Las Vegas Metropolitan Police Department
Forensic Laboratory
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Las Vegas, NV 89118

TECHNICAL REQUIREMENTS MANUAL
# LVMPD FORENSIC HANDBOOK

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**NOTE:** Hyperlinks were accurate at the time of manual publication.
5.1 Title: General Technical Requirements

Definition(s)

Expiration Dates- The date of expiration for chemicals and/or reagents is defined as midnight (2400 hours) of the listed date. If the expiration date is listed in FRED, the expiration date in FRED is set to midnight (0000 hours) of the listed date. To keep chemicals and/or reagents from expiring one day early in FRED the expiration date is listed one day later than the determined expiration date (e.g., 04/09/2014 expiration is listed as 04/10/2014).

Reference Material- Material, sufficiently homogenous and stable with respect to one or more specified properties, which has been established to be fit for its intended use in a measurement process (e.g., drugs, drug mixes in a variety of matrices, Arson Test Mixture).

Secondary Reference Material- Reference material obtained from a secondary provider (not directly from the source or manufacturer); used as what it is purported to be and/or verified with a reliable source (e.g., duct tape purchased from a home improvement store for the purposes of Trace comparison, pharmaceutical tablet purchased from a pharmacy).

Until Consumed- FRED does not allow for an expiration date of “Until Consumed”. 9/9/9999 will be used to signify an “Until Consumed” expiration date for chemicals/reagents in FRED.

5.1.1 Factors Contributing to the Reliability of Testing
There are many factors that affect the quality of tests performed by the Laboratory. The factors listed below that contribute to the correctness and reliability of testing are addressed as follows:

- Human Factors (Personnel) (5.2)
- Accommodation and environmental conditions (5.3)
- Test and calibration methods and method validation (5.4)
- Equipment (5.5)
- Measurement traceability (5.6)
- Sampling (5.7)
- Handling of test and calibration items (5.8)
5.1.2 Factors Considered in Developing Test Methods and Procedures, Training and Qualification of Personnel and Selection/Calibration of Equipment

The following areas have been considered in developing test methods, in the training and qualification of personnel, and in the selection and calibration of equipment used:

- Training and competency testing programs have been developed for each Detail/Unit for new employees and for existing employees as the need arises.
- Proficiency testing is required for each analyst actively engaged in casework (see 5.9.3 - Proficiency Testing Program for further details).
- All analytical procedures will be written and validated by each Detail/Unit and approved by the appropriate Forensic Laboratory Manager/Supervisor/DNA Technical Leader and Quality Manager/designee prior to use in casework.
- Procedures shall be established for the calibration and quality control checks for instruments and equipment producing quantitative or qualitative data that have a significant effect on the results.

The factors considered for contribution to the total uncertainty of measurement for quantitative analyses are listed in the appropriate Detail/Unit Technical Manual and/or in the documentation containing the determined estimation of uncertainty.

5.1.3 Reagents and Standards

Reagent Preparation Logs

Preparation of reagents, buffers, standards and solutions will be documented in a Reagent Preparation Log stored in the Resource Manager Object Repository.

Logs will contain the following information:

- identity of reagent (including concentration or molarity if applicable)
- ingredients and their lot numbers (water may not require a lot number, but should be listed as an ingredient)
- internal lot number (assignment defined below)
- quality control checks performed (if required by Technical Manual) and results
- name or P# and initials of person preparing the reagent
- expiration date or “until consumed” if no expiration date has been established

When a solution is prepared to be used in a single examination, then the preparation need not be placed in the reagent preparation log. Instead, information that would normally be recorded in the log will be recorded with the case documentation.
Internal Lot Numbers will be assigned in the following manner:
The lot number will begin with the letter corresponding to the appropriate
Detail/Unit (Crime Scene Investigation’s reagent preparations are located in a
logbook):

- DNA – D
- Seized Drugs – C
- Trace – A
- Toxicology – T
- Latent Prints – LP
- Firearms – F
- Crime Scene Investigations – CS

The letter will be followed by a 6 digit number indicating the date of
preparation (mmddyy). The 6 digit number will be followed by a dash. All
reagents made on certain day per Detail/Unit will be sequentially numbered
(which will follow the dash). Example: Sodium Nitroprusside is made up for
the Seized Drugs Unit on November 21, 2001. It is the second reagent made
for Seized Drugs Unit that day. The lot number would be C112101-2.

In the Biology/DNA Detail the dash will be followed by letters indicating the
type of reagent that was prepared:

- 1X 3130 Buffer – 1XB
- Acid Phosphatase Test (AP) Step A – APA
- Acid Phosphatase Test (AP) Step B – APB
- Acid Phosphatase Test (AP) Buffer - APBUF
- Acid Phosphatase Overlay Stock Step I – APO1
- Acid Phosphatase Overlay Stock Step II – APO2
- Acid Phosphatase Overlay Working Solution – WS
- Blood Presumptive Standard -BL
- Digest Buffer – DB
- DTT – DTT
- EZ1 Carrier RNA- cRNA
- NaCl – SC
- PBS – PBS
- Phenolphthalein Stock Solution – PTS
- Phenolphthalein Working Solution – PT1
- Phenolphthalein Working Solution (Peroxide) – PT2
- Pro K Stock - PKS
- Pro K Working Solution – PK
- Quantifier Trio Standards – TRIO
- Saliva Presumptive Standard - SAL
- Semen Presumptive Standard- SL
- TE-4 Buffer – TE

Example: TE Buffer is made up for the Biology/DNA Detail on January 21,
2008. The lot # would be D012108-TE

Container Labeling
At a minimum, all laboratory preparations will be labeled with the following information:

- identity of the reagent
- laboratory assigned lot number
- expiration date
- initials of the preparer
- storage requirements

For each preparation, physical and health hazard symbol warnings will be displayed on the container or within the respective Laboratory Detail/Unit.

**Manufacturer Chemicals**

Policies regarding the labeling of chemicals that have undergone no preparation are detailed in **3.3.5 - Labeling** in the **Safety Manual**.

Chemicals that have undergone no preparation, but have been transferred to a secondary container must bear the identity of the substance, name of the manufacturer, the lot number and the expiration date.

For each product, physical and health hazard symbol warnings will be displayed on the container or within the respective Laboratory Detail/Unit when warranted.

**Secondary Reference Materials**

For tracking purposes, secondary reference materials will be assigned secondary lot numbers. These lot number assignments will be maintained by individual Detail/Units. Documentation will include the identity of the substance, the manufacturer and the Laboratory defined secondary lot number (see below). Other information such as verification against a primary reference material can also be recorded.

**Assigning Secondary Lot Numbers:**

The lot number will begin with “2S”. The next characters will be the letter used by the Detail/Unit from the above internal lot number procedure followed by a sequential number. Example: The Trace Materials Unit acquires some gasoline to be used as a secondary reference material. It is the third reference material the unit has received since the implementation of this procedure; its secondary lot number would be “2SA3”.

Breath Alcohol solutions will be numbered as described in the Breath Alcohol Technical Manual.

**5.1.3.1 Chemical/Reagent Issues and Expired Chemicals/Reagents**

If any laboratory prepared reagent does not meet required quality standards or is found to be prepared in error, use of the substance will cease immediately, a notation will be made in the Reagent Preparation Log and the appropriate Forensic Laboratory Manager/Supervisor/DNA Technical Leader
will be notified. If the reagent was utilized in the examination of casework, a CAPA Workflow will be initiated.

If any reagent or material received from a supplier does not meet required quality standards, use of the reagent/material will cease immediately and the appropriate Forensic Laboratory Manager/Supervisor/DNA Technical Leader will be notified. If the reagent or material was utilized in the examination of casework, a CAPA Workflow will be initiated.

Reagents, and/or chemicals which have a manufacturer’s expiration, use by, or retest date may be used in analyses past these dates, as determined by each Detail/Unit. If expired materials, reagents, and/or chemicals are used, they must pass quality control procedures before use or, if appropriate, concurrent with use. The procedures for the use and quality control checks of expired materials, reagents, and/or chemicals will be defined in Detail/Unit Technical Manuals. If a Detail/Unit determines that expired materials, reagents, and/or chemicals will not be used, they must be disposed of in a safe manner or clearly marked if they are retained for research/training purposes.

5.1.4 Reagent Reliability Testing
The individual Details/Units of the Laboratory will establish the formulations and necessary quality control checks for reagents and standards particular to that Detail/Unit. The formulations will be contained in the Technical Manuals. Quality control checks of those reagents, standards, and materials called for in each specific Technical Manual will be performed prior to, or if appropriate concurrent with, use in casework.
### 5.2 Title: Personnel

**Definition(s)**

**Competency Test** - The evaluation of a person’s knowledge and ability prior to performing independent work in forensic casework. Prior to December 17, 2012, the LVMPD Forensic Laboratory referred to competency tests as qualifying tests.

#### 5.2.1 Qualifications

Forensic Laboratory Managers, Forensic Laboratory Supervisors and/or the DNA Technical Leader in the Biology/DNA Detail will ensure the competence of all staff that operate instruments/equipment, perform tests, evaluate results, and sign Laboratory reports by requiring successful completion of training requirements as specified in Detail/Unit Training Manuals. Personnel shall be qualified on the basis of appropriate education, training, experience and/or demonstrated skills, as required. Appropriate supervision for those undergoing training shall be provided.

#### 5.2.1.1 Personnel Educational Requirements

Personnel who issue a report that includes the result of a test, a series of tests, an opinion, or an interpretation (Forensic Scientists, Forensic Laboratory Technologists and NIBIN Technicians) shall meet the minimum education requirements below:

**Biology/DNA Detail**

A baccalaureate or an advanced degree from an accredited college or university in a chemical, physical, or biological science, or forensic science.

In addition to the above requirement, Forensic Scientists in the Biology/DNA Detail must also meet the educational requirements for analyst established in the *Quality Assurance Standards for Forensic DNA Testing Laboratories* and the *Quality Assurance Standards for DNA Databasing Laboratories* issued by the FBI.

**Chemistry and Toxicology Details**

A baccalaureate or an advanced degree from an accredited college or university in a chemical, physical, or biological science or forensic science.

In addition to the above requirement, Forensic Scientists in the Chemistry and Toxicology Details shall have successfully completed 24 college credits in chemistry.
Firearms and Latent Print Details
Meet the educational requirements specified in the appropriate Class Specifications for their date of hire.

5.2.1.2 Minimum Education and Experience Requirements
With the exception of NIBIN Technician, the minimum education and experience requirements that must be met for ensuring competence for the following personnel are located in the class specifications maintained by the LVMPD Office of Human Resources:

a) designated as Laboratory Director;
b) designated as technical management
   ▪ DNA Technical Leader in the Biology/DNA Detail
   ▪ Forensic Lab Managers in the Chemistry, Firearms, Latent Prints and Toxicology Details
c) performing specific tasks related to testing
   ▪ Forensic Scientist Trainee, I and II
   ▪ Forensic Technologist
d) performing specific tasks that create items (e.g., test-fired ammunition, photos, trace evidence collection, DNA swabs, etc.) that could be used for testing.
   ▪ NIBIN Technicians- NIBIN Technicians must meet the minimum education and experience requirements specified in the appropriate Class Specifications for their date of hire.

5.2.2 Formal Laboratory Training Programs
Those classifications which allow for entry level employees will have formal training programs designed to prepare the trainee for meeting the performance standards of competent casework analysis in particular areas of expertise. Training programs for all Details/Units will be established in written format. The program will include mechanisms for documenting the training received.

In the event employees are hired with previous experience, the formal technical training programs in these areas of expertise may be abbreviated to the extent that the past experience has been demonstrated to be relevant and sufficient. Documentation of the relevance and sufficiency of the previous experience must be maintained.

Internal Training Evaluation forms will be completed for all formal, technical internal training to evaluate the effectiveness of the training. The completed forms will be reviewed by the Quality Manager and stored in Qualtrax.

5.2.2.1 Training Program Requirements
To the extent necessary based on job function, training programs shall include:

a) the skills, knowledge, and abilities required for adequate job performance;
b) a general knowledge of Forensic Science;
c) the application of ethical practices in Forensic Sciences;
d) criminal law, civil law, and testimony;
e) provisions for retraining;
   Retraining may be required when an employee is away from a particular
category of testing in a Detail/Unit for some time and returns and/or is
reassigned to the area with the expectation of casework analyses. In this
instance, retraining may simply consist of one or more of the following:
reading assignments, analysis of a representative number of case
samples, and/or a competency test.

Remedial training may be necessary as a result of a proficiency testing
irregularity, or a laboratory problem. The remedial training may include
completion of training exercises/samples or may be provided by an
outside source. The remedial training program will be tailored to the
individual's needs. Any portion of the Detail/Unit Training Manuals may
be used as remedial training, if needed. The analyst will typically be
required to successfully complete a competency test prior to performing
independent casework analysis. An evaluation period may apply, during
which time the analyst's work may be subject to increased technical
review.

Remedial training may be included in the formal Laboratory training
program at any time, if warranted.

f) provisions for maintenance of skills and expertise;
   Keeping abreast of new techniques, trends, and analyses is an important
component for technical competence in the forensic field. Employee
training and development in the functional area of assignment is
necessary. As such, management is committed to providing training to
members of the Forensic Laboratory in accordance with department
regulation (Department Manual 5/108.06 - Advanced Training
Program), laboratory needs, and fiscal responsibility. It is advantageous
for members of the Laboratory to meet an annual training goal of eight
training hours per year, which may be achieved through in-service
training or from external sources as funding allows. Members of the
Biology/DNA Detail will ensure compliance with the continuing
educational requirements as outlined in the Quality Assurance Standards.

Members will submit their training requests for outside technical training
opportunities, meetings and seminars specifically applicable to the
forensic services they conduct, and for in-service training through their
respective Forensic Laboratory Managers/Supervisors. Forensic
Laboratory Managers/Supervisors will also determine the amount and
type of training required to fulfill the missions of the Laboratory and
department and advise the Laboratory Director of their ongoing
assessment.
Outside Training

Laboratory members will follow the procedures for travel and training outlined in the Department Manual 5/103.04 – Travel/Training Requests. In addition, the following policy will be adhered to when requesting training and travel from outside sources:

1. Preferably, at least two months prior to the requested training, members will submit their request to the Forensic Laboratory Manager/Supervisor. Early submittal of training requests, allows for better preparation from a planning and budgetary standpoint.

2. The Laboratory Director may approve the requested training based on a number of criteria including, but not limited to: if it is deemed applicable, of benefit to the Laboratory and goals of the LVMPD, if adequate funding is available, and if workload permits. Laboratory members will be advised as to whether the training was approved or denied by their respective Forensic Laboratory Manager/Supervisor or the Laboratory Director.

3. The Laboratory Director may also request that the member make certain tentative arrangements (such as room reservations, with a confirmation number) to ensure availability at the training site. Such arrangements will be coordinated with the Travel Office, whose normal duties are to plan the travel of all department employees.

4. Members of the Laboratory will also note “training given” and “training received” in Employee Self Service (ESS). Any training received at the employee’s own expense may be added to the employee’s records.

5. With the exception of overnight trips, the training/travel request process does not apply to routine trips to accomplish LVMPD business, such as breath instrument calibration runs.

In-service Training

All new employees are required to attend a civilian orientation established to acclimate them to the LVMPD environment. This training is designed and scheduled by the Training Section.

The Training Section also holds a variety of in-service classes for both the civilian and commissioned members of the department. If a Laboratory member wishes to attend a specific type of in-service training, the request must be made through and approved by the respective Forensic Laboratory Manager/Supervisor. Registration for the in-service training can be accomplished through UMLV. Failure to attend previously reserved training may result in sanctions from the Training Section.

Training Records and Programs

For all external technical training, employees will complete the appropriate steps in the External Training- Forensic Lab Workflow in Qualtrax. The External Training- Forensic Lab Workflow is used to rate the effectiveness of the training and will be forwarded to the appropriate
Detail/Unit Forensic Laboratory Manager/Supervisor for completion of the Workflow. Instructions for completion of the Workflow are available in Qualtrax.

In addition, the External Training- Forensic Lab Workflow will require an update to the Curricula Vitae for all external technical training received.

Copies of training certificates or other training documents (e.g., syllabus, etc.) will be scanned by the employee and uploaded into Qualtrax for inclusion in the employee's Qualifications File. Every Forensic Laboratory employee has a designated Training Certificates folder in Qualtrax with the appropriate rights to upload into their designated folder. The training certificate will be attached to the External Training- Forensic Lab Workflow in the appropriate step.

In the Biology/DNA Detail, the training certificates or other training documents (e.g., syllabus, etc.) will be provided to the DNA Technical Leader for approval before being uploaded into Qualtrax.

Employees will record their training hours in ESS for all training.

**Hosting Meetings and Seminars**
Las Vegas is a particularly good place to hold meetings and seminars, and frequently it is in the best interest of the Laboratory to act as the host laboratory for various forensic groups. However, putting on such events requires much time and energy on the part of the host laboratory. Laboratory Managers and the Laboratory Director will be advised prior to members volunteering to host a meeting to ensure that the effort will not conflict with case output or meeting department and Laboratory goals.

**Professional Development**
It is this Department’s policy to provide career development as outlined in LVMPD Department Manual 5/101.50 - Career Development Program. Further, due to the professional and scientific nature of the work performed by Forensic Laboratory members, additional emphasis is placed on training and development in order to assure technical competency. The continued professional development of Laboratory members can occur in many ways and may include:

- Attendance at professionally sponsored classes, seminars and conferences
- Seminars/classes offered by the LVMPD Training Bureau or by the Laboratory in conjunction with training providers
- Payment of dues for membership in a professional organization related to job duties (suspended)
- Attendance at meetings held by professional forensic organizations
- Exchange of information with other Forensic Laboratories through visiting scientist opportunities or internet group lists
- Mentoring by another LVMPD employee or by a Forensic Scientist from another Laboratory
- Payment for pursuit of peer-based individual certification related to job function, as offered by an appropriately credentialed certifying body (non-mandatory certification payment has been suspended)
- Opportunities for research
- Availability of a library of various texts and journals and access to the internet
- Routing journals, publications or articles of forensic interest through the Laboratory
- Opportunities to act in place of Forensic Laboratory Managers, the Quality Manager, the DNA Technical Leader, Forensic Laboratory Supervisors or the Laboratory Director during their absence

Members are encouraged to participate in Department committees related to their job function or in the strategic planning process. Members are also urged to become active in professional forensic organizations, through committee involvement, holding offices in the organization, or research opportunities. Involvement in the field provides opportunities for growth of both the seasoned professional and the new Forensic Scientist.

g) criteria for acceptable performance:
Criteria for acceptable performance for the Detail/Unit training programs is outlined in the Detail/Unit Training Manuals.

Library and Reference Collections
The Forensic Laboratory library contains books, general reference and resource material, and journals that apply to forensic science and related topics. Materials obtained by employees as a result of training received at department expense are the property of the LVMPD and should be placed in the library or the specific Detail/Unit for the benefit of the other forensic employees.

It is important that the Laboratory maintains the most current information regarding the multiple specialty areas of forensic science. Employees are encouraged to request the latest reference materials and relevant publications through the purchasing process.

5.2.2.2 Competency Testing
Each analyst, regardless of academic qualifications or past work experience, shall complete a competency test(s) and achieve the intended result(s) prior to performing testing on a test item (evidence) or performing specific tasks that create items that could be used for testing. These tests are to be completed without assistance from other Laboratory personnel or individuals from outside the LVMPD Laboratory.
The competency test(s) shall, at a minimum include:

- Practical examination(s) of sufficient unknown samples to cover the spectrum of assigned duties and to evaluate the individual’s ability to perform proper testing methods and appropriate note taking;
- A test report to demonstrate the individual’s ability to properly convey results and/or conclusions and the significance of those results/conclusions; and
- Providing testimony (moot court).

Upon successful completion of a competency test, the analyst will receive a Certificate of Competency.

All analysts will perform a period of supervised casework before performing independent casework analyses.

The successful completion of a competency test will satisfy that category of testing’s Proficiency Test requirement for the current year for that individual with the exception of DNA analysts. DNA analysts must enter the proficiency testing cycle according to the timeframe designated in the Quality Assurance Standards for Forensic DNA Testing and the Quality Assurance Standards for DNA Databasing Laboratories documents.

5.2.3 Contract Workers
The Laboratory shall use personnel who are employed by, or under contract to the LVMPD. Contract workers may be utilized by the Forensic Laboratory to provide training, complete a specific project (to include outsourcing), or temporarily fill a vacant position in a Detail/Unit in which they are proficient. Contract workers are subjected to a background investigation. Contract workers, if performing casework analyses, are assigned to a Detail/Unit supervised by a Forensic Laboratory Manager or a Forensic Laboratory Supervisor and are subject to all of the same requirements of the quality system as a Forensic Scientist, including the successful completion of a competency test(s) prior to beginning casework analysis.

5.2.4 Job Descriptions and Class Specifications
A number of different class specifications can be assigned to the Laboratory. These class specifications are:

- Director of Laboratory Services
- Forensic Laboratory Manager
- DNA Technical Lead
- Forensic Laboratory Supervisor
- CODIS Administrator
- Forensic Scientist I and II
- Forensic Scientist Trainee
- Forensic Laboratory Technologist
- Forensic Laboratory Aide
- Evidence Technician
- Senior Law Enforcement Support Technician (Sr. LEST)
Law Enforcement Support Technician (LEST)
Part-time Laboratory Assistant- may perform Lab Aide functions
Part-time Investigative Aide - may perform NIBIN functions
Part-time Support Assistant - may perform latent print support functions, clerical functions or provide general assistance

In accordance with the policies and procedures of the LVMPD, class specifications are maintained by the LVMPD Office of Human Resources, who has the ultimate responsibility for developing, maintaining, and updating applicable class specifications.

**NIBIN Technician**
The following job description was developed by the Forensic Laboratory and may apply to the Part-time Investigative Aide class specification or any member of the LVMPD performing NIBIN Technician duties in their current class specification working in a TDY capacity.

NIBIN Technicians may be assigned to the Forensic Laboratory operating in an Investigative Aide Class Specification, or in a TDY or permanent function in a different Class Specification. Regardless of the Class Specification the employee currently falls under, the following Job Description shall be used to describe the duties performed for anyone temporarily or permanently assigned to support the NIBIN program.

The National Integrated Ballistic Information Network (NIBIN) is an electronic database of firearm related images managed by the Bureau of Alcohol, Tobacco, Firearms and Explosives (BATFE). NIBIN allows for the comparison of ballistic evidence from crime scenes and impounded firearms to aid in solving and preventing firearms related violent crimes. 

The primary job of the NIBIN Technician is to test fire eligible impounded firearms for the entry of cartridge cases into the NIBIN Database as part of the Las Vegas Metropolitan Police Department’s ballistic imaging program.

The typical job duties of a NIBIN Technician are:

- Handle, examine and test fire a variety of impounded firearms following all safety procedures, and laboratory protocols, and NIBIN Squad protocols.
- Use time and other available Department provided resources in a reasonable and cost efficient manner.
- Conduct and complete assigned tasks with a level of independence requiring some guidance but not repeated in same or similar circumstances. Document pertinent data and examination results in the Forensic Laboratory’s Information Management Database
- Microscopically screen and enter test fired cartridge cases into NIBIN
- Issue Forensic Lab Reports pertaining to work performed.
5.2.5 Qualifications Files
The Laboratory maintains a qualifications file for all technical personnel in Qualtrax. The qualifications file will include the following:

- Diplomas and transcripts
- Technical training certificates
- Authorization Memos
- Certificates of Competency
- Curricula Vitae
- Competency documentation
- Training documentation

The Curricula Vitae are maintained by the employee. The Curricula Vitae detail the education, training, and experience of each employee. All technical employees are required to complete the Curricula Vitae in detail and upload it into Qualtrax for approval by the appropriate Forensic Laboratory Manager/DNA Technical Leader/Supervisor.

The Curricula Vitae should be updated by the employee each time new training is received.

The Curricula Vitae will be reviewed annually by the analysts at the time of their annual performance appraisal, to ensure that they are complete and up to date.

The Curricula Vitae will be used to meet the legislation requiring the district attorney’s office to provide an expert’s qualifications to the defense. The Curricula Vitae can be sent electronically by a Forensic Laboratory employee to any prosecutors upon request.

Certificates of Competency
The Laboratory Director authorizes personnel to perform specific types of testing, to issue test reports and to operate related instrumentation/equipment. This authorization is documented by the issuance of a certificate of competency. The Laboratory Director in conjunction with the DNA Technical Leader provides the above authorization in the Biology/DNA Detail. Certificates of competency are maintained in Qualtrax.

All employees issued certificates of competency are authorized to use all equipment associated with the analyses for which the certificate was issued, as well as prepare reports for such analyses.

5.2.5/5.2.5.1 Authorization Memos
Based on appropriate education, training, experience and the demonstration of necessary skills, the Laboratory Director, Detail/Unit Forensic Laboratory Managers/Supervisors and/or the DNA Technical Leader authorize personnel to do one or more of the following:

- Perform testing
- Perform sampling
- Operate equipment
- Give opinions/interpretations
- Issue reports
- Perform technical review
- Evaluate results and conclusions
- The performance of specific tasks that create items that could be used for testing

This authorization is documented on a LVMPD Memorandum. These Authorization Memos are maintained in Qualtrax.

In the Biology/DNA Detail, the Authorization Memos are issued by the DNA Technical Leader.
5.3 Title: Accommodation and Environmental Conditions

5.3.1 Laboratory Facilities
The accommodations and environmental conditions of the Laboratory are suitable for instrumentation/equipment and proper performance of tests. This will be maintained through the proper performance and operation of heating/cooling, electrical systems and safety. Requirements for environmental conditions associated with a particular protocol, method, or reagent are documented in Detail/Unit Technical Manuals, if required.

5.3.2 Monitoring Environmental Conditions
Environmental conditions will be monitored and records maintained for those procedures as required in the Detail/Unit specific Manuals. If environmental conditions are observed which jeopardize the results of testing, the testing will be halted and the appropriate Forensic Laboratory Manager/Supervisor/DNA Technical Leader will be notified.

5.3.3 Separation of Incompatible Testing Procedures
The design of the Laboratory areas used for testing will take into account the type of testing performed and separate any testing procedures that are not compatible (the separation may be accomplished by physical space and/or time). Steps will be taken to prevent any cross contamination of evidence (see the Detail/Unit Technical Manuals for further details, if applicable).

5.3.4 Laboratory Security
Laboratory security is crucial to ensure the preservation and integrity of evidence in Laboratory custody, to protect the assets and records within the Laboratory, to ensure the safety of Laboratory personnel, and to meet Laboratory accreditation standards. The Forensic Laboratory building is secured with an intrusion alarm system, a LVMPD wide computerized network, known as the Millennium System, interior push button combination locks and locks on all exterior doors.

The DNA Annex is secured with an intrusion alarm system, the Millennium System, and locks on all exterior doors.

The Millennium System is programmed by the Facilities Section of the General Services Bureau and maintained by the Quality Manager/designee of the Forensic Laboratory. The Laboratory Director determines who has access to secure doors with the exception of LVMPD Executive Staff who has access to every door on the Department.
5.3.4.1 Forensic Laboratory Security

Intrusion Alarm System/Entrance and Exits
All exterior Forensic Laboratory doors are locked. Entry into the building perimeter is controlled by the Millennium System. The Millennium System utilizes electronic readers located at specific exterior doors, which can recognize electronic devices known as proximity cards and fobs. The Laboratory Director determines who has access to secure doors.

Security will be maintained to prevent unauthorized access to the Laboratory. Certain exterior doors are not to be used for routine access including the “Breath Alcohol”, “Clan Lab”, and “West Hallway” (door between Toxicology and Chemistry) doors. All doors are equipped with emergency panic bars and may be used for emergencies and/or equipment access.

The Forensic Laboratory will be properly alarmed and secured whenever it is vacant during off-duty hours. The Forensic Laboratory building is secured with an alarm system which utilizes key pads for arming and disarming, motion detectors, glass breaks and a cellular relay to the monitoring company in the event that power is cut to the system.

Four digit alarm codes are chosen by each employee, and are to be kept strictly confidential and not to be shared or released. Alarms are monitored by a contracted company who maintains a list of employee specific six digit codes. In the event an alarm is set off by a Forensic Laboratory employee in error, the employee will immediately call the alarm company and supply the alarm dispatch center with their name and six digit code. If an alarm sounds in an area that is unoccupied and there is no call from an employee, the monitoring company will dispatch a private security vehicle and notify LVMPD Communications Bureau (Dispatch) who will dispatch a Police Officer to investigate. Meanwhile, a Laboratory member will be contacted to respond to the Laboratory to address any security issues.

The last member to leave at the close of the work day is responsible for setting the perimeter intrusion alarm and ensuring that all other sections of the building are vacant.

Emergency Access
Emergency contact information will be provided by the Bureau Commander to the Communications Bureau detailing the emergency contacts for the Criminalistics Bureau buildings.

Those members of the Laboratory called out for an emergency associated with the facilities will prepare a memorandum for the Laboratory Director briefly describing the circumstances surrounding the call out.

Interior Access
Entry into Laboratory areas and Laboratory evidence vaults is also controlled by the Millennium System.
Entry to the various areas of the Laboratory is governed by job assignment and work days and hours. Employees will be notified of their access limitations. It is each employee’s responsibility to ensure that they are entering authorized areas during authorized times. In addition to the assigned cards and fobs, there are a set of visitor cards that are available for temporary assignment to trainees, new employees, and other qualified personnel. The Forensic Laboratory Manager of each Detail/Unit has access to a visitor card granting appropriate access to their Detail. The Quality Manager/designee has access to two visitor cards. One allowing generic access to the building (no vault access) and one allowing full access to the Forensic Laboratory building. The full access visitor card will only be signed out to a member of the management team.

Entry into the Laboratory evidence vaults is controlled by the Millennium System. Entry into the Laboratory evidence vaults is limited to LVMPD Executive Staff and those Forensic Laboratory members requiring access as determined by Detail/Unit of assignment and class specification (e.g., Forensic Laboratory members assigned to the Chemistry Detail have access to the Chemistry vault, but not the Latent Print vault). See 5.8.4 – Evidence Security and Storage for further details.

The Information Technologies (IT) Bureau Operations (Services) Section has been granted unescorted access in the Forensic Laboratory building Forensics IT Room by the Laboratory Director. Members of the Operations (Services) Section must still log in as Visitors and be escorted to the Forensics IT Room. Access to the Laboratory Proper from the Forensics IT Room cannot be gained without proximity card access.

All Information Technologies (IT) Bureau members will be escorted at all times in the DNA Annex.

Laboratory Testing Areas (Laboratory Proper)
Interior areas in the Forensic Laboratory building specific to a Detail/Unit are secured by locking doors and/or push button combination locks. Entry codes for combination locks on interior doors will be given to authorized personnel with the understanding that they are to be kept confidential. Signatures of Laboratory members provided with entry codes for designated areas will be recorded and maintained by the Quality Manager/designee.

The DNA Annex Laboratory proper is secured by the Millennium System.

Any individual other than Laboratory members, or those granted access as described in 2.4 - Visitors and Tours, will sign in as a “visitor” (see 2.4 - Visitors and Tours for further details). Visitors will be monitored by Laboratory member(s) during their stay.
Accountability of Proximity Cards/Fobs and Keys
Each proximity card/fob bears a unique number and is assigned to a specific employee. Upon assignment to the Forensic Laboratory, employees will sign the LVMPD Proximity Card/ Proximity FOB Receipt / Return annotating their corresponding card/fob number. Individually assigned proximity cards/fobs are not to be shared. Visitor proximity cards are available for checkout from the Quality Manager/designee and/or a Forensic Laboratory Manager in the event an employee’s proximity card/fob is not available (at home, not working, lost). The use of a visitor proximity card will be documented by the Quality Manager or Forensic Laboratory Manager on the Proximity Card Sign-out log in the Quality Manager’s Office or located in the Manager’s folder on the H: drive. The location of all keys is maintained in a database by the Quality Manager/designee.

Cards and fobs are to be safeguarded against loss or use by unauthorized persons. In the event that a card or fob loss occurs, the Quality Manager and/or Laboratory Director will be notified immediately.

There are three categories of keys.
- Secure Keys – keys assigned to an individual with a required signature of receipt
- Shared Secure Keys- keys to unassigned evidence lockers/areas used when the need arises
- General Keys – keys assigned to an individual with no signature required.

Individual evidence locker keys, keys to DNA Analysts personal lockable evidence cabinets, and keys to secure areas within the Laboratory fall under the category of secure keys and are distributed by the Quality Manager/designee, Laboratory Director, Forensic Laboratory Managers or Forensic Laboratory Supervisors, at which time the key log must be signed. Each key is labeled with a coded designator.

Community evidence locker keys and DNA exam room keys are considered shared secured keys. The community evidence locker are controlled by digital locks. The keys for the DNA exam rooms are kept in the DNA evidence vault until needed. If an analyst stores evidence in a DNA exam room, the key will be kept in their possession until the evidence is removed. For more information, refer to the Biology/DNA Procedures/Quality Manual. Community evidence lockers in the DNA Annex will contain a digital lock with the ability for the code to be changed by the user upon each use. When a community evidence locker becomes vacant it will be available for use by the next user and a new code will have to be chosen. A master code will be available to the management team, if needed.
With the exception of the overhead bins in the latent prints bullpen, desk keys are considered general keys. No evidence will be placed in general key locations. The overhead bins in latent prints are secure key areas and may house evidence.

A complete inventory of all secure keys and shared secure keys, including unissued and spare keys, will be conducted annually by the Quality Manager/designee. A database showing the location of all general keys will be maintained, however an inventory of general keys is not required.

Where deemed necessary by the Laboratory Director, keys and entry codes will be assigned to Laboratory members. All keys are to be safeguarded against loss or use by unauthorized persons and are not to be duplicated unless authorized. In the event that a key loss occurs, the Quality Manager and/or Laboratory Director will be notified immediately.

Access to Individual Characteristic Database Samples
Access to individual characteristic database samples associated with AFIS, CODIS and NIBIN is restricted to those individuals having a legitimate purpose related to their job function. Authorization to individual characteristic database samples under the control of the Laboratory is granted by the Laboratory Director (see the Individual Characteristic Database Authorization memo).

5.3.5 Housekeeping
Custodians contracted by the LVMPD Forensic Laboratory are responsible for the general cleanliness of the Forensic Laboratory.
5.4 Title: Test and Calibration Methods and Method Validation

5.4.1 Technical Procedures

To ensure that analyses are carried out in a planned, systematic and controlled manner, approved procedures must be available to the analysts in the form of a technical procedures manual for each Detail/Unit of the Forensic Laboratory. The technical procedures utilized must be based on sound scientific principles, good laboratory practice, be appropriate for the evidence type and types of requests routinely submitted and wherever possible, generally accepted in the field. Technical procedures should take into account accuracy, reliability, flexibility, and to the extent practicable, cost.

When appropriate, technical procedures will include the following information:
- instructions for the logical progression of the analysis or examination
- instrumentation requirements and protocol
- standards and controls as required and/or calibration procedures
- sampling techniques and procedures to be performed on evidence, if applicable
- reference to forms, run sheets, or logs as required
- safety precautions peculiar to the procedure
- statistical techniques and calculations as required
- guidelines for conclusions, interpretation of the analytical results and limitations of the analysis
- if appropriate, references to literature and/or methods validation records

Manufacturer/Instrument Manuals needed for the use and/or operation of instruments or equipment will be referenced in the appropriate Detail/Unit Technical Manual, if needed. The location of these documents will also be referenced in the Detail/Unit Technical Manual.

Plans for the estimation of measurement uncertainty for quantitative analyses are listed in the appropriate Detail/Unit Technical Manual and/or in the documentation containing the determined estimation of uncertainty.

The handling, transportation, storage and preparation of evidence are documented in 5.8 - Handling of Evidence (Test and Calibration Items).

Departure from Documented Procedures (Deviation from Test Methods)

Departures from documented procedures will be discussed with the respective Laboratory Manager/DNA Technical Leader. Any procedure deviations will have the documented approval of the appropriate Laboratory
Manager/DNA Technical Leader prior to use on casework. Deviations shall be documented in the case file and technically justified.

The following is documented on the LVMPD internet (for outside jurisdiction customers- at [http://www.lvmpd.com/Sections/ForensicLaboratory/LaboratoryRequestGuide lines(LEONLY)/tabid/468/Default.aspx](http://www.lvmpd.com/Sections/ForensicLaboratory/LaboratoryRequestGuidelines(LEONLY)/tabid/468/Default.aspx)) and on the LVMPD intranet (for LVMPD customers- at [http://metroweb.lvmpd.int/services/investigative/criminalistics/forensics/Pages /LaboratoryRequestGuidelines.aspx](http://metroweb.lvmpd.int/services/investigative/criminalistics/forensics/Pages/LaboratoryRequestGuidelines.aspx)) Forensic Laboratory web page under the heading Deviation from Standard Operating Procedures:

“Laboratory requests for analysis will be worked according to analytical procedures specified in Detail/Unit specific Technical Manuals. Any deviations from these procedures will be approved by a Forensic Laboratory Manager and documented in the case file. Deviations from DNA procedures will be approved by the DNA Technical Leader in the Biology/DNA Detail.”

### 5.4.1 Test Data Interpretation

Procedures for test data interpretation are located in the Detail/Unit Technical Manuals.

### 5.4.2 Comparison of Unknown to Known

Test methods involving the comparison of an unknown to a known shall require the evaluation of the unknown item(s) to identify characteristics suitable for comparison and, if applicable, characteristics suitable for statistical rarity calculations, prior to comparison to one or more known item(s). Specific test methods for the comparison of an unknown to a known are located in the Detail/Unit Technical Manuals.

### 5.4.4 Selection of Methods

The Forensic Laboratory primarily utilizes methods widely accepted by the Forensic Science community; however the Laboratory can develop new analytical procedures. All Laboratory developed procedures shall be properly validated before use in casework (see **5.4.5 - Method Validation** for further details).

The Laboratory will select the appropriate analysis based on the type of evidence submitted and the information provided by the customer. If the customer requests any services considered inappropriate or out of date, the Detail/Unit Manager/designee shall inform the customer of that fact and that the service requested will not be performed (see **4.4 - Review of Requests, Tenders and Contracts** for further details).

The following is documented on the LVMPD internet (for outside jurisdiction customers- at [http://www.lvmpd.com/Sections/ForensicLaboratory/LaboratoryRequestGuide lines(LEONLY)/tabid/468/Default.aspx](http://www.lvmpd.com/Sections/ForensicLaboratory/LaboratoryRequestGuidelines(LEONLY)/tabid/468/Default.aspx)) and on the LVMPD intranet (for
LVMPD customers- at
http://metroweb.lvmpd.int/services/investigative/criminalistics/forensics/Pages/LaboratoryRequestGuidelines.aspx) Forensic Laboratory web page under the heading Selection of Test Method:

"Based on the type of evidence, information provided and the request received, the LVMPD Forensic Laboratory will select the appropriate method(s) of analysis. A summary of methods used is detailed in each Detail/Unit specific webpage located under the Forensic Laboratory heading.

5.4.3 Laboratory Developed Methods
Laboratory developed procedures may be utilized if properly validated and authorized (see 5.4.5.2 – Validation of Methods for further details). Validation of Laboratory developed methods shall be a planned activity. The respective Detail/Unit Managers/Supervisors/DNA Technical Leader are responsible for review and authorization of the validation plan. The Detail/Unit Managers/Supervisors and the DNA Technical Leader are also responsible for assigning the validation to qualified personnel and ensuring they are equipped with adequate resources.

During the validation, progress and/or issues regarding the validation will be discussed with the appropriate Detail/Unit Manager/Supervisor and/or the DNA Technical Leader, when warranted. If needed, the validation plan shall be updated as the validation proceeds.

5.4.4 Non-Standard Methods
It is recognized that many acceptable procedures may exist to accomplish a particular evidence examination. The considerable variations that exist in actual casework demand that analysts be free to exercise judgment in choosing the most appropriate analysis method.

Non-standard methods (or methods used outside of their scope) must be validated prior to use unless, the procedure is cited in scientific literature or used by other Detail/Units within the Laboratory or outside laboratories. In these instances, a performance check may be acceptable.

See 5.4.2 - Selection of Methods regarding customer notifications for procedures.

5.4.5 Method Validation
5.4.5.1 Validation Definition
Validation is the process used to assess the ability of a procedure to obtain an accurate and reliable result and to determine the conditions and limitations under which such results can be obtained. The extent to which a method needs to be evaluated is a matter of professional judgment. Validations performed in the Biology/DNA Detail will be in compliance with the standards established in the Quality Assurance Standards for Forensic DNA Testing.
Laboratories and the Quality Assurance Standards for DNA Databasing Laboratories issued by the FBI.

5.4.5.2 Validation of Methods

New technical procedures shall be tested to prove their efficacy in analyzing evidence material before being implemented on casework.

Since a variety of scientific procedures may validly be applied to a given situation, standards and criteria for assessing procedures need to remain flexible. In forensic science, well established procedures are found in a variety of sources - peer reviewed literature, conference proceedings and procedure manuals from training classes or those developed by other laboratories - all of which may be appropriate for use in the LVMPD Laboratory once the procedures have been demonstrated as capable of producing valid results in the LVMPD Forensic Laboratory. Minor modifications to improve such methods can be implemented as appropriate. These decisions can be made as data is obtained and procedures evaluated. Prior to implementing a procedure which was validated in another laboratory, the Laboratory will conduct internal quality assurance tests using known samples, unknown samples and/or non-probative evidentiary samples.

Typically, proper validation will include:
- identification and scope of the method
- procedure used for the validation
- an understanding of the theoretical basis for the method
- testing known samples
- testing known samples designed to mimic actual casework samples
- specificity, limitations, or sources of error associated with the testing process
- preparation of a written procedure for addition to the technical procedures manual after proper approval
- literature references used in method validation will be cited in the validation records
- a statement as to whether the method is fit for use

Once validation is complete, a Validation/Performance Check Acknowledgment will be completed by the respective Forensic Laboratory Manager/Supervisor/DNA Technical Leader and forwarded to the Quality Manager. This acknowledgment will record details of the validation and reference the location of pertinent documentation. A copy of the acknowledgment will be maintained with the referenced documentation.

Validations in the Biology/DNA Detail will be performed in compliance with the standards established in the Quality Assurance Standards for Forensic DNA Testing Laboratories and the Quality Assurance Standards for DNA Databasing Laboratories issued by the FBI.
5.4.5.2.1 Method Validation Procedure
Method validation procedures/plans shall:
   a) encompass the test process to include data interpretation;
   b) establish the data required to report a test result, opinion, or interpretation;
   c) identify limitations of the test method, reported test results, opinions, and interpretations;
   d) specify when a currently validated method, including associated data interpretation, needs additional validation; and
   e) require a validation plan providing direction for parameter evaluation and parameter acceptance criteria to determine if the method is fit-for-purpose prior to starting a method validation.

5.4.5.3 Validation Testing Methods Range and Accuracy
Where appropriate, the Laboratory shall determine the range and accuracy of the values obtained from the validated method as related to:
   - limits of detection
   - linearity in quantitative methods
   - uncertainty of results
   - limit of repeatability and/or reproducibility
   - cross-sensitivity/selectivity

5.4.5.4 Procedure Modification/Performance Checks
Newly acquired instrumentation (similar to existing configurations) or casework-associated software changes/upgrades will require a performance check before use in casework analyses. Performance checks will serve to evaluate existing validated technical procedures used by the Laboratory to ensure conformity to specifications. Testing considerations may include studies on functionality, reproducibility and sensitivity. When the new instrumentation is replacing, or is alternate to, instrumentation currently in use for casework samples, efforts will be made to compare results against the existing instrumentation (i.e., parallel testing).

Performance checks may also be required in the event of relocation or reassignment of instrumentation.

Once the performance check is complete, a Validation/Performance Check Acknowledgment will be completed by the respective Laboratory Manager/Supervisor/DNA Technical Leader and forwarded to the Quality Manager. Documentation of performance checks will be maintained in the corresponding equipment logbook, in the Resource Manager Object Repository, if applicable, or in Qualtrax.

Should any new equipment (or the resulting performance check) prompt a method change or modification to a procedure, an internal validation may be required. This will generally be decided upon by the Detail/Unit Manager/Supervisor/DNA Technical Leader. If a significant modification to
instrumentation or an existing procedure is made, validation studies will be required.

Procedure modifications and/or performance checks in the Biology/DNA Detail will be conducted in compliance with the standards established in the Quality Assurance Standards for Forensic DNA Testing Laboratories and the Quality Assurance Standards for DNA Databasing Laboratories issued by the FBI.

5.4.6.1 Estimation of Uncertainty for Calibrations
Required calibrations of Forensic Laboratory equipment (balances, pipettes, ASTM 1 weights, etc.) are performed by external vendors and are not performed internally.

Estimation of uncertainty for breath testing instruments will not be performed by the Forensic Laboratory at this time.

5.4.6.2 Estimation of Uncertainty for Forensic Testing
The Forensic Laboratory will estimate the uncertainty of measurement for the following:

- Blood alcohol results
- Quantitative Blood/Urine drug results
- Weights in drug analysis testing
- Quantitative drug analysis results
- Barrel lengths
- Distance Determination
- Trigger Pull

Estimation of uncertainty is not required when the results of testing are qualitative and estimation of uncertainty will also not be determined for the following:

- Sound suppression (reported as an approximation)

5.4.6.2.1 Estimation of Uncertainty for Quantitative Results
The Forensic Laboratory will estimate the uncertainty of measurement for all reported quantitative test results that are not used solely as an item descriptor.

5.4.6.2.2 Estimation of Uncertainty Procedures
The estimation of uncertainty of measurement shall:

a) Require the specific measuring device(s) or instrument(s) used for a reported test result to have been included in or evaluated against the estimation of measurement uncertainty for that test method (e.g., balance, thermometers, rulers)
b) Include the process of rounding the expanded uncertainty (e.g.,
Microsoft Excel was used to perform all calculations. Microsoft Excel
carries the maximum number of significant figures in the background.
Standard rules of rounding were applied to round numerical values to
one decimal place.)
c) Require the coverage probability of the expanded uncertainty to be a
minimum of 95.45% (often referred to as approximately 95%);
d) Specify the schedule to review and/or recalculate the measurement
uncertainty

5.4.6.3 Important Uncertainty Components
The estimation of uncertainty of measurement shall include, at a minimum,
the identification and assessment of the major sources of uncertainty in the
procedure which are of importance to the process. This may include, but not
be limited to, the following:

- Instruments/Equipment
- Test methods
- Special environmental conditions
- Reference standards
- Test operator

5.4.6.4 Estimation of Measurement Uncertainty Records
The following records for each estimation of measurement uncertainty shall
be maintained:

a) statement defining the measurand;
b) statement of how traceability is established for the measurement;
c) the equipment (e.g., measuring device(s) or instrument(s) used);
d) all uncertainty components considered;
e) all uncertainty components of significance and how they were
   evaluated;
f) data used to estimate repeatability, intermediate precision, and/or
   reproducibility;
g) all calculations performed; and
h) the combined standard uncertainty, the coverage factor, the coverage
   probability, and the resulting expanded uncertainty.

5.4.7.1 Calculations and Data Transfers
It is the responsibility of each Laboratory member to monitor any data entry,
transfer, or calculation performed during casework to ensure accuracy. In
casework, the technical reviewer shall check any data transfers and/or
calculations which do not form part of a validated electronic process for
accuracy.

5.4.7.1.1 Documentation of Calculations and Data Transfer Checks
The case record shall indicate that the check of any data transfer and/or
calculation was performed and will include the initials / P# and initials of the
person performing the check. The check shall not be performed by the person who performed the original (documented) calculation or data transfer(s).

5.4.7.2(a) Computer Programs Developed In-House
Computer programs (e.g. extensive macros, workbooks) developed by the Forensic Laboratory will be documented and validated as being adequate for use. If the data from the macro/workbook is checked as a part of the review process, validation is not required. Commercial off-the-shelf software in general use within their designed application range is considered to be sufficiently validated.

5.4.7.2(a).1 Forensic Lab Developed Software Validation
A validation plan will be created for computer software developed by the Forensic Laboratory requiring validation. Records of the validation shall be maintained.

5.4.7.2(b) Protecting Electronic Data
The protection of data transmission, processing and storage on LVMPD network computers is accomplished by the LVMPD Information Technologies Bureau. All LVMPD network computers require a unique user name consisting of initials and a LVMPD personnel number in the format, a1234z, and a password.

Access to FRED is controlled by individual accounts maintained by the LIMS System Administrator(s). For those with an account, their profile allows them restricted access determined by their assignment. This restriction prohibits access to cases from other Details/Units. Ability to change data within the worksheets is restricted by assignment of the case. Unless the case is assigned or there are delegate roles determined, FRED will not allow edits to the worksheet data. For the Unit Record Object Repository, the ability to delete approved files is limited to certain roles (Administrator and Supervisor).

There are reports that can be produced that show the roles, the rights assigned to the roles and individual role assignments.

FRED is stored and connected to a dedicated server that is utilized by the Forensic Laboratory and maintained by ITB according to ITB policies and procedures.

The only data that is transferred by FRED are the released laboratory reports. The reports are distributed to two places, OnBase and FAWeb. OnBase is maintained by ITB and secured under their policies and procedures. OnBase is the LVMPD record database. FAWeb is an auxiliary program maintained by Forensic Advantage to allow outside jurisdictions the ability to obtain their laboratory reports and to allow LVMPD and outside jurisdiction requestors to see the progress of their request (e.g., in progress, in review, completed). Access to FAWeb is controlled through user accounts to individuals assigned
by their agency/Bureau and must also have accounts to their specific agency/Bureau.

In the Biology/DNA Detail, electronic data from the instruments is stored on the H:drive. Only the Laboratory Director and those employees assigned to the Biology/DNA Detail have access to the H:drive. Data stored on the H:drive is automatically backed up by ITB (see the Biology/DNA Procedures/Quality Manual for further details).

In the Chemistry Detail, electronic data from the instruments is backed up on an external hard drive and stored in a safe in the Chemistry vault.

The protection of electronic data from macros/workbooks developed by the Forensic Laboratory is documented in the appropriate Detail/Unit Technical Manual.

5.4.7.2(c) Computer and Automated Equipment Maintenance
All computers with access to the LVMPD network are properly maintained by the LVMPD Information Technologies Bureau. All other computers and instruments are maintained by the Forensic Lab to ensure proper functioning by authorized and qualified personnel (see 5.5.2 - Equipment Calibration for further details). Instruments that require certain environmental conditions for proper operation will be operated in those conditions necessary to maintain the integrity of the test data. The instrumentation and the associated environmental conditions will be documented in the appropriate Technical Manual(s), if necessary.
LVMPD FORENSIC LABORATORY
TECHNICAL REQUIREMENTS MANUAL

5.5 Title: Equipment

Definition(s)

Adjustment of a Measuring System - Set of operations carried out on a measuring system so that it provides prescribed responses corresponding to given values of a quantity measured.

Calibration - A specified procedure with established measurement uncertainty that is a series of measurements establishing the response of a known reference and then comparing the response of the item being calibrated. With the exception of Breath Alcohol, all calibrations are performed by an external vendor.

Equipment - An analytical instrument, a measuring device, or a measuring instrument.

Performance Check - A set of operations to determine if a piece of equipment or instrumentation is working correctly within manufacturer’s specifications or LVMPD Forensic Laboratory specified parameters.

Quality Control Check – All-encompassing term for the following: Calibration, Verification and/or Performance Check.

Verification (Calibration Check, Accuracy Check) - Provision of objective evidence that a given item fulfills specified requirements. Performed by the Forensic Laboratory between calibrations.

The following are definitions in reference to time intervals listed for quality control checks:

Weekly - Once every week. The time frame between checks shall be no greater than one week and two days.

Biweekly - Once every two weeks. The time frame between checks shall be no greater than two weeks and three days.

Monthly - Once every month. The time frame between checks shall be no greater than one month and one week.

Quarterly - Once every three months. The time frame between checks shall be no greater than three months and two weeks.

Semi-annually - Twice a year. The time frame between checks shall be no greater than seven months.
Annually - Once every year. The time frame between checks shall be no greater than 14 months.

Every 10 Years – The time frame between checks shall be no greater than 10.5 years

5.5.1 Equipment – General
The Laboratory will be adequately furnished with all items of test equipment needed to facilitate quality analyses. If equipment outside of the Laboratory’s permanent control is utilized, the Laboratory will ensure that ANAB ISO/IEC 17025 accreditation standards are followed.

5.5.2 Equipment Calibration
Equipment and its software will be capable of achieving the required accuracy and comply with specifications relevant to the tests. Procedures shall be established for the quality control checks (calibration, verification, and/or performance checks) for equipment producing quantitative and/or qualitative data. The methods employed to ensure proper calibration and maintenance of Laboratory equipment are delineated in Detail/Unit specific Quality Control Plans (found in respective Technical Manuals). Quality Control Plans are prepared in table format to enable easy reference. Quality Control Plans will include the following, if applicable:

- Identity of equipment
- Manufacturer’s name
- Model number
- Serial number
- Unique identifier (e.g.: Tox #1)
- Frequency of the quality control checks (both internal and external)
- Acceptable criteria for the quality control checks
- Reference to the location of the quality control logs
- The corrective action needed if quality control criteria are not met

Note: Not all equipment requires both internal and external quality control checks. If an internal and/or external quality control check is not documented in the Quality Control Plan, it is presumed that an internal/external check is not required. All required checks will be documented in the Quality Control Plan.

The frequency of these checks will be determined by the Detail/Unit Forensic Laboratory Manager/Supervisor/DNA Technical Leader in concert with the Quality Manager/designee.

The Biology/DNA Detail will define and perform quality control checks as established in the Quality Assurance Standards for Forensic DNA Testing Laboratories and the Quality Assurance Standards for DNA Databasing Laboratories issued by the FBI (see the Biology/DNA Procedures/Quality Manual for further details).
A quality control check (calibration, validation, verification and/or performance check) shall be conducted on all Laboratory equipment before being initially placed into service to establish it meets Laboratory requirements.

5.5.3 Authorization to Use Equipment
Authorization Memos are prepared by the Laboratory Director, Forensic Laboratory Managers, Forensic Laboratory Supervisors and/or the DNA Technical Leader in the Biology/DNA Detail to authorize personnel to perform specific types of testing, to issue test reports and to operate related instrumentation/equipment. These Authorization Memos are located in Qualtrax.

5.5.3.1 Equipment Manuals and Logs
Manufacturer’s Manuals received with equipment must be kept by the Laboratory.

If logbooks are established for specific equipment, their location will be designated by the appropriate Quality Control Plan. All pertinent documentation will be placed in this log or in the Resource Manager Object Repository, including corrective action reports, regularly scheduled preventative maintenance performed on the equipment by company technicians, and quality control checks.

Prior to 2014 and the use of the Object Repository in FRED, relevant quality control data from a number of different items of equipment may be maintained in a common logbook. For example, one logbook may be used for all of the balances in the Laboratory. In these cases, it is the responsibility of the Quality Manager/designee to maintain the appropriate documentation, certificates, etc.

5.5.4 Unique Identification of Equipment
All equipment and its software (if applicable) used in testing that is significant to the quality of the results shall be uniquely identified. Identification of the equipment is detailed below in 5.5.5 – Equipment Records. Identification for equipment software is detailed in the appropriate Detail/Unit Technical Manual.

5.5.5 Equipment Records
Records of each item of equipment and its software shall be maintained. The following lists the information that shall be recorded in regards to all equipment and the location the information is recorded:

a) The identity of the item of equipment (Quality Control Plan located in Detail/Unit Technical Manuals, Property Control Inventory, Equipment/Instrumentation Receipt and Resource Manager)

b) Manufacturer’s name, model number and serial number (Quality Control Plan located in Detail/Unit Technical Manuals, Property
c) Quality control check information. (Resource Manager, Qualtrax or Equipment Logbooks).

d) Current location (Property Control Inventory and Resource Manager).

e) Operator/Instrument manual (Equipment/Instrumentation Receipt and Detail/Unit Technical and/or Training Manuals).

f) Calibration dates, results and copies of reports and certificates of calibrations (Equipment Logbooks or Resource Manager). Due date of next calibration (Quality Assurance Schedule and/or as a label on the instrument/equipment). Acceptance criteria of calibration (Quality Control Plan in Detail/Unit Technical/Quality Manuals).

g) Maintenance plan (Quality Control Plan located in the Detail/Unit Technical Manuals). Maintenance to date (Equipment Logbooks, Qualtrax or Resource Manager).

h) Damage, malfunction, modification or repair (Equipment Logbooks, Qualtrax or Resource Manager).

5.5.6 Handling, Transportation, Storage, Use and Planned Maintenance of Measuring Equipment

Procedures for the safe handling, transportation, storage, use and planned maintenance of measuring equipment are documented in Manufacturer/Instrument Manuals and/or in the Detail/Unit Technical Manuals, if needed. See 5.6.3.4- Safe Handling, Transport, Storage and Use of Reference Standards/Materials for information regarding the NIST traceable thermometers.

5.5.7 Equipment Problems

It is the responsibility of the user to ensure that the equipment is functioning correctly, calibrated and adjusted for the task at hand.

If a problem or a nonconformance is noted, the equipment shall be taken out of service and clearly labeled "Out of Service" until it is repaired and either calibrated or verified to ensure correct performance. It will also be documented on a Forensic Lab Corrective Action Report (see 4.11 - Corrective Action for further details) if casework was affected. When applicable, a copy of the Corrective Action Report will be placed in any relevant logbook or in the Resource Manager Object Repository.

The effect the problem had on previous tests shall be examined and the Control of Nonconforming Testing and/or Calibration Work procedure (see 4.9) shall be instituted if warranted.

5.5.8 Calibration Status

Where practicable, a label indicating the last date of calibration and the next calibration due date shall be located on all equipment requiring calibration.
5.5.9 Equipment out of the Laboratory’s Control
When equipment that affects the quality of work goes outside the direct control of the Laboratory and is used for testing by someone outside of the control of the Laboratory (e.g. substation balances), the equipment shall be shown to be performing correctly upon its return to service in the Forensic Laboratory. This does not apply to equipment that is sent to an approved external vendor for calibration.

5.5.10 Intermediate Checks
When quality control checks are needed to maintain confidence in the calibration status of the equipment (e.g., monthly check of balances in Seized Drugs, Latent Prints and Toxicology), these checks will be carried out as defined in the Detail/Unit Technical Manuals.

5.5.10.1 Intermediate Check Frequency
The frequency of intermediate checks are defined in the Quality Control Plans located in the Detail/Unit Technical Manuals.

5.5.10.2 Extension of Intermediate Check Frequency
Once established, any extension in the interval of intermediate checks shall be based on empirical data and an evaluation of risk. Documentation of the empirical data and the evaluation of the risk shall be maintained.

5.5.11 Correction Factors
Any correction factors determined by calibrations shall be documented and all quality control forms shall be updated with this information.

5.5.12 Improper Adjustments
Test equipment that has calibration settings that can be adjusted by Laboratory staff will be safeguarded against unintentional changes by at least one of the following methods:

- Use of positive, negative, or known controls
- Assigned authorized individual(s) to operate/adjust the instrument
- Limited access to Laboratory areas
- Password protection
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5.6 Title: Measurement Traceability

Definition(s)

Certified Reference Material - Reference material accompanied by documentation issued by an authoritative body and providing one or more specified property values with associated uncertainties and traceabilities, using valid procedures.

International System of Units (SI) - System of units, based on the International System Quantities, founded on these seven base units:
Length - meter (m)
Mass - kilogram (kg)
Time - second (s)
Electrical current - ampere (A)
Thermodynamic Temperature - kelvin (K)
Amount of substance - mole (mol)
Luminous intensity - candela (cd)

Reference Collection - A collection of objects maintained for the purpose of identification, comparison or interpretation purposes (e.g., firearms, ammunition, ignitable liquids).

Reference Material - Material, sufficiently homogenous and stable with respect to one or more specified properties, which has been established to be fit for its intended use in a measurement process (e.g., drugs, drug mixes in a variety of matrices, Arson Test Mixture).

Reference Standard - Measurement standard designated for the calibration of other measurement standards for quantities of a given kind (e.g., ASTM 1 Weights).

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.

Working Measurement Standard - Measurement standard that is used routinely to calibrate or verify measuring instruments or measuring systems (a working measurement standard is usually calibrated with respect to a reference standard).

5.6.1 Equipment Calibration
All equipment used for testing having a significant effect on the accuracy or validity of the result shall be calibrated prior to being put into service to be used in casework.
5.6.1.1 Calibration Check (Verification) Frequency
Procedures to check the calibration of equipment shall be established depending on the specific requirements of the testing being performed. The procedures for calibration checks are outlined in the Detail/Unit Technical Manuals’ Quality Control Plans. Calibration checks shall be performed after any shut down and following service or substantial maintenance. Calibration check intervals shall not be less stringent than manufacturer’s recommendations.

A list of equipment requiring calibration including the specified requirements for the calibration and the interval of calibration are outlined in the Quality Control Plan in the Detail/Unit Technical Manuals. The specifications for the calibration laboratory are located in 5.6.2.2.1.2 External Calibration Laboratories.

Calibration checks in the Biology/DNA Detail will be performed in compliance with the standards established in the Quality Assurance Standards for Forensic DNA Testing Laboratories and the Quality Assurance Standards for DNA Databasing Laboratories issued by the FBI.

5.6.1.1.1 Extension of Calibration Frequency
Once established, any extension in the interval of calibration checks shall be based on documented empirical data and an evaluation of risk. Documentation of the empirical data and the evaluation of the risk shall be maintained in FRED and/or Qualtrax.

5.6.2 Calibration
ASCLD/LAB Policy on Traceability
Traceability of a measurement is required for all measurements where measurement uncertainty is estimated. Additionally, traceability of a measurement is required where the measurement result has a significant impact on the final result. A Measurement Equipment Traceability Memo detailing the items of measuring equipment requiring traceability for each Detail/Unit has been prepared. This memo is located in Qualtrax.

5.6.2.1.1 Utilizing External Calibration Services
When equipment is calibrated by an external vendor, traceability of measurement shall be assured by using calibration laboratories that can demonstrate competence, measurement capability and traceability.

Calibration certificates issued by the external calibration laboratory must contain the following:

- Measurement results;
- Measurement uncertainty and/or a statement of compliance with an identified metrological specification.

Calibration certificates will be maintained in FRED or Qualtrax.
5.6.2.1.2 External Calibrations not in SI Units
For calibrations that cannot be strictly made in SI units, traceability to appropriate measurement standards shall be established by the use of certified reference materials or by the use of specified methods that are clearly described.

5.6.2.2 Testing
5.6.2.2.1 Calibration Contributing to Uncertainty
The uncertainty of measurement from the calibration (listed on the calibration certificate) will be accounted for in the appropriate uncertainty budget used for the determination of uncertainty of a quantitative method, unless it has been established that the associated contribution from the calibration contributes little to the total uncertainty of the test result. The Laboratory shall ensure the equipment used can provide the uncertainty of measurement needed.

5.6.2.2.1.1 Calibration NOT Contributing to Uncertainty or the Test Result
If it has been determined that the calibration of equipment does not have a significant effect on the sampling, the test result, or the total of uncertainty of the test result, documentation of objective evidence demonstrating the determination of the insignificant contribution shall be maintained.

Equipment, where the calibration does not have a significant effect on sampling, the test result, or the total uncertainty of the test result is listed on the Measuring Equipment Traceability Memo. The reason traceability is not required is also detailed in this memo.

5.6.2.2.1.2 External Calibration Laboratories
External calibrations shall be performed for all reference standards and where the calibration of the equipment has a significant effect on:
- The accuracy or validity of sampling or a test result, or
- The total uncertainty of the test result

Calibration laboratories shall either be:
- a) a National Metrology Institute that is a signatory to the BIPM (International Bureau of Weights and Measures) – CIPM Mutual Recognition Arrangement with the calibration to be performed listed in Appendix C of the BIPM key comparison database (KCDB), or;
- b) accredited to ISO/IEC 17025 by an accrediting body that is a signatory to the International Laboratory Accreditation Cooperation Mutual Recognition Arrangement (ILAC MRA), with the calibration to be performed listed in a scope of accreditation (see 4.6.4 – Critical Services in the Management Systems Manual for further details).

Note: The BIPM KCDB, Appendix C is available at – http://kcdb.bipm.org/appendixC/ and more information regarding ILAC is available at – www.ilac.org
5.6.2.1.3 External Calibration Laboratories Meeting 5.6.2.2.1.2 Not Available
If a supplier of external calibration services that meets 5.6.2.2.1.2 is not available, the Forensic Laboratory shall confirm competence, measurement capability, and measurement traceability for the supplier and the service being purchased. Evidence of the above confirmation shall be documented and maintained.

5.6.2.1.4 Internal Calibration for Establishing Traceability of a Measurement
The Forensic Laboratory does not calibrate its own equipment.

5.6.2.2 Traceability to SI (International System of Units) Units of Measurement
To ensure accurate measurements, Laboratory equipment calibrations will be traceable to appropriate national or international standards (SI units), where available. Equipment without internal calibration capability (e.g. pipettes, balances, ASTM 1 weights) will be calibrated by an appropriate external vendor. Equipment that is automatically calibrated internally (e.g. GC/MS) will be verified using reference materials and/or reference standards which are traceable to national, international, or certified references, where available.

Where traceability of calibration materials cannot be made strictly in SI units, traceability to appropriate measurement standards shall be established by the use of certified reference materials from a supplier, or the use of specified methods, published standards, and/or consensus standards, or participation in interlaboratory comparisons.

5.6.3.1 Reference Standards
All in house NIST traceable primary reference standards shall be periodically replaced or calibrated by an external vendor to maintain their NIST traceability. The external vendor must meet all requirements detailed in 5.6.2.2.1.2 - External Calibration Laboratories.

- NIST traceable thermometers will be calibrated and/or replaced every two years or when certificate expires, whichever is sooner
- ASTM class 1 weights will be calibrated annually
- 1" micrometer standard will be calibrated and/or replaced every three years
- 1 mm gauge block will be calibrated or replaced every five years.
- Sound level calibrator will be calibrated annually

All secondary reference standards used in the routine check of equipment will be checked annually against a primary standard or using externally calibrated equipment (balance).

With the exception of Breath Alcohol, the Forensic Laboratory does not perform calibrations; therefore the primary and secondary standards listed above can be used for purposes other than for performing calibrations. The primary standards may be used for calibration checks, performance checks and/or in casework analyses. The secondary reference standards may be
used for monitoring environmental conditions of equipment or in casework analyses.

**5.6.3.2 Reference Materials and Collections**
Reference materials traceable to national or international standards or certified reference materials should be used where possible. In those cases where certified reference materials or reference materials traceable to national or international standards are not available, an untraceable reference material or a Laboratory prepared standard may be used. The Detail/Unit will ensure that the properties and characteristics of the untraceable reference material or Laboratory prepared standard are suitable for its intended purpose.

Reference collections that are maintained for the purposes of identification, comparison, or interpretation shall be documented, uniquely identified and properly controlled (e.g. drug samples, cartridges, gasoline).

**5.6.3.2.1 Certified Reference Material Suppliers**
The suppliers of certified reference material used to establish or maintain measurement traceability shall be either:

a) a National Metrology Institute that is a signatory to the BIPM (International Bureau of Weights and Measures) – CIPM Mutual Recognition Arrangement with the calibration to be performed listed in Appendix C of the BIPM key comparison database (KCDB), or;

b) an accredited reference material producer that is accredited to ISO Guide 34:2009 by an accrediting body that is a signatory to a mutual or multilateral recognition arrangement in an ILAC recognized regional accreditation cooperation or the International Laboratory Accreditation Cooperation Mutual Recognition Arrangement (ILAC MRA), with a scope of accreditation covering the certified reference material.

Note: The BIPM KCDB, Appendix C is available at – http://kcdb.bipm.org/appendixC/ and more information regarding ILAC is available at – www.ilac.org

**5.6.3.2.2 Non-accredited Reference Material Suppliers**
If a reference material producer that meets 5.6.3.2.1 is not available, the Forensic Laboratory shall confirm competence, measurement capability, and measurement traceability for the supplier and product being purchased. Evidence of the above confirmation shall be documented and maintained.

**5.6.3.2.3 Altered Certified Reference Material**
If a certified reference material is changed in a way that alters the traceable measurement value, then the equipment used to alter the certified reference material shall be calibrated to meet the requirements in 5.6.2.1- Calibration.
5.6.3.3 Intermediate Calibration Checks (Verifications) of Reference Standards/Materials

Quality control checks on reference materials will be performed as designated in the appropriate Detail/Unit Technical Manuals. Due to the limited use of reference standards between calibrations, intermediate checks will only be performed if a problem is suspected. If it is suspected that a primary reference standard is not performing properly, the standard will be removed from service and either be sent to an external vendor for calibration or be replaced.

5.6.3.3.1 Extension of Intermediate Checks

Once established, any extension in the interval of intermediate checks shall be based on empirical data and an evaluation of risk. Documentation of the empirical data and the evaluation of the risk shall be maintained in FRED and/or Qualtrax.

5.6.3.4 Safe Handling, Transport, Storage and Use of Reference Standards/Materials

NIST Traceable Thermometers

The NIST traceable thermometer will be handled carefully to avoid being dropped and damaged. The spare NIST thermometers, with the exception of the spares designated for Biology/DNA Detail, will be stored in the Quality Manager’s Office. The spare NIST thermometers designated for the Biology/DNA Detail will be stored in the DNA Technical Leader’s Office. If transported outside of the Laboratory, the thermometer will be packaged with appropriate packing material in an appropriate container. The thermometer may be used for the biweekly performance checks of the refrigerator, freezer, heat block, etc. thermometers or for new equipment prior to use. The thermometer will only be used in its rated temperature range.

All NIST Thermometers in use are manufactured by Control Company unless otherwise approved by the Quality Section.

All Other Reference Standards and Reference Materials

Procedures for safe handling, transportation, storage and use of all other reference standards and reference materials are outlined in the appropriate Detail/Unit Technical Manuals.
5.7 Title: Sampling

**Definition(s)**

**Sampling** - Taking a part of a substance, material or product for testing in order to reach a conclusion or make an inference about, and report on the whole. Sampling should only be used when there is a reasonable assumption of homogeneity of the whole.

**Sampling Plan** - For an item that consists of a multi-unit population (e.g. tablets, baggies, bindles), a sampling plan is a statistically valid approach to determine the number of sub-items that must be tested in order to make an inference about the whole population.

**Sampling Procedure** - A defined procedure used to collect a sample or samples from the larger whole, to ensure that the value obtained in the analysis is representative of the whole. The sampling procedure may include details about size and number of sample(s) to be collected, locations from which to collect the sample(s), and a method to ensure the homogeneity of the larger whole (or to make it so).

**Sample Selection** - A practice of selecting items to test, or portions of items to test, based on training, experience and competence. In sample selection, there is no assumption about homogeneity.

**5.7.1 Sampling Plan**

The process of sampling of forensic items submitted is unique for each Detail/Unit. Sampling procedures will be documented in Detail/Unit Technical Manuals, if any sampling takes place. When appropriate, sampling procedures shall be based on an appropriate statistical model.

**5.7.1.1 Sampling Plan Procedure(s)**

a) require an evaluation of the selected population for homogeneity
b) require the population to have a reasonable expectation of homogeneity to use a sampling plan
c) require that the sampling plan makes use of probability and provides an opinion or interpretation with a minimum confidence level of 95.45% (often referred to as approximately 95%)
d) require each item selected to meet the sampling plan level of confidence to be tested completely
e) provide instruction regarding the course of action to take if one or more selected items demonstrate a lack of homogeneity

**5.7.2 Deviation from the Sampling Plan Due to a Request**

If a customer requests a departure from the standard sampling procedure, the appropriate Forensic Laboratory Manager or Forensic Laboratory Supervisor must be notified and approve prior to any deviation.
Documentation of this request and approval shall be maintained in the case record in FRED.

5.7.3 **Records of Sampling**

A reference to the sampling plan used, including the statistics the sampling plan was based upon, shall be documented in the case report or an attachment to the report. The identification of the person performing the sampling is located in the case record in FRED. Any deviations to the sampling procedure will be documented in the case record in FRED. If drawings, diagrams or photographs are generated to document the sampling location(s), they shall be included in the case record in FRED. Environmental conditions, if relevant will be documented in the case record in FRED.
5.8 Title: Handling of Evidence (Test and Calibration Items)

5.8.1 Evidence Ordering, Receipt, Processing, Return and Release

The nature of forensic work is related to the recognition, collection, preservation and examination of physical evidence. Therefore, evidence must be collected, received, handled, sampled and stored so as to maintain its identity, condition and security. Testing of evidence samples should be conducted to provide the maximum information with the least consumption of the sample feasible. At all times, evidence shall be handled in such a fashion so as to ensure its integrity, maintain chain of custody, protect it from deleterious change and contamination and to protect the interests of the Forensic Laboratory and its customers.

Detail/Unit Technical Manuals will deal with the marking of evidence and evidence storage requirements specific to the Detail/Unit.

Ordering Evidence from the Vault

With the exception of latent prints and some footwear and ESDA lifts created during analysis by the Forensic Laboratory which are stored in the Forensic Laboratory, the LVMPD Evidence Vault controls the long-term storage, retention and disposal of the Department’s evidence and is maintained at a physical location separate from the Forensic Laboratory. The method of choice for receipt and release of evidence into the Forensic Laboratory is through the LVMPD Evidence Vault, which physically transports evidence through an Evidence Vault Technician.

Evidence needed for examination purposes by Laboratory analysts will be found in the ACE (Active Control of Evidence) database and saved onto an electronic list under the initials and P # of the author (e.g., L1471K). There are 31 files named 1-31 corresponding to the days of the month. The evidence list will be saved in the folder corresponding to the date the analyst wants the evidence delivered. The folders are located in the Forensic Lab folder in the ACE “Lists”.

- For the Forensic Laboratory building- Network \cl-f10-app1\app2\Winace\AceLive\Lists\00001 FORENSIC LAB\00001 FORENSIC LAB\FORENSIC LAB\.
- For the DNA Annex- Network \cl-f10-app1\app2\Winace\AceLive\Lists\00001 DNA\00001 DNA\DNA\.

Because Evidence Technicians at the Evidence Vault will refer to these lists to determine what evidence is brought to the Laboratory, this will in effect be the way the Laboratory will “order” evidence. When there is an immediate need for evidence receipt due to a rush or priority request, a request e-mail
can be sent to all Evidence Vault Supervisors and the Evidence Vault Director, this should not be a routine method for requesting evidence.

Though latent prints are stored in the Forensic Laboratory, they are still entered into and tracked by ACE. Since latent prints are stored in the Forensic Laboratory they do not need to be “ordered” as detailed above. Latent print packets are internally moved via ACE when needed for analysis (see 5.8.1.1 - Chain of Custody ACE (Active Control of Evidence) for further details.

Since latent prints and the Footwear and ESDA lifts are entered into ACE, they will be included in the disposal orders initiated by the Evidence Vault. At least one Evidence Technician assigned to the Forensic Laboratory will be responsible for the physical disposal of latent prints.

**Receiving Evidence from the Vault**

The Evidence Vault will perform a run to the Laboratory Monday through Thursday, excluding holidays. Evidence Technicians will pick up evidence that has been analyzed and relinquish evidence that has been requested to the appropriate analysts or Evidence Technician/designee.

Evidence coming into the Forensic Laboratory from the Evidence Vault can be received by anyone with an ACE password. The Evidence Vault representative will secure move the evidence to an ACE user who will receive the evidence into their custody and place it into a secure physical location (see 5.8.1.1 – Chain of Custody ACE Evidence Locations).

**Biological Sample Runs**

The Laboratory Evidence Technician(s)/designee will routinely pick up evidence, mostly of a biological nature from specific LVMPD authorized sample drop locations and transport it directly to the Laboratory. A cooler is used during the transportation process in order to maintain the appropriate environmental conditions required for certain biological evidence (blood/urine drug kits). This occurs in the interest of expediting the analyses of certain samples requiring toxicology services, such as blood and urine specimens, and to ensure proper sample handling of the biological materials. All retrieved samples are data entered into ACE.

Other biological samples, such as LVMPD sexual assault kits, are sent to the Evidence Vault for storage after data entry. Outside jurisdiction sexual assault kits are held at the Forensic Laboratory for at least 60 days pending a receipt/forensic lab generation of a Forensic Laboratory Request for Examination. If prior authorization to analyze sexual assault kits has been given by the outside jurisdiction, the sexual assault kits are held at the Forensic Laboratory until the analysis is completed. Outside jurisdiction authorization forms for analysis of sexual assault kits are located in Qualtrax in the DNA folder. If prior authorization to analyze is not granted and no
request is received, the sexual assault kits are sent to the Evidence Vault for release to the responsible agency.

Evidence may be left unattended in the evidence run vehicle for short periods of time while subsequent items of evidence are being picked up during the run. The vehicle will be kept locked at all times when evidence is located in the vehicle and the vehicle is left unattended.

If needed, the vehicle may be fueled while evidence is located in the vehicle. The vehicle must be locked and the Evidence Technician/designee must remain in the immediate vicinity of the vehicle.

Food may be picked-up while transporting evidence as long as the Evidence Technician/designee does not leave the vehicle (drive-thru).

In the event of an accident, the Evidence Technician/designee will remain in the vehicle unless doing so is not prudent (fire). Dispatch will be advised by the Evidence Technician/designee immediately and a Patrol unit will be requested to respond to standby if the vehicle contains evidence. The Quality Manager/Quality Assistant will be advised. If needed, another Evidence Technician/designee will respond to the scene to transfer and transport any evidence.

The handling of biological samples submitted to the Forensic Laboratory for Department drug testing is outlined in the Toxicology Technical Manual.

Evidence Receipt under Special Circumstances
When possible, individuals wishing to submit evidence to the Laboratory will be directed to the LVMPD Evidence Vault to deposit their evidence and, upon request by Laboratory personnel, the evidence will be transported to the Laboratory by an Evidence Vault Technician during the routine evidence run.

However, evidence from outside jurisdictions can be received through the United States Postal Service or other common carriers such as Federal Express. In unique circumstances, evidence may be hand delivered directly to the Laboratory and presented to a Laboratory Evidence Technician/designee for ACE entry. When these circumstances arise, the following steps must be completed:

- Each package must be logged onto a LVMPD 126 Temporary Evidence/Property Control Log if it is a LVMPD case or on an LVMPD ISD 22 Evidence Log for Outside Agencies for outside jurisdictions. This form must be completed by the individual submitting the evidence or the Forensic Laboratory will not accept it.

- All packages must be appropriately sealed, and pertinent information required on the package must be completed: event number or applicable outside agency case number, item descriptions,
impounding officer, relevant dates, etc. Since evidence can be received from a variety of sources and outside agencies, the presence of an LVMPD event number is not a mandatory requirement. However, all items submitted to the Laboratory should bear some marking or numbering system for identification purposes. Special handling instructions must be annotated on the package (e.g., keep frozen, refrigerate, biohazard).

- At the time of evidence delivery, a Forensic Laboratory Examination Request, LVMPD 63, or a Toxicology Request (547) will be completed by the submitting personnel, if a request has not been submitted previously. LVMPD requests will not be made using the LVMPD 63. These requests will be submitted through Property Connect.

- Evidence Technician/designee receiving the evidence will verify that the information on the evidence log matches the information on the package(s), and then will initial (LVMPD log) or sign (outside jurisdiction log) the log acknowledging receipt of the evidence.

- A copy of the signed evidence log will be made and provided to the individual delivering the evidence. The original log, the evidence package(s), and the Laboratory request will be forwarded to the Forensic Laboratory Evidence Technician. The Forensic Laboratory Evidence Technician/designee will perform the database entry of the evidence into the ACE system, where the item history automatically records the fact that the evidence was received directly through the Laboratory.

- After the data entry of the evidence is completed, the Evidence Technician will ascertain who will be assigned the evidence for analysis and a secure move in ACE will be performed.

- Evidence submitted directly to the Laboratory will be maintained by the Evidence Technician on a temporary basis only. If the evidence is not secure moved to an analyst within a short time, it will be sent to the Evidence Vault for storage until it is again requested by the analyst assigned to perform the Laboratory examination.

**Evidence Processing**
The following general evidence processing guidelines will be adhered to:

- Evidence will be handled in a manner to ensure its integrity is maintained during the testing process.

- It is common for a single item of evidence to be examined and tested by several Details/Units of the Laboratory. For example, a bullet may retain traces of blood which will be examined by the DNA Detail before being examined by the Firearms examiner. It is important that
the examinations be conducted in a sequence that maximizes the forensically significant information from each item. Forensic Scientists should be familiar with the proper analytical sequence and it is expected that the different Details/Units will consult and coordinate their activities. In most cases, the proper analytical sequence is:

1) Trace Materials  
2) Biology/DNA  
3) Latent Prints  
4) Firearms

The analyst’s case notes will be documented to reflect the consultation and coordination of their activities in regards to these types of evidence (see 5.8.1.1.1 - Evidence Intra-Lab Transactions and Splits Analysts Working Concurrently on Evidence for further details).

- Any evidence requested for analysis should be inventoried immediately after the envelope, bag or other evidence package is opened. If significant alteration of the evidence is anticipated due to sampling or the sample selection process, the analyst will record the evidence in its original condition according to the designated Detail/Unit Technical Manual prior to the alteration. A diagram and/or photography may be used to document the condition of the evidence.

- In all evidence, except for latent print packets and prepared boxed kits such as blood alcohol and urine kits, the original seals will remain intact where possible. The evidence package should be entered in an area different than where the impounding officer sealed it. In some instances due to unusually shaped or heavy items, this would only serve to destroy the original packaging. In that case, the impounding officer’s seals can be broken and a notation will be made in the case notes documenting this situation.

- Analysts will confine examination of their evidence as much as possible to their own assigned work areas or those areas specifically designated for evidence screening.

- Exam tables and benches may be covered with clean paper before the examination begins. Clean paper should be laid down under each item examined for trace or biological evidence as this will prevent cross transfer of materials from one item to another.

- Any significant loss or damage to an item or package must be recorded. This does not refer to the routine use of a sample during analysis, but rather refers to a significant change, such as breaking a vial of blood, consuming a whole tablet during controlled substance analysis, or tearing an evidence bag during handling.
- Although it may be necessary to consume a sample in order to complete the analysis properly, unnecessary alteration or consumption of the evidence shall be avoided. If items are consumed, the appropriate procedures outlined in the Detail/Unit Manuals will be followed and the case notes documented.

Returning Evidence to the Vault
With the exception of latent prints and Footwear and ESDA lifts created during analysis by the Forensic Laboratory, the Forensic Laboratory cannot maintain evidence for any significant length of time after the analysis has been completed. The LVMPD Evidence Vault is the department’s storage facility. Once analysis is complete or evidence is no longer needed by Laboratory personnel it will be returned to the main evidence vault. A secure move is performed to move items from the Laboratory node to an Evidence Vault node. This requires two authorized ACE users with passwords.

The Evidence Vault is not a long term storage facility for evidence belonging to an outside jurisdiction. Evidence from outside agencies also cannot be destroyed by the LVMPD Evidence Vault, even if they request it. Therefore, at the completion of the analysis of evidence from an outside jurisdiction, the evidence will be sent to the Evidence Vault where the outside agency can retrieve it.

Releasing Evidence to Outside Jurisdictions Directly from the Forensic Laboratory
In unique circumstances, evidence may be retrieved directly from the Laboratory by the originating agency.

The release will occur through ACE and two copies of an evidence receipt document will be printed. One copy will be maintained by the LVMPD and must bear the signature of the representative of the outside jurisdiction who took control of the evidence. Following the evidence release, the signed copy of the receipt document will be maintained in the Forensic Laboratory case file. The second copy of the receipt document will be provided to the representative of the outside jurisdiction.

Returning Evidence to an Outside Jurisdiction (NHP Only)
At the completion of the analysis or when the evidence is no longer needed, NHP evidence will be delivered to NHP by the Forensic Laboratory Evidence Technicians. A release is performed to release items from the Forensic Laboratory to the Outside Jurisdiction. The evidence Release Receipt will be delivered and left with the evidence. Once the Receipt is signed, it will be maintained in the Forensic Laboratory case file.

Temporary Release of Evidence/Shipping Evidence
As per Department Manual 5/210.20 - Releasing Evidence For Outside Laboratory Analysis, a LVMPD 17
Authority for Temporary Release will be completed for all evidence that is sent to a location outside of the department at the instruction of an individual not part of the Forensic Laboratory (e.g., for analysis by an outside laboratory). LVMPD 17 forms are not necessary for outsourcing cases that are initiated by the Forensic Laboratory to send out for testing.

The Laboratory maintains an account with Federal Express and this private courier is used most frequently for sending evidentiary materials and/or perishable substances. This type of service should be used Monday through Thursday to prevent evidence or perishables from sitting over the weekend pending delivery. Suitable packaging materials exist in the Laboratory for this purpose and care should be taken to package the items so as not to compromise the evidence. Utilizing this service is coordinated through the support staff.

The US Postal Service does not accept ammunition. Special considerations exist for sending ammunition through private carriers. It is best to consult these carriers prior to preparing a package of ammunition for shipment.

All transfers of evidence are documented in ACE. The following lists departmental and Laboratory specific procedures regarding the transfer of evidence to an outside location:

- For LVMPD evidence, original LVMPD 17 will be forwarded to records and a copy will be included in the case record. For outside jurisdiction evidence, original LVMPD 17 will be maintained in the Forensic Laboratory case record.

- Subsequent to the transfer of evidence via ACE, an evidence withdrawal receipt will be produced - the recipient of the evidence will be asked to sign this receipt and it will be scanned into OnBase. A copy will be included in the case record.

- If evidence is shipped to the outside laboratory, the evidence withdrawal receipt, along with a self-addressed stamped envelope, will be included with the evidence. The letter to the outside agency will request that the withdrawal receipt be signed and returned to the LVMPD in the envelope. Once returned, the signed receipt will be scanned into OnBase. A copy will be included in the case record.

- Evidence will be sent utilizing the signature required option offered by the shipping company.

If the volume or size of the evidence packages being shipped precludes the use of the shipping containers supplied by the shipping vendor (FedEx Express envelopes and/or boxes), the following guidelines will be followed:
- The Forensic Laboratory will not use such large boxes to help deter the possibility of the box being used as a stacking box.

- Each box will be wrapped with pallet wrap to provide extra strength to the box, as well as, provide a barrier to prevent the items from falling out of the box.

- A stronger shipping vessel, such as, a plastic storage type bin may be used to ship evidence instead of a box. Pallet wrap can be used on the storage bin to help prevent the lid from being removed.

- Using Federal Express Custom Critical, a truck will be reserved for the delivery of the evidence. This only applies in certain circumstances for large shipments where funding allows.

5.8.1.1 All Evidence Received and Handled by the Laboratory

All evidence received and handled by the laboratory, to include items tested and not tested, will be documented in the Chain of Custody Report generated from ACE as well as on the Detail/Unit worksheet and/or in the case record. See Detail/Unit Technical Manuals for requirements related to the documentation of the evidence received by the analyst in the Forensic Laboratory (to include evidence items tested and not tested) in the case record.

See section 5.8.2 Laboratory System on how the Forensic Laboratory unique identifier, Lab #, is related to items received in the laboratory by the analyst in ACE.

Evidence and Property Sealing

All evidence containers and packages must be sealed in a manner to preserve the integrity of the evidence and to prevent inadvertent addition or removal of items. An evidence container or package is properly sealed when its contents cannot readily escape and if entering the package would result in obvious damage or alteration to the container or its seals.

All evidence will be sealed in accordance with the Department Manual 5/210.02 - Booking Evidence and Property.

If LVMPD evidence and/or property is accepted into the Laboratory in a condition that does not meet the Department policy defined above, the evidence package will be brought to an Evidence Technician/designee for resolution.

The proper sealing procedures established by the LVMPD do not apply to evidence belonging to other jurisdictions since their evidence sealing procedures may differ from those established by the LVMPD. However, if the evidence is in an unsealed condition, it may be refused and returned to the Evidence Vault.
If outside jurisdiction evidence is accepted into the Laboratory in a condition that would allow items to enter or exit the package, a proper seal will be established. This supplemental seal will be initialed and dated, in a manner so as not to obscure any seals that may be present. In the event that additional tape is added, the analyst’s notes shall reflect that this action was taken.

Certain items (e.g., firearms or other cumbersome articles) that are not suitable for packaging can be accepted into the Forensic Laboratory without being sealed in a container (Department Manual 5/210.02). The item must be protected with regard to the nature of the requested examination.

**Evidence Not in the Process of Examination**
All evidence will be kept in a sealed condition in a secure location until the analysis begins.

**Evidence in the Process of Examination/Analysis**
While evidence is in the process of examination/analysis it may be stored temporarily in an unsealed condition. Evidence that is actively in progress shall be stored in a secure location such as a personal evidence locker, personal lockable evidence cabinet, Detail/Unit evidence vault, a Detail/Unit refrigerator/freezer or in a locked examination room. The only exception to this policy is for large and/or cumbersome items that will not fit in the aforementioned locations. In these instances, evidence may be stored temporarily in an unsealed condition in a secure (controlled) Laboratory area.

Any evidence that is not under active examination/analysis will be properly sealed and secured.

**Unattended Evidence**
In access controlled Laboratory areas, the analyst may allow evidence to be out of direct control for short periods of time (e.g. lunch, breaks). The analyst may temporarily place a note alongside of the work in progress while unattended for a short period of time to alert other Laboratory members that evidence is in the process of being analyzed. The last person that leaves the Detail/Unit is responsible for assuring that appropriate doors are secured in that Detail/Unit.

**Chain of Custody**
ACE serves as an electronic chain of custody record of every transaction performed on the evidence once it was entered into the ACE database. The documentation of the chain of custody of all evidence received in the Forensic Laboratory will include both, items tested and not tested, as well as items that are created and used or could be used for testing. ACE references each individual who participated in a transaction.
Another account of the chain of custody is affixed to or preprinted on the evidence package itself. It is the policy of the department (Department Manual 5/210. 02 – Booking Evidence and Property) to sign the chain of custody affixed to the package only when the package has been physically opened to handle, analyze or view the contents. The chain will be signed and dated by the analyst who opened the evidence at the time when the evidence is resealed. Evidence Technicians or analysts handling a package for the sole purpose of package transfer are not required to sign the chain of custody located on the evidence package.

**ACE (Active Control of Evidence)**

Evidence transactions performed between the Evidence Vault and Forensic Laboratory personnel are documented in the Evidence Vault’s ACE computerized database system. Each item of evidence handled through ACE has an ACE number that is assigned upon entry to the database.

Evidence moved through ACE is placed from one individual’s custody into another’s by a “secure move”. In order to execute a secure move, two user passwords are required (a “relinquisher” and a “receiver”) at the time of the transaction. These ACE passwords are distinct from the password the department requires for logon to the network. In the secure move, the passwords serve as electronic signatures and eliminate the need for a handwritten signature to authorize the transaction. Each secure move performed is electronically documented referencing the items of evidence, the names of the receiving and relinquishing individuals as well as the date and time of the transaction. A hard copy receipt of any given transaction can be produced by referencing the transaction (by LVMPD Event #, ACE #, suspect name, etc.) and reprinting the receipts from the item history.

The transaction used to move evidence into or out of the custody of an individual from/to a general location (e.g. refrigerator, Remstar) is called an “internal move”. An internal move requires the individual relinquishing or receiving custody of the evidence to be logged into ACE. Each internal move performed is electronically documented referencing the items of evidence, the name of the individual performing the transaction and the date and time of the transaction.

The transaction used to relinquish and receive evidence entered into the ACE system from or to a person without an ACE user password is called a “transfer”. This transaction only requires one ACE user password. Transfer transactions executed through ACE will electronically document the items of evidence, the individual who transferred the evidence, to whom it was transferred, the reason why it was transferred and the date and time the transaction occurred. Transfer receipts require a signature from any individual involved in the transaction who does not have an ACE password.

**ACE Evidence Locations**
An important aspect of ACE is the manner in which it tracks the “location” of each item of evidence. The “location” may describe the actual physical location of the evidence and/or the status of the evidence. The location is broken down into three levels: the node, the primary location and the secondary location. The Laboratory and the Evidence Vault are on two separate nodes due to their separate physical sites and the separate computer pathways that are employed at these facilities. During any evidence move conducted in ACE, the user is required to enter a primary and secondary location. The primary location must be selected from a list of predetermined sites established by the ACE administrator. The node is determined upon initial entry of the evidence item into ACE (i.e., items initially entered at the Forensic Laboratory will show the node as LAB). According to Forensic Laboratory policy, the secondary location is defined as the P# of the Laboratory personnel receiving the evidence.

Evidence that has been ordered by an analyst assigned to the Forensic Laboratory building (see 5.8.1 – Evidence Ordering, Receipt, Processing, Return and Release: Ordering Evidence from the Vault for further details), will be pulled from its storage location at the Evidence Vault and placed in the LABR LAB location (node = EV; primary designation = LABR; secondary designation = LAB) for transport to the Forensic Laboratory building by Evidence Technicians from the Evidence Vault.

Evidence that has been ordered by an analyst assigned to the DNA Annex, will be pulled from its storage location at the Evidence Vault and placed in the LABR DNA location (node = EV; primary designation = LABR; secondary designation = DNA) for transport to the DNA Annex by Evidence Technicians from the Evidence Vault.

Once arriving at the Laboratory, an Evidence Technician from the Evidence Vault will secure move evidence that has been ordered to either a Forensic Laboratory Evidence Technician/designee or the requesting analyst. The Evidence Technician/designee will change the evidence location from LABR LAB or LABR DNA to a location that will reflect a specific Detail/Unit in the Laboratory and a particular individual’s custody. Primary locations and the corresponding sections associated with the LAB node are as follows:

- FLV Forensic Lab Vault
- DNA Biology/DNA
- CHM Chemistry Seized Drugs
- FTM Firearms
- LPT Latent Prints
- TOX Toxicology
- TRA Trace Materials

The secondary designation will be the assigned individual’s five digit P#. Since the secondary designation will allow the user to input any five digit code, care must be taken that the appropriate P# is entered. An example of
a location after evidence has been secure moved from LABR LAB would be CHM0 5418. This particular location would indicate that Tom Melville (P#05418) from the Chemistry Detail has the evidence in his custody.

In the case of DNA evidence delivered to the DNA Annex, the primary location would be DNA0 and the secondary location would be VLT.

In the case of biological samples delivered directly to the Toxicology refrigerator, the primary location would be TOXI and the secondary location would be FRIG.

In the case of clandestine (clan) laboratory samples recovered by a member of the clan lab team and delivered directly to the Chemistry refrigerator, the primary location would be CHM0 and the secondary location would be FRIG. The FRIG location is utilized while evidence is temporarily stored in a refrigerator in the Toxicology and/or Chemistry Details while awaiting analysis.

In the case of Latent Print Packets received by the Evidence Technicians/designee and delivered directly to the Remstar, the primary location would be LPT0 and the secondary location would be REMS. The REMS location is utilized to house Latent Print Packets for the current five years approximately. Older Latent Print Packets from non-statute cases (e.g. homicides) which must be stored indefinitely are stored in the Latent Print Vault. The secondary location for these packets is VLT. Older Latent Print Packets, other than non-statute cases, are stored in the Forensic Lab storage room and will list a secondary location of ARCV.

**Chain of Custody for DNA Extracts**
Effective May 16, 2018, DNA extracts created during the course of DNA testing are maintained and tracked using an internal chain of custody within the Biology/DNA Detail. Refer to the DNA Quality Manual for further information.

**Evidence Intra-Lab Transactions and Splits**
When items of evidence require different types of analysis by several Details/Units in the Laboratory, the evidence packages containing those items can be moved from analyst to analyst without sending the package back to the vault first. When this type of intra-laboratory transfer occurs, the evidence packages will be secure moved in ACE from one analyst to another.

In rare instances, usually associated with a rush analysis, several items in one package require simultaneous examination by two different analysts. In these situations, evidence items that are entered into ACE individually under separate ACE numbers may be secure moved on an item by item basis. In these cases, it is not required that the individual item of evidence be in a formal sealed condition prior to the examination. The analyst who originally opened the package will attest to its sealed condition; however both analysts’
case notes must reflect the manner in which the evidence was handled. The second analyst receiving just the singular item will sign the chain of custody and indicate specific item(s) examined. In certain circumstances an analyst may collect evidence from an item that is being analyzed in another section (see below - Analysts Working Concurrently on Evidence).

In cases where evidence needs to be transported between the Forensic Laboratory building and the DNA Annex, the evidence will be transported in a secure receptacle (e.g., rolling cart with lockable cage).

Analysts Working Concurrently on Evidence
It is common for a single item of evidence to be examined and tested by several Details/Units of the Laboratory, and, in some cases, analysts may be working concurrently on the same item of evidence.

This type of interaction is considered a “significant interaction” and the following must occur:

- Examinations must be conducted in a sequence that maximizes the forensically significant information from each item. For example, a bullet bearing traces of blood can be examined by the Biology/DNA Detail, to collect evidence of biological importance, while in the possession of a Firearms analyst.

- Both analysts’ case notes shall document the consultation and coordination of their activities.

- In instances where only evidence collection is performed, the analyst collecting the evidence will complete case notes and an Officer’s Report. One copy of the Officer’s Report will be maintained in the Unit Record Object Repository in FRED and one will be forwarded to the primary investigator; the original will be forwarded to the Records Bureau. This provides investigators and other interested parties with important information regarding the availability of evidence in the case.

- If matter is derived from the original evidence (such as a blood swabbed from a weapon), it must be placed into a separate container (such as a Petri dish or coin envelope).

- The packet of derived evidence must be placed in an additional evidence envelope/bag.

- Items will be data entered as a new item in ACE.

- When an analyst handles an item of evidence when it is in the primary custody of someone else, the analyst must annotate it on the evidence package. The annotation shall be made on
the front of the evidence package (if possible) outside the specific "chain of custody" lines. The annotation shall indicate the specific item(s) examined. This provides an accurate depiction of the handling of the evidence.

Evidence Collected by Photography
When evidence can only be recorded or collected by photography and the impression itself is not recoverable, the photograph or negative of the image shall be treated as evidence (see Latent Print and Documentation Photographs in the Latent Prints Technical Manual for further details).

Crime Scene Evidence Collected by Laboratory Personnel
Evidence collected from a crime scene by Laboratory personnel (clandestine laboratories) shall be protected from loss, cross transfer, contamination and/or deleterious change during transportation to the Laboratory. The evidence shall be appropriately identified, packaged and entered into ACE as soon as practical see Clandestine Laboratory Response in the Seized Drugs Technical Manual for further details.

Individual Characteristic Databases
The Forensic Laboratory participates in several databases with crime solving capabilities including:

- AFIS – Automated Fingerprint Identification System
- CODIS – Combined DNA Index System
- NIBIN - National Integrated Ballistics Information Network

CODIS is maintained by the FBI and NIBIN is supported by the ATF. In some instances Laboratory participation is guided by a Memorandum of Understanding with these law enforcement partners. Procedures for the operation of the individual characteristic databases are located and/or referenced in the appropriate Detail/Unit Technical Manual.

Designation of Individual Characteristic Database Samples
The designation of individual characteristic database samples as evidence, reference materials, or examination records is defined in the appropriate Detail/Unit Technical Manual.

Individual Characteristic Database Samples Treated as Evidence

Individual Characteristic Database Samples Not Treated as Evidence
Individual characteristic database samples not treated as evidence shall meet ANAB ISO/IEC 17025:2005 5.8.1.1 f).
Handling of Individual Characteristic Database Samples

Individual characteristic database samples under the control of the Laboratory are handled in such a manner to protect them from loss, cross transfer, contamination and/or deleterious change. The samples are handled in a manner that reasonably ensures their utility as comparison materials.

Disposition of All Items Received

Disposition of all items received in the Forensic Laboratory to include both, tested and not tested, will be documented on the Formal Laboratory Report.

5.8.2 Laboratory System

The Forensic Laboratory uses both ACE and FRED as the laboratory system. ACE provides the official chain of custody that documents and tracks the location and transfer of items of evidence received in the laboratory. FRED documents and tracks the case record related to the Event #.

The Forensic Laboratory unique identifier, the Lab #, will be entered in the “Lab Number” field in ACE to correlate the ACE # (red box), Event # (white box) and the Lab # (yellow box) to items received by the laboratory. This entry will only be done on items received by the analyst in the Forensic Laboratory to include items tested, not tested, and/or created.

Evidence Marking

Any evidence examined by members of the Laboratory must be marked in some manner so that it can be identified in court. Items examined must bear the Event #, the initials of the examining analyst, the FRED designated item
number and the Lab Number, if practical. To avoid the possibility of several Lab Numbers existing on a single item of evidence, the Unit Record designator portion of the Lab Number does not need to be utilized when marking items of evidence (e.g., 14-02742.2 may be documented 14-02742). All markings or identifiers will be made in such a manner that the evidentiary value of the item is not compromised. If a proximal container is added by the analyst, the proximal container must be marked as outlined above. Under the following circumstances, the identifying markings may be placed on the proximal container only:

- If the evidence is too small for an identifying mark.
- Marking the item will damage the evidence (e.g., a small fragment of a bullet where the rifling characteristics must be observed).
- Marking the item may interfere with another Detail/Unit’s examination.
- The nature or texture of the item prevents it from being marked.
- Items with irregular or absorbent surfaces.
- Where markings may compromise an item’s value and/or may be returned to the owner, such as a piece of jewelry.

When working on evidence that is not in the analyst’s sole care and custody, (e.g., recovering derived matter from an item of evidence located in another analyst’s custody), the item of evidence does not need to be marked with unique identifier or initials. The marking of evidence applies only to the analyst who maintains the physical custody of the evidence. However, the outside of the evidence package must be marked by the analyst working on the evidence.

Multiple like items which were examined may be taped together with clear tape and marked as one. Unusual items which can be conveniently stapled together or attached, such as a pair of socks, can be marked with one label.

Evidence marks should be made with permanent ink, waterproof marker, paint pen, labels or by scribing. If due to the nature of the evidence, it appears that the marking may be at risk for rubbing off, a piece of clear tape can be placed over the markings for protection.

See Detail/Unit Technical Manuals for requirements specific to that Detail/Unit.

**5.8.2.1 Uniquely Identifying Evidence Items**
Each item of evidence and/or its proximal container will be marked with a unique identifier and be traceable to an Event # and Lab Number (see 5.8.2 – Evidence Marking and Detail/Unit Manuals for further details).

The FRED generated Item Number is developed for each ACE Item that is entered into FRED. Items can be further identified by creating sub-items. Numbering convention to indicate sub-items will include the original item followed by sequential numbers (e.g. Item designator 2, Sub-item designator...
2.1). The creation of sub-sub-items will be addressed by specific Detail/Unit Technical Manuals, if applicable.

For items received in the Forensic Laboratory but not tested will be documented in the case record. The documentation will be addressed by specific Detail/Unit Technical Manuals.

**Unique Identification of Individual Characteristic Database Samples**

Individual characteristic database samples under the control of the Laboratory shall be uniquely identified. Designation for the unique identification of individual characteristic database samples is defined in the appropriate Detail/Unit Technical Manual.

**5.8.3 Evidence Discrepancies**

Individuals receiving evidence will ensure that the description of the evidence on the package (i.e., the event number, or applicable agency identifier, evidence amount and evidence type - controlled substances, firearms, etc.) matches the description of the item ordered through ACE. If a discrepancy exists between the items of evidence listed on the outside of the package and those items actually received, the respective Forensic Laboratory Manager/Forensic Laboratory Supervisor will be notified and the impounding officer or agency may be contacted by technical staff to inform them of the discrepancy. The discrepancy will be documented in the case notes. In controlled substances cases, if a discrepancy exists the Internal Affairs Bureau may be notified.

When there is doubt as to the suitability of an item for testing or the test required is not specified in sufficient detail, the Laboratory shall consult the requestor before proceeding and shall record the discussion in FRED.

**5.8.4 Evidence Security and Storage**

While evidentiary articles are in the Laboratory they will be stored in the Laboratory evidence vaults, individual lockers, DNA personal lockable evidence cabinets, Latent Print overhead bins or Laboratory evidence refrigerators/freezers. Large and/or cumbersome items may be stored in limited access areas.

During the examination process, evidence will be handled in such a way as to prevent loss, contamination or deleterious change. The last person that leaves the Detail/Unit (e.g., lunch, breaks or the end of the day) is responsible for assuring that appropriate doors are secured in that Detail/Unit.

Evidence must not be removed from the Laboratory except for legitimate purposes such as transferring it to an officer for court, returning it to the Evidence Vault/submitting agency, or conducting examinations outside of the Laboratory (e.g., firearms range).
General Evidence Storage Guidelines

- With the exception of Latent Print Packets and footwear and ESDA lifts created by the Forensic Laboratory, the period during which evidence is stored at the Laboratory will be minimized; therefore Laboratory members will promptly facilitate the return of evidence to the main evidence vault upon completion of examination.

- Biological evidence will be stored in a manner which will ensure that its evidential value is prolonged and that degradation is minimized. Temperatures for refrigerator/freezers that house evidence are monitored and recorded in Resource Manager (see Quality Control Plans in the Detail/Unit Technical Manuals for further details).

- Unusually large or valuable drug submissions should be analyzed as soon as possible to avoid any long term storage in the Laboratory.

- Certain types of evidence may be removed from evidence and maintained in the Laboratory and placed in a reference collection (such as the firearms and pill collections).

- The DNA Detail maintains DNA database samples, bloodstain standards, substrates and DNA extracts according to the Biology/DNA Procedures/Quality Manual

- LVMPD latent lift packets/cards from the current year and four (4) previous years will be maintained within the Laboratory in the secured latent file (Remstar). Archived latent lift packets/cards are stored in the secure storage room or in the Latent Prints Evidence Vault.

- Footwear and ESDA lifts created by the Forensic Laboratory are located in a locker in the Latent Print vault.
The following definitions in reference to time intervals listed for proficiency tests:

- **Semi-annual** – Twice a year
- **Annual** – Once every year
- **Biennial** – Every other year

### 5.9.1 Assuring the Quality of Test and Calibration Results

Each Detail/Unit will have quality control procedures to monitor analytical testing appropriate to the type and frequency of the tests conducted. The quality control procedures shall be documented and the results retained to show whether the quality control results were acceptable or not, and if not, that remedial action has been taken. These quality control procedures and methods of documentation will be found in the Detail/Unit Technical Manuals. One or more of the following techniques may be used to demonstrate quality assurance of the test performed:

- Regular use of positive and negative controls
- Use of internal standards
- Regular use of certified reference materials or internally generated reference materials
- Use of reference collections
- Replicate testing
- Independent checks (verifications)

In addition, the Forensic Laboratory will use the following as an effective means to monitor its performance:

- Participation in proficiency testing
- Technical review of casework
- Monitoring of analysts courtroom testimony
- Customer feedback

### 5.9.1.1 Controls and Standards

Quality control procedures to ensure the validity of tests undertaken shall be specified in the test method and the result of each quality control activity shall be recorded. Procedures are located in the Detail/Unit Technical Manual.

### 5.9.1.2 Reference Collections of Data or Materials

Reference collections of data or materials which are maintained for identification, comparison, or interpretation purposes shall have each entry in...
the collection documented, uniquely identified and handled properly to protect the characteristic(s) of interest.

5.9.1.3 Verification of a Test Result
The purpose of the verification process is to evaluate the validity of a test result/opinion reached by re-performing the comparison between the unknown and the known. Specific test methods for the comparison of an unknown to a known are located in the Detail/Unit Technical Manual.

When a verification of a test result is carried out:
   a) This verification shall be conducted by individuals authorized to perform the testing. The authorization to perform verifications is documented on the Authorization Memos located in Qualtrax.
   b) The record of the verification can be found in FRED. The record shall identify who performed the verification, when it was performed and the results of the verification.
   c) The verifier may not agree with the original test result. Methods for dealing with any differences in opinion are detailed in section 5.9.4 h – Technical Review of Technical Records and Test Reports.
   d) The resolution of any discrepancy shall be recorded. The record of the discrepancy can be found in FRED. See 5.9.4 h – Technical Review of Technical Records and Test Reports.

5.9.2 Quality Control Data
Quality control data shall be analyzed. If the data is found to be outside acceptable criteria, planned action shall be taken to correct the problem and to prevent incorrect results from being reported.

5.9.3 Proficiency Testing Program
Regular participation in an external proficiency testing program is an important part of the Forensic Laboratory’s Quality Assurance Program. Proficiency tests provide the Laboratory with a means for continuing self-evaluation in the areas of forensic science and are therefore considered a part of the employee’s personnel records. It provides management with a means for identifying problem areas of analysis and provides a means to monitor the technical skills of the analyst.

Forensic Laboratory management will support the proficiency testing program by providing equipment, resources, and proficiency samples and by offering training and scientific seminar opportunities to encourage the professional growth of its technical staff.

The proficiency testing program shall have at a minimum:

   a) The Forensic Laboratory shall not use past proficiency test samples for in-house proficiency tests. The proficiency test results are expected to not be known or readily available to the test taker. All past external proficiency test results are available online, therefore,
readily available to the test taker. Prior to re-purposing, any unused external proficiency test samples must be rendered to be untraceable, to be known only by the test creator and appropriate management or quality personnel.

b) The Forensic Laboratory shall successfully complete at least one external proficiency test from an approved provider if an approved provider is available for each discipline in which application for accreditation has been made. Established disciplines in the Forensic Laboratory that require completion of a proficiency test are:

- Firearms
- Fire Debris and Explosives
- Friction Ridge
- Trace Materials
- Seized Drugs
- Toxicology
- Biology

c) The Forensic Laboratory shall successfully complete, per calendar year, at least one external proficiency test for each discipline in which accredited services are provided, with authorized release of the test results to ANAB from the test provider for each location on the scope of accreditation. The locations on the scope of accreditation are:

- Main Laboratory
- DNA Laboratory

Note: For proficiency tests taken at the end of one calendar year, evaluation of these tests can occur in the subsequent calendar year.

d) Analysts shall successfully complete at least one internal or external proficiency test per calendar year in each discipline on the scope of accreditation in which they routinely perform casework.

Technical support staff working in the Administrative AFIS program will be required to successfully complete a proficiency test in Individual Characteristic Database (AFIS) annually. Technical support staff working in the NIBIN program will be required to successfully complete a proficiency test in Individual Characteristic Database (NIBIN) annually. Other types of examinations not listed above may be proficiency tested if a need arises.

The General Chemical Testing category of testing proficiency test may be conducted concurrently with the Seized Drugs category of testing proficiency tests.

The Body Fluid Identification category of testing proficiency test may be conducted concurrently with the DNA STR category of testing proficiency test.

Note: Internal proficiency tests may include internally created practical tests, previously worked or older unworked commercially
provided practical tests (provided the answers cannot be traced (see 5.9.3 a.)), testing reanalysis and when appropriate, observation based tests.

e) The test methods from the appropriate Detail/Unit Technical Manual shall be used when participating in proficiency tests.

f) Proficiency test records are maintained by the Quality Manager/designee, in FRED and/or in Qualtrax. See 5.9.3.3 for records maintained.

g) Successful completion of a proficiency test is defined as either obtaining the correct response(s) or completing corrective actions pursuant to Laboratory policy. See Detail/Unit Technical Manual for further criteria.

h) The Quality Manager/designee will assess the results upon receipt from the test provider. The assessment will include the determination if any corrective action or additional training is necessary.

**Corrective Action Associated with Proficiency Tests**

Proficiency test taking is not normally subject to disciplinary action as the purpose is self-assessment, however exceptions may apply:

- If a proficiency test is performed in error in a purposeful fashion to avoid performing a particular type of casework, disciplinary action will be pursued.

- Repeated inability to turn in proficiency tests in a timely manner will be dealt with through the progressive discipline guidelines established in the collective bargaining process.

- Repeated inability to successfully complete proficiency tests as compared with national respondents will be dealt with as a performance issue.

The Quality Manager or appropriate Forensic Laboratory Manager/Supervisor/DNA Technical Leader will review the Laboratory’s response in comparison to the proficiency test manufacturer’s expected or average results, and those results reported by the test respondents. A notation of the status of results (satisfactory, unsatisfactory, etc.) will be made in the Proficiency Test Workflow. It is the responsibility of the Quality Manager/Forensic Laboratory Manager/Supervisor/DNA Technical Leader to ensure that conflicting results are acknowledged and any corrective action is documented.

Discrepancies in results will be evaluated on an individual test basis. Reviews of the tests will conform to the technical and administrative capabilities associated with the casework performed by the Laboratory. Therefore, there may be instances where the proficiency test results and current testing capabilities of the Laboratory do not mesh. It is recognized that samples provided by external sources
may be prepared to present novel analyses or research situations and an educational challenge to the Laboratory. Special consideration will be given to these unusual situations when reviewing results. Discrepancies not found to be significant do not invalidate a proficiency test.

In the Biology/DNA Detail, the Technical Leader will determine whether an error in interpretation or typing will be classified as an analytical error. If inconclusive results are obtained, the Technical Leader will document if they are in compliance with Laboratory guidelines.

A variety of corrective techniques may be utilized after a discrepancy has been noted. These techniques may include, but are not limited to: fact-finding, retesting using additional or previously taken proficiency tests, technical competency assessment, technical review of completed casework, technical procedure review, evidence reexamination, monitored casework, cessation of casework, and/or additional training. Documentation of the varied phases of a corrective action will be compiled and maintained by the Quality Manager/designee.

Corrective action will follow an established course:

- A Forensic Laboratory Corrective Action Report will be completed and the results will be discussed with the analyst.

- The analyst reporting the apparently conflicting results will have the opportunity to address the question verbally or in writing.

- The analyst may be asked to re-analyze the test sample with or without the knowledge of the target result.

- Discrepancies found to be the result of administrative error (clerical, transcriptional, insufficient documentation) may be handled by discussion, counseling, additional training, or other supervisory techniques.

- Significant discrepancies found to be the result of systemic error (equipment, materials, method) may require a review of that casework which occurred since the last successfully completed proficiency test to determine if the casework was adversely affected. A cessation of casework analyses may be necessary. Once the cause of the problem has been identified, all analysts in the affected Detail/Unit will be made aware of the corrective action to minimize the recurrence of the discrepancy.
Any significant discrepancy determined to be the result of an analytical/interpretative problem may prohibit the analyst involved from further examination of casework. Depending upon the nature of the problem, additional training may be pursued and/or an audit of prior cases may be required. Before resuming casework, the individual responsible for the discrepancy may be required to satisfactorily complete an additional set of proficiency samples. Closer monitoring of casework may be required.

Proficiency Tests as Training Exercises
Proficiency tests may be assigned to analysts with limited training in a field as a “training exercise”. In these situations, the samples are analyzed informally and the results are not reported. The analyst may be asked to follow-up the exercise by reviewing the test with colleagues. Opportunities for additional training in the subject matter may be explored.

Reference Tests
The Forensic Laboratory may participate as a reference Laboratory for external research projects of for proficiency test providers. Whenever possible, samples will be examined and results will be submitted. Reference samples may also be used as proficiency test materials and will follow the policies and procedures of the program when treated as such.

i) Assessment results will be routed to the appropriate Forensic Laboratory Manager/Forensic Laboratory Supervisor and analyst for review.
   • Proficiency tests performed by the Biology/DNA Detail will also be routed to the Technical Leader and CODIS Administrator for documented review. All proficiency tests assigned and performed by the Biology/DNA Detail will be in compliance with the Quality Assurance Standards issued by the FBI. Refer to the Biology/DNA Procedures/Quality Manual for detailed information regarding proficiency tests.

j) Internally created proficiency tests shall be quality control checked to verify the validity of the test prior to issuing the test. See Detail/Unit Technical Manual or Training Manual for mechanism used.

Responsibilities of Management – Lab Director and Quality Manager/Designee

- The Director will procure the budgetary support for proficiency testing materials. The Quality Manager/designee will subscribe to proficiency testing services found to be adequate for the Laboratory’s needs.

- The Quality Manager/designee will keep a log of the proficiency tests and will assign the testing materials to the analysts.
- Although single proficiency tests may be apportioned to or split between two or more analysts, these tests will be worked and reviewed separately. A consensus response may be sent to the external test provider.

- The Quality Manager/designee will send the results to the test source and maintain a copy for the Laboratory.

- The Quality Manager/designee will assess the results upon receipt from the test provider. The assessment will include the determination if any corrective action or additional training is necessary.

- Assessment results will be routed to the appropriate Forensic Laboratory Manager/Forensic Laboratory Supervisor and analyst for review.
  - Proficiency tests performed by the Biology/DNA Detail will also be routed to the Technical Leader and CODIS Administrator for documented review. All proficiency tests assigned and performed by the Biology/DNA Detail will be in compliance with the Quality Assurance Standards issued by the FBI. Refer to the Biology/DNA Procedures/Quality Manual for detailed information regarding proficiency tests.

- Laboratory management may use past proficiency test samples for repeat analysis, training, or competency tests. Samples from past proficiency tests must have the proficiency testing identification removed and the sample must be repackaged and relabeled prior to being used competency tests so the answers are not readily available to the end-user.

**Responsibilities of the Analyst**

- When test specimens are designated as proficiency samples, the analyst will conduct the test without assistance from other Laboratory personnel or individuals from outside the LVMPD Laboratory. Only in unusual situations will the test be worked as a group effort and only with the permission of the Laboratory Director/Quality Manager.

- The analyst will: receive test samples and maintain chain of custody, prepare notes as necessary, conduct analyses, interpret analytical data, form conclusions or answer questions posed by the test provider, report conclusions within the appropriate time frame.

- When a section procedure outlines certain steps that are normally performed in requested case work, these steps shall be performed during a proficiency test even if they are designated as "optional" by the provider.
Results of proficiency tests will be held confidential by Laboratory members. Discussions regarding proficiency tests and results are prohibited unless prior approval of the Laboratory Director or Quality Manager is obtained. Revealing test information defeats the purpose of the testing program.

Technical and Administrative review will be conducted on all proficiency tests and the reviews will be documented in FRED. Cases worked outside of FRED (Breath Alcohol) will be reviewed outside of FRED. The procedures for review of case work found in 5.9.4 - Technical Review of Technical Records and Test Reports, and 5.9.5 - Administrative Review will be followed.

Where applicable, procedures found in 4.13.2.1 – Technical (Case) Records will be followed while developing the proficiency test file. Certain elements of the proficiency test file will be considered analogous to case record components (e.g. test provider forms to be submitted = formal report).

After the results are submitted by the proficiency test provider, if an analyst feels review of specific proficiency tests by other members of the Laboratory staff would enhance the quality of examinations and affect the output of the Laboratory, the analyst may do so with the permission of the Laboratory Director and/or Quality Manager.

### 5.9.3.1 Proficiency Test Plan

The Forensic Laboratory shall utilize a proficiency test plan that ensures:

- The disciplines within each location on the scope of accreditation successfully complete at least one external proficiency test per calendar year.
- All proficiency tested personnel successfully complete at least one internal or external proficiency test per calendar year in each discipline in which the individual conducts testing.
- The inclusion of a representative sample of the types of tests within each discipline listed on the scope of accreditation.
- Successful completion of a proficiency test is defined as either obtaining the correct response(s) or completing corrective actions pursuant to Laboratory policy.
- The categories of testing within each discipline are:
  - **Firearms**
    - Collection (DNA Swabbing)
    - Physical Comparison
    - Determination of Functionality
    - Length Measurement
    - Trigger Pull Force Measurement
    - Distance Determination
    - Serial Number Restoration
    - NIBIN entry and reporting
- Fire Debris and Explosives
  - Qualitative Analysis
- Latent Prints (Friction Ridge)
  - Collection
  - Enhancement
  - Physical Comparisons
  - AFIS
- Trace Materials
  - Physical Determination
  - Chemical Determination
  - Physical/Chemical Comparison
- Seized Drugs
  - Collection (Clan Lab Response)
  - Qualitative Analysis
- Toxicology
  - Qualitative Determination
  - Quantitative Measurement
- Biology
  - Collection
  - Body Fluid Identification
  - DNA-STR
  - Individual Characteristics Database

Note: Refer to the Quality Assurance Standards for Forensic DNA Testing Laboratories and the Quality Assurance Standards for DNA Databasing Laboratories for further information related to proficiency test requirements for the Biology/DNA Details/Units.

For each category of testing within a discipline that is not routinely performed, analysts will successfully complete a proficiency test at least once during each four-year accreditation cycle. Categories of testing within our Scope of Accreditation that require completion of a proficiency test biennially are:

- Firearms (Forensic Scientists)
  - Serial Number Restoration
  - Collection (DNA Swabbing)
  - Determination of Functionality
  - Length Measurement
  - Trigger Pull Force Measurement
  - NIBIN entry and reporting
- Latent Prints (Friction Ridge)
  - Collection
  - Enhancement
  - AFIS
- Seized Drugs
  - Collection (Clan Lab Response)
- Trace Materials
  - Physical Determination
5.9.3.2 External Proficiency Tests
The Forensic Laboratory shall:

a) Where available and appropriate for the testing conducted, use a proficiency test provider that is accredited to ISO/IEC 17043 by an accreditation body that is a signatory to the APLAC MRA or IAAC MLA and has the applicable proficiency test(s) on its scope of accreditation.

b) Where not available or not appropriate for the testing conducted, gain approval from ANAB for alternative means by which the laboratory’s performance can be assessed.

5.9.3.2.1 Proficiency Test Submission
External proficiency test results shall be submitted to the external test provider on or before the agreed upon due date.

5.9.3.3 Proficiency Tests Records
The Forensic Laboratory shall maintain records for all proficiency testing conducted. The maintained records include:

- The test set identifier (e.g. CTS 10-534)
- The disciplines tested
- How samples were obtained or created (Manufacturer's Information)
- Expected proficiency test results
- Location where the proficiency test was taken when more than one location is associated with a single accreditation certificate
- Records submitted to an external proficiency test provider
- Identity of the person taking the test
- Date of analysis and completion
- Originals or copies of all data and notes supporting the conclusions
- The proficiency test results
- Any discrepancies noted
- Assessment of proficiency test results (review and feedback of performance)
- Details of corrective actions taken (when necessary)

5.9.3.4 Retention of Proficiency Test Records
See ISO/IEC 17025, 4.13.1.2 for details on retention of all records. Prior to 2015, full proficiency test records are maintained in the File room for a period of at least two years. At least three additional years of proficiency tests are documented in the Quality Manager’s Files by maintaining proficiency test summaries in the Proficiency Test Materials binder. Associated paperwork for the additional three years will be stored in the Forensic Laboratory file archives.
Starting in 2015, full proficiency test records are maintained in FRED or in Qualtrax for at least five years.

Beyond the five years referenced, records will be destroyed when convenient.

5.9.4 Technical Review of Technical Records and Test Reports
The purpose of the technical review process is to ensure that appropriate examination of the evidence takes place in regards to the choice of procedure, methodology, and documentation; to confirm that the results or interpretations of the analyses are documented and support the stated conclusions; to verify identifications made and to ensure that Laboratory defined documentation procedures are followed. Technical review is a vital step to ensuring a quality work product.

Forensic Laboratory Managers/Forensic Laboratory Supervisors will select cases for technical review. The method for selecting the cases is left to the discretion of the Forensic Laboratory Managers/Supervisors.

Technical review will be undertaken as soon as practical after the case is completed.

The technical review process shall:

a) Be conducted by individuals that have been competency tested in the task(s) that the review is encompassing. The technical reviewer shall have knowledge of the appropriate technical procedures. The authorization to perform technical reviews is documented on the Authorization Memos located in Qualtrax.

Technical reviews may be completed by an analyst not employed by the LVMPD Forensic Laboratory. The performance of technical reviews by an outside agency is considered a critical service.

When technical reviews are performed by an analyst from another accredited Forensic Laboratory the following criteria must be met:

- The reviewing analyst must be employed by a Forensic Laboratory that is accredited to ISO/IEC 17025 in the applicable Category of Testing (e.g. Fire Debris).
- A current Statement of Qualifications and/or a Curriculum Vitae must be on file for the reviewing analyst.
- The reviewing analyst must have an Authorization Memo sanctioning the performance of technical review for the specified casework (e.g. Fire Debris) on file at the LVMPD Forensic Laboratory.
- The reviewing analyst will be provided the appropriate portions of the Technical Manual and Forensic Handbook for the casework being technically reviewed.
When technical reviews are performed by an analyst from an agency that is not accredited in the applicable Category of Testing, a competency review of the technical reviewer will be conducted. This review will include the following:

- Previous work experience in a Forensic Laboratory that was accredited to ISO/IEC 17025 in the applicable Category of Testing during their tenure
- Quality of service provided determined from past use as a Technical Reviewer
- Expertise in the Category of Testing established by training and experience in that Category of Testing
  - Determined through review of a current Curriculum Vitae
  - Determined through past successful completion of proficiency tests in that Category of Testing
- The reviewing analyst must have an Authorization Memo sanctioning the performance of technical review for the specified casework (e.g. Fire Debris) on file at the LVMPD Forensic Laboratory.
- The reviewing analyst will be provided the appropriate portions of the Technical Manual and Forensic Handbook for the casework being technically reviewed.

See the Trace Materials Technical Manual for further details.

b) Not be conducted by the author or co-author(s) of the casework under review. A verifier is not considered a co-author.

An individual who performs a verification can also perform a technical review.

c) Ensure a representative sample of technical records and test reports in each discipline are subjected to technical review.
- All Biology/DNA Detail cases and database samples will be subjected to technical review by current or formerly qualified analysts and performed in accordance with the Quality Assurance Standards issued by the FBI.
- All Seized Drugs, Trace Materials and Toxicology cases will be subjected to technical review.
- All Firearms cases where verifications are performed or which involve proximity analysis (distance determinations) will be subjected to technical review. For all casework, technical review will be completed on a minimum of 20% or six cases, whichever is fewer, per analyst per month.
- All Latent Print cases where verifications are performed will be subjected to technical review. Refer to the Latent Print Technical Manual for verification procedures.

d) See section for Technical Review of Testimony.
e) Utilized a technical review checklist prepared by each Detail/Unit. These checklists can be found in Qualtrax or in FRED.

In the Biology/DNA Detail, the technical review checklist will include all of the requirements set forth in the Quality Assurance Standards issued by the FBI.

The technical review documentation will be maintained as a part of the case record.

**Responsibility of the Analyst**

It is the analyst's responsibility to ensure that the notes and other case documentation accompanying the formal report are complete and legible to the reviewer. The analyst must work with the reviewer to facilitate the process and maintain an open frame of mind if discrepancies are brought to the analyst's attention. Requirements defined in **4.13.2– Technical (Case) Records** must be met before the case proceeds to technical review and it is the analyst's responsibility to ensure that the work product reflects these requirements.

**Responsibility of the Reviewer**

The purpose of the technical review is to ensure that the conclusions are reasonable and that the documentation and case notes substantiate the conclusions. The reviewer will follow the guidelines on the Technical Review form and/or the technical review questions in FRED for that specialty area. Reviewers are to keep in mind that variation in approach to casework is part of the discretion left to the individual analysts, thus the focus of the review process will be on “substance” rather than “style”. However, the technical requirements defined in **4.13.2 Technical (Case) Records** must also be met before the Technical Review is completed by the reviewer and the case is forwarded for Administrative Review.

**Conflict Resolution**

The reviewer may request changes in the report or request additional work to clarify an issue. Methods for dealing with any differences in opinion are detailed in section **5.9.4 – Technical Review of Technical Records and Test Reports**.

f) At a minimum include a review of the Formal Laboratory Reports and all associated case documentation to ensure:

- Accuracy of the formal report
- The data supports the results and/or conclusions in the formal report
- Associations are properly qualified in the formal report
- The formal report contains all required information
g) Ensure conformance with proper technical procedures and applicable Laboratory policies and procedures.

h) Ensure a course of action is taken if a discrepancy is found.

The case review processes provide an additional level of checking for any technical and administrative shortcomings or errors prior to the issuance of results. Occasionally, situations of opposing viewpoints, uncertainty, or dissenting opinion will exist between reviewers and analysts. In these situations, the guidelines listed below will be followed.

Administrative Problems
Administrative problems consist of instances of a clerical nature (name, event number, requesting officer, etc.) or transcription errors, insufficient documentation and/or faulty review procedures. If one of these problems is noted during administrative or technical review, the report and associated notes will be returned to the analyst for research and/or correction.

If the reviewer feels a grammatical error exists in a Formal Laboratory Report or if the wording of a report does not seem adequate or understandable, the reviewer will confer with the analyst first. If agreement is reached between the reviewer and analyst, changes may be made in the report. In situations involving the Forensic Laboratory Manager/Supervisor as reviewer, the Laboratory Director or another Forensic Laboratory Manager/Supervisor may act as a “third opinion.” In the Biology/DNA Detail, the Technical Leader has the ultimate authority over scientific discrepancies.

Technical, Analytical, or Interpretive Problems
During technical review, if the reviewing analyst does not agree with the case analyst on a result/conclusion (including statistics), it must be documented in the comment/note section of the Technical Review list prior to discussing the results with the case analyst.

If the case analyst concurs with the reviewing analyst, the case analyst can simply document that they agree with the reviewing analyst and update the notes and/or report with the revised conclusion and date. This documentation can either be placed in the notes or it can be documented in the comments section of the Technical Review list.

If the case analyst does not concur and a discussion is needed to arrive at a result/conclusion, the Forensic Laboratory Manager/Supervisor will be notified. In the Biology/DNA Detail, the DNA Technical Leader will be notified. The Forensic Laboratory Manager/Supervisor/DNA Technical Leader will determine the appropriate course of action. If resolution cannot be reached, it will be brought to the attention of the Laboratory
Director. In the Biology/DNA Detail, the Technical Leader has the ultimate authority over scientific discrepancies.

If an actual error in conclusion and/or interpretation is noted which may indicate a deficiency in the training or abilities of the analyst, the report will be submitted to the respective Forensic Laboratory Manager/Supervisor/DNA Technical Leader if the problem was noted during technical review or to the Laboratory Director if the error was noted during administrative review. In the Biology/DNA Detail, the Technical Leader will be notified of such issues. The Forensic Laboratory Manager/Supervisor/DNA Technical Leader will evaluate the situation and determine the needed course of action. See section 4.9 - Control of Nonconforming Testing and/or Calibration Work for further details.

Technical Review of Testimony

Presenting testimony regarding scientific examinations conducted by members of the Forensic Laboratory is one of the most important functions of the Forensic Scientist. Laboratory members will at all times present testimony that is truthful and based on the analysis at hand. At no time will a member testify as an expert to subjects beyond the scope of their experience and expertise.

Analysts who have testified in the courts of law during the course of a calendar year will have their testimony monitored at least once during that calendar year.

The testimony will be reviewed by an individual that has been competency tested in the task(s) that the review is encompassing in one of the following methods:

- Observation (preferred method)
- Review of transcripts or video tapes of the court proceedings

Review of testimony will be recorded on an Expert Witness Critique Form and should be completed during or shortly after the testimony has been rendered. The Expert Witness Critique Forms are located in Qualtrax separately for each Detail/Unit. At a minimum, the review of testimony shall ensure:

- That the results, opinions and interpretations are accurate, properly qualified and supported by the technical record
- Conformance with test methods and applicable policies and procedures

Any comments, feedback, or deficiencies mentioned on a critique will be addressed by the Laboratory Director or the appropriate Forensic Laboratory Manager/Technical Leader/Forensic Laboratory Supervisor and annotated utilizing the Witness Critiques Workflow in Qualtrax. If a deficiency is noted, the Laboratory Director or appropriate Forensic Laboratory
Manager/Technical Leader/Forensic Laboratory Supervisor will meet with the analyst to discuss the deficiency and planned course of action. The planned course of remedial action intended to resolve any noted deficiency(ies) will be addressed in the Witness Critiques Workflow. The course of action will vary depending on the deficiency and will be determined by the Laboratory Director or appropriate Forensic Laboratory Manager/Technical Leader/Forensic Laboratory Supervisor.

Testimony review may not be necessary in certain situations. For example, an analyst may not render expert testimony during the course of a year. In these situations, the Quality Manager or designee will annotate the witness critique records, indicating that the affected employee is exempt from testimony review.

5.9.5 Administrative Review
Forensic Laboratory Managers, Forensic Laboratory Supervisors or a Forensic Scientist/designee will perform administrative review on Formal Laboratory Reports/Declarations issued by their respective Details/Units. Administrative reviews shall be conducted on all cases. Administrative reviews shall not be conducted by the author(s) of the report. The administrative review, which is conducted prior to the release of the report, is an integral part of ensuring a quality product. The administrative review will be documented on an Administrative Review checklist or in FRED.

5.9.5.1 Administrative Review Checklist
The administrative review will address, but is not limited to, the following:

- That the event numbers, Lab Number, agency name, offense and subject names are consistent between formal report, case notes, and charts, graphs, etc. Subject names and offense may differ on items not produced by the Forensic Laboratory (evidence versus request); therefore these details only need to be consistent on all items generated by Laboratory personnel. The differences observed may be noted in the case record.
- When applicable, information transferred from a paper request (found in the Lab Request of the Case Record within the RFLE tab) will be compared to the data entered in the appropriate fields.
- That notes are understandable and relevant dates are reflected when applicable.
- That evidence identifiers such as item number, and results are properly transcribed from notes to report especially for disciplines that complete work or notes outside of FRED.
- That nomenclature is appropriate, and conclusions and report formats are understandable and consistent with Laboratory policy.
- That all administrative requirements defined in 4.13.2 – Technical (Case) Records are properly met.
- That all key information is included in the report.
- That grammar and spelling are correct.
- That the report is completed.
- That the files within the Unit Record Object Repository properly reflect the Lab Number.

After the administrative review is complete and satisfactory, the administrative reviewer will complete the Admin Review list and release (publish) the report for distribution.

In the Biology/DNA Detail all cases will undergo an administrative review performed in accordance with the Quality Assurance Standards issued by the FBI prior to dissemination.

The reviewer may request changes in the report or request additional work to clarify an issue.
5.10 Title: Reporting the Results

5.10.1 General
The results of each test carried out by the Laboratory shall be reported accurately, clearly, unambiguously and objectively in a Laboratory report. The case record shall include all information necessary for the interpretation of the results. Reports should be “user friendly” without sacrificing accuracy and completeness. A Formal Laboratory report may not be necessary in certain circumstances. This is addressed below in 5.10.1.1. No Laboratory report will be issued prior to the completion of technical and/or administrative review.

5.10.1.1 Reporting Test Results
a) All items received in the laboratory by the analyst/technologist, including items not tested, items created from the evidence that were or could be tested (e.g. DNA swab) and for all testing performed (partial and complete) will be documented on a Formal Laboratory Report. Items examined are documented in a table located at the top of the report. Items not examined for the purpose of the report are documented in a table located at the bottom of the report.

Note: Toxicology Detail reports do not require tables summarizing the evidence items received or not examined at this time.

Instances When a Formal Laboratory Report is Not Necessary
The creation and dissemination of a formal laboratory report may not be necessary in certain circumstances. In these circumstances documentation in the form of a notation on the request, a(n) memo/e-mail, or an Officer’s Report saved in the Object Repository in FRED and indicating the reason may suffice. The following lists some of the circumstances in which a Formal Laboratory Report may not be produced:

- The request for analysis was cancelled by the requestor prior to the analysis being performed (closed without analysis).
- No evidence is booked at the vault under the submitted event/case number.
- The evidence was not properly preserved for the type of analysis requested (e.g., latent print request on evidence that was not placed in a package).
- The evidence was already processed (e.g., latent print request on evidence that was processed by the CSI section).
- Render safe requests – Firearms cases involving rendering firearms safe/confirming firearms are not loaded.
When drug samples are retained for Department drug related operations, then documentation in LIMS will suffice.

An analyst is handling an item to collect a specific kind of evidence (such as fibers or hairs), repackaging an item for safe keeping or preservation or to view an item for investigatory purposes.

If an Officer’s Report is prepared, the report should always be forwarded to the Record’s Bureau. The Officer’s Report or memo should also be sent to the primary detective.

b) When applicable, the content for simplified reports or an annex to the report will be documented in a Formal Laboratory Report or email format. See Detail/Unit Technical Manual for further details.

c) Laboratory personnel who issue findings, including writing reports and providing testimony, based on examination documentation generated by another person, shall complete and document the review of all relevant pages of examination documentation in the case record by either initialing each relevant page of the examination documentation, by documenting the review on the worksheet in FRED or by documenting the review on a checklist (e.g. Technical Review form) or some other form.

d) When associations are made, the significance of the association shall be communicated clearly and qualified properly in the report. See Detail/Unit Technical Manual for further details.

- Example: The paint found in item 1 is similar to the paint in item 2 in color, layer structure and chemical composition. Therefore, item 1 may share a common origin with item 2 or any other paint with the same distinct characteristics.

When comparative analysis examinations result in the elimination of an individual or object, the report shall clearly communicate the elimination. See Detail/Unit Technical Manual for further details.

- Example: The evidence cartridges, cartridge cases and bullets were examined and microscopically compared to the test fired cartridge cases and bullets with the following results: The .40 S&W cartridge cases were not fired by either pistol.

e) When no definitive conclusion can be reached, the report shall clearly communicate the reason(s). See Detail/Unit Technical Manual for further details regarding reporting inconclusive results.

- Example: John Doe could not be excluded. Detail was found in agreement with the right middle finger of John Doe however,
the quantity of detail in the latent print was insufficient to render a definitive conclusion.

f) When an initial database entry (e.g., CODIS, AFIS, NIBIN) is performed, the initial database entry shall be communicated clearly in the report. See Detail/Unit Technical Manual for further details.

g) When an association resulting from a database search (e.g., CODIS, AFIS, NIBIN) is developed, this association shall be communicated clearly in the report. See Detail/Unit Technical Manual for further details.

5.10.2 Formal Reports

Formal reports shall include at least the following information, unless a valid reason exists for not doing so:

a) Title – The following title is located in the header of the formal reports:
   Report of Examination followed by the name of the Detail/Unit issuing the report.

b) Forensic Laboratory Name and Address – The name and the address of the Forensic Laboratory is located on the bottom of the formal report.

c) Unique Identification – The Lab Number is used as the unique identification of the report. If the report consists of more than one page, the Lab number will appear on each page and the last page will be documented by the wording “-END OF REPORT-”

d) Name and Agency (Address) of the Requestor – The name of the agency and the name of the person requesting the analysis shall be included in the header of the report. The addresses of the outside jurisdiction customers are located in FRED. LVMPD requests contain the name and Bureau of the requestor. The Bureau is utilized as the address for LVMPD requests. The requests are contained in FRED.

e) Identification of the Method Used – Identification of the analytical method(s) used shall be documented on the Formal Laboratory Report. See Detail/Unit Technical Manual for further details.

f) Description of Evidence – The description and unambiguous identification of the items of evidence tested shall be documented on the formal report. The condition of the evidence, if needed (i.e. noted issues), will be documented in the case record in FRED.

g) Dates – The date of receipt of the evidence is documented in ACE and the date(s) of analysis are recorded in the case record in FRED. The distribution date reflected on the formal report is the date the report is published/distributed by FRED. The date(s) of performance of the test shall be documented on the Formal Laboratory Report. This can be reported as a date range or specific dates. The start date of testing will be defined in the Detail/Unit Technical Manual. The end date of testing will be defined as the distribution date.

h) Sampling Plan – If sampling occurs, the report will clearly state what statistical sampling plan was used. Sampling plans and requirements are located in the Detail/Unit Technical Manuals.
i) **Results** – Results, opinions, and interpretations related to the analysis shall be clearly annotated on the formal report. Where appropriate units of measurement shall be included with the results.

j) **Names/Signatures** – Reports shall be electronically signed by the analyst(s) assigned to the case. The signature is electronically embedded onto the formal report when the report is published/distributed by FRED. In Toxicology, confirmation reports will contain the electronic signature of each analyst that performed a confirmation analysis for that Lab Number. If a formal report contains more than one signature (i.e., Toxicology confirmation reports), the report will be generated by the last analyst to work on the case. The printed name of the analyst as well as their title will accompany their signature.

k) **Results Relating to Items Tested** – If applicable, a statement to the effect that the results relate only to the items tested will be included on the formal report.

5.10.3.1 **Additional Requirements**

When warranted, the information required in 5.10.3.1 shall be contained within the case record in FRED. This information may be included on the Formal Laboratory Report when appropriate or required by the Detail/Unit for interpretation of the report.

a) **Deviations** – A statement explaining any deviation from, addition to, or exclusion from the test method including any adverse Laboratory environmental conditions that may have impacted the testing.

b) **Compliance** – This is not applicable to the Forensic Laboratory.

c) **Estimation of Uncertainty** – A statement on the estimated uncertainty of measurement shall be included in the formal report when it is relevant to the validity or application of the test results, when a customer’s instruction so requires, or when the uncertainty affects compliance to a specification limit (See 5.10.3.1.1 Reporting of Uncertainty Measurements).

d) **Results, Opinions and Interpretations** – A “Results, Opinions, and Interpretations” header is used in the formal laboratory report as the report may contain the results, opinions, and interpretations of the analyst whose signature appears on the report.

e) **Additional Information** – Additional information required by specific methods will be located in the case record. Any additional information specifically required by the customer will be handled on a case by case basis.

5.10.3.1.1 **Reporting of Uncertainty of Measurement**

When reporting the uncertainty of measurement:

a) A statement on the estimated uncertainty of measurement shall be included on the formal report. In the Firearms Detail the expanded uncertainty of measurement will be reported when it impacts evaluation of a statute, legal requirement or upon customer request.

b) The reported uncertainty statement shall include the measured quantity value, y, along with the associated expanded uncertainty, U, and the coverage probability.
c) The uncertainty statement shall be reported as y +/- U where U is consistent with the units y.

d) The rounded expanded uncertainty shall be reported to at the most two significant digits, unless there is a documented rationale for reporting additional significant digits.

e) The measurement result and the rounded expanded uncertainty shall be reported to the same level of significance.

f) The specific measuring device or instrument used for a reported result must have been evaluated in the estimation uncertainty for that test method.

5.10.3.1.2 If a regulatory body, statute, case law or other legal requirement specifies the format for the reporting of a test result or prohibits including measurement uncertainty in the test report, the laboratory shall:

a) Have objective evidence of the regulation, statute, case law or other legal requirement.

b) Have a policy and procedure for applying the estimated uncertainty at the laboratory’s established level of confidence prior to reporting the test results. See Detail/Unit Technical Manual for further details.

5.10.3.2 Sampling

Sampling plans and requirements are located in the Detail/Unit Technical Manuals. Where necessary for the interpretation of results, the following will be included about sampling in the case record.

a) Date – The date of the sampling shall be documented in the case record in FRED.

b) Unique Identification – The item sampled will be given a unique identifier. See 5.8.2 – Evidence Marking for further details. The unique identifier of the item of evidence is located on the formal report.

c) Location of Sampling – The case record in FRED contains the notes, drawings, sketches and photographs that may have been generated during the course of examination.

d) Reference to the Sampling Plan – A reference to the sampling plan used shall be documented on the formal report (e.g., hypergeometric method).

e) Environmental Conditions – Any adverse environmental conditions that may have affected the sampling/selection will be documented in the case record in FRED.

f) Deviations – Any deviations to the established sampling plan shall be documented in the case record in FRED.

5.10.3.2.1 Reporting Sampling

If a sampling plan is used, the report shall contain information about the sampling plan, including confidence levels and corresponding inference(s) regarding the population.
5.10.3.3 Dissemination of Laboratory Results

Dissemination of LVMPD and certain Outside Jurisdiction Laboratory reports is accomplished by FRED. Upon the publishing of a report in FRED, FRED automatically generates and sends an email to the listed requestor. The email states:

“This message has been automatically generated by the Forensic Request & Examination Database (FRED) DO NOT RESPOND TO THIS EMAIL.

A Forensic Lab Report has been completed for:

Agency Case Number(s): 140101-0001
Agency: LVMPD
Case #: 13-02449
Section: Firearms
Persons of Interest: Doe, JOHN

You may obtain the report by one of the following methods:

LVMPD Employees - the final report of examination will be available in OnBase by end of business day. If you have any questions call 702-828-3292.

Clark County School District PD, Nevada Highway Patrol, Boulder City PD, Nye County Sheriff's Office, Henderson PD, Clark County District Attorney’s Office reports must be retrieved from the FRED web portal FA Web. They will be available for 30 days from receipt of this email notification. Your agency has designated an individual(s) to retrieve those reports on your behalf. You MUST contact them to obtain your reports. If you have any questions call 702-828-3292.

All other NON-LVMPD employees - the final report of examination will be mailed to you. If you have any questions call 702-828-3292.

****YOUR FEEDBACK IS IMPORTANT TO THE FORENSIC LABORATORY - PLEASE TAKE OUR ONLINE SURVEY AT https://www.surveymonkey.com/s/LVMPDForensicLaboratory”

The clerical support staff is responsible for mailing the reports to the Outside Jurisdictions that do not receive their reports via the FA Web portal.

The original report of LVMPD cases or event numbers is maintained in OnBase by the Records and Fingerprint Bureau. The LVMPD Records and Fingerprint Bureau does not maintain a copy of outside jurisdiction reports.

When a forensic analysis has been requested of an outside laboratory by the LVMPD Forensic Laboratory, the report will be maintained in FRED.
Copies of LVMPD reports may be disseminated to other law enforcement or legal agencies with an official need for the information.

Copies may be sent by facsimile or e-mail to an official law enforcement or judicial authority on a rush or need to know basis.

Results shall not be released in any written or printable format (including email) prior to the release of the formal report.

The preferred format for communicating results is through the formal report. If a situation necessitates release of results prior to completion of a formal report, results may be released verbally by the analyst working the case, or their Supervisor/Manager/Technical Leader or the Laboratory Director, provided the conclusions released are limited to the results completed and/or confirmed/verified to date.

- The release of the verbal information must be approved by the appropriate Supervisor/Manager/Technical Leader or the Laboratory Director. This approval must be documented and maintained in the appropriate Object Repository (e-mail) or memorialized utilizing the appropriate Communication Log in FRED under the appropriate Lab Number.
- A technical review must be performed on the technical documentation pertaining to the results prior to the results being verbally released. Documentation of the Technical Review will be recorded in the appropriate area in FRED (utilizing the review function) or in the case notes as applicable per Detail/Unit.
- Details/Units that require verification will perform the verification prior to the release of the results. This verification serves as the required review and no further technical review is necessary prior to the verbal release of the results. The verification will be documented in the appropriate area in FRED (utilizing the review function) or in the case notes as applicable per Detail/Unit.
- The specific results released shall be recorded in the case record utilizing the appropriate Communication Log.
- Verbal results will only be released to the requestor or other law enforcement or legal personnel with an official need for the information.
- A formal report will be generated at the conclusion of the analysis.

Draft copies of LVMPD reports and the associated completed case file may be sent to an outside accredited Forensic Laboratory for the purpose of technical review prior to release. These reports may be sent via email or through the United States mail or another common package delivery company (e.g., Federal Express).
5.10.4 **Calibration Certificates (5.10.4.1-5.10.4.4)**

The Forensic Laboratory only performs calibrations, including the issuance of calibration certificates in Breath Alcohol. The Forensic Laboratory is not accredited in Breath Alcohol at this time.

5.10.5 **Opinions and Interpretations**

Forensic laboratory results, opinions and interpretations will be stated in Laboratory Reports under the header “Results, Opinions, and Interpretations”. The supporting evidence for rendering results, opinions and interpretations will be documented in the associated case record in FRED.

The following definitions apply:

**Results**: a scientific testing outcome.

**Opinion**: a formal expression of reasoning or advice provided by an expert.

**Interpretation**: the act or result of giving an explanation of the scientific analysis.

5.10.6 **Testing Results Obtained from Subcontractors**

When a Laboratory report contains results of tests performed by subcontractors, these results shall be clearly identified. The subcontractor shall report the results in writing.

Subcontractor’s reports will be uploaded into the Unit Record Object Repository under the appropriate Lab Number. The reports will be approved by a member of the appropriate Detail/Unit. A copy of the report will be disseminated to the requestor and be provided to the appropriate Section of the LVMPD for uploading into OnBase.

The Forensic Laboratory does not subcontract calibrations.

5.10.6.1 The reports do not make reference to accreditation.

5.10.7 **Electronic Transmission of Results**

For transmission of test results by telephone, facsimile or other electronic means see 5.10.3.3 – *Dissemination of Laboratory Results*.

5.10.8 **Format of Reports**

Formal reports will follow the style accepted and approved for the various Details/Units and results, opinions, and interpretations will follow any guidelines established in the Detail/Unit Technical Manuals. Reports should be “user friendly” without sacrificing accuracy and completeness.
The formal laboratory reports should include the following formatting unless otherwise noted:

1. A table listing the evidence item(s) received and examined at the top under header “The following evidence item(s) was(were) received and examined:”
   NOTE: The header should be updated to grammatically reflect how many items are listed in the table.
   a. The table should include:
      i. Lab Item #
      ii. Impound Package #
      iii. Impound Item #
      iv. Description
      v. Results, Opinions, and Interpretations (if applicable)

2. “Results, Opinions, and Interpretations” header listed under the evidence examined table

3. A table listing the evidence item(s) received, but not examined for the purpose of this report after the body of the report under header “The following evidence item(s) was (were) received, but not examined for the purposes of this report:”
   NOTE: The header should be updated to grammatically reflect how many items are listed in the table.
   a. The table should include:
      i. Lab Item # (if applicable)
      ii. Impound Package #
      iii. Impound Item #
      iv. Description
      v. Results, Opinions, and Interpretations

4. The following statements should be added above the signature line:
   a. The evidence is returned to secure storage.
   b. Start date of testing
   c. This report does not constitute the entire case file. The case file may be comprised of worksheets, images, analytical data and other documents.

   Note: Toxicology Detail reports do not require tables summarizing the evidence items received or not examined at this time.

Formal reports in the Seized Drugs Unit and Toxicology Detail will typically be prepared in the declaration format in accordance with NRS 53.045 and/or NRS 50.320 (if a given specialty has guidelines for reporting established in any section of the NRS or applicable state administrative code, these will be incorporated into the report format.).
Below are examples of Report of Examination general formats:  
*Toxicology Blood Alcohol Report of Examination (Declaration format included)*

<table>
<thead>
<tr>
<th>Las Vegas Metropolitan Police Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forensic Laboratory</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Report of Examination</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Blood Alcohol Testing</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Subject(s): Doe, Jane (Suspect)</td>
</tr>
</tbody>
</table>

Distribution Date: XXXXXXXXXXX
Agency: LVMPD
Location: XXX
Primary Case #: XXXXXXX
Incident: XXXXXXXX
Requestor: XXXXXXX
Lab Case #: XXXXXXX

I, Bonnie Clyde, do hereby declare:

That I am a Forensic Scientist employed by the Las Vegas Metropolitan Police Department.

That I am a "chemist," as defined in Nevada Revised Statute 50.330, and my duties include the analysis of the blood of a person to determine the presence or quantification of alcohol.

That on June 4, 2012, I first qualified in the City of Las Vegas Municipal Court of Clark County, Nevada, as an expert witness, to testify regarding the presence and amount of alcohol in a biological fluid.

That I received sealed evidence in the above case from a secure refrigerator in the LVMPD Forensic Laboratory, containing a sample of whole blood.

Results, Opinions, and Interpretations
That I completed an analysis on the sample from BLOOD/ALCOHOL KIT DOE, JANE and determined that the blood contained a concentration of ethanol of 0.152 g/100ml ± 0.007 g/100ml of blood.

NOTE: Limit of detection is 0.010 g ethanol/100 ml of blood
NOTE: A coverage probability of 95.73% was utilized in the calculation of uncertainty (+/-) for the measurement(s) reported above.

That I sealed the evidence and placed it in a secure refrigerator in the LVMPD Forensic Laboratory.

That the evidence was in my custody from the time I first obtained it until I received the sample, at which time it was in substantially the same condition as when I first obtained it.

That the start date of testing is 11/26/2016.

That each blood kit received was a standard blood kit containing two gray top tubes of whole blood. Only one blood tube per kit was used for analysis.

That this report does not constitute the entire case file. The case file may be comprised of worksheets, images, analytical data and other documents.

That blood alcohol analysis is performed by Dual Column Headspace Gas Chromatography/Flame Ionization Detection (GC/FID).

I declare under penalty of perjury that the foregoing is true and correct.

Bonnie Clyde, #55555
Forensic Scientist II

- END OF REPORT -

LVMPD Forensic Laboratory | 5605 W Badura Ave Suite 120 B | Las Vegas, NV 89118
Toxicology Drug Screening/Confirmation Report of Examination (Declaration format included)

Las Vegas Metropolitan Police Department
Forensic Laboratory

Report of Examination

Drug Screening/Confirmation

| Subject(s) | Doe, Jane (Suspect) |

Distribution Date: XXXXXXXXX
Agency: LVMPD
Location: XXX
Primary Case #: XXXXXXXX
Incident #: XXXXXXXX
Requester: XXXXXXXX
Lab Case #: XXXXXXXX

I, Bonnie Clyde, do hereby declare:

That I am a Forensic Scientist II employed by the Las Vegas Metropolitan Police Department;

That I am a "chemist", as defined in Nevada Revised Statute 90.320, and my duties include the analysis of the blood of a person to determine the presence or quantification of a controlled substance, chemical or prohibited substance;

That on May 13, 2014, I first qualified in the Justice Court of Clark County, Nevada, as an expert witness, to testify regarding the presence and amount of controlled substances in a biological fluid;

That I received a sealed blood sample in the above case from a secure refrigerator in the LVMPD Forensic Laboratory;

That an immunoassay Screen was completed by Joe Smoke, #12345, on the sample Blood/Alcohol kit Doe, Jane and the following was determined:

**Imunoassay Screen**

<table>
<thead>
<tr>
<th>Drug Class</th>
<th>Results, Opinions, and Interpretations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amphetamines</td>
<td>none detected</td>
</tr>
<tr>
<td>Benzodiazepines</td>
<td>none detected</td>
</tr>
<tr>
<td>Cannabinoids</td>
<td>further analysis performed, see Confirmation Analysis below</td>
</tr>
<tr>
<td>Carisoprodol</td>
<td>none detected</td>
</tr>
<tr>
<td>Cocaine</td>
<td>none detected</td>
</tr>
<tr>
<td>Opiates</td>
<td>none detected</td>
</tr>
<tr>
<td>Opiates – Oxydone</td>
<td>none detected</td>
</tr>
<tr>
<td>Phenylpropanol</td>
<td>none detected</td>
</tr>
</tbody>
</table>

That I completed a Confirmation Analysis on the sample Blood/Alcohol kit Doe, Jane and the following was determined:

**Confirmation Analysis**

<table>
<thead>
<tr>
<th>Drug Class</th>
<th>Drug</th>
<th>Results, Opinions and Interpretations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cannabinoids</td>
<td>11-Hydroxy-THC (Marijuana metabolite)</td>
<td>none detected</td>
</tr>
<tr>
<td>Cannabinoids</td>
<td>THC-Carboxylic Acid (Marijuana metabolite)</td>
<td>28.7 ng/mL +/- 3.8 ng/mL</td>
</tr>
<tr>
<td></td>
<td>Delta-9-tetrahydrocannabinol</td>
<td>1.8 ng/mL +/- 0.3 ng/mL</td>
</tr>
</tbody>
</table>

*NOTE: A coverage probability of approximately 95% was utilized in the calculation of uncertainty (+/-) for the measurement(s) reported above.*

That I sealed the evidence and placed it in a secure refrigerator in the LVMPD Forensic Laboratory;

That the evidence was in my custody from the time I obtained it until I resealed the sample, at which time it was in substantially the same condition as when I first obtained it;

That the start date of testing is: 12/3/2016;

That each blood kit received was a standard blood kit containing two gray top tubes of whole blood. Only one blood tube per kit was used for analysis.

That this report does not constitute the entire case file. The case file may be comprised of worksheets, images, analytical data and other documents.
I declare under penalty that the foregoing is true and correct.

Bonnie Clyde, #99699
Forensic Scientist II

...“None detected” indicates the drug/metabolite is not present above the reporting threshold. ... Reporting thresholds as applicable:

**Immunosay Screen by Enzyme-Linked Immunosorbent Assay (ELISA):**

<table>
<thead>
<tr>
<th>Drug Class</th>
<th>Reporting Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amphetamines</td>
<td>20 ng/mL</td>
</tr>
<tr>
<td>Benzodiazepines</td>
<td>25 ng/mL</td>
</tr>
<tr>
<td>Cannabinoids</td>
<td>10 ng/mL</td>
</tr>
<tr>
<td>Carisnopinal</td>
<td>500 ng/mL</td>
</tr>
<tr>
<td>Cocaine</td>
<td>50 ng/mL</td>
</tr>
<tr>
<td>Opiates</td>
<td>10 ng/mL</td>
</tr>
<tr>
<td>Opiates – Oxycodone</td>
<td>10 ng/mL</td>
</tr>
<tr>
<td>Phencyclidine (PCP)</td>
<td>10 ng/mL</td>
</tr>
</tbody>
</table>

**Confirmation Analysis by Gas Chromatography/Mass Spectrometry (GC/MS):**

<table>
<thead>
<tr>
<th>Drug Class</th>
<th>Reporting Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amphetamines</td>
<td></td>
</tr>
<tr>
<td>Amphetamine</td>
<td>100 ng/mL</td>
</tr>
<tr>
<td>Methamphetamine</td>
<td>100 ng/mL</td>
</tr>
<tr>
<td>Methylenedioxyamphetamine (MDA)</td>
<td>100 ng/mL</td>
</tr>
<tr>
<td>Methylenedioxyamphetamine (MDMA)</td>
<td>100 ng/mL</td>
</tr>
<tr>
<td>Benzodiazepines</td>
<td></td>
</tr>
<tr>
<td>Alprazolam</td>
<td>25 ng/mL</td>
</tr>
<tr>
<td>Chlordiazepam</td>
<td>25 ng/mL</td>
</tr>
<tr>
<td>Dazepam</td>
<td>25 ng/mL</td>
</tr>
<tr>
<td>Lorazepam</td>
<td>25 ng/mL</td>
</tr>
<tr>
<td>Oxazepam</td>
<td>25 ng/mL</td>
</tr>
<tr>
<td>Nordiazepam</td>
<td>25 ng/mL</td>
</tr>
<tr>
<td>Trazolam</td>
<td>25 ng/mL</td>
</tr>
<tr>
<td>Tramadol</td>
<td>25 ng/mL</td>
</tr>
<tr>
<td>Codeine</td>
<td></td>
</tr>
<tr>
<td>Cocaine</td>
<td>50 ng/mL</td>
</tr>
<tr>
<td>Benzoylacetone</td>
<td>50 ng/mL</td>
</tr>
<tr>
<td>Opiates</td>
<td></td>
</tr>
<tr>
<td>Codeine</td>
<td>50 ng/mL</td>
</tr>
<tr>
<td>Morphine</td>
<td>50 ng/mL</td>
</tr>
<tr>
<td>Hydromorphone</td>
<td>25 ng/mL</td>
</tr>
<tr>
<td>Phencyclidine (PCP)</td>
<td>10 mg/mL</td>
</tr>
<tr>
<td>Soma®</td>
<td></td>
</tr>
<tr>
<td>Carisnopinal</td>
<td>100 mg/mL</td>
</tr>
<tr>
<td>Meprobamate</td>
<td>1000 mg/mL</td>
</tr>
</tbody>
</table>

**Confirmation Analysis by Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS):**

<table>
<thead>
<tr>
<th>Drug Class</th>
<th>Reporting Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cannabinoids</td>
<td></td>
</tr>
<tr>
<td>Delta-9-tetrahydrocannabinol (THC)</td>
<td>1 ng/mL</td>
</tr>
<tr>
<td>Δ9-Hydroxy-THC (Marijuana Metabolite)</td>
<td>1 ng/mL</td>
</tr>
<tr>
<td>THC-Carboxylic Acid (Marijuana Metabolite)</td>
<td>2 ng/mL</td>
</tr>
</tbody>
</table>

- END OF REPORT -
Seized Drugs Report of Examination (Declaration format included)

Las Vegas Metropolitan Police Department
Forensic Laboratory
Report of Examination
Seized Drugs

Distribution Date: XXXXXXXX
Agency: LVMPD
Location: XXX
Primary Case #: XXXXXXX
Incident: XXXXXXX
Requester: XXXXXXX
Lab Case #: XXXXXXX

I, Bonnie Clyde, do hereby declare:

That I am a Forensic Scientist employed by the Las Vegas Metropolitan Police Department;

That on April 2, 2016, I first qualified in the Justice Court of Clark County, Nevada as an expert witness, to testify regarding the identity of a controlled substance.

That the following evidence item was received and examined:

Conclusive analysis identified:

<table>
<thead>
<tr>
<th>Lab Item #</th>
<th>Impound Pkg #</th>
<th>Impound Item #</th>
<th>Description</th>
<th>Results, Opinions and Interpretations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 1</td>
<td>CLVDPS-1</td>
<td>1</td>
<td>One package containing an off-white crystalline substance</td>
<td>Methamphetamine, net weight 0.420 g ≥ 0.390g</td>
</tr>
</tbody>
</table>

NOTE: A coverage probability of approximately 95% was utilized in the calculation of uncertainty (+/-) for the measurement(s) reported above.

Lab item 1 was tested using Gas Chromatography/Mass Spectrometry (GC/MS) and color tests.

The following evidence item was received, but not examined for the purposes of this report:

<table>
<thead>
<tr>
<th>Lab Item #</th>
<th>Impound Pkg #</th>
<th>Impound Item #</th>
<th>Description</th>
<th>Results, Opinions and Interpretations</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>CLVDPS-1</td>
<td>1</td>
<td>One field test checklist</td>
<td>Received, not examined</td>
</tr>
</tbody>
</table>

That the evidence is returned to secure storage.

That the start date of testing is 12/11/2018. Sampling took place between the start and end dates of testing.

That this report does not constitute the entire case file. The case file may be comprised of worksheets, images, analytical data and other documents.

I declare under penalty that the foregoing is true and correct.

Bonnie Clyde, #99999
Forensic Scientist II

- END OF REPORT -
Trace Materials Report of Examination

**Las Vegas Metropolitan Police Department**
**Forensic Laboratory**

**Report of Examination**

**Trace Materials**

<table>
<thead>
<tr>
<th>Lab Item #</th>
<th>Imprint Pig #</th>
<th>Impound Item #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>001294-2</td>
<td>2</td>
<td>Silver metal pipe with one end cap attached</td>
</tr>
<tr>
<td>8</td>
<td>001294-2</td>
<td>3</td>
<td>Silver metal pipe with one end cap attached</td>
</tr>
</tbody>
</table>

General Unknown Analysis

**Results, Opinions, and Interpretations:**

The above items were examined using stereo-microscopy. The items were analyzed using Gas Chromatography/Mass Spectrometry, (GC/MS), and Fourier Transform Infrared Spectroscopy, (FTIR).

Item 5: No explosive residue was detected

Item 8: No explosive residue was detected

The evidence was received on October 23, 2018. Start date of testing was October 30, 2018.

The evidence is returned to secured storage.

This report does not constitute the entire case file. The case file may be comprised of worksheets, images, analytical data and other documents.

Bonnie Clyde, #99999
Forensic Scientist II

· END OF REPORT ·
Firearms Report of Examination

Las Vegas Metropolitan Police Department
Forensic Laboratory
Report of Examination

Firearms

<table>
<thead>
<tr>
<th>Subject(s):</th>
<th>Doe, Jane (Suspect)</th>
</tr>
</thead>
</table>

The following evidence items were received and examined:

<table>
<thead>
<tr>
<th>Lab Item #</th>
<th>Impound Flg #</th>
<th>Impound Item #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>013572-2</td>
<td>1A</td>
<td>One ‘PPU’ .38 S&amp;W cartridge case</td>
</tr>
<tr>
<td>2</td>
<td>013572-2</td>
<td>1B</td>
<td>One ‘PPU’ .38 S&amp;W cartridge case</td>
</tr>
<tr>
<td>3</td>
<td>013572-2</td>
<td>1C</td>
<td>One ‘PPU’ .38 S&amp;W cartridge case</td>
</tr>
<tr>
<td>4</td>
<td>013572-2</td>
<td>1D</td>
<td>One ‘PPU’ .38 S&amp;W cartridge case</td>
</tr>
<tr>
<td>5</td>
<td>008427-1</td>
<td>1</td>
<td>One bullet</td>
</tr>
<tr>
<td>6</td>
<td>013572-1</td>
<td>1</td>
<td>One Smith &amp; Wesson Model K-200 .38 S&amp;W caliber revolver with the serial number XXXX</td>
</tr>
</tbody>
</table>

Results, Opinions, and Interpretations:

Firearm

The Smith & Wesson revolver was examined, test fired, and found to be operational with no noted malfunctions. This revolver has a barrel length of approximately 5 1/16 inches, an overall length of approximately 10 1/16 inches, a single action trigger pull of 5 1/4 – 5 1/2 pounds, and a double action trigger pull of 15 – 15 1/4 pounds. This revolver has a capacity of 6 cartridges.

Comparisons

The evidence cartridge cases were examined and microscopically compared to test fired cartridge cases from the Smith & Wesson revolver with the following results:

• The cartridge cases were identified as having been fired in the Smith & Wesson revolver.

The evidence bullet was examined and microscopically compared to test fired bullets from the Smith & Wesson revolver with the following results:

• The bullet is consistent with nominal .38 caliber to include .38 S&W and has similar general rifling characteristics and some microscopic similarity to the test fired bullets from the Smith & Wesson revolver. However, there was insufficient microscopic detail for a conclusive identification or elimination as having been fired from the Smith & Wesson revolver due to damage.

The following evidence item was received, but not examined for the purposes of this report:

<table>
<thead>
<tr>
<th>Lab Item #</th>
<th>Impound Flg #</th>
<th>Impound Item #</th>
<th>Description</th>
<th>Results, Opinions and Interpretations</th>
</tr>
</thead>
<tbody>
<tr>
<td>—</td>
<td>013572-2</td>
<td>1E</td>
<td>One .38 S&amp;W caliber cartridge</td>
<td>Received, not examined</td>
</tr>
</tbody>
</table>

The evidence is returned to secure storage.

Start date of testing: 07/25/2018

This report does not constitute the entire case file. The case file may be comprised of worksheets, images, analytical data and other documents.

Bonnie Clyde, #99999
Forensic Scientist II

- END OF REPORT -
Latent Prints Report of Examination

The following evidence items were received and examined:

### Latent Development and Recovery

<table>
<thead>
<tr>
<th>Lab Item #</th>
<th>Impound Pkg #</th>
<th>Impound Item #</th>
<th>Description</th>
<th>Results, Opinions, and Interpretations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 1</td>
<td>005500 - 1</td>
<td>1</td>
<td>One neuralyzer, silver metallic</td>
<td>Two latent prints (L1 &amp; L2) recovered from the end cap.</td>
</tr>
<tr>
<td>Item 2</td>
<td>005588 - 3</td>
<td>4</td>
<td>Two sonic screwdrivers</td>
<td>No latent prints were developed.</td>
</tr>
</tbody>
</table>

Lab Item 1 was tested using visual examination, cyanoacrylate fuming, and RSG dye staining.

Lab Item 2 was tested using visual examination, cyanoacrylate fuming, and RSG dye staining.

### Latent Print Examination

<table>
<thead>
<tr>
<th>Lab Item #</th>
<th>Impound Pkg #</th>
<th>Card #</th>
<th>Description</th>
<th>Results, Opinions, and Interpretations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 4</td>
<td>19831 - 1</td>
<td>2</td>
<td>2 Photos</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>L1</td>
<td>One photograph of the neuralyzer end cap (Lab Item 1)</td>
<td>One suitable print(s) marked A: A - Identified to the left palm of CROOK, Ima.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>L2</td>
<td>One photograph of the neuralyzer endcap (Lab Item 1)</td>
<td>No suitable latent prints.</td>
</tr>
</tbody>
</table>

### Exemplar Prints

<table>
<thead>
<tr>
<th>Name</th>
<th>ID#</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>LVMPD Archive finger and palm prints dated 7/8/2017</td>
</tr>
</tbody>
</table>

All suitable latent prints for comparison in the case have been identified. No further action is warranted.

The following evidence items were received, but not examined for the purposes of this report:

<table>
<thead>
<tr>
<th>Lab Item #</th>
<th>Impound Pkg #</th>
<th>Impound Item #</th>
<th>Description</th>
<th>Results, Opinions, and Interpretations</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>005588 - 3</td>
<td>5</td>
<td>One cloak of invisibility</td>
<td>Received, not examined</td>
</tr>
<tr>
<td>N/A</td>
<td>005588 - 3</td>
<td>6</td>
<td>One isabel fish</td>
<td>Received, not examined</td>
</tr>
</tbody>
</table>
Primary Event #: XXXXXXXXXX
Lab Case #: XXXXXXXX

The evidence is returned to secure storage.
The examination process began on: 01/31/2017
This report does not constitute the entire case file. The case file may be comprised of worksheets, images, analytical data and other documents.

Technical Reviewer: Forensic Scientist Norma Cerva P#99999

Unless otherwise specified, any latent prints listed above were analyzed utilizing the applicable components of the ACE-V method

Emmett Brown, #19831
Forensic Scientist

- END OF REPORT -
Biology/DNA Report of Examination

<table>
<thead>
<tr>
<th>Lab Item #</th>
<th>Impound Pkg #</th>
<th>Impound Item #</th>
<th>Description</th>
<th>Results, Opinions, &amp; Interpretations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 1</td>
<td>Demelanin - SAK</td>
<td></td>
<td>Sexual assault evidence collection kit from Jane Doe</td>
<td>Reference standard</td>
</tr>
<tr>
<td>Item 1.1</td>
<td></td>
<td></td>
<td>Reference standard</td>
<td></td>
</tr>
<tr>
<td>Item 1.2</td>
<td></td>
<td></td>
<td>Vaginal and cervical swabs and a 4x4</td>
<td></td>
</tr>
<tr>
<td>Item 1.2.1</td>
<td></td>
<td></td>
<td>Vaginal swabs</td>
<td></td>
</tr>
<tr>
<td>Item 1.2.2</td>
<td></td>
<td></td>
<td>4x4 gauge</td>
<td></td>
</tr>
<tr>
<td>Item 3</td>
<td>00360 - 1</td>
<td>1</td>
<td>Reference standard from Prince Charming</td>
<td>Reference standard from Prince Charming</td>
</tr>
</tbody>
</table>

FS II Allison Rubin P#: 14764 performed screening and sample collection on the above evidentiary items and forwarded the sample(s) to FS II Kimberly Dannenberger P#: 13772 for DNA processing. Interpretation and report writing was completed by FS II Craig King P#: 9971.

Results, Opinions, and Interpretations:

Item 1.1, Item 1.2.1, Item 1.2.2, Item 2.1, and Item 3 were subjected to PCR amplification at the following STR genetic loci: TH01, D2S1358, vWA, D21S11, TPOX, VSOS01, D1S1656, D12S391, SE3S, D10S1248, D22S1045, D19S433, D8S1179, D5S810, D2S441, D18S51, FGA, D16S539, CSF1PO, D13S317, D5SS18, and D7S820. The sex-determining Amelogenin locus was also examined. Where applicable, STRmix was used for interpretation.

Lab Item 1.2.1: Vaginal swabs

Number of contributors: 1 female

The DNA profile obtained is consistent with Yarandy Hernandez (Item 1.1).

Lab Item 1.2.2: 4x4 gauge

Number of contributors: 2 (one male)

Approximate mixture proportions: 68.2

Assumed Contributor(s): Yarandy Hernandez (Item 1.1)

Excluded: Lionel Baldwin (Item 3)

Assuming Yarandy Hernandez (Item 1.1) is a contributor, a foreign contributor was detected. No additional conclusions can be made regarding the contributor(s) to this DNA profile at this time.

The following evidence item was received, but not examined for the purpose of this report:

<table>
<thead>
<tr>
<th>Lab Item #</th>
<th>Impound Pkg #</th>
<th>Impound Item #</th>
<th>Description</th>
<th>Results, Opinions, &amp; Interpretations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 1.2.3</td>
<td>Demelanin - SAK</td>
<td>Cervical swabs</td>
<td></td>
<td>Received, not examined</td>
</tr>
</tbody>
</table>

Notes:

1. The evidence is returned to secure storage.
2. Start date of testing: October 11, 2018
3. This report does not constitute the entire case file. The case file may be comprised of worksheets, images, analytical data and other documents.
4. DNA extracts generated during the analysis of this case and/or cuttings taken from the evidence may be available for future testing.

5. Evidence collected directly from the body or personal items removed directly from the body are intimate samples; therefore, the donor may be reasonably assumed to be present should the item produce a DNA profile that is suitable for comparison.

6. In instances in which all contributors can be assumed, no statistical calculations will be reported for the assumed contributors.

7. Where applicable, likelihood ratios (LR) were calculated to assess whether each submitted reference standard is statistically included or excluded, individually, as a contributor to the reported DNA profile(s). The reported LR value for an “individually included” reference standard is reflective of the likelihood ratio calculation associated with the listed individual, without being considered in combination with other reference standards, except where an “Assumed Contributor” is noted.

8. Mixture proportions signify the approximate percentage of each contributor to the mixture DNA profile.

9. The likelihood ratios are based upon propositions that can explain the evidence. This includes assumptions as to the number of contributors present in the DNA profile and, unless otherwise noted, that each unknown contributor is unrelated to the named reference standards. Since a range of propositions might explain the evidence, either interested party to this case, prosecution and/or defense, may request an additional likelihood ratio that incorporates an additional proposition that more accurately represents their position. All requests must be submitted in a timely manner, must be reasonable given the test results, and must be within the capability and validated application of the program used.

10. Statistical probabilities were calculated using the recommendations of the National Research Council (NRC) II utilizing the NIST database (Hill, C.R., Duwee, D.L., Kline, M.C., Coble, M.D., Butler, J.M. (2013) U.S. population data for 29 autosomal STR loci. Forensic Sci. Int. Genet. 7: e52-e63 and Steffen, C., Coble, M., Gettine, K., Vallone, P., Corrigan to “U.S. Population Data for 29 Autosomal STR Loci” [Forensic Sci. Int. Genet. 7 (2013) e52-e63]). The probability that has been reported is the most conservative value obtained from the US Caucasian (CAU), African American (AA), and Hispanic (HISP) population databases. All likelihood ratios calculated by the LVMPD are truncated to three significant figures.

11. For comparison purposes, please collect reference buccal swabs from the consensual partner or individuals believed to be involved in (or who have had reasonable access to) the incident. When a reference buccal swab is obtained, please submit a Forensic Laboratory Request in Property Connect to complete the case.

Bonnie Clyde, #96559
Forensic Scientist II

- END OF REPORT -
**Multiple Event Numbers**

If more than one event number is involved in any analysis, all numbers will be referenced in the header at the top of the report within the additional event number field, along with the primary event number listed above.

If more than one event number is associated with a piece of evidence in an analysis, or two pieces of evidence listed on one report bear different event numbers, the additional event number will be referenced in the body of the report. If any of the evidence was analyzed earlier, the original report will be referenced.

### 5.10.9 Amendments to Test Reports

#### Supplemental Reports

A supplemental analysis occurs when a Detail/Unit completes an analysis for a case and subsequently performs an additional analysis(es) for the same case. It is not considered a supplemental analysis if different Detail/Units are performing analyses for the same case.

In the Toxicology Detail, drug screen/confirmation analysis and blood alcohol analysis on the same case are not considered supplemental analyses.

When a supplemental report is issued, the word “Supplemental” will be placed in the right column of the header under the “Lab Case #:” If more than one supplemental is completed, those which follow the first one will be numbered in sequence beginning with “2”.

Each page of the formal supplemental report must be identified as being associated with the supplemental to avoid any confusion with the original analysis and report and/or other supplements which may follow. Formal Laboratory Reports consisting of multiple pages will be annotated with the supplement number and page number.

Supplemental reports shall meet all the same requirements as the original reports.

#### Amended Reports

An amended report occurs when information on a report needs to be added/removed/amended, but no additional analyses are being performed and the amendment is not due to an error (e.g. a profile is being removed from CODIS). When an amended report is issued, the word “Amended” will precede “Report of Examination”. The reason for the amendment will appear on the report.

#### Corrected Reports

Whenever errors in a Laboratory report are discovered after distribution, a corrected report will be issued. The word “Amended” will precede “Report of
Examination”. The first line of the body, will briefly describe the correction. The corrected report is uniquely identified by the addition of the word “Amended”. If the corrected report is superseding the original report(s), the corrected report shall contain a reference to the original(s) that it replaces.

5.10.10.1 Use of the ANAB Accreditation Symbol
The Forensic Laboratory does not make reference to accreditation in any communication by use of an accreditation symbol, business name, business acronym or ILAC mark.

5.10.10.2 The Forensic Laboratory does not make reference to accreditation on the reports.

5.10.10.3 The Forensic Laboratory does not use the ILAC mark.