance:

Analysis performed-fulfills the criteria for reporting a particular analyte or class of compounds as defined in the laboratory's SOP.

Reporting Language:

"Contains [substance]" or name the substance.

Examples:

- *Item 1 contains cocaine.*
- *Item 1: Cocaine.*

Negative

Circumstance:

Analysis performed-fulfills the criteria for reporting the absence of a controlled substance as defined in the laboratory's SOP [i.e., little to no response from the instrument or the response from the instrument did not fulfill laboratory identification criteria].

Reporting Language:

"No controlled substances identified"

Examples:

- *No controlled substances identified in Item 1.*
- *Item 1: No controlled substances were identified.*

No Analysis

Circumstance:

Analysis is not performed.

Reporting Language:

"No analysis"

Examples:

- *No analysis was performed on Item 1.*
- *Item 1: No analysis.*

Preliminary Result

1) **Circumstance:**

The laboratory's minimum criteria for a positive or negative result is not fulfilled due to incomplete testing [i.e., specimen was not compared to a controlled substance reference material] and a statement is being reported about a particular analyte or class of compounds. The reporting language must clearly state that the result(s) have not been confirmed. In some cases, a preliminary report may be issued.

Reporting Language:

"Not confirmed"

To be used in conjunction with "indicate" qualifier. See example below.

2) **Circumstance:**

The laboratory's minimum criteria for a positive or negative result is not fulfilled due to incomplete testing [i.e., specimen was not compared to a controlled substance reference material] and statement is not being reported about a particular analyte or class of compounds.

Reporting Language:

"Initial examination only. The presence or absence of a controlled substance was not confirmed."

Qualifying Statements

When a statement is reported about a particular analyte or class of compounds in the absence of confirmatory testing (ex. pharmaceutical identifiers or color tests only), the laboratory must issue a qualifier using the term "indicate."

Example:

Item 1: Pharmaceutical identification indicates 1 milligram of alprazolam per tablet. Alprazolam was not confirmed.

When a preliminary result is reported due to unavailability of reference material, a qualifying statement must detail the reason for incomplete testing.

Example:

XLR-11 is indicated in Item 1. XLR-11 was not confirmed because the laboratory does not possess a suitable reference material for confirmation.

When tetrahydrocannabinol (THC) is reported in items containing no plant material or plant material not consistent with the Cannabis plant, the laboratory must use a qualifier indicating that the origin (synthetic or natural) cannot be determined.

Example:

Item 1 contains tetrahydrocannabinol (THC). It cannot be determined if the tetrahydrocannabinol (THC) is natural or synthetic in origin.

Aggregate Weight: 12.57 grams.

Methodology

- When an instrumental technique is used to confirm the qualitative result (whether positive or negative), the technique(s) must be specified (i.e., Gas Chromatography – Mass Spectrometry [GCMS]).
- When an instrumental technique is used to arrive at a preliminary result only, the technique(s) must be specified [i.e., Gas Chromatography – Mass Spectrometry (GCMS)].
- When reporting a qualitative result in the absence of an instrumental technique (whether positive, negative or preliminary), the technique(s) used to determine the result must be specified (i.e., microscopic analysis, color test, thin layer chromatography).
- When the quantity or purity of a substance is reported (other than for aggregate weight determination), the instrumental technique used for quantitative analysis [i.e., High-Performance Liquid Chromatography (HPLC)] must be specified.
- All other information on aggregate weight determination and specific equipment / instrumentation used must be in the case record (i.e., analytical balances, etc.)

Sampling *(if applicable)*

A reference to the sampling plan used by the laboratory will be reported.

Project Area III: Standardized Terms & Definitions

Controlled Substance

Substance(s) listed in the [New York State Public Health Law Article 33 Section 3306](#).

Abbreviations of instrumentation used:

1. **GC** – Gas Chromatography
2. **FID** – Flame Ionization Detection
3. **MS** – Mass Spectrometry
4. **LC** – Liquid Chromatography
5. **UPLC** – Ultra Performance Liquid Chromatography
6. **HPLC** – High Performance (formerly High Pressure) Liquid Chromatography
7. **DAD** – Diode Array Detection
8. **FTIR** – Fourier Transform Infrared Spectroscopy
9. **TLC** – Thin Layer Chromatography
10. **IR** – Infrared Spectroscopy
11. **UV/Vis** – Ultraviolet/Visual Spectroscopy
12. **IA** – Immunoassay
13. **NPD** – Nitrogen Phosphorus Detection
14. **ECD** – Electron Capture Detection
15. **AA** – Atomic Absorption Spectrophotometry
16. **TOF** – Time of Flight
17. **DART** – Direct Analysis in Real Time
18. **Raman** – Raman Spectroscopy

Analytical instruments that use multiple technologies in tandem are indicated by a combination of the abbreviations listed above, for example gas chromatography/mass spectrometry may be abbreviated GCMS, GC/MS or GC-MS.

Contains or name the substance

Analysis performed-fulfills the criteria for reporting a particular analyte or class of compounds as defined in the laboratory's SOP.

No controlled substances identified

Analysis performed-fulfills the criteria for reporting the absence of a controlled substance as defined in the laboratory's SOP.

Not confirmed

The laboratory's minimum criterion for reporting a positive or negative result was not fulfilled due to incomplete testing.

Indicate

The laboratory did not fulfill the minimum criteria for reporting a positive identification.

Residue

An amount (weight/volume) of material that is below the measurement uncertainty (MU), below the minimum sample quantity (MSQ) or unable to be measured at the discretion of the analyst.

Gross Weight

The total weight of the test material and its packaging.

Net/Aggregate Weight

The weight of the test material without its packaging.

Pure Weight

The weight of the controlled substance itself, contained in the test material.

Fire Debris – Ignitable Liquid Report Standardization Materials

Project Area I: Standardized Report Components

1. Unique case identifier on each page of report (such as lab number)
2. Title of the report (such as “report of laboratory analysis”)
3. Identification of the laboratory
4. Submitting Agency Info or at a minimum submitting agency
5. List or explanation of items examined
6. General indication of methodology utilized
7. Results/conclusions
8. Date report issued
9. Signature and title of examiner (or electronic equivalent)
10. Pagination of the report (example page 1 of 2 etc.)
11. Statement regarding the report does not constitute the entire case file or equivalent
12. Statement that definitions of terms used in the report can be located at the DCJS website and if applicable on the laboratory website or attached to report

Additional Discipline Specific Report Components:

13. Date of submission of evidence to the laboratory.
14. Positive / Negative Qualifying Statement:

Example -

The identification of an Ignitable liquid / residue does not necessarily lead to the conclusion that a fire was incendiary in nature. The absence of an Ignitable liquid / residue does not preclude the possibility that ignitable liquids were present.

15. A statement for instances when there is no analysis performed due to improper packaging or failure of a container.

Due to the evidence being in an improper container/failed container, no analysis was performed.

16. When analysis is performed, a qualifying statement regarding the improper/failed container must be reported. As there are many circumstances involving improper/failed containers, specific qualifying statement may vary. The following statement may be used when analysis is conducted:

Due to the evidence being in an improper container/failed container (describe here), the condition of the container may have affected the reported results for the presence or absence of an ignitable liquid/ignitable liquid residue.

17. Criteria for determination regarding analysis, or not, will be left to individual agencies. It is recommended that the circumstance regarding the improper/failed container and all applicable considerations taken regarding the decision to analyze or not be documented.

Project Area II: Standardized Report Language/Statements

Positive

Circumstance:

An ignitable liquid pattern(s) which is (are) comparable to the available reference(s) within ASTM E1618 ignitable liquid classification is (are) observed in an item.

Reporting Language:

The specific finding (ASTM class of ignitable liquid; *gasoline, petroleum distillate, isoparaffinic product, aromatic product, naphthenic-paraffinic product, normal-alkane product, oxygenated solvent or miscellaneous*) and range (light, light-medium, medium, medium-heavy, heavy, or the n-alkane range) is reported. The phrase “was identified” may be used.

Example(s) of commercial product(s) in the reported classification and range are given. (The examples may be given either through a statement as part of the finding or through providing the ASTM E1618 classification scheme or equivalent.)

Additional product information or qualifying statements may be provided.

Additional Comments:

Gasoline is a distinct class of ignitable liquid (no range or examples necessary).

Miscellaneous – reporting the miscellaneous classification as “miscellaneous” is not required.

- Mixtures of two or more products or blended single products comprised of components characteristic of two or more ASTM classes - the range(s) are reported as well as the corresponding two or more ASTM classification(s). Additional compound or product information may be provided.
- Single or few component products are reported based on single component(s) identified rather than ASTM classification (no range necessary, but may be reported). ASTM classification may be reported in addition to the identified components. Furthermore, examples are not required for single component identifications, but may be given. Additional compound or product information may be provided.

Positive Finding Special Circumstances:

Situations in which the identified ignitable liquid may be present as a constituent of the evidence sample itself (naturally occurring/used in manufacturing of item/or result of heating or burning of the material)

Note: Common interfering compounds resulting from inherent constituents of the evidence item, pyrolysis, combustion, or distillation of a substrate are not normally reported except when a significant quantity of an unexplainable product is identified. Derived from ASTM E1618 - Terminology Used in Reporting Results/Conclusions and Opinions

Caution shall be used when reporting a positive finding if it is known that the submitted evidence sample itself may consist of a matrix which is known to contain an ignitable liquid of the type identified. Derived from ASTM E 1618-11 section 12.3.3.2. When a positive ignitable liquid finding is reported in situations in which it is known that the identified ignitable liquid may be a constituent of the evidence sample itself such as terpenes in wood, heavy petroleum distillate in newsprint/magazines, or toluene in shoes or other materials with adhesives, then a qualifying statement must be reported along with the positive finding.

The qualifier must indicate that the identified ignitable liquid may be present due to the evidence item itself (naturally occurring/used in manufacturing of item/or result of heating or burning of the material) , and therefore not necessarily from a foreign source.

There are numerous possibilities for special circumstances. Therefore specific qualifying statement wording will vary dependent on each individual case item circumstance.

Negative

Circumstance:

Little or no response from the instrument or the response from the instrument could not be classified using the ASTM E1618 classification criteria.

Note: Common interfering compounds resulting from inherent constituents of the evidence item, pyrolysis, combustion, or distillation of a substrate are not normally reported except when a significant quantity of an unexplainable product is identified. Derived from ASTM E1618 - Terminology Used in Reporting Results/Conclusion and Opinions

Reporting Language:

"Ignitable liquids/or ignitable liquid residues were not identified" or "No ignitable liquids/or ignitable liquid residues identified."

Additional qualifying statements may be provided.

Inconclusive

Circumstance:

Presence or absence of ignitable liquid could not be determined (partial pattern match with unexplained differences possibly due to substrate interference masking part of chromatographic pattern, missing components [e.g., soil substrate] or low abundance).

Reporting Language:

“Testing for ignitable liquids and/or ignitable liquid residues was inconclusive”.

A qualifying statement must be reported along with the inconclusive finding.
The qualifier must indicate the reason for the inconclusive statement.

There are numerous reasons for inconclusive findings. Therefore, specific qualifying statement wording will vary dependent on each individual case item circumstance.

Project Area III: Standardized Terms & Definitions

Definitions of instrumentation used:

1. **GC** – Gas Chromatography
2. **MS** – Mass Spectrometry

Analytical instruments that use multiple technologies in tandem are indicated by through a combination of the abbreviations listed above, for example gas chromatography/mass spectrometry is abbreviated GCMS, GC/MS or GC-MS depending on the report software of the laboratory.

Comparison Sample (*n* — *fire debris*)

- 1) a sample of material collected from a fire scene which is, to the best of the collector's knowledge, similar with respect to relevant characteristics to a sample suspected of containing ignitable substance, but which is not expected to contain an ignitable substance;
- 2) a sample of suspected ignitable substance submitted for the purpose of comparing with any ignitable substance separated from a debris sample. (ASTM 1732) Limited to class comparison.

Control Sample (*ASTM 1732 n*)

Material of established origin that is used to evaluate the performance of a test or comparison.

Identified

Ignitable liquid found and classified according to ASTM E1618 identification criteria.

Not Identified

Little or no response from the instrument or the response from the instrument could not be classified using the ASTM E1618 classification criteria. Common interfering compounds resulting from inherent constituents of the evidence item, pyrolysis, combustion, or distillation of a substrate are not normally reported except when a significant quantity of an unexplainable product is identified.

Product

A commercially produced item that is a variation of petroleum products or are derived from non-petroleum sources.

Inconclusive

Not able to make a determination as to the presence or absence of an ignitable liquid/ ignitable liquid residue within the item of evidence analyzed.

Ignitable Liquid / Ignitable Liquid Residue (ILR)

Any combustible liquid or flammable liquid. (NFPA 921 - Definitions). Ignitable liquid residue and ignitable liquid shall be considered the same for the purposes of reporting analytical results.

Firearms Report Standardization Materials

Project Area I: Standardized Report Components

1. Unique case identifier on each page of report (such as lab number)
2. Title of the report (such as “report of laboratory analysis”)
3. Identification of the laboratory
4. Submitting Agency Info or at a minimum submitting agency
5. List or explanation of items examined
6. General indication of methodology utilized
7. Results/conclusions
8. Date report issued
9. Signature and title of examiner (or electronic equivalent)
10. Pagination of the report (example page 1 of 2 etc.)
11. Statement regarding the report does not constitute the entire case file or equivalent
12. Statement that definitions of terms used in the report can be located at the DCJS website and if applicable on the laboratory website or attached to report

Additional Discipline Specific Report Components

13. The laboratory report will include the estimated uncertainty when it impacts evaluation of a specification limit stated by a regulatory body, a statute, case law or other legal requirement.
14. The measurement uncertainty value will be expressed as an expanded uncertainty and include the coverage probability.

Project Area II: Standardized Report Language/Statements

Comparative Analysis

Identification

Item x and Item y were microscopically examined and compared. Based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics, Items x and y are identified as having been (fired in/from or cycled in/through) the (same firearm/specific firearm).

Inconclusive

Item x and Item y were microscopically examined and compared. There is observed agreement of their class characteristics. However, there is insufficient agreement or disagreement of their individual characteristics to either identify or eliminate the items as having been fired (in/from) the (same firearm/specific firearm).

Elimination

Item x and Item y were microscopically examined and compared. Based on the observed disagreement of (class and/or individual) characteristics, Items x and y are eliminated as having been fired (in/from) the (same firearm/specific firearm).

Unsuitable for comparison

Item x was microscopically examined and determined to be unsuitable for comparison. (basis for conclusion)

Suitable for comparison

Item x was microscopically examined and determined to be suitable for comparison. (basis for conclusion)

Operability

- Description of Evidence
- Identification of Firearm Test Fired
- Type of Ammo Used (specify submitted or of laboratory supply)
- Result
- Special circumstances

Operable

The (Item __, or described item) was test fired using submitted/laboratory ammunition and is operable.

The (Item __, or described item) was test fired utilizing laboratory/submitted ammunition. Item __ (firearm) and the utilized submitted ammunition were found to be operable.

Inoperable

The (Item __, or described item) is not operable as submitted. (For Special Circumstances use appropriate statements that detail the reason/cause and any additional information as required)

Serial Number Restoration

- Description of Evidence (including obliterated/defaced)
- Identification of Firearm
- Restoration Analysis and/or identification of secondary number (included in report)
- Result – complete and/or partial w/possibilities of questioned characters (if applicable)

The (Item __, or described item) was (physically, chemically, magnetically) processed.

Its serial number was (restored/partially restored) to read (for secondary number “is identified as”): (for partial restorations – an “*” or other symbol represent partially restored/unrestorable characters-list potential characters if applicable)

The (Item __, or described item) is defaced beyond restoration capabilities.

Restoration attempts on the defaced area of (Item __, or described item) were unsuccessful.

The pistol, Item X, was received without its serial number plate. Therefore, a routine serial number restoration analysis was not performed.

Barrel/Overall Lengths

- Description of Evidence (including statement of alteration, if applicable)
- Identification of Firearm
- Result (including uncertainty, if reporting)

(Item __, or described item) has a shortened/altered barrel with a barrel length of X inches.

(Item __, or described item) has a shortened/altered/missing butt stock. The overall length of (Item __, or described item) is X inches.

The length of the barrel was determined by measuring the distance between the muzzle and the face of the (bolt, breech, or breech lock) when closed and when the (shotgun or rifle) was cocked. The overall length of the (shotgun or rifle) is the distance between the extreme ends of the weapon measured along a line parallel to the center line of the bore.

Assault Weapons

- Description of Evidence
- Identification of Firearm
- Listing of observed characteristics

(Item __, or described item) is a semi-automatic (pistol, rifle, shotgun) that accepts a detachable cartridge magazine and has the following characteristics: (list the offending characteristics)

Gunshot Residue

- Description of Evidence
- Identification of Holes
- Type of Examination
- If firearm submitted: Identification of firearm, ammunition used & distances at which patterns taken

Examination of Item X revealed a hole (designate ID & location of hole). Visual/microscopic examination and chemical processing of the area around the hole revealed a pattern of gunshot residues.

The (firearm) and submitted (and/or lab) ammunition were used to produce test patterns at X, X1, X2... and X6 inches. The residue pattern from Item X (“was consistent in size, appearance and/or density with the patterns obtained between X2 and X3 inches, muzzle-to-target” or “indicates a muzzle-to-target distance between X2 and X3 inches”).

The absence of (gunshot residues, patterns, a firearm, etc...) precludes a muzzle- to-target distance determination.

[Observed characteristics] were detected. There are characteristics of gunshot residue that are observed on surfaces that were within the proximity of a discharging weapon. The appearance of these characteristics depends on the proximity of the weapon, as well as multiple other factors such as the type of firearm and ammunition used.

NIBIN Wording

(Digital) Images of the (recovered/test fired) component (Item) were entered into the National Integrated Ballistics Information Network (NIBIN) computer database. An additional report will be issued if an association is made with an existing database image.

The test fired components from this (rifle/pistol/shotgun) are not suitable for entry into the National Integrated Ballistics Information Network (NIBIN) Database.

Magazine Capacity

The (cartridge) magazine (Item #) has a capacity of (actual # or greater than 10) (caliber) cartridges.

Silencer Testing

This device, Item X, is capable of attaching to the muzzle/bbl of Item Y. It has design features with the possible ability to reduce/suppress the audible report of a firearm. Tests were fired with and without this device attached to Item Y. This device noticeably reduces the report of Item Y. Sound measurements were taken for these tests. The average reduction is X decibels with Item X attached to Item Y.

OR

Item X has design features with the possible ability to reduce/suppress the audible report of a firearm. Tests were fired with and without this device attached to Item Y. This device noticeably reduces the report of Item Y.

All conclusions will include the basis for the conclusions.

Project Area III: Standardized Terms & Definitions

(The following definitions and terms are taken from the Association of Firearm and Tool Mark Examiners Glossary 6th Edition unless otherwise noted.)

Action

The working mechanism of a firearm. The combination of the receiver or frame, the breech bolt, and the other parts of the mechanism by which a firearm is loaded, fired, and unloaded.

Ammunition

One or more loaded cartridges consisting of a primed cartridge case, propellant, and with or without one or more projectiles. Also referred to as fixed ammunition or live ammunition (slang term).

Automatic Action / Fully Automatic / Full Auto / Selective Fire

** See NYS Penal Law Section 265 Definitions No. 1*

Barrel

That part of a firearm through which a projectile or shot charge travels under the impetus of powder gasses, compressed air, or other like means. A barrel may be rifled or smooth.

Barrel Length

** See NYS Penal Law Section 265 Definitions No. 3*

Bolt Action

A firearm in which the breech closure is in line with the bore at all times, manually reciprocates to load, unload, and cock, and is locked in place by breech bolt lugs and engaging abutments, usually in the receiver. There are two principal types of bolt actions: the turn bolt and the straight pull.

Bore

The interior of a barrel forward of the chamber

Breech

The part of a firearm at the rear of the bore into which the cartridge or propellant is inserted

Breech Bolt

The locking and cartridge head support mechanism of a firearm that operates in line with the axis of the bore

Bullet

A non-spherical projectile for use in a rifled barrel

Bullet Core

The inner portion of a jacketed bullet often made of lead

Caliber

- 1) A term used to designate the specific cartridge for which a firearm is chambered
- 2) In firearms, caliber is the approximate diameter of the circle formed by the tops of the lands of a rifled barrel, typically expressed in hundredths of an inch (38 caliber) or millimeters (9mm caliber)
- 3) In ammunition, caliber is a numerical term, without the decimal point, included in a cartridge name to indicate the nominal bullet diameter

Carbine

A rifle of short length and light weight originally designed for mounted troops

Cartridge

A single unit of ammunition consisting of the cartridge case, primer, propellant, and with or without one or more projectile(s). Also applies to a shotshell

Cartridge Case

The container for all the other components which comprise a cartridge. Serves as a gas seal during the firing of a cartridge

Chamber

The rear part of the barrel bore that has been formed to accept a specific cartridge. Revolver cylinders are multi-chambered

Chemical Tests for GSR Analysis

Griess, Sodium Rhodizonate, Dithioamide, Diphenylamine

Chemicals for Serial Number Restoration

Relative acidic & basic etchants

Class Characteristics

Measurable features of a specimen which indicates a restricted group source. They result from design factors, and are determined prior to manufacture

Cock

To place a firing mechanism under spring tension

Copper Washed Bullet

A term used for lead projectiles with a thin copper colored coating. This finish is found extensively on 22 caliber bullets

Cycled Through (Chambered In)

A cartridge moved through the action of a firearm without being discharged

Cylinder

The rotating part of a revolver that contains the chambers

Derringer

The generic term applied to many variations of pocket size pistols, either percussion or cartridge, made by manufacturers other than Henry Derringer, up to present time

Discharge

To cause a firearm to fire

Firearm

* See *NYS Penal Law Section 265 Definitions No. 3*

Fired

Discharged in/from a firearm

Fragment

A portion of the whole item as described

Frame

* See *Receiver*

Function Testing

Testing with other than a live cartridge

Gauge

A term used in the identification of a shotgun bore. The gauge is equal to the number of round lead balls of bore diameter that equal one pound. Thus 12 gauge is the diameter of a round lead ball weighing 1/12 pound.

General Rifling Characteristics

The number, width, and direction of twist of the lands and grooves in a barrel of a given caliber firearm.

Grip, Pistol

On shoulder arms, that part of the stock, behind the trigger, shaped similar to the grip of a pistol to afford better grasp.

Gunpowder

A variety of powders used in firearms as a propellant charge. A term commonly used when referring to cartridge and muzzle loading propellant.

Gunshot Residue

- 1) The total residues resulting from the discharge of a firearm. It includes both, propellant and primer residues, carbonaceous material plus metallic residues from projectiles, fouling, and any lubricant associated with the bullets.
- 2) The spatial distribution of gunshot residues deposited upon a pattern surface.

Inconclusive¹

'Inconclusive' is an examiner's conclusion that all observed class characteristics are in agreement but there is insufficient quality and/or quantity of corresponding individual characteristics such that the examiner is unable to identify or exclude the two toolmarks as having originated from the same source.

The basis for an 'inconclusive' conclusion is an examiner's decision that there is an insufficient quality and/or quantity of individual characteristics to identify or exclude. Reasons for an 'inconclusive' conclusion include the presence of microscopic similarity that is insufficient to form the conclusion of 'source identification'; a lack of any observed microscopic similarity; or microscopic dissimilarity that is insufficient to form the conclusion of 'source exclusion.'

Individual Characteristics

Marks produced by the random imperfections or irregularities of tool surfaces. These random imperfections or irregularities are produced incidental to manufacture and/or caused by use, corrosion, or damage. They are unique to that tool and distinguish it from all other tools.

Inoperable / Non-functional (not operable)

Incapable of discharging a cartridge

Jacketed Bullet

A projectile having an inner core typically enveloped by a metallic substance.

Land and Groove Impressions

Impressed areas on the bearing surface of a bullet caused by a bullet engaging with the rifling in the barrel of a firearm.

Lead Bullet

A projectile formed from a lead alloy.

Load

- 1) The combination of components used to assemble a cartridge or shotshell.
- 2) The placing of cartridges into a firearm magazine or chamber.

Magazine

- 1) A secure storage place for gunpowder, ammunition, or explosives.
- 2) A container for cartridges which has a spring and follower to feed those cartridges into the chamber of a firearm. The magazine may be detachable or an integral part of the firearm.

Malfunction

The failure of a firearm to function properly. Malfunctions can be caused by the firearm, ammunition, and/or human factors.

Microscopic Comparison

A general term for the comparison of two or more items under a microscope.

Muzzle Attachment

Compensator, Muzzle Brake, Flash Suppressor

Not a Firearm (NAF)

Anything appearing to be a firearm but is not capable of firing a cartridge. (Ex. pellet/BB air pistols and rifles, starter pistols, toy guns, imitation guns, cap guns, water pistols, cigarette lighters, theatrical guns, paint ball guns, etc.)

Operable / Functional

Capable of discharging a cartridge

Overall Length

* See *NYS Penal Law Section 265 Definitions No. 3*

Pistol

A handgun in which the chamber is integral with the barrel. A term sometimes used for handgun.

Projectile

An object propelled by the force of rapidly burning gases or other means.

Receiver

The basic unit of a firearm which houses the firing and breech mechanism and to which the barrel and stock are assembled.

Revolver

A firearm, usually a handgun, with a cylinder having several chambers so arranged as to rotate around an axis. The firearm is discharged successively by the same firing mechanism.

Revolver Action

A firearm, usually a handgun, with a cylinder having several chambers so arranged as to rotate around an axis. The firearm is discharged successively by the same firing mechanism. (*Refer to **Revolver.***)

Rifle

* See *NYS Penal Law Section 265 Definitions No. 3*

Rifling

Helical grooves cut or impressed into the bore of a firearm barrel to impart rotary motion to a projectile when fired.

Sear

A part which retains the hammer or striker in the cocked position until the trigger is pulled.

Semiautomatic Action

* See *NYS Penal Law Section 265 Definitions No. 21*

Serial Number

A number applied to a firearm for identification purposes. The Gun Control Act of 1968 requires all firearms manufactured after 1968 to bear a unique serial number.

Shot

Generally, spherical pellets used in loading shotshells or cartridges. Shot can be found in many compositions such as lead, steel, bismuth, tungsten-polymer, tin, zinc, etc.

Shotgun

* See *NYS Penal Law Section 265 Definitions No. 3*

Shotshell

A unit of ammunition that may contain a single projectile or multiple projectiles/pellets. Generally, shotshells are designed to be fired from shotguns.

Source Exclusion/Elimination¹

‘Source exclusion’ is an examiner’s conclusion that two toolmarks did not originate from the same source.

The basis for a ‘source exclusion’ conclusion is an examiner’s decision that two toolmarks can be differentiated by their class characteristics and /or individual characteristics.

Source Identification¹

‘Source identification’ is an examiner’s conclusion that two toolmarks originated from the same source. This conclusion is an examiner’s decision that all observed class characteristics are in agreement and the quality and quantity of corresponding individual characteristics is such that the examiner would not expect to find that same combination of individual characteristics repeated in another source and has found insufficient disagreement of individual characteristics to conclude they originated from different sources.

The basis for a ‘source identification’ conclusion is an examiner’s decision that the observed class characteristics and corresponding individual characteristics provide extremely strong support for the proposition that the two toolmarks came from the same source and extremely weak support for the proposition that the two toolmarks came from different sources.

A ‘source identification’ is the statement of an examiner’s opinion (an inductive inference) that the probability that the two toolmarks were made by different sources is so small that it is negligible. A ‘source identification’ is not based upon a statistically-derived or verified measurement or an actual comparison to all firearm or toolmarks in the world.

Stock

The wood or plastic component(s) to which the metal parts of a firearm are attached to enable the shooter to hold the firearm.

Sufficient Agreement – See Theory of Identification**Suitable for Comparison**

When a fired bullet or cartridge case possesses sufficient individual characteristics that could be utilized for a microscopic comparison with another bullet or cartridge case.

Test Fire

To discharge a firearm in a laboratory or controlled setting in order to obtain representative bullets and cartridge cases for comparison or analysis, to determine functionality of the firearm, or to produce gunshot residue or shot patterns at known distances.

Theory of Identification

- 1) The theory of identification as it pertains to the comparison of toolmarks enables opinions of common origin to be made when the unique surface contours of two toolmarks are in “sufficient agreement.”

- 2) This “sufficient agreement” is related to the significant duplication of random tool marks as evidenced by the correspondence of a pattern or combination of patterns of surface contours. Significance is determined by the comparative examination of two or more sets of surface contours patterns comprised of individual peaks, ridges and furrows. Specifically, the relative height or depth, width, curvature and spatial relationship of the individual peaks, ridges and furrows within one set of surface contours are defined and compared to the corresponding features in the second set of surface contours. Agreement is significant when it exceeds the best agreement demonstrated between tool marks known to have been produced by different tools and is consistent with agreement demonstrated by tool marks known to have been produced by the same tool. The statement that “sufficient agreement” exists between two tool marks means that the agreement of individual characteristics is of a quantity and quality that the likelihood another tool could have made the mark is so remote as to be considered a practical impossibility. Currently the interpretation of individualization/identification is subjective in nature, founded on scientific principles and based on the examiner’s training and experience.

Trigger Pull

The amount of force which must be applied to the trigger of a firearm to cause sear release. It is measured by hanging weights or an instrument touching the trigger at a point where the trigger finger would normally rest. The force applied during measurement is approximately parallel to the bore axis.

Unsuitable for Comparison

Item exhibits insufficient characteristics for comparison.

NYS Penal Law Section 265 Definitions:

1. **"Machine-gun"** means a weapon of any description, irrespective of Size, by whatever name known, loaded or unloaded, from which a number of shots or bullets may be rapidly or automatically discharged from a magazine with one continuous pull of the trigger and includes a sub-machine gun.
2. **"Firearm silencer"** means any instrument, attachment, weapon or appliance for causing the firing of any gun, revolver, pistol or other firearms to be silent or intended to lessen or muffle the noise of the firing of any gun, revolver, pistol or other firearms.
3. **Firearm"** means
 - a) any pistol or revolver; or
 - b) a shotgun having one or more barrels less than eighteen inches in length; or

- c) a rifle having one or more barrels less than sixteen inches in length; or
 - d) any weapon made from a shotgun or rifle whether by alteration, modification, or otherwise if such weapon as altered, modified, or otherwise has an overall length of less than twenty-six inches; or
 - e) an assault weapon
 - For the purpose of this subdivision the length of the barrel on a shotgun or rifle shall be determined by measuring the distance between the muzzle and the face of the bolt, breech, or breech lock when closed and when the shotgun or rifle is cocked; the overall length of a weapon made from a shotgun or rifle is the distance between the extreme ends of the weapon measured along a line parallel to the center line of the bore. Firearm does not include an antique firearm.
7. **"Deface"** means to remove, deface, cover, alter or destroy the manufacturer's serial number or any other distinguishing number or identification mark
11. **"Rifle"** means a weapon designed or redesigned, made or remade, and intended to be fired from the shoulder and designed or redesigned and made or remade to use the energy of the explosive in a fixed metallic cartridge to fire only a single projectile through a rifled bore for each single pull of the trigger.
12. **"Shotgun"** means a weapon designed or redesigned, made or remade, and intended to be fired from the shoulder and designed or redesigned and made or remade to use the energy of the explosive in a fixed shotgun shell to fire through a smooth bore either a number of ball shot or a single projectile for each single pull of the trigger.
14. **"Antique firearm"** means any unloaded muzzle loading pistol or revolver with a matchlock, flintlock, percussion cap, or similar type of ignition system, or a pistol or revolver which uses fixed cartridges which are no longer available in the ordinary channels of commercial trade.
21. **"Semiautomatic"** means any repeating rifle, shotgun or pistol, regardless of barrel or overall length, which utilizes a portion of the energy of a firing cartridge or shell to extract the fired cartridge case or spent shell and chamber the next round, and which requires a separate pull of the trigger to fire each cartridge or shell.
22. **"Assault weapon"** means
- a) a semiautomatic rifle that has an ability to accept a detachable magazine and has at least one of the following characteristics:
 - i) folding or telescoping stock;

- ii) a pistol grip that protrudes conspicuously beneath the action of the weapon;
 - iii) a thumbhole stock;
 - iv) a second handgrip or a protruding grip that can be held by the non-trigger hand;
 - v) a bayonet mount;
 - vi) a flash suppressor, muzzle break, muzzle compensator, or threaded barrel designed to accommodate a flash suppressor, muzzle break, or muzzle compensator;
 - vii) a grenade launcher; or
- b) a semiautomatic shotgun that has at least one of the following characteristics:
- i) a folding or telescoping stock;
 - ii) a thumbhole stock;
 - iii) a second handgrip or a protruding grip that can be held by the non-trigger hand;
 - iv) a fixed magazine capacity in excess of seven rounds;
 - v) an ability to accept a detachable magazine; or
- c) semiautomatic pistol that has an ability to accept a detachable magazine and has at least one of the following characteristics:
- i) a folding or telescoping stock;
 - ii) a thumbhole stock;
 - iii) a second handgrip or a protruding grip that can be held by the non-trigger hand;
 - iv) capacity to accept an ammunition magazine that attaches to the pistol outside of the pistol grip;
 - v) a threaded barrel capable of accepting a barrel extender, flash suppressor, forward handgrip, or silencer;
 - vi) a shroud that is attached to, or partially or completely encircles, the barrel and that permits the shooter to hold the firearm with the non-trigger hand without being burned;
 - vii) a manufactured weight of fifty ounces or more when the pistol is unloaded; or
 - viii) a semiautomatic version of an automatic rifle, shotgun or firearm; a revolving cylinder shotgun;
- d) a semiautomatic rifle, a semiautomatic shotgun or a semiautomatic pistol or weapon defined in subparagraph (v) of paragraph (e) of subdivision twenty-two of section 265.00 of this chapter as added by chapter one hundred eighty-nine of the laws of two thousand and otherwise lawfully possessed pursuant to such chapter of the laws of two thousand prior to September fourteenth, nineteen hundred ninety-four;

- e) a semiautomatic rifle, a semiautomatic shotgun or a semiautomatic pistol or weapon defined in paragraph (a), (b) or (c) of this subdivision, possessed prior to the date of enactment of the chapter of the laws of two thousand thirteen which added this paragraph;
- f) provided, however, that such term does not include:
 - i) any rifle, shotgun or pistol that (A) is manually operated by bolt, pump, lever or slide action; (B) has been rendered permanently inoperable; or (C) is an antique firearm as defined in 18 U.S.C. 921(a) (16);
 - ii) a semiautomatic rifle that cannot accept a detachable magazine that holds more than five rounds of ammunition;
 - iii) a semiautomatic shotgun that cannot hold more than five rounds of ammunition in a fixed or detachable magazine; or
 - iv) a rifle, shotgun or pistol, or a replica or a duplicate thereof, specified in Appendix A to 18 U.S.C. 922 as such weapon was manufactured on October first, nineteen hundred ninety-three. The mere fact that a weapon is not listed in Appendix A shall not be construed to mean that such weapon is an assault weapon;
 - v) any weapon validly registered pursuant to subdivision sixteen-A of section 400.00 of this chapter. Such weapons shall be subject to the provisions of paragraph (h) of this subdivision;
 - vi) any firearm, rifle, or shotgun that was manufactured at least fifty years prior to the current date, but not including replicas thereof that is validly registered pursuant to subdivision sixteen-a of section 400.00 of this chapter;
- g) Any weapon defined in paragraph (e) or (f) of this subdivision and any large capacity ammunition feeding device that was legally possessed by an individual prior to the enactment of the chapter of the laws of two thousand thirteen which added this paragraph, may only be sold to, exchanged with or disposed of to a purchaser authorized to possess such weapons or to an individual or entity outside of the state provided that any such transfer to an individual or entity outside of the state must be reported to the entity wherein the weapon is registered within seventy-two hours of such transfer. An individual who transfers any such weapon or large capacity ammunition device to an individual inside New York state or without complying with the provisions of this paragraph shall be guilty of a class A misdemeanor unless such large capacity ammunition feeding device, the possession of which is made illegal by the chapter of the laws of two thousand thirteen which added this paragraph, is transferred within one year of the effective date of the chapter of the laws of two thousand thirteen which added this paragraph.

23. **"Large capacity ammunition feeding device"** means a magazine, belt, drum, feed strip, or similar device, that
- a) has a capacity of, or that can be readily restored or converted to accept, more than ten rounds of ammunition, or *
 - b) contains more than seven rounds of ammunition, or
 - c) is obtained after the effective date of the chapter of the laws of two thousand thirteen which amended this subdivision and has a capacity of, or that can be readily restored or converted to accept, more than seven rounds of ammunition

* NB Suspended and NOT Effective per ch 1/2013 § 58, as amended by ch 57/2013 Pt. FF § 4; provided, however, that such term does not include an attached tubular device designed to accept, and capable of operating only with, .22 caliber rimfire ammunition or a feeding device that is a curio or relic. A feeding device that is a curio or relic is defined as a device that:

- i) was manufactured at least fifty years prior to the current date,
- ii) is only capable of being used exclusively in a firearm, rifle, or shotgun that was manufactured at least fifty years prior to the current date, but not including replicas thereof,
- iii) is possessed by an individual who is not prohibited by state or federal law from possessing a firearm and
- iv) is registered with the division of state police pursuant to subdivision sixteen-a of section 400.00 of this chapter, except such feeding devices transferred into the state may be registered at any time, provided they are registered within thirty days of their transfer into the state. Notwithstanding paragraph (h) of subdivision twenty-two of this section, such feeding devices may be transferred provided that such transfer shall be subject to the provisions of section 400.03 of this chapter including the check required to be conducted pursuant to such section.

* *Note*: Refer to appropriate law on date of recovery for definition

¹ Department of Justice Uniform Language for Testimony and Reports for the Forensic Firearms/Toolmarks Discipline – Pattern Match Examination

Latent Print Processing Report Standardization Materials

Project Area I: Standardized Report Components

1. Unique case identifier on each page of report (such as lab number)
2. Title of the report (such as “report of laboratory analysis”)
3. Identification of the laboratory
4. Submitting Agency Info or at a minimum submitting agency
5. List or explanation of items examined
6. General indication of methodology utilized
7. Results/conclusions
8. Date report issued
9. Signature and title of examiner (or electronic equivalent)
10. Pagination of the report (example page 1 of 2 etc.)
11. Statement regarding the report does not constitute the entire case file or equivalent
12. Statement that definitions of terms used in the report can be located at the DCJS website and if applicable on the laboratory website or attached to report

Project Area II: Standardized Report Language/Statements

Latent Print Processing

The following concepts must be included in the report template (if applicable):

a) General development method used to process evidence

Evidence was processed using Visual/Chemical/Physical techniques/methods.

b) Latent prints recovered

Laboratories with processing analysts

- Number of latent prints and unique identifiers recovered for further examination
 - Qualifier should be: “of potential value for further examination” or “suitable for capture”
- “Latent print(s) or friction ridge detail recovered from”
- Method used to capture latent impression (e.g., Digitally captured, Lifted)

Laboratories with trained comparison analysts

- Number of latent prints and unique identifiers recovered for further examination
 - Qualifier should be: “suitable for further examination” or “suitable for capture”
- “Latent print(s) or friction ridge detail recovered from”
- Method used to capture latent impression (e.g., Digitally captured, Lifted)

c) No latent prints recovered

If no friction ridge detail was observed:

- No latent prints/friction ridge detail were/was observed

If no friction ridge detail of suitable quality for further examination was observed:

- No latent prints/friction ridge detail suitable for capture/identification were/was observed

Additional evidence (if applicable)

Description of non-latent print evidence (e.g., DNA/ Trace/ Impressions/ QD) and method of collection and preservation.

No examination performed

- Evidence was not examined.
- Evidence was not conducive for latent print examination (state reason).

Project Area III: Standardized Terms & Definitions

ACE-V

The acronym for a scientific method; Analysis, Comparison, Evaluation, and Verification (see individual terms).

AFIS

The acronym for Automated Fingerprint Identification System, a generic term for a fingerprint matching, storage, and retrieval system.

Analysis

The first step of the ACE-V method. The assessment of an impression to determine suitability for comparison.

Blind Verification

The independent examination of one or more friction ridge impressions at any stage of the ACE process by another competent examiner who is provided with no, or limited, contextual information, and has no expectation or knowledge of the determinations or conclusions of the original examiner.

Characteristics

Distinctive details of the friction ridges, including Level 1, 2, and 3 details (also known as features).

Chemical

The application of latent print reagents that react with latent print residues in order to develop friction ridge impressions.

Comparison

The second step of the ACE-V method. The observation of two or more impressions to determine the existence of discrepancies, dissimilarities, or similarities.

Complete Friction Ridge Exemplars

A systematic recording of all friction ridge detail appearing on the palmar sides of the hands. This includes the extreme sides of the palms, joints, tips, and sides of the fingers (also known as major case prints).

Conclusion

Determination made during the evaluation stage of ACE-V, including identification, inconclusive, and exclusion.

Consultation

A significant interaction between examiners regarding one or more impressions in question.

Distortion

Variances in the reproduction of friction skin caused by factors such as pressure, movement, force, and contact surface.

Elimination Prints

Exemplars of friction ridge skin detail of persons known to have had legitimate access to an object or location.

Evaluation

The third step of the ACE-V method wherein an examiner assesses the value of the details observed during the analysis and the comparison steps and reaches a conclusion.

Exemplars

The prints of an individual, associated with a known or claimed identity, and deliberately recorded electronically, by ink, or by another medium (also known as known prints).

Features

Distinctive details of the friction ridges, including Level 1, 2, and 3 details (also known as characteristics).

Fingerprint

An impression of the friction ridges of all or any part of the finger.

Friction Ridge

A raised portion of the epidermis on the palmar or plantar skin, consisting of one or more connected ridge units.

Friction Ridge Detail (Morphology)

An area comprised of the combination of ridge flow, ridge characteristics, and ridge structure.

Friction Ridge Unit

A single section of ridge containing one pore.

IAFIS

The acronym for Integrated Automated Fingerprint Identification System, the FBI's national AFIS.

Impression

Friction ridge detail deposited on a surface.

Inconclusive

'Inconclusive' is an examiner's conclusion that there is insufficient quantity and/or clarity of corresponding friction ridge skin features between two impressions such that the examiner is unable to identify or exclude the two impressions as originating from the same source.

The basis for an 'inconclusive' conclusion is an examiner's opinion that a 'source identification' or 'source exclusion' cannot be made due to insufficient information in either of the two impressions examined.

Joint (of the finger)

The hinged area that separates segments of the finger.

Known Prints (finger, palm, foot)

The prints of an individual, associated with a known or claimed identity, and deliberately recorded electronically, by ink, or by another medium (also known as exemplars).

Latent Print

1. Transferred impression of friction ridge detail not readily visible.
2. Generic term used for unintentionally deposited friction ridge detail.

Level 1 Detail

Friction ridge flow, pattern type, and general morphological information. Level 1 detail may be used for exclusionary purposes, however may not be used alone to reach a conclusion of identification.

Level 2 Detail

Individual friction ridge paths and associated events, including minutiae. Level 2 detail may be used alone, or in conjunction with level 1 detail to reach a conclusion of identification or exclusion.

Level 3 Detail

Friction ridge dimensional attributes, such as width, edge shapes, and pores. Level 3 detail may be used in conjunction with level 2 detail to reach a conclusion of identification. Level 3 detail may not be used alone in order to reach a conclusion.

Lift

An adhesive or other medium used to transfer a friction ridge impression from a substrate.

Major Case Print / Impressions

A systematic recording of the friction ridge detail appearing on the palmar sides of the hands. This includes the extreme sides of the palms, joints, tips, and sides of the fingers (also known as complete friction ridge exemplars).

Palmprint

An impression of the friction ridges of all or any part of the palmar surface of the hand.

Pattern type

Fundamental pattern of the ridge flow: arch, loop, whorl. Arches are subdivided into plain and tented arches; loops are subdivided into radial and ulnar loops; whorls are subdivided into plain, double loop, central pocket loop, and accidental whorls.

Quality

The clarity of information contained within a friction ridge impression.

Quantity

The amount of information contained within a friction ridge impression.

Physical

The application of non-chemical techniques to develop friction ridge impressions.

SABIS

The acronym for the Statewide Automated Biometric Identification System, the New York State fingerprint and palmprint matching, storage, and retrieval system.

Simultaneous Impression

Two or more friction ridge impressions from the same hand or foot deposited concurrently.

Source

An area of friction ridge skin from an individual from which an impression originated.

Source Exclusion¹

'Source exclusion' is an examiner's conclusion that two friction ridge skin impressions did not originate from the same source.

The basis for a 'source exclusion' conclusion is an examiner's opinion that the observed friction ridge skin features are in sufficient disagreement and provide extremely strong support for the proposition that the two impressions came from different sources and extremely weak or no support for the proposition that the two impression came from the same source.

Source Identification¹

'Source identification' is an examiner's conclusion that two friction ridge skin impressions originated from the same source. This conclusion is an examiner's opinion that the observed friction ridge skin features are in sufficient correspondence such that the examiner would not expect to see the same arrangement of features repeated in an impression that came from a different source and has found insufficient friction ridge skin features in disagreement to conclude that the impressions came from different sources.

The basis for a 'source identification' conclusion is an examiner's opinion that the observed corresponding friction ridge skin features provide extremely strong support for the proposition that the two impressions came from the same source and extremely weak support for the proposition that the two impressions came from different sources.

A 'source identification' is the statement of an examiner's opinion (an inductive inference²) that the probability that the two impressions were made by different sources is so small that it is negligible.

Sufficiency

The product of the quality and quantity of the objective data under observation (e.g., friction ridge, crease, and scar features).

Sufficient

The determination that there is sufficiency in a comparison to reach a conclusion at the evaluation stage.

Suitable

The determination that there is sufficiency in an impression to be of value for further analysis or comparison.

Tenprint

1. A generic reference to examinations performed on intentionally recorded friction ridge impressions.
2. A controlled recording of an individual's available fingers using ink, electronic imaging, or other medium.

Visual

As seen by the human eye without the aid of alternate light sources or development techniques

Verification

The independent application of the ACE process as utilized by a subsequent examiner to either support or refute the conclusions of the original examiner; this may be conducted as blind verification. Verification may be followed by some level of review as specified by agency policy.

¹Department of Justice Uniform Language for Testimony and Reports for the Forensic Latent Print Discipline

²Inductive reasoning (inferential reasoning): A mode or process of thinking that is part of the scientific method and complements deductive reasoning and logic. Inductive reasoning starts with a large body of evidence or data obtained by experiment or observation and extrapolates it to new situations. By the process of induction or inference, predictions about new situations are inferred or induced from the existing body of knowledge. In other words, an inference is a generalization, but one that is made in a logical and scientifically defensible manner. OXFORD DICTIONARY OF FORENSIC SCIENCE 130 (Oxford Univ. Press 2012).

Latent Print Comparison Report Standardization Materials

Project Area I: Standardized Report Components

1. Unique case identifier on each page of report (such as lab number)
2. Title of the report (such as “report of laboratory analysis”)
3. Identification of the laboratory
4. Submitting Agency Info or at a minimum submitting agency
5. List or explanation of items examined
6. General indication of methodology utilized
7. Results/conclusions
8. Date report issued
9. Signature and title of examiner (or electronic equivalent)
10. Pagination of the report (example page 1 of 2 etc.)
11. Statement regarding the report does not constitute the entire case file or equivalent
12. Statement that definitions of terms used in the report can be located at the DCJS website and if applicable on the laboratory website or attached to report

Additional Discipline Specific Report Components:

13. Available exemplars: Include name (Alias/alternative DOB if relevant), Anatomical Source, Origin or record, and Identification number (e.g., NYSID)
14. Automated Databases (SABIS/AFIS/NGI) - Information concerning the search of latent print evidence through automated databases, and the inclusion of what databases were searched. Statement must include: latent print(s) searched, what databases were searched, results, entrance to ULD, and if a hit was made the name/identifier of subject. Statement can be narrative or tabular format.
15. A statement qualifying the significance of associations, whether by statistic or qualitative statement, when the results reported include associations.

Project Area II: Standardized Report Language/Statements

Analysis of Latent Print (Friction Ridge) Impressions

Determination of Suitability

Depending on agency approach, the reporting statements for indicating latent print suitability will minimally contain language similar to the following for each approach:

Approach #1:

- “suitable for identification” or “of value for identification”
- “not suitable for identification” or “of no value for identification”

Approach #2:

- “suitable for comparison” or “of value for comparison”
- “not suitable for comparison” or “of no value for comparison”
- “suitable for exclusion only” or “of value for exclusion only”

Comparison/Evaluation of Latent Print (Friction Ridge) Impressions

Identification

When the comparison and evaluation results in an identification decision, reporting will include: the latent print identifier (as determined by individual lab policy), the name of the subject, and the conclusion (Identification). Individual laboratories may determine if the anatomical source is listed or not. (e.g., 1A/John Jones/Identification- Left Thumb).

Required terminology to be included in statement:

- identified
- identification

Exclusion

When the comparison and evaluation results in an exclusion decision reporting will include: the latent print identifier (as determined by individual lab policy), the name of the subject, and the conclusion (Exclusion). If laboratory policy has adopted SWGFAST Approach 2 (Section 5.1.4.2 of Document 10), report must state during analysis if latent is suitable for exclusion value only.

Required terminology to be included in statement:

- excluded or exclusion

Inconclusive

When the comparison and evaluation results in an inconclusive decision reporting will include: the latent print identifier (as determined by individual lab policy), the name of the subject, the conclusion (Inconclusive), and reasoning for the inconclusive result.

Required terminology to be included in statement must be similar to:

- “not identified or excluded” or
- “no identification or exclusion”
- “did not reveal an identification or exclusion”

Qualifications and Limitation of Forensic Latent Print Examinations¹

- A conclusion provided during testimony or in a report is ultimately an examiner's decision and is not based on a statistically-derived or verified measurement or comparison to all other friction ridge skin impression features. Therefore, an examiner shall not:
 - assert that a 'source identification or a 'source exclusion' conclusion is based on the 'uniqueness'³ of an item of evidence
 - use the terms 'individualize' or 'individualization' when describing a source conclusion
 - assert that two friction ridge skin impressions originated from the same source to the exclusion of all other sources.
- An examiner shall not assert that forensic latent print examination is infallible or has a zero error rate.
- An examiner shall not provide a conclusion that includes a statistic or numerical degree of probability except when based on relevant and appropriate data.
- An examiner shall not cite the number of forensic latent print examinations performed in his or her career as a direct measure for accuracy of the conclusion provided. An examiner may cite the number of forensic latent print examinations performed in his or her career for the purpose of establishing, defending, or describing his or her qualifications or experience.
- An examiner shall not assert that two friction ridge skin impressions originated from the same source with absolute or 100% certainty; or use the expressions 'reasonable degree of scientific certainty,' 'reasonable scientific certainty,' or similar assertions of reasonable certainty in either reports or testimony unless required to do so by a judge or applicable law.⁴

Project Area III: Standardized Terms & Definitions

ACE-V

The acronym for a scientific method; Analysis, Comparison, Evaluation, and Verification (see individual terms).

AFIS

The acronym for Automated Fingerprint Identification System, a generic term for a fingerprint matching, storage, and retrieval system.

Analysis

The first step of the ACE-V method. The assessment of an impression to determine suitability for comparison.

Blind Verification

The independent examination of one or more friction ridge impressions at any stage of the ACE process by another competent examiner who is provided with no, or limited, contextual information, and has no expectation or knowledge of the determinations or conclusions of the original examiner.

Characteristics

Distinctive details of the friction ridges, including Level 1, 2, and 3 details (also known as features).

Comparison

The second step of the ACE-V method. The observation of two or more impressions to determine the existence of discrepancies, dissimilarities, or similarities.

Complete Friction Ridge Exemplars

A systematic recording of all friction ridge detail appearing on the palmar sides of the hands. This includes the extreme sides of the palms, joints, tips, and sides of the fingers (also known as major case prints).

Conclusion

Determination made during the evaluation stage of ACE-V, including identification, inconclusive, exclusion.

Consultation

A significant interaction between examiners regarding one or more impressions in question.

Distortion

Variances in the reproduction of friction skin caused by factors such as pressure, movement, force, and contact surface.

Elimination Prints

Exemplars of friction ridge skin detail of persons known to have had legitimate access to an object or location.

Evaluation

The third step of the ACE-V method wherein an examiner assesses the value of the details observed during the analysis and the comparison steps and reaches a conclusion.

Exemplars

The prints of an individual, associated with a known or claimed identity, and deliberately recorded electronically, by ink, or by another medium (also known as known prints).

FBI/NGI

The acronym for the Federal Bureau of Investigation's Next Generation Identification System.

Features

Distinctive details of the friction ridges, including Level 1, 2, and 3 details (also known as characteristics).

Fingerprint

An impression of the friction ridges of all or any part of the finger.

Friction Ridge

A raised portion of the epidermis on the palmar or plantar skin, consisting of one or more connected ridge units.

Friction Ridge Detail (Morphology)

An area comprised of the combination of ridge flow, ridge characteristics, and ridge structure.

Friction Ridge Unit

A single section of ridge containing one pore.

Impression

Friction ridge detail deposited on a surface.

Inconclusive¹

'Inconclusive' is an examiner's conclusion that there is insufficient quantity and/or clarity of corresponding friction ridge skin features between two impressions such that the examiner is unable to identify or exclude the two impressions as originating from the same source.

The basis for an 'inconclusive' conclusion is an examiner's opinion that a 'source identification' or 'source exclusion' cannot be made due to insufficient information in either of the two impressions examined.

Joint (of the finger)

The hinged area that separates segments of the finger.

Known Prints (finger, palm, foot)

The prints of an individual, associated with a known or claimed identity, and deliberately recorded electronically, by ink, or by another medium (also known as exemplars).

Latent Print

1. Transferred impression of friction ridge detail not readily visible.
2. Generic term used for unintentionally deposited friction ridge detail.

Level 1 Detail

Friction ridge flow, pattern type, and general morphological information. Level 1 detail may be used for exclusionary purposes, however may not be used alone to reach a conclusion of identification.

Level 2 Detail

Individual friction ridge paths and associated events, including minutiae. Level 2 detail maybe used alone, or in conjunction with level 1 detail to reach a conclusion of identification or exclusion.

Level 3 Detail

Friction ridge dimensional attributes, such as width, edge shapes, and pores. Level 3 detail may be used in conjunction with level 2 detail to reach a conclusion of identification. Level 3 detail may not be used alone in order to reach a conclusion.

Lift

An adhesive or other medium used to transfer a friction ridge impression from a substrate.

Major Case Print / Impressions

A systematic recording of the friction ridge detail appearing on the palmar sides of the hands. This includes the extreme sides of the palms, joints, tips, and sides of the fingers (also known as complete friction ridge exemplars).

Palmprint

An impression of the friction ridges of all or any part of the palmar surface of the hand.

Pattern type

Fundamental pattern of the ridge flow: arch, loop, whorl. Arches are subdivided into plain and tented arches; loops are subdivided into radial and ulnar loops; whorls are subdivided into plain, double loop, central pocket loop, and accidental whorls.

Quality

The clarity of information contained within a friction ridge impression.

Quantity

The amount of information contained within a friction ridge impression.

SABIS

The Statewide Automated Biometric Identification System. New York State maintains an automated database for the search of fingerprint and palmprint impressions to a known exemplar repository.

Simultaneous Impression

Two or more friction ridge impressions from the same hand or foot deposited concurrently.

Source

An area of friction ridge skin from an individual from which an impression originated.

Source Exclusion¹

‘Source exclusion’ is an examiner’s conclusion that two friction ridge skin impressions did not originate from the same source.

The basis for a ‘source exclusion’ conclusion is an examiner’s opinion that the observed friction ridge skin features are in sufficient disagreement and provide extremely strong support for the proposition that the two impressions came from different sources and extremely weak or no support for the proposition that the two impression came from the same source.

Source Identification¹

‘Source identification’ is an examiner’s conclusion that two friction ridge skin impressions originated from the same source. This conclusion is an examiner’s opinion that the observed friction ridge skin features are in sufficient correspondence such that the examiner would not expect to see the same arrangement of features repeated in an impression that came from a different source and has found insufficient friction ridge skin features in disagreement to conclude that the impressions came from different sources.

The basis for a ‘source identification’ conclusion is an examiner’s opinion that the observed corresponding friction ridge skin features provide extremely strong support for the proposition that the two impressions came from the same source and extremely weak support for the proposition that the two impressions came from different sources.

A ‘source identification’ is the statement of an examiner’s opinion (an inductive inference²) that the probability that the two impressions were made by different sources is so small that it is negligible.

Sufficiency

The product of the quality and quantity of the objective data under observation (e.g., friction ridge, crease, and scar features).

Sufficient

The determination that there is sufficiency in a comparison to reach a conclusion at the evaluation stage.

Suitable

The determination that there is sufficiency in an impression to be of value for further analysis or comparison.

Tenprint

1. A generic reference to examinations performed on intentionally recorded friction ridge impressions.
2. A controlled recording of an individual’s available fingers using ink, electronic imaging, or other medium.

Unsolved Latent File

Database in SABIS and FBI NGI where unsolved latent print images are deposited. The Unsolved Latent File may also be referred to as the Unsolved Latent Database(s).

Verification

The independent application of the ACE process as utilized by a subsequent examiner to either support or refute the conclusions of the original examiner; this may be conducted as blind verification. Verification may be followed by some level of review as specified by agency policy.

¹Department of Justice Uniform Language for Testimony and Reports for the Forensic Latent Print Discipline

²Inductive reasoning (inferential reasoning): A mode or process of thinking that is part of the scientific method and complements deductive reasoning and logic. Inductive reasoning starts with a large body of evidence or data obtained by experiment or observation and extrapolates it to new situations. By the process of induction or inference, predictions about new situations are inferred or induced from the existing body of knowledge. In other words, an inference is a generalization, but one that is made in a logical and scientifically defensible manner. OXFORD DICTIONARY OF FORENSIC SCIENCE 130 (Oxford Univ. Press 2012).

³As used in this document, the term 'uniqueness' means having the quality of being the only one of its kind. OXFORD ENGLISH DICTIONARY 804 (Oxford Univ. Press 2012)

⁴See Memorandum from the Attorney General to Heads of Department Components (Sept. 9, 2016)

Questioned Documents Report Standardization Materials

Project Area I: Standardized Report Components

1. Unique case identifier on each page of report (such as lab number)
2. Title of the report (such as “report of laboratory analysis”)
3. Identification of the laboratory
4. Submitting Agency Info or at a minimum submitting agency
5. List or explanation of items examined
6. General indication of methodology utilized
7. Results/conclusions
8. Date report issued
9. Signature and title of examiner (or electronic equivalent)
10. Pagination of the report (example page 1 of 2 etc.)
11. Statement regarding the report does not constitute the entire case file or equivalent
12. Statement that definitions of terms used in the report can be located at the DCJS website and if applicable on the laboratory website or attached to report

Additional Discipline Specific Report Components:

13. Each submitted item will have:
 - a. A unique identifier associated with it
 - b. The date it was received

Project Area II: Standardized Report Language/Statements

ESDA/Visual

Positive

- (The evidence/sample name) was examined utilizing (describe method – visually/ESDA) for the possible presence of indented impressions. (Multiple) impressions were found (see page ___ for interpretation).
- (A copy of the ESDA image will be included in the report.)

Negative (Positive of No Value)

- 1.b.1 No impressions of investigative value were found.
- 1.b.2 (The evidence/sample name) was examined utilizing (describe method – visually/ESDA) for the possible presence of indented impressions; no impressions of investigative value were found.
- 1.b.3 (The evidence/sample name) was examined utilizing oblique/side lighting and ESDA (Electrostatic Detection Apparatus) for the possible presence of indented impressions.

Aside from the laboratory number, lab item number, envelope outline, paper outline, or extraneous markings – no impressions were found.

Inconclusive

N/A

Print Process

Positive

Visual and microscopic examination revealed the presence of:

- Non-impact print process (define further e.g., ink jet/dry toner/off set/etc.)
- Impact printing

Negative

N/A

Inconclusive

The print process cannot be determined. (A qualifier(s) will be inserted as to the limitations.)

Physical Match

Positive

(The evidence/sample name) were at one time joined together

Negative

(The evidence/sample name) were not at one time joined together.

Inconclusive

The evidence submitted does not allow a definitive determination as to if the objects were at one time joined together. (A qualifier(s) will be inserted as to the limitations.)

Paper

Positive

Could have originated from a common source or another source with similar characteristics to those examined.

- Another analytical technique may reveal differences.

Negative

Could not have originated from the same source based upon observed differences

Inconclusive

- The presence of similar and different characteristics precludes a determination of common origin.
- The quality of the known or questioned samples precludes any determination.

Ink

Positive

(Insert methodology used) showed no differences in the inks examined. The inks could have originated from a common source or another source with similar characteristics.

- Another analytical technique may reveal differences.

Negative

Could not have originated from the same source based upon observed differences. (Insert Methodology used).

Inconclusive

- The presence of similar and different characteristics precludes a determination of common origin.
- The quality of the known or questioned samples precludes any determination.

Writing Instrument

Positive

Visual and microscopic examination revealed that the instrument used to create the observed writing (was/is consistent with, or has characteristic of) a _____.

Negative

N/A

Inconclusive

- No definitive determination could be made regarding the writing instrument used to create the observed writing (Qualifier(s) will be inserted as to the limitations. i.e. “Due to the lack of distinguishable characteristics, no definitive.....”)
- The quality of the known or questioned samples precludes any determination.

Alterations / Obliterations

Positive

(Insert method used) revealed that the document was altered in the following manner: - (insert how document was altered).

Negative

No differences were observed by (insert method) examination.

Inconclusive

A definitive determination could not be reached; e.g., the same writing implement was used to alter/obliterate the evidence. (A qualifier(s) will be inserted as to the limitations.)

Typewritten Material - Class Characteristic

Positive

- Sufficient class characteristics are present to determine that the documents were produced by the same class of machine/machine system or any other machine/machine system that exhibits the same class features/characteristics.
- Machine system consists of: (give description of machine system elements).

Negative

Sufficient differences exist to exclude the possibility of common class of machine.

Inconclusive

- The text provided for comparison is too limited to allow for a definitive determination.
- The presence of similar and different characteristics precludes a determination of common origin.
- The quality of the known or questioned samples precludes any determination.

Typewritten Material – Individual Characteristic

Positive

- Sufficient individual characteristics are present to determine that the documents were produced by the same machine/machine system.
- Machine system consists of: (give description of machine system elements).

Negative

Sufficient differences exist to exclude the possibility of common source.

Inconclusive

- The text provided for comparison is too limited to allow for a definitive determination.
- The presence of similar and different characteristics precludes a determination of common origin.
- The quality of the known or questioned samples precludes any determination.

Machine Copies – Class Characteristic**Positive**

Sufficient class characteristics are present to determine that the documents were produced by the same class of machine, or any other class of machines producing the same class of characteristics.

Negative

Sufficient dissimilar class characteristics exist to exclude the possibility of common source.

Inconclusive

- The exhibit provided for determination is too limited to allow a definitive determination.
- The presence of similar and different characteristics precludes a determination of common origin.
- The quality of the known or questioned samples precludes any determination.
- Overlapping characteristics are present which may interfere with the examination.

Machine Copies – Individual Characteristic**Positive**

Sufficient individual characteristics are present to determine that the documents were produced by the same machine.

Negative

Sufficient dissimilar individual characteristics exist to exclude the possibility of common source.

Inconclusive

- The exhibit provided for comparison is too limited to allow for a definitive determination.
- The presence of similar and different characteristics precludes a determination of common origin.
- The quality of the known or questioned samples precludes any determination.

Robbery Notes / Criminal Letters

Positive

(Lab item_) was searched through the current [Agency] (robbery note/criminal letter) database. As of (insert date) the following cases including the current submission may be associated to a common source. (Insert chart with case information.) (Insert definition/qualifier for “association.”)

Negative

(Lab item _) was searched through the current [Agency] (robbery note/criminal letter) database. As of (insert date) this evidence cannot be associated with any previously submitted case.

Inconclusive

N/A

Other: Handwriting / Signature

At most, 9 levels of opinions/conclusions will be used for handwriting analysis.

Identification

(The evidence/sample) was **written by** the author (insert name) of the known writing samples.

Highly Probable

It is **highly probable** that (the evidence/sample) was written by the author (insert name) of the known writing samples. A qualifier(s) will be inserted as to the limitations.

Probable

(The evidence/sample) was **probably/probably may have been** written by the author (insert name) of the known writing samples. A qualifier(s) will be inserted as to the limitations.

Indications

There are **indications** that (the evidence/sample) was **written/may have been written** by the author (insert name) of the known writing samples. A qualifier(s) will be inserted as to the limitations.

No Conclusion

No conclusion can be made. A qualifier(s) will be inserted as to the limitations.

Indications Did Not

There are **indications** that (the evidence/sample) **was not written/may not have been written** by the author (insert name) of the known writing samples. A qualifier(s) will be inserted as to the limitations.

Probably Did Not

(The evidence/sample) was **probably not/probably may not have been written** by the author (insert name) of the known writing samples. A qualifier(s) will be inserted as to the limitations.

High Probability Did Not

There is a **high probability** that (the evidence/sample) were not written by the author (insert name) of the known writing samples. A qualifier(s) will be inserted as to the limitations.

Elimination

(The evidence/sample) was not written by the author (insert name) of the known writing samples.

Counterfeit Documents**Positive**

(Methodology used) revealed that the document (Item identifier, ex. "Q1") was/is genuine. The laboratory will list the reasons why.

Negative

(Methodology used) revealed that the document (Item identifier, ex. "Q1") was/is non-genuine. The laboratory will list the reasons why.

Inconclusive

A definitive determination could not be reached as to the genuineness. The laboratory will list the reasons why.

Project Area III: Standardized Terms & Definitions

Alteration

A modification made to a document by physical, chemical or mechanical means including, but not limited to, obliterations, additions, over-writings, or erasures.

Association

“Association to a common source” – connection between two or more questioned documents which exhibit similarities in verbiage, letter formation, arrangement, alignment or other individual feature.

Character

Any language symbol i.e. letter, numeral, punctuation mark or other sign.

Characteristic

A feature, quality, attribute or property of writing

Class Characteristic

One that is common to a group.

Common Origin (Common Source)

Belonging to or shared by two or more people, groups or object(s).

Counterfeit Documents

Item made in imitation of something else with intent to deceive (forged).

ESDA (Electrostatic Detection Apparatus)

The acronym for the instrument used to visualize paper fiber disturbances (for example, indentations, erasures, typewritten material/lift off).

Handwriting / Signature

Handwriting – handwriting executed by one’s hand as distinguished from printscript, printing or typing since the letters and words are for the most part joined together. Signature – inscribed name of a writer, or a symbol representing his name whether written or one authorized to affix his signature.

Handwriting Opinions

- **Was written** – This is the highest degree of confidence expressed by document examiners in handwriting comparisons. The examiner has no reservations whatever, and although prohibited from using the word “fact,” the examiner is certain, based on evidence contained in the handwriting, that the writer of the known material actually wrote the writing in question.

- **Strong probability (highly probable, very probably)** – The evidence is very persuasive, yet some critical feature or quality is missing so that an *identification* is not in order; however, the examiner is virtually certain that the questioned and known writings were written by the same individual.
- **Probable / Probably may have** – The evidence contained in the handwriting points rather strongly toward the questioned and known writings having been written by the same individual; however, it falls short of the “virtually certain” degree of confidence.
- **Indications / Indications may have (evidence to suggest)** – A body of writing has few features which are of significance for handwriting comparison purposes, but those features are in agreement with another body of writing.
- **No conclusion (totally inconclusive, totally indeterminable)** – This is the zero point of the confidence scale. It is used when there are significantly limiting factors such as disguise in the questioned and/or known writing or a lack of comparable writing and the examiner does not have even a leaning one way or another.
- **Indications may not have (evidence to suggest)** – A body of writing has few features which are of significance for handwriting comparison purposes, but those features are dissimilar with another body of writing.
- **Probably did not / Probably may not have** – The evidence points rather strongly against the questioned and known writings having been written by the same individual, however, the evidence is not quite up to the “virtually certain” range.
- **Strong probability did not** – The evidence is very persuasive, yet some critical feature or quality is missing so that an *elimination* is not in order; however, the examiner is virtually certain that the questioned and known writings were not written by the same individual.
- **Was not written** – This is the highest degree of confidence expressed by document examiners in handwriting comparisons. The examiner has no reservations whatever, and although prohibited from using the word “fact,” the examiner is certain, based on evidence contained in the handwriting, that the questioned and known writings were not written by the same individual.

Indentations / Indented Impressions

Latent or visible impressions (a mark left/caused by pressure) in paper or other media.

Individual Characteristic

One that is highly personal or peculiar and is unlikely to occur in other instances.

Impact Printing Process

Type of printing process produced by a device that strikes the ribbon and paper to form a character.

Ink

A colored fluid or viscous marking material used for writing or printing.

Known

Exemplar, of established origin associated with the matter under investigation.

Machine Copy (Photocopy)

A reproduction of a document made on paper by any office or commercial system.

Non-Impact Printing Process

Type of printing process produced by a device that does not strike a ribbon to form a character.

Paper

The material that is used in the form of sheets for writing or printing purposes.

Physical Match

Optical and/or physical realignment of fractured evidence.

Questioned

Associated with the matter under investigation about which there is some question, including, but not limited to, whether the questioned and known items have a common origin.

Significant Difference

Fundamental difference, an individualizing characteristic that is structurally divergent between handwritten items, that is outside the range of variation of the writer, and that cannot be reasonably explained.

Significant Similarity

An individualizing characteristic in common between two or more handwritten items.

Robbery Notes / Criminal Letters

See Association.

Typewriter

A machine for writing in characters similar to those produced by printer's type by means of keyboard-operated types striking a ribbon to transfer ink or carbon impressions onto the paper.

Visual

Of or relating to seeing or sight; seen or able to be seen by the eye; attained by sight

VSC (Video Spectral Comparator)

The acronym for the instrument used in viewing documents using a high resolution camera, range of viewing filters, multiple illumination sources to detect irregularities on questioned documents.

Writing Instrument / Writing Implement

An instrument used to apply ink, graphite, paint or another substance to paper or some surface.

Toxicology Report Standardization Materials

Project Area I: Standardized Report Components

1. Unique case identifier on each page of report (such as lab number)
2. Title of the report (such as “report of laboratory analysis”)
3. Identification of the laboratory
4. Submitting Agency Info or at a minimum submitting agency
5. List or explanation of items examined
6. General indication of methodology utilized
7. Results/conclusions
8. Date report issued
9. Signature and title of examiner (or electronic equivalent)
10. Pagination of the report (example page 1 of 2 etc.)
11. Statement regarding the report does not constitute the entire case file or equivalent
12. Statement that definitions of terms used in the report can be located at the DCJS website and if applicable on the laboratory website or attached to report

Additional Discipline Specific Report Components:

13. Unique case/sample identifier on each page
14. Name of subject/defendant/victim/suspect/decedent
15. Date submitted to or received by laboratory
16. Samples submitted for toxicology
17. Any positive ethanol result for a Vehicle and Traffic case must include an uncertainty of measurement statement (using $k = 3$ standard deviations, 99.7% level of confidence).
18. Forensically significant results that have not been confirmed will be clearly indicated as such.
19. Where test results obtained from another laboratory are included in the report, the name of the reference laboratory must be clearly stated.
20. When the contents of a tablet or capsule have been identified by a visual comparison only, the report must reflect that and must indicate that an analytical confirmation was not performed.

Project Area II: Standardized Report Language/Statements

Below is a list of standardized report language/statements. Not all laboratories will use these. These definitions refer only to use in a written report, and may have different meanings and interpretations when used in the case file material. They should be defined in the laboratory's Standard Operating Procedure Manual (SOPM). They may also be defined on the report itself, or may be posted on the laboratory's website. If using a website, care should be exercised to ensure that the statements are current. If a laboratory uses other unique or infrequent terminology (example: no result, presumptive positive, consistent with) then those terms should be defined in its report.

Due to the comprehensive nature of toxicology testing, it is not necessary to include the scope of testing on toxicology reports.

Positive/Present

Meets the laboratory's criteria for reporting the presence of a particular analyte or class of compounds as defined in the laboratory's SOPM.

Detected

Meets the laboratory's criteria for reporting the presence of a particular analyte or class of compounds as defined in the laboratory's SOPM. Differs from the term "positive" only in the context in which it is used.

Negative

No drug(s) identified within the scope of the testing method used and at the level of sensitivity of the method at the time the analysis was performed OR did not meet the criteria for reporting a positive as defined in the laboratory's SOPM. Used in the reporting of class screens such as immunoassays or screens that encompass large numbers of drugs.

None / Not Detected

No drug(s) identified within the scope of the testing method used and at the level of sensitivity of the method at the time the analysis was performed, OR did not meet the criteria for reporting a positive as defined in the laboratory's SOPM. Differs from the term "negative" only in the context in which it is used. Used in the reporting of results from quantitative analyses or screens with lists of analytes specifically tested for.

Confirmed

A second test was performed on a separate aliquot or sample using either two different methods or having at least one method that has sufficient specificity for definitive identification.

Confirmed By History

A drug has been identified using a method with sufficient specificity for definitive identification and corroborated through information contained in a pharmacy, medical or investigative record.

Unconfirmed

Confirmatory analysis was not performed.

Unsuitable for Analysis*Specimen related:*

Cannot perform or complete the analysis due to the condition of the specimen (e.g., clotted, decomposed, oily, or improper, as in serum for COHb).

Analysis related:

Low internal standard, interference, ion ratio failure

Inconclusive

Testing was performed, but unable to obtain a valid result.

Interference

Testing was performed, but the laboratory was unable to obtain valid results due to the presence of other substances.

Project Area III: Standardized Terms & Definitions

Abbreviations for analytical methods used:

1. **GC** – Gas Chromatography
2. **FID** – Flame Ionization Detection
3. **MS** – Mass Spectrometry
4. **LC** – Liquid Chromatography
5. **HPLC** – High Performance (formerly High Pressure) Liquid Chromatography
6. **DAD** – Diode Array Detection
7. **FTIR** – Fourier Transform Infrared Spectroscopy
8. **TLC** – Thin Layer Chromatography
9. **IR** – Infrared Spectroscopy
10. **UV/Vis** – Ultraviolet/Visual Spectroscopy
11. **HS** – Headspace
12. **IA** – Immunoassay
13. **NPD** – Nitrogen Phosphorus Detection
14. **ECD** – Electron Capture Detection
15. **AA** – Atomic Absorption Spectrophotometry
16. **TOF** – Time of Flight
17. **CT** – Color Test
18. **CA** – Chemistry Analyzer

Analytical instruments that use multiple technologies in tandem are indicated by through a combination of the abbreviations listed above, for example gas chromatography/mass spectrometry is abbreviated GCMS, GC/MS or GC-MS depending on the report software of the laboratory.

Amended Report

If used, this would indicate that there has been a correction to a previously issued report.

Preliminary Report

A report issued prior to the completion of all toxicology testing. If used, this term indicates that further testing results can be expected in subsequent report(s).

Supplemental Report

If used, this would indicate that other results have been previously reported.

Trace Evidence Report Standardization Materials

Project Area I: Standardized Report Components

1. Unique case identifier on each page of report (such as lab number)
2. Title of the report (such as “report of laboratory analysis”)
3. Identification of the laboratory
4. Submitting Agency Info or at a minimum submitting agency
5. List or explanation of items examined
6. General indication of methodology utilized
7. Results/conclusions
8. Date report issued
9. Signature and title of examiner (or electronic equivalent)
10. Pagination of the report (example page 1 of 2 etc.)
11. Statement regarding the report does not constitute the entire case file or equivalent
12. Statement that definitions of terms used in the report can be located at the DCJS website and if applicable on the laboratory website or attached to report

Additional Discipline Specific Report Components:

13. Sample selection, if it occurs, clearly reflected in the report

Project Area II: Standardized Report Language/Statements

The following consists of report writing examples representing typical results and report wording used in trace evidence examinations. Due to the range of materials and the varied condition and quality of evidence samples encountered, modifications to the following report wording should be utilized to more clearly convey results and conclusions of examinations.

Basis for conclusions will be included in the report.

When associations are made, the significance of the association shall be communicated clearly and qualified properly in the report.

Class Comparisons

Positive

Results

- The questioned sample (Q) and known sample (K) are consistent... and/or
- No exclusionary differences were observed between the questioned sample (Q) and known sample (K).
- Include the actual techniques used in comparison and the properties examined.

Conclusions

The questioned sample could have originated from ... as represented by the known submitted *exemplar or* from another source exhibiting all of the same analyzed/measured characteristics.

Negative

Results

State that the items compared were different and state properties.

Conclusions

- Do not share a common origin/source (when you do not have a known)
- Could not have originated from the source represented by K (when you have a known)

Inconclusive

State/explain the limiting factors of the exam:

- No conclusion could be reached due to (*state/explain limiting factors*).

Qualifying Statements (*where applicable*)

Include limiting factors, such as size, and state that they preclude further testing which can provide additional information.

Impressions / Imprints

Positive Results

State what class characteristics are the same (or different) between the questioned and known and whether or not there are any corresponding individual characteristics.

Conclusions

- *Identification*: Q was made by K.
- *Inclusion*: Q could have been made by K or another item exhibiting the same analyzed characteristics.

Elimination

- State/explain differences observed.
- Q could not have been made by K.

Inconclusive

State/explain what the limiting factors of the exam are, such as if there is insufficient detail or if the pattern area is too small:

- No conclusion could be reached due to...

Qualifying statements Impressions / Imprints

- Qualify basis for results. Listing the characteristics is sometimes desirable (i.e., the same design, spacing) it can then be stated why a stronger conclusion was not made.
- No distinguishable difference in tread pattern, however, the lack of (state limiting factors i.e.: lack of individual characteristics observed) precludes a stronger association.
- X corresponding individual characteristics (or other features) increase the value of the comparison

Physical Match / Physical Fit Examination

Positive

Results

Describe the condition(s) of the edge(s) and state that they were examined and compared for physical match/fit.

Conclusions

Q and K were at one time joined together...

Elimination

- Q and K were not previously joined together... as represented by...
- If no physical match was established, state such and *refer to class comparison (if applicable)*.

Inconclusive

Due to (state reason), it cannot be concluded whether Q and K were at one time joined together.

Hair Comparisons

Positive

Results

Known and questioned hairs exhibit similar visual and microscopic characteristics. The questioned hair appears/may be suitable/unsuitable for nuclear DNA and/or mitochondrial DNA analysis.

Conclusions

The Q could have originated from the K as represented by the submitted (analyzed) exemplar/reference hairs or from another individual/source whose hairs exhibit the same physical/microscopic characteristics.

Negative

Results

Known and questioned hairs exhibit dissimilar visual and microscopic characteristics/dissimilar physical characteristics/significant microscopic differences. The questioned hair appears/may be suitable/unsuitable for nuclear DNA and/or mitochondrial DNA analysis.

Conclusions

- The Q is not consistent with originating from the K as represented by the submitted (analyzed) exemplar/reference hairs - OR-
- The Q could not have originated from the K as represented by the submitted (analyzed) exemplar/reference hairs.

Inconclusive

Clearly communicate reasons a definitive conclusion could not be reached.

For example (but not limited to):

- Comparison of the questioned hair to the known standards revealed differences or comparison of the questioned hair to the known standards revealed similarities but the questioned hair lacks enough features for comparison and/or the known sample is insufficient.
- The questioned hair is not identifiable or is not suitable for reliable comparisons..... therefore no conclusion can be reached.
- No conclusion could be reached as to whether or not Q could have originated from a source as represented by K.
- The questioned hair appears/ may be suitable/ unsuitable for nuclear DNA and/or mitochondrial DNA analysis.

Qualifying statements

It should be noted that microscopical hair comparisons are not a means of absolute personal identification or individualization. DNA could give a more conclusive result than microscopical comparison alone.

Optional Statement (if no references are submitted): Additional information could be provided by a combination of microscopical comparison followed by DNA analysis.

The following qualifying statement will be added when racial/ancestral characterizations are made based on microscopical hair examinations: It should be noted that racial/ancestral classifications of hairs are based on microscopic characteristics which are typically observed in hairs from individuals of a given racial/ancestral group, and these classifications may or may not correspond to an individual's racial/ancestral origin or self-identification.

Body area classifications of hairs are based on the combination of macroscopic and microscopic characteristics which are typically observed in hairs from different areas of the body.

Chemical Identification / Explosives Identification

Identification:

Positive

Results

State what tests you used and what you identified.

Conclusions

- *Identity of material* was identified. This is commonly found in (but not limited to).
- Example for bank dye packs: MAAQ was identified by instrumental analysis (GC/MS). This chemical is a component of dye packs.

Indication:

Positive

Results

State tests used and chemicals indicated. Clarify not confirmed/identified.

Conclusions

- *Substance* was indicated based on...Include why an identification can't be made (where applicable).
- Example: Sample size was insufficient for instrumental analysis necessary for positive identification.

Negative

State tests conducted.

Conclusions

Requested substance was not identified.

Inconclusive Chemical Identification / Explosives Identification

State tests conducted, and reasons as to why inconclusive.

- No conclusion could be reached due to

(General Physical Comparisons) Motor Vehicle Lamp Examination

Results (As Appropriate)

- Describe condition of bulb and filament.
- Item exhibits characteristics (list) consistent with (*hot shock, hot break, cold shock, cold break*)...

Conclusions (As Appropriate)

... indicating that the filament was (on/off) at time of damage.

Inconclusive

Results

Describe condition of bulb and filament.

Conclusions

... indeterminate, no determination whether the filament was “on” or “off” at time of damage.

Qualifying statements

For hot shock: It is not possible to determine if filament was damaged at time of collision.

Other Qualifying Statements

Because (textile fibers, plastic bags, plastic gloves, etc.) are mass produced, it is not possible to state that a (describe item) originated from a particular source to the exclusion of all other materials that exhibit the same (state applicable properties).

For blue denim and white cotton fibers:

If no further analysis was warranted: These fibers are ubiquitous and have limited forensic value and therefore no further analysis was performed

For plastic bags (where applicable):

It was concluded that the bags were made consecutively, therefore it is possible, but cannot be conclusively determined that the bags came from the same physical package. This statement may be part of class comparison results for plastic bags.

For glass:

Elemental analysis (which is not available at this laboratory) could provide additional discrimination.

Database Inquiry

- State database used, such as PDQ, Tread Design Guides.
- State limitations (*i.e.: List is not all-inclusive, do not limit search to items on list...*)
- Specify that information is for investigatory purposes only.
- If further analysis is required, state that samples for comparison purposes would have to be submitted.

Project Area III: Standardized Terms & Definitions

Class

A group, set or kind marked by common attributes or a common attribute. (ASTM E1732-12)

Class Characteristics

The attributes that establish membership in a class. (ASTM E1732-12)

Consistent

No significant differences are discernable between two objects with respect to class characteristics (size, shape, dimensions, and physical properties and composition). Items share sufficient similarity in observed characteristics such that they could not be distinguished from sharing a common source. Due to the mass manufacturing process, items with indistinguishable class characteristics cannot be positively identified as sharing common origin without the addition of sufficient identifying characteristics.

Exclusionary differences

A difference in a feature or property between compared items that is substantial enough to conclude that they did not originate from the same source.

Inclusion

A positive association of a questioned to a known item based primarily on class characteristics

Identification

1. Impressions

The highest degree of association assigned to of a questioned impression and a known source based on the agreement of class and randomly acquired characteristics when there is sufficient quality and quantity of information.

2. Chemical Analysis

Analysis conducted confirms presence of a material.

Indication

The analysis conducted suggests a material/condition is present, but is not sufficient for identification / a definitive conclusion.

Individual Characteristic

A randomly acquired characteristic that contributes to the uniqueness of an item.

Physical Match/Physical Fit

An association based upon the realignment of two or more fragments or pieces that demonstrate they were once joined together to form a single object.

Qualifying Statement

Refers to analysis / comparison in case. May strengthen or weaken the association.