NYCLAC Report Standardization Project

BioTWG

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April 2026

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NEW YORK CRIME LABORATORY ADVISORY COMMITTEE

REPRESENTING:

Division of Criminal Justice Services
Office of Forensic Services
Latent Print Lab

Division of Homeland Security
Office of Fire Prevention & Control

Drug Enforcement Administration Northeast
Regional Lab*

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

Monroe County
Crime Lab
Medical Examiner's Forensic Toxicology Lab

Nassau County
Medical Examiner's Dept. of Forensic
Services
Medical Examiner's Toxicology Lab

N.Y.C. Medical Examiner's Office
Department of Forensic Biology
Forensic Toxicology Lab
Forensic Anthropology Unit

New York City Police Department
Police Lab
Latent Print Lab

New York State Police
Crime Lab

Niagara County Sheriff's Office
Forensic Lab

Onondaga County
Center for Forensic Sciences
Forensic Toxicology Lab

Suffolk County
Crime Lab
Medical Examiner's Toxicology Lab

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

Yonkers Police Department
Forensic Science Laboratory

*Non-voting Participant

March 30, 2026

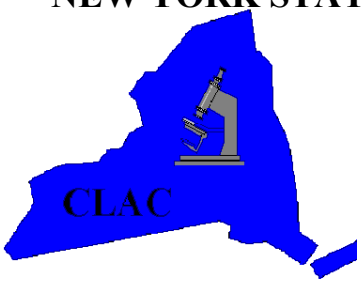
RE: NYS Report Standardization Project

In 2024, the New York State Technical Working Groups (TWGs) were tasked with a thorough review, as it relates to current methods and practices, and updating of the report standardization project document. The result of that review was a restructuring of the document. Major changes are highlighted below.

- Project Area numbers have been removed.
- Standardized Report Components, previously Project Area 1, has been removed and will only be present in disciplines for which there are discipline-specific standardized report components, above those listed in accreditation requirements.
- Forensic Anthropology has been incorporated.
- Discipline names have been updated to reflect external accrediting body language.

As stated in the original iteration, these will be living documents that will continue to be reviewed and modified as new testing protocols are implemented and incorporated.

NEW YORK STATE CRIME LABORATORY ADVISORY COMMITTEE



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

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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'sToxicology 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

March 10, 2014

RE: NYS Report Standardization Project

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)

Anthropology Report Standardization Materials

Standardized Report Language/Statements

Scene Search and Recovery

Anthropological assistance may be required for certain types of medicolegal scenes. Most commonly, anthropological assistance with scene search and recovery occurs when human remains are partially or completely skeletonized, burned, buried, dismembered, fragmentary, or any other scenario where anthropological assistance may be considered beneficial. Results will include documentation of the anthropological methods employed during the search and recovery process and documentation of potentially relevant material that was recovered.

Determining Osseous/Dental versus Non-osseous/Non-dental

The material is examined to assess the presence or absence of features or structures that characterize osseous and dental material. Results will determine if the items are osseous/dental remains, are not osseous/dental remains, or if the findings are inconclusive.

Determining Human versus Non-human

Osseous/dental material is examined to assess morphological features or landmarks that are consistent with human or non-human species. Results will indicate if the items are human remains, non-human remains, or if the findings are inconclusive.

Determining Medicolegal Significance

Determination of medicolegal (i.e., forensic) significance is based on taphonomic and/or contextual indicators. Human remains may be determined to lack medicolegal significance when they originate from historic/prehistoric archaeological contexts, disturbed cemeteries, or anatomical teaching collections. Results will indicate if the items have medicolegal significance, lack medicolegal significance, or if the findings are inconclusive.

Minimum Number of Individuals

An analysis of the minimum number of individuals (MNI) shall be completed to check for commingling. If commingling is found, results will include a value that represents the minimum number of individuals associated with the case based on duplication of skeletal elements.

Biological Profile

The biological profile provides estimated age, sex, ancestry/population affinity, and stature for an individual based on anthropological (i.e., skeletal) analysis.

Analysis of age-at-death is based on skeletal and dental markers. Results are usually presented as an interval with upper and lower bounds of the estimate, but in some instances more general estimates (e.g., middle to older adult) may be reported.

Ancestry/population affinity estimation is based on both non-metric and metric analyses. Results of ancestry/population affinity estimation may include groups such as White

(European), Black (African), Hispanic, Asian, Native American, or the results may be inconclusive.

Sex estimation is performed by non-metric and/or metric assessment procedures that examine sexually dimorphic characteristics of the skeleton. Results are presented as male, female, or inconclusive.

Stature can be estimated using various skeletal measurements. Results are presented as a point estimate along with an appropriate prediction interval with a lower and upper bound of the estimate.

Documentation of Pathological Conditions and Anatomical Variants
Submitted material is examined and pathological changes and/or anatomical variants, if present, are documented and described.

Trauma Analysis
Trauma analysis involves examining the skeletal remains for antemortem, perimortem, and/or dismemberment trauma. Results include a description of the type of trauma (e.g., blunt, sharp, high velocity projectile), if possible, and documentation of the location of the observed trauma.

Taphonomic Changes
Results include a description of the condition of the skeletal remains, any relevant postmortem damage, and, if appropriate, the probable interval between death and discovery based on their state of preservation.

Comparative Medical Imaging
A direct side-by-side comparison between antemortem and postmortem medical images for the purpose of identification of an individual. Results of the comparison are reported as:

Identification: There are sufficient points of concordance between antemortem and postmortem images to determine that they represent the same individual. Any differences can be clearly explained by variation in radiographic angulation, postmortem artifact, and/or temporal changes that occurred between the time of the antemortem and postmortem imaging.

Exclusion: There are anatomical differences between the antemortem and postmortem images that indicate they are not from the same individual. Differences cannot be explained by variation in radiographic angulation, postmortem artifact, and/or temporal changes that occurred between the time of the antemortem and postmortem imaging.

Inconclusive: A comparison can be conducted, but a conclusive determination cannot be established. The reason for the inconclusive result will be stated (e.g., there are insufficient points of concordance for an identification and/or there are no obvious inconsistencies for an exclusion).

Not Comparable: A comparison is not possible due to poor image quality, insufficient anatomical overlap, differences in radiographic angulation, or incompatible images for comparison.

Standardized Terms & Definitions

Age-at-death
The chronological age of an individual at the time of their death. This is based on skeletal and dental development in subadults, and it is based on skeletal and dental degenerative changes in adults.

Anatomical variant
Skeletal features (e.g., accessory sutures) that may occur infrequently, but which are still normal and do not represent trauma or pathology.

Anomaly
A deviation from typical skeletal anatomy. Often nonlethal or nondisruptive to function, it may or may not have clinical or forensic significance.

Antemortem
Term used in reference to trauma analysis and pathological conditions. For anthropology, this term refers to trauma and pathological conditions that occurred before death where there are skeletal indications of healing.

Articulation
A congruent joint or juncture between skeletal elements.

Biological profile
The biological profile provides estimated age-at-death, sex, ancestry/population affinity, and living stature for an individual based on anthropological skeletal analysis.

Blunt force trauma
Skeletal fracture(s) caused by low-velocity impact with/from a blunt object or surface.

Commingling
Intermixing of remains from more than one individual.

Datum
A fixed reference point used for scene mapping.

Dismemberment trauma
Skeletal defect(s) caused by the use of an implement (e.g., knife or saw) for the intentional separation of a body part.

Dry-screening
Excavated soils/sediments are shaken or pressed through a wire mesh screen without the use of water. Materials greater in size than the wire mesh are evaluated for relevance.

Gender
An individual's culturally mediated social expression along the feminine-masculine continuum. Gender is not estimated in forensic anthropology (see "sex").

High velocity projectile trauma
Skeletal defect(s) caused by a high velocity projectile (e.g., bullet from a gunshot).

Histologic examination
Cellular or microstructural level assessment of specimens under magnification with a microscope.

in situ
The original, undisturbed location where skeletal remains and/or associated evidence are found.

Incident-sterile soil
A stratigraphic level of soil that is undisturbed or lacks case relevance. This soil will be free of human remains and any associated evidence.

Inconclusive / Indeterminate / Undetermined
Analyses with ambiguous results will be deemed inconclusive/indeterminate/undetermined. These synonymous terms may also be used when the requisite skeletal elements are lacking to perform an analysis.

Kerf
A cut in bone, tooth, or cartilage usually made by a sharp implement.

Maceration
Intentional removal of soft tissue from skeletal elements to facilitate skeletal analysis.

Macroscopic examination
Visual assessment of skeletal and/or cartilaginous structures without magnification.

Microscopic examination
Assessment of skeletal and/or cartilaginous structures under magnification with a stereomicroscope.

Medicolegal significance
A contemporary case having forensic significance (e.g., relevance for determination of decedent identity and/or death certification).

MNI
Minimum Number of Individuals calculated as the number of the most repeated element after sorting by element, side, and developmental status.

Osseous
Composed of bone.

Pathological condition
Skeletal changes associated with disease or remote trauma.

Perimortem
Term used in reference to trauma analysis. For anthropology, this term refers to trauma that occurred around the time of death where there is a lack skeletal indications of healing.

Population affinity
A measure (e.g., distance, probability of membership) of similarity between an unknown individual and specific reference groups; commonly assessed based on cranial measurements and/or features. Categorical groups may include White (European), Black (African), Hispanic, Asian, Native American, among others. The terms “race” and “ancestry” have been used in the past but the term “population affinity” is currently more accepted.

Postmortem
Term used in reference to skeletal and cartilaginous damage that occurred after death.

Postmortem interval
The amount of time between death and discovery of a body; also known as time since death.

Sex
Biological sex, or sex assigned at birth, is recorded as male or female based on dimorphic skeletal indicators.

Prediction interval
A statistical interval representing an upper and lower bound of an estimate.

Radiographic examination
Review of skeletal structures from x-ray imaging.

Sharp force trauma
Skeletal defect(s) caused by an item with a pointed, beveled, or cutting edge (e.g., knife or saw).

Stature
A person’s living height. This may be in the form of measured stature (e.g., military records) or self-reported stature (e.g., driver’s license).

Subadult / sub-adult
An individual who has not completed skeletal/dental growth and development. In general terms, this could pertain to individuals from birth to mid-20s.

Taphonomy
The study of the processes affecting remains after death (e.g., color changes, animal scavenging).

Thermal trauma
A skeletal defect produced by exposure to high temperature or direct contact with flame.

Wet-screening
Excavated soils/sediments are passed through a wire mesh screen using both water pressure and water flow to dissolve soluble materials. Non-soluble materials greater in size than the wire mesh are evaluated for relevance.

Forensic Biology Report Standardization Materials

Discipline Specific Report Components

1. Locus or amplification system indicated

2. 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.

3. Disposition of evidence

Standardized Report Language/Statements

Body Fluid Testing

a) **Positive**
All body fluid testing results (with the exception of sperm search) 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 indicated.” 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 P30test 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 reasonwhy 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 negative quantitation result for male DNA is obtained and no further analysis is conducted, the phrase “No male DNA detected” will be used.
- If a positive but very low quantitation results is obtained and no further analysis is conducted, the phrase “insufficient DNA” will be used.
- If a positive quantitation result for male DNA is obtained, the phrase “Male DNA indicated” or “Male DNA detected” 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 x 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”

Probabilistic Genotyping/Likelihood Ratios (LR):

- The DNA typing results for Item are X times more probable/likely if they originated from POI and N-1 unknown, unrelated individual(s) than if they originated from N unknown, unrelated individual(s). This statement should be modified according to the type of LR reported of the propositions determined by the laboratory (i.e. conditioning).

- When reporting the likelihood ratio, the number should be reported to 1 significant figure. For example, $3.55 \text{ X } 10^{17}$ should be reported as “$3 \text{ X } 10^{17}$ (300 quadrillion)”.
- A qualitative statement is not required. However, if the laboratory chooses to use a verbal qualifier, it must use the entire verbal scale reported in the SWGDAM Guidelines for Reporting Likelihood Ratios.
- If using a verbal scale, the level of support should be reported as “there is limited support, moderate support, strong support, or very strong support for the proposition that the POI is included or excluded as a possible contributor”. The entire scale should be reported.
- If not using a verbal scale, phrases like “supports proposition for inclusion” or “supports proposition for exclusion” or “does not support proposition for inclusion or exclusion” should be used.
- If the LR is zero (or less than one as defined by the laboratory), then the phrase “POI is excluded as a possible contributor” should be used.
- If the LR is one (or a range as defined by the laboratory), then the phrase “there is equal support for the proposition that the POI is included or excluded as a possible contributor” should be used.

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 designed to separate sperm cells from all other cells in a sample, resulting in a Sperm Fraction which intended to isolate sperm DNA and a Non-Sperm/Epithelial Fraction which contains DNA from other cell types. However, incomplete separation may occur, and fractions may contain both sperm cell DNA and non-sperm cell DNA. Sperm and Non-Sperm/Epithelial Fractions can be referred to as Fraction 1 and Fraction 2, as defined by the laboratory.

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.

Likelihood Ratio (LR)
- A ratio of two probabilities which provides a statistical measurement of the strength of support for one hypothesis (H) / proposition over another.
- H_p or H_1: Probability of the evidence given POI and *N-1* unknown individuals
- H_d or H_2: Probability of the evidence given *N* unknown individuals

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

Male/Y Screening
A non-confirmatory method to screen for the presence of male DNA.

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.

Scale of verbal qualifiers for reporting LRs

LR for H1 Support and 1/LR for H2 Support	Verbal Qualifier
1	Uninformative
2 – <100	Limited Support
100 – <10,000	Moderate Support
10,000 – <1,000,000	Strong Support
≥1,000,000	Very Strong Support

Verbal scale derived from Scientific Working Group on DNA Analysis Methods (SWGDAM), *Guidelines for Reporting Likelihood Ratios*, approved and effective April 7, 2025

Digital Evidence Report Standardization Materials

Discipline Specific Report Components

1. Scope of Work as detailed from the original requestor

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.

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"*

After First Unlock (AFU) state
Device has been unlocked/logged into at least once after being rebooted/powered on.

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.

Before First Unlock (BFU) state
Device has been rebooted or powered on, but not logged into/unlocked yet with a pin or passcode.

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”.)

Comparative Analysis
The assessment of the correspondence between features in images and known objects or images to render an opinion regarding identification, elimination, or a qualified conclusion (as opposed to a demonstrative exhibit).

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).

(i,v) See *"Downloading/Exporting"*

> **After First Unlock (AFU/Hot) Extraction**
> A collection of available data from a powered-on device that has been unlocked at least once since the last operating system boot.
>
> **Before First Unlock (BFU/Cold) Extraction**
> A collection of available data from a powered-on, locked device that has not been unlocked since the last operating system boot. This extraction contains a limited dataset when compared to AFU, Full File System, or Logical extractions.
>
> **File System Extraction**
> A process that requests the active files and folders from the file system. This acquisition can contain remnants of deleted data and non-user data.
>
> **Full File System (FFS) Extraction**
> A complete collection of all available active files and folders.
>
> **Logical Extraction**
> A process that requests file data from the operating system, which then interprets and returns the resultant data. Various techniques query the operating system in order to extract the data. These techniques can include, but are not limited to, backup utilities, application agents, and manual interaction. Manual interaction involves direct interaction with the device display to photograph/video/document data accessible via the user interface.
>
> **Partial File System Extraction**
> A partial collection of active files and folders from the file system. Partial File System extractions include, but are not limited to, AFU and BFU.

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, ½ inch, ¾ 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.

Photogrammetry
The science and technology of obtaining reliable information about physical objects and the environment through the process of recording, measuring, and interpreting photographic images.

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.

Timeline Sequence Reconstruction
The process of relating video, images, audio, and/or other data to one another in a chronologically ordered succession.

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.

Fire Debris Report Standardization Materials

Discipline Specific Report Components

1. Date of submission of evidence to the laboratory.

2. 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.

3. 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.

4. 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.

5. 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.

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. 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.

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 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

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. Limited to class comparison.

Control Sample

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

Discipline Specific Report Components

1. 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.

2. The measurement uncertainty value will be expressed as an expanded uncertainty and include the coverage probability.

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).

Subclass

- Item x and Item y were microscopically examined and compared. There is observed agreement of their class and potential subclass 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).
- This subclass agreement allows the source of these marks to be narrowed to a subgroup (OR smaller source group) but not to a particular item.
- The cartridge cases may have been fired in the same firearm, however, analysis of _____ (firearm part) is required to evaluate whether subclass or individual characteristics may be present.
- The cartridge cases were identified as having been fired in/from a firearm/firearm part manufactured by the same tool at the same approximate state of wear. An unspecified quantity of manufactured _____ (firearms part) could exhibit these possible subclass characteristics.

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 (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 – completed and/or partial with possibilities of questioned character (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)

Ghost Guns

- Description of Evidence
- “Serial Number: None”
- Markings on frame (Ex. Polymer 80, additive manufacturing, etc.)
- Markings on slide, barrel including secondary numbers

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 Ballistic 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 Ballistic 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.

<u>All conclusions will include the basis for the conclusions.</u>

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, Dithioxamide, 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 pocketsize 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.

Inconclusive[1]
'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/Elimination[1]
'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 Identification[1]
'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 courses.

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.

Subclass Characteristics
Features that may be produced during manufacture that are consistent among items fabricated by the same tool in the same approximate state of wear. These features are not determined prior to manufacture and are more restrictive than class characteristics.

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.

***See Current Version of New York State Penal Law section 265.00 for definitions.**

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

Friction Ridge Processing Report Standardization Materials

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

d) A statement detailing that the presence of friction ridge detail on an item of evidence does not indicate the significance or time frame in which the print was deposited should be included in the written report if latent prints were detected.

The presence of friction ridge detail on an item, in absence of contextual information, does not independently indicate the significance or timing of deposition.

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).

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.

Conflict
A condition in which two or more examiners disagree on a suitability decision or source conclusion.

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 Exclusion[1]
'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 impressions came from the same source.

Source Identification[1]
'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 inference[2]) 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.

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

[2]Inductive 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).

Friction Ridge Comparison Report Standardization Materials

Discipline Specific Report Components

1. Available exemplars: Include name (Alias/alternative DOB if relevant), Anatomical Source, Origin or record, and Identification number (e.g. NYSID)

2. 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.

3. Statement indicating that limited comparisons were conducted, or comparisons were deferred, where applicable.

4. Whether or not conclusion(s) were verified and the type(s) of verification.

5. Statement when the conclusion is based upon simultaneous impressions or aggregate of information (i.e. impressions that do not stand alone).

6. When reporting source identification and inconclusive with similarities conclusions, the anatomical origin including the specific finger, palm, or toe compared should be included in the written report.

7. A statement detailing that the presence of friction ridge detail on an item of evidence does not indicate the significance or time frame in which the print was deposited should be included in the written report if latent prints were detected.

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
- 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 Examinations[1]

- 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]

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, and exclusion.

Conflict
A condition in which two or more examiners disagree on a suitability decision or source conclusion.

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.

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.

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 Exclusion[1]
'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 impressions came from the same source.

Source Identification[1]
'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 inference[2]) 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.

_____

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

[2]Inductive 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).

[3]As 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)

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

Questioned Documents Report Standardization Materials

Discipline Specific Report Components

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

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 X 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.)

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 Characteristics

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.

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 filers, 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.

Scene Investigation Report Standardization Materials

Discipline Specific Report Components

1. Incident/Scene location(s)

2. Personnel present (at a minimum, the person in charge of scene processing/report signing)

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.

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 patter 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. A presumptive test is not definitive and requires further confirmatory testing for accurate identification.

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 >.

Seized Drug Report Standardization Materials

Discipline Specific Report Components

1. 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.

Standardized Report Language/Statements

Composites *(if applicable)*

The report will clearly state when a result is based on testing from a composite of individual units.

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.

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.

Cannabis
As defined in New York State Penal Code Article 222, Section 222.00 and New York State Cannabis Law Article 1, Section 3.

Concentrated Cannabis
As defined in New York State Penal Code Article 222, Section 222.00 and New York State Cannabis Law Article 1, Section 3.

Composites
The combination of multiple sample units in their entirety or in part to form a new sample.

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.

Toxicology Report Standardization Materials

Discipline Specific Report Components

1. Unique case/sample identifier on each page

2. Name of subject/defendant/victim/suspect/decedent

3. Date submitted to or received by laboratory

4. Samples submitted for toxicology

5. 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).

6. Forensically significant results that have not been confirmed will be clearly indicated as such.

7. Where test results obtained from another laboratory are included in the report, the name of the reference laboratory must be clearly stated.

8. When the contents of a tablet or capsule have been identified by a visual comparison, the report must reflect that and must indicate that an analytical confirmation was not performed.

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.

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 a combination of the abbreviations listed above, for example gas chromatography/mass spectrometry may be 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 Materials and Impressions Report Standardization Materials

Discipline Specific Report Components

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

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.

When bulleted options appear in the document, not all have to be used.

Class Comparisons

Association

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 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.

Exclusion

Results

State that the items compared were different and state properties.

Conclusions

- Do not share a common origin/source (without a known)
- Could not have originated from the source represented by K (with 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.

Cross transfers of (*fibers*) between two items provide stronger support for the transfer of (*fibers*) between two (*textile materials*) than having either transfer alone.

State that in the opinion of the analyst, the presence of cross-transfers and/or multiple transfers, reduce the chance that ___ were deposited by coincidence.

Mass Produced Items
Because _____ 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 properties listed in results).

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 (when 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 corresponding die/extrusion lines/pigment bands and other sub-class features:
The corresponding features observed in the above bags result from the manufacturing equipment and change over time. However, the duration of these features and the number of other bags which may also show corresponding features cannot be estimated.

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

Impressions/Imprints

Association Level 1

Results

State what class characteristics are similar or correspond between the questioned and known, the corresponding randomly acquired characteristics (RACs) and if present, wear. State that in the opinion of the analyst, the RAC(s) is/are of high quality and/or discriminability.

Conclusions

- There is strong support that Q was made by K based on the correspondence of class characteristics and high quality and/or discriminability of RACs.
- Therefore, there is strong support that Q was made by K.
- Option to then put the definition of RACs in the report.

Association Level 2

Results

State what class characteristics are similar or correspond between the questioned and known and any corresponding unusual wear and/or randomly acquired characteristics (RACs).

Conclusions

Q could have been made by K or another item exhibiting the same (include compared characteristics). The addition of corresponding unusual wear and/or RACs make the association stronger than if the comparison were just based on class characteristics. However, the RACs were not of the quality and/or discriminability to reach the higher level of association.

- Option to then put the definition of RACs in the report.

Association Level 3

Results

State what class characteristics (e.g. design, physical size, general wear) are similar or correspond between the questioned and known.

Conclusions

Q could have been made by K or another item exhibiting the same (include compared class characteristics). There were no other points of comparison present to reach a higher level of association.

Exclusion

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…

Physical Match/Physical Fit Examination

Physical Match/Physical Fit

Results

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

Conclusions
The broken/torn edges of [items] have distinctive features that physically match/fit together. The alignment of these features serve as the basis for the opinion that [items] were at one time joined together…

No Physical Match/Physical Fit
- If no physical match/fit was established, state such and refer to class comparison (if applicable).
- Q and K were not previously joined together… as represented by…

Qualifying Statements
When there is a physical match/physical fit
The determination of a physical match/fit is based solely on a visual/microscopic examination, not upon a statistical evaluation of data or an exhaustive comparison to all potential sources.

When applicable with no physical match/physical fit
The absence of a physical fit does not preclude the possibility that the compared items originated from the same source. Additional comparison examinations would be required to evaluate the possibility of an association or an exclusion based on class characteristics.

Hair Comparisons

Association
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 either originated from the K as represented by the submitted (analyzed) exemplar/known hairs or from another individual/source whose hairs exhibit the same physical/microscopic characteristics.

Exclusion
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/known hairs - OR-

- The Q did not originate from the K as represented by the submitted (analyzed) exemplar/known hairs. (when exclusionary differences observed)

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.

Hairs for DNA Suitability

State what was observed and what was done with the hairs.

Where applicable:
- State the hair(s) is/are not suitable for DNA analysis using the current technology at the laboratory.
- State the hair(s) may be suitable for DNA testing at another laboratory.

Chemical Identification/Explosives Identification

Identification:

Positive

Results

State what tests you used and what you identified.

Conclusions

- *Identifity 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

Results

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

Conclusions

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

Negative

State tests conducted

Conclusions

Requested substance(s) was/were not identified.

Inconclusive Chemical Identification/Explosives Identification

State tests conducted, and reasons as to why inconclusive.

- No conclusion could be reaches 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 was made whether the filament was “on” or “off” at time of damage.

Qualifying Statements (when applicable)

It is not possible to determine if the filament was damaged at the time of collision.

It is not possible to determine if the damage was due to the impact in question or a previous accident.

Other Qualifying Statements (when applicable)

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.

Standardized Terms & Definitions

Class
A group, set or kind sharing common attributes (ASTM E1732)

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

Consistent
No exclusionary 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.

Discriminability/discriminating
The property of an observed characteristic that distinguishes it from different sources.

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

Identification (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.

Physical match/Physical Fit
A realignment of two or more fragments/pieces with distinctive features that serves as the basis for the opinion that (items) were at one time joined together

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

Quality
A subjective measure to determine value in a comparison.

Randomly Acquired Characteristic (RAC)
A feature resulting from interaction with an object including but not limited to: cuts, scratches, tears, holes, stone holds, abrasions and the acquisition of debris. The

position, orientation, size and shape of these characteristics differentiate the item from other items with similar class characteristics.