Glossary of Forensic Terms

**Absolute Certainty** - ultimate sureness with no implication of possible change.

**Accountability** - the quality of subordinate workers being responsible for his/her own work and answerable to a superior.

**Accuracy** - the degree of conformity of a measured quantity to its actual (true) value.

**Acetone** - a colorless, highly flammable chemical compound used as an organic solvent, an ingredient in many lacquer thinner compounds and adhering liquids.

**Accelerant** - an agent, often an ignitable liquid, that acts to initiate a fire or increase its rate of spread.

**Administrative documentation** - records such as case related conversations, evidence receipts, description of evidence packaging and seals, and other pertinent information.

**Administrative (or Laboratory Director) Case File Review** - a detailed final review of the case file documentation. A member other than the assigned analyst must conduct the Laboratory Director case file review on all case files.

**Algor mortis** - the postmortem cooling of the body.

**Analytical Data** - all case specific records such as notes, worksheets, graphs, spectra, printouts, computer data files, photographs, photocopies, microscopic slides and other data or records.

**Analytical Procedure** - an orderly step-by-step process designed to ensure operational uniformity and to minimize systematic variability.

**Analyst** - any ADFS personnel assigned to perform scientific investigation or evidential examination.

**Ante mortem** – preceding death Antigens - foreign substances in the body that are capable of causing disease.

**Arson** - the intentional and unlawful burning of a building or other property.

**Assessment** - the process of evaluating analysts to determine their level of technical knowledge, skills, and abilities.

**Asphyxiation** - a medical term for suffocation, which leads to lack of oxygen in the blood.

**Audit** - a review conducted to compare the various aspects of the laboratory’s performance with a standard for that performance.

**Back spatter** - blood directed back toward the source of energy or force that caused the spatter; often associated with entrance gunshot wounds.

**Ballistics** - branch of physics that deals with the flights of projectiles.

**Base pair** - combination of 2 nucleotides (A and T or G and C) held together by weak hydrogen bonds; the DNA double helix is formed when a base pair of nucleotides in the DNA strands are connected by these bonds.

**Bile** - a digestive fluid made by the liver and stored in the gallbladder that helps digest fats.

**Biology** – the science that studies living organisms.

**Blind or Double-Blind Sample Technique** - a type of proficiency testing where the member is not aware that the sample/case under analysis is a quality assessment sample.

**Blood borne pathogens** - pathogenic microorganisms in blood or other body fluids that can cause disease in people. These pathogens include, but are not limited to, hepatitis B virus (HBV) and human immunodeficiency virus (HIV) in all of its forms.

**Bloodstain** - transfer resulting when liquid blood comes into contact with a surface.

**Calibration** - the set of operations which establish, under specified conditions, the relationship between values indicated by a measuring instrument or measuring system, or values represented by a material, and the corresponding known values of a measurement.

**Case File** – the hard copy case folder which contains all or part of the documentation forming the case record.

**Case Record** - all notes, reports, custody records, charts, analytical data, and any correspondence generated in the laboratory pertaining to a particular case, which may be located in the hard copy case folder or the LIMS.

**Case Management** - the approach for setting up a logical methodology for acceptance, analytical work, priority, transfer, and return related to work conducted.

**Cause of death** - disease or injury that initiates the lethal train of events leading to death.

**Cerebral edema** – the presence of a large amount of water in the spaces of the brain.

**Certificate of Analysis** - a document that reports and certifies the test results of a product.

**Certified Reference Material** - a reference material or standard whose property values are certified by a valid procedure or are accompanied by or traceable to a certificate or other documentation is issued by a recognized certifying body.

**Chain of Custody** - a record of individuals who have had physical possession of the evidence.

**Chemicals & Toxic Substance List** - a list of recognized chemicals and toxic substances present in the laboratory facilities.

**Chromatogram** - the pattern of separated substances obtained by chromatography.

**Chromatography** - a method for separating mixtures based on differences in the speed at which they migrate over or through a stationary phase.

**CODIS** - Combined DNA Index System; a DNA database system

**CODIS administrator** - an employee of the laboratory responsible for administration and security of the laboratory’s CODIS at a laboratory that owns the database and/or known samples.

**Competency test** - the evaluation of a person’s ability to perform work in any functional area prior to the performance of independent casework.

**Congenital anomaly** - an abnormality, such as a spinal column defect, present at birth.

**Contact wound** - a skin injury produced by a weapon in contact with or a fraction of an inch from the skin when discharged.

**Continuing Education Courses** - short, defined periods of formal job-related instruction (including but not limited to professional meetings) provided to members of a Forensic Laboratory for the purpose of enhancing job knowledge, skills, or abilities. Documentation of such training is to be kept on file in the Quality Manager’s Office.

**Control** - a test with predictable results performed with an experimental procedure to confirm the reliability of the experimental results.

**Controlled Substance** – a drug or chemical whose manufacture, possession, and use are regulated by a government.

**Coroner** - an elected official with death investigation duties.

**Corroborating evidence** - evidence that tends to support a proposition that is already supported by some evidence.

**Crime/Forensic Laboratory** - a laboratory (with at least one full-time scientist), which examines physical evidence in criminal matters and provides opinion testimony with respect to such physical evidence in a court of law.

**Crime scene** - an area, object or person, external to a laboratory facility, from which evidence is identified, documented, collected, and/or interpreted.

**Criteria** - standards against which compliance is evaluated. The criteria are used to evaluate whether the laboratory activity meets the standard. This is often a restatement of the standard in the form of a question which can be answered “yes”, “no”, or not applicable – “(N/A)”.

**Database** - refers to the DNA analysis of database samples for entry into CODIS and, if eligible, for upload to the National DNA Index System (NDIS).

**Database sample** - a sample obtained from an individual who is legally required to provide a DNA sample for databasing purposes and whose identity is established at the time of collection of the sample.

**Deficiency** - an inadequacy or lacking in some necessary defined quality or element. Deficiencies include but not limited to missing data, incomplete data, or incomplete reports.

**Desirable** - a defined standard, which has the least deleterious effect on the work product or the integrity of the evidence but which nevertheless, enhances the professional status, character, or values of the laboratory.

**Detection Limit** - the lowest quantity of a substance that can be distinguished from the absence of that substance (a blank value) within a stated confidence limit.

**Discipline** - a major forensic science area dealing with similar tests, examinations, or comparisons. Examples include but are not limited to the disciplines of DNA Database, Drug Chemistry, Firearms/Toolmarks, Forensic Biology, Forensic Pathology/Death Investigation, Implied Consent, Scene Investigation/Processing, and Toxicology.

**Discipline Standard Operating Procedures Manuals (SOP)** - manuals that concentrate on issues that are unique to a discipline or functional area. Examples include but are not limited to: maintenance and calibration of instruments and balances; reference standards and controls; detailed analytical protocols and procedures; health and safety issues specific to functional area. Each Discipline or Functional Area is required to have a Discipline SOP Manual.

**Discrepancy** - any reported result, casework, or proficiency test, which differs from the consensus result.  Discrepancy is also defined as an apparent error in the final conclusion from an analytical procedure. Analytical procedures are tests performed in casework and proficiency tests. A final conclusion is issued in a report after appropriate reviews. Discrepancies may be classified as Class I, II, or III.

**Deoxyribonucleic Acid (DNA)** - a nucleic acid that contains the genetic instructions used in the development and functioning of all known living organisms and some viruses.

**Drift, Analytical** - the systematic or scientific variability in a method, test, or procedure where results gradually deviate from the norm or the expected range.

**Drug Chemistry Section** - the discipline responsible for the analyzes of any substance seized under the state’s laws restricting the sale, manufacture, distribution and use of abusive-type drugs.

**Drug Standards Inventory** - the physical accounting of drug standards used in the Chemistry and Toxicology Sections.

**Duty** - a responsibility, task, etc., required by or relating to one’s occupation or position.

**Electrophoresis** - a technique for the separation of charged molecules by migration on a support medium under the influence of an electrical charge.

**Equivocal death** - manner of death (homicide, suicide, accident) remains undetermined after a complete investigation.

**Error Rate** - the frequency at which one deviates or strays from a correct standard.

**Essential** - a defined standard, which directly effects and has a fundamental impact on the work product of the laboratory or the integrity of the evidence.

**Evidence** - any item entrusted to the ADFS Forensic Laboratories for demonstrative examination.

**Evidence Inventory** - the physical accounting of evidence and records related thereto.

**Evidence Submission Form** - form used to receive evidence into the laboratory and to initiate request for laboratory examinations or analyses.

**Evidence Transfer** - a change in the possession of a custody item that must be documented in two specified locations (submitter and receiver). Transfers can occur from person to person, person to secure place, or secure place to secure place.

**Evidence Vault(s)** - a secured room or rooms for the storage of custody items.

**Examinations (Training)** - objective evaluative instruments designed to measure job-related knowledge, skills or abilities and usually conducted in one or more of these formats: written, oral, practical or moot court.

**Examinations (Evidential)** - the questioning, testing, comparing, or analyzing of a custody item in a prescribed manner that is helpful in forming a conclusion or judgment relative to the item

**Exception** - the temporary suspension of some essential element of a policy, procedure, or requirement caused by circumstances that are expected to return to normal at some point in the future. For the duration of the period, the policy, procedure, or requirement is temporarily modified. If the period is anticipated to last longer than one year, then the modification should be incorporated into the ADFS Quality or Operations manual.

**External Proficiency Test** - an exam process/instrument prepared by an outside provider and used as a quality assessment sample.

**Exsanguination** - bleeding to death.

**False negative** – test result that states that an analyte is absent, when, in fact, it is present above the established limit of detection for the analyte in question.

**False positive** – test result that states that an analyte is present, when, in fact, it is not present or, is present in an amount less than a threshold or designated cut-off concentration.

**Fire Debris** - a general term used to define the debris from a fire that is collected as evidence for laboratory examination.

**Firearms and Toolmarks Section** – a discipline responsible for the comparison of firearms, casings, projectiles and other evidence that may be associated through toolmarks. Toolmarks result whenever two items come into contact with sufficient force, such that one or both of the items bear markings resulting from the other item.

**Forensic** - the application of scientific knowledge to legal problems.

**Forensic biology** - the application of biology to law enforcement.

**Forensic Pathology** - a branch of pathology concerned with determining the cause of death by examination of a corpse.

**Forensic science** - the process of using science to resolve legal issues.

**Forensic Toxicology** - a discipline of forensic science concerned with the study of toxic substances or poisons, of which there are many thousands.

**Gas chromatography** - gas flowing through a coated tube separates compounds by their size, weight, and chemical reactivity with the coating of the tube or column.

**Gel** - support medium (agarose) that holds DNA molecules in place during the separation phase of electrophoresis.

**Genetics** - the study of inherited traits, genotype/phenotype relationships, and population/species differences in allele and genotype frequencies.

**Goal** - a statement of purpose defining the mission or intended outcome.

**Good Analytical Practice** - approved method to perform a specific analytical technique that influences the quality of the analysis.

**Good Laboratory Practice** - an approved method to perform a basic operation, activity, or service in a laboratory which influences or enhances the quality of its output.

**Histology** - is the anatomical study of the microscopic structure of tissues.

**Hypostasis** - the pooling of blood as it accumulates at the lowest parts of the body, being pulled down by gravity; is a method of determining the position of the body at/after death.

**Hypothermia** - this situation occurs when the core temperature of one's body falls below normal. It is the failure of the body to maintain adequate production of heat under conditions of extreme cold.

**IBIS (Integrated Ballistics Information System)** - a database used for acquiring, storing, and analyzing images of bullets and cartridge casings. Important - a defined standard, that is considered to be a key indicator of overall quality in the laboratory, but which may not directly affect the work product or the integrity of the evidence.

**Inspection** - a review or audit of areas, practices, procedures for compliance with existing policy.

**Inventory** - a detailed accounting of all items within a specified location. Examples include but are not limited to: evidence in the evidence vault, evidence in the possession of an analyst, drug standards in the secure storage area for drug standards, contents of a container, etc.

**Internal Proficiency Test** - an exam process/instrument originating from within the laboratory system and used as a quality assessment sample.

**Known sample** - biological material whose identity or type is established. An example of a known sample is a sample contributed by the close biological relative of a missing person.

**Known Standard** - a specimen from an identified source acquired for the purpose of comparison with the evidence.

**Laboratory** - a facility (1) employing at least two full-time employees who are qualified DNA analysts and (2) having and maintaining the capability to perform the DNA analysis on database and/or known samples at that facility.

**Laboratory Director (or Administrative) Case File Review** - a detailed final review of the case file documentation. A member other than the assigned analyst must conduct the Laboratory Director case file review on all case files.

**Laboratory Personnel** - ADFS members with specific laboratory responsibilities.

**Laboratory Satellite** - a member of a laboratory system that is managed by, but is physically separated from, a parent or regional laboratory.

**Laboratory System** - an organization containing at least two physically separate laboratory facilities that are independently managed under the control of a single superior in the chain of command.

**Laboratory support personnel** - employees who perform laboratory duties exclusive of analytical techniques on database and/or known samples.

**Lacerations** - anything that has been torn roughly for example - a rough cut.

**Limited Access** - access limited to personnel authorized by the laboratory director.

**Manner of death** - death occurs in one of four manners: natural, if caused solely by disease; accidental, if it occurs without apparent intent; suicide, if caused by the deceased; homicide, if someone other than the deceased caused it.

**Mass spectrometers** - an instrument used to both measure and analyze molecules under study. The process involves introducing enough energy into a target molecule to cause its ionization and disintegration. The resulting fragments are then analyzed, based on the mass to charge ratio and produces a "molecular fingerprint."

**Mass spectrometry** - this technique can be used to both measure and analyze molecules under study. It involves introducing enough energy into a target molecule to cause its ionization and disintegration. The resulting fragments are then analyzed, based on the mass/ charge ratio to produce a "molecular fingerprint."

**Medical Examiner** - government official, always a physician and often a forensic pathologist, charged with investigating sudden and unexpected deaths or deaths from injuries.

**Method** - the course of action or technique followed in conducting a specific analysis or comparison leading to an analytical result.

**NDIS**  - The National DNA Index System. NDIS is one component of CODIS—the national and highest-level index containing the DNA records contributed from participating federal, state, and local laboratories.

**Notes** - the documentation of procedures, standards, control and instruments used, observations made, results of tests performed, charts, graphs, photographs, sketches and other documents generated that are used to support the analyst’s conclusions.

**Objective** - a measurable, definable accomplishment that furthers the goals of the organization.

**Offender** - An individual who is required by statute to submit a sample for DNA analysis and databasing. The term “offender” includes individuals who are convicted of or arrested for a crime or juveniles adjudicated delinquent for an offense and required by state or federal law to provide a DNA sample for analysis and databasing.

**Open Proficiency Test** - an exam process/instrument where the analyst is aware that the sample is a proficiency test.

**Operations Manual** - a document stating procedures and protocols dealing with the day-to-day issues of ADFS business that does not deal directly with evidence or work product.

**Peer** - an individual having expertise in a specific functional area or discipline gained through documented training and experience.

**Performance Audits** - the review of laboratory administration, management, sections and/or analysts for compliance with policies, procedures, and operational effectiveness outlined in the ADFS Departmental Quality Manual.

**Policy** - a guiding principle, operating practice, or plan of action governing decisions made on behalf of an organization.

**Population** – the totality of items or units of material under consideration.

**Principle** - a basic rule, assumption or quality; a fixed or predetermined policy or mode of action.

**Probability** - the ratio of the number of outcomes in an exhaustive set of equally likely outcomes that produce a given event to the total number of possible outcomes.

**Procedure** - An established practice to be followed in performing a specified task or under specific circumstances.

**Process Development** - the act of defining and describing a process. It may include planning, architecture, design, implementation, and validation.

**Proficiency Test** - a process to evaluate the competence of an analyst/laboratory by evaluation of the results obtained on test materials. Involves the use of open, blind, reexamination, or known sample techniques.

**Property Inventory** - the physical accounting of capital equipment.

**Protocol** - a directive listing the procedures to be followed in performing a particular laboratory examination or operation. Also refers to the overall plan for analysis of a particular type of evidence.

**Postmortem** - after death

**Proper seal** - a seal that prevents loss, cross-transfer, or contamination while ensuring that attempted entry into the container is detectable. A compliant seal may include a heat seal, tape seal, or a lock with the initials of the person creating the seal being placed on the seal or across the seal onto the container when possible.

**Pulmonary Edema** – an abnormal buildup of fluid in the air sacs of the lungs.

**Qualifying Test** - measures proficiency in both technical skills and knowledge. Also known as Competency Test.

**Quality** - the degree of excellence achieved by laboratory through its work product.

**Quality Assessment** - the overall system of activities designed to provide assurance that quality control activities are effective.

**Quality Assurance** - those planned and systematic actions necessary to provide sufficient confidence that a laboratory’s product or service will satisfy given requirements for quality.

**Quality Audit** - a management tool used to evaluate and confirm activities related to quality.

**Quality Control** - internal activities, or activities conducted according to externally established standards, used to monitor the quality of analytical data and to ensure that it satisfies specified criteria.

**Quality Manual** - a document stating the quality policy and describing the various elements of the quality system and quality practices of the laboratory system. The Forensic Science Quality Manual is the “ADFS Departmental Quality Manual”.

**Quality Manager** - the individual designated by top management having authority and responsibility to ensure that the requirements of the ADFS quality system are implemented and maintained.

**Quality System** - the organizational structure, responsibilities, procedures, processes, and resources for implementing quality management

**Qualitative analysis** - determination of the identity of a substance.

**Random** - 1) having no specific pattern 2) produced by chance or unplanned in nature

**Reliability** - the extent to which an experiment, test or measuring procedure yields the same the same results on repeated trials.

**Reagent** - a substance that, because of the reactions it causes, is used in analysis and synthesis.

**Reagent blank control**  - an analytical control sample that contains no template DNA and is used to monitor contamination from extraction to final fragment or sequence analysis. This control is treated the same as, and parallel to, the database, known, or casework reference samples being analyzed.

**Re-Examination Technique** - exhibits (the questioned and known items of original evidence) of a previously analyzed case are examined and a conclusion reached by the reviewer, prior to the reviewer knowing the analysts’ conclusions.

**Reference Standard** - a sample acquired or prepared that has known properties for the purpose of calibrating equipment and/or for use as a control in experiments

**Reliability** - the quality of being dependable. May refer to personnel, materials, reagents, methods, and equipment.

**Retinal Hemorrhage** - Abnormal bleeding of the blood vessels in the retina, the membrane in the back of the eye.

**Rigor mortis** - Stiffening of the body after death; a time dependent change that helps determine time of death.

**Root Cause Analysis** - the process of determining the underlying cause of a problem which might warrant corrective action. A root cause analysis is not a simple re-statement of what is wrong, but is a process of repeatedly asking probing questions about what went wrong, obtaining answers, and asking questions about the answers until the underlying cause of the problem is determined. Problems tend to recur unless the root cause is determined and corrected.

**Report** - an official record of information relating to investigations and analyses conducted by ADFS or other parties. Reports are generated for casework and proficiency testing examinations. Casework reports are normally generated using the LIMS format, while proficiency test reports may be prepared and distributed according to policies set by individual ADFS disciplines.

**Rule** - an authoritative direction for conduct or procedure.

**Safety & Security Inspections** - the review or audit of procedures and equipment to ensure the safety and security of laboratory personnel and facilities

**Scene** - an area, object, or person external to the examining forensic laboratory facility, from which evidence is identified, documented, collected, and/or interpreted.

**Science** - A systematic gathering of knowledge. The observation, identification, description, experimental investigation and the theoretical explanation of phenomena.

**Scientific method** - Procedures for the systematic gathering of knowledge.  These procedures generally involve:

* state the problem
* develop a hypothesis
* test the hypothesis
* form a theory
* use theories to predict events
* theory becomes law

**Scientist** - One learned in science and esp. natural science.

**Section Evidence Area** - a secured room or cabinet for temporary storage of evidence by analysts.

**Secure area** - a locked space (for example, cabinet, vault or room) with access restricted to personnel authorized by the laboratory director.

**Seminal** - pertaining to or containing or consisting of semen; "seminal fluid".

**Serology** - a sub-discipline of biology, which is concerned with the identification of biological materials through the use of various tests.

**Solvents** - liquids, usually petroleum based, that can dissolve solids and keep them in solution. May contribute to pollution through evaporation.

**Spatter** - dispersion of small blood droplets due to the forceful projection of blood.

**Standard** - a statement that describes an acceptable level of performance, excellence, or attainment in that particular activity.

**Stippling** - A disposition of fragments of powder into the skin as the result of a gunshot wound of relatively close range.

**Subarachnoid hemorrhage** - bleeding in the area between the brain and the thin tissues that cover the brain.

**Subdural hematoma** - A collection of blood on the surface of the brain.

**Submission** - any single delivery of evidence in a specific investigation.

**Submitting Agency** - any agency that submits evidence for examination to any ADFS office. Also referred to as the “Contributing Agency, Contributor, or Customer”.

**Supervised Casework** - analysis performed by a member under the supervision of a certified analyst. This is generally performed as part of training or as part of an assessment of an experienced analyst.

**Technical Casework Review** - the detailed technical review of bench notes, data, observations and analytical results that form the basis for the scientific conclusion(s).

**Technical Operations Manual** - protocols developed for analyses, examination, comparison, or identification that prescribes the Good Analytical Practice in a discipline.

**Technical Operations** - laboratory activities specific to a discipline directly related to the analysis or examination of evidence for the purpose of providing information in a laboratory report, whether verbal or written.

**Testable** - to be proven true or false.

**Testability** - a critical evaluation process that supports or refutes a hypothesis.

**Testimony Review** - the observation, evaluation, and feedback from the sworn testimony given by a staff member as part of his/her normal job duties. Also may be a reviewed by an officer of the court.

**Traceability** - the property of a result of a measurement whereby it can be related to appropriate standards, generally international or national standards, through an unbroken chain of comparisons.

**Theorem** - an idea accepted or proposed as demonstrable truth; often as part of a general theory.

**Theory** - most logical explanation of an event that occurs in nature.

**Tissue** - a part of an organism consisting of an aggregate of cells having a similar structure and function.

**Tomography** - the technique of obtaining an X-ray picture of a selected layer in an object.

**Toxicology (forensic science discipline)** - analysis of biological samples for the presence of drugs and other potentially toxic materials.

**Trace Evidence** - any analytical procedure utilizing either chemical or instrumental techniques not specifically covered in other forensic disciplines.

**Training Program** - a written description of activities to be performed by a trainee status member of the Forensic Laboratory for the purpose of enhancing job-related knowledge, skills or abilities.

**Trauma** - a physical injury or wound caused by an external force of violence, which may cause death or permanent disability. Trauma is also used to describe severe emotional or psychological shock or distress.

**Turnaround Time** - the total time a Service Request is in the laboratory, from its receipt at Evidence Intake until a formal report is issued

**Universal Precautions** - an approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infectious for blood borne pathogens.

**Validation** - is the process of performing a set of experiments that establish the efficacy and reliability of a technique or procedure or modification thereof. Validation includes specification of the requirements, determination of the characteristics of the methods, a check that the requirements can be fulfilled by using the method and a statement on the validity.

**Verification** - To confirm the truth or correctness of something. Vitreous humor - The ocular fluid (from within the eye) that is often used as a sample for testing in postmortem toxicology.