CRIME SCENE TRAINING MANUAL

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Revision History

Revision #	Description of Changes
1	Original document
2	Add Section 14 “Shooting Reconstruction Documentation”; format fixes throughout; spelling and grammar fixes throughout. Add: training course list and Crime Scene response list; 3.4 heat stress video link; 6.4.5 written test; 10.4.2 “Pass/Fail” and “Date”.
3	Combined sections. Added Information section (3) Added additional training. Defined roles and requirements.

1.0 Introduction

The purpose of this manual is to provide an in-house training program that will result in a competent and qualified expert Crime Scene Investigator (CSI). The CSI shall possess knowledge, skills, and training in numerous tools and techniques relevant to crime scene investigations. This manual shall serve to establish a minimum standard of competency and shall aid in maintaining quality and consistency among CSIs.

The training program is designed for the Forensic Scientist who will be part of the crime scene response team Each section of the manual may consist of reading materials and practical exercises. When applicable, sections have a test and/or a competency test. Section tests shall evaluate technical knowledge and ability to perform examinations and/or techniques. If the CSI trainee has successfully completed a comparable training in their primary discipline, the completion of that training will be noted in their crime scene training record and shall satisfy the training requirement.

The sections included in this manual are the minimum requirements for completion of training. Additional exercises or readings may be assigned at the discretion of the Discipline Lead. The training may be abbreviated for CSIs with prior experience and training or for those individuals who perform limited duties at crime scenes. The background and experience of each individual will be assessed by the Discipline Lead prior to the CSI trainee beginning the training program. Training sections do not need to be completed in the order they are presented in this manual; the order of completion may vary depending on the individual and/or operational needs.

Prior to beginning training, the CSI trainee shall seek approval from their supervisor and the Crime Scene Discipline Lead. Section 3 of this manual shall be completed prior to a CSI trainee attending a crime scene. During training, the CSI trainee may respond to crime scenes in a limited capacity. During these responses, the CSI trainee may only be able to observe and/or assist with non-technical aspects of the investigation. Due to the varying nature of crime scene response, there is not a set number of responses that will deem a trainee as being a competent responder. A CSI can be trained to be a "Lead" for crime scene response; a lead is a CSI that has fulfilled adequate training requirements and will be the point of contact for agencies and other CSIs, deciding scene processing and examination. To be trained as a lead, the CSI shall complete the following sections of this manual: 3.0 Foundational Information, 4.0 Documentation, 5.0 Photography and 8.0 Presumptive Blood Testing. In addition, the CSI lead shall complete the following three external training courses: Crime Scene Investigation, Basic Bloodstain Pattern Analysis and Crime Scene Photography.

With input from the CSI trainee's supervisor and Crime Scene Discipline Lead, a timeline for each training section shall be established. The Discipline Lead or the designated trainer shall be assigned for each section. Competency may be gained in each section separately and therefore, will include a mock court or technical session. Competency tests and mock court are "pass" or "fail". Should the CSI trainee provide incorrect results or inaccurate testimony during these exercises, additional training or testing will be necessary and mock courts may be repeated until competency is achieved. Training is considered complete upon formal approval by the Discipline Lead and authorization by the Quality Manager.

Training progress is monitored by the trainer and/or the Discipline Lead. All testsare closed book unless otherwise noted. Tests shall be graded as "pass" or "fail". If a written test is assessed as "fail", the CSI trainee will be given additional training and/or exercises until competency is achieved.Practical exercises shall also be graded as "pass" or "fail". In order to receive a passing mark, the CSI trainee must demonstrate comprehension of the subject and demonstrate to the trainer and/or Discipline Lead that they are able to complete the assignment with satisfactory results. If a practical exercise is assessed as "fail", the CSI trainee will be given additional training and/or exercises until competency is achieved.

The length of the training program may fluctuate between CSI trainees, based on the availability of crime scene responses and by the type of examinations conducted at those scenes. The training program may also be affected by the training and case work needs of the trainee's primary discipline. The pace of training is dictated by agency resources and needs, as well as the CSI trainee's progress and demonstrated proficiency.

The CSI trainee shall keep a written record of the cases they responded to, general description of work done, and other CSIs present. The CSI trainee shall also keep a written record of the CSI-related courses and/or training they attend.

External Training Courses

Crime Scene Investigation	**40 hours**	**_____ Date _____Initials**
Basic Bloodstain Pattern Analysis	**40 hours_____Date _____ Initials**	
Crime Scene Photography	**40 hours _____Date_____Initials**	
Shooting Reconstruction	40 hours	_____Date _____Initials

Advanced Bloodstain Pattern Analysis 40 hours _____Date _____Initials

Bolded courses above are required to become a Lead CSI.

Shooting Reconstruction and Advanced Bloodstain are not required courses and attendance will depend on budget, need and CSI interest.

LAB #	TYPE OF CRIME	OTHER CSIs	ACTIVITIES	DATE

2.0 Roles and Responsibilities

2.1 Supervisor

The Supervisor shall maintain an employee training file with all associated authorizations and shall assist the CSI trainee with planning their goals related to crime scene training.

2.2 Discipline Lead

The Discipline Lead shall assess any prior applicable training, review and/or modify the current training plan to reflect the CSI's prior training, assign the appropriate sections, and organize the training. The Discipline Lead should regularly monitor the trainee's progress and review their training record for completeness and accuracy, procure competency tests, and schedule mock courts. The Discipline Lead shall provide input regarding mock court performances to the Supervisor and/or other members of management. At the completion of each section of this manual, the Discipline Lead shall review all section documentation to determine if the trainee is competent to respond to crime scenes and perform related tasks. The Discipline Lead shall forward all required documentation to the Quality Manager. The Discipline Lead may designate a Trainer.

2.3 Trainer

The trainer will frequently be a more experienced CSI but may also be the Discipline Lead. Different trainers may oversee different portions of the training program. The trainer is responsible for coordination of practical exercises, demonstrating techniques, reviewing assignments, providing feedback, and administration of section tests. The trainer shall communicate progress, delays, or the need for supplemental activities to the Discipline Lead and/or Supervisor. Deficiencies should be openly discussed among the trainee, trainer, Discipline Lead, and/or Supervisor to rectify them.

2.4 Trainee

The CSI trainee shall maintain a record of training. This record shall include, but is not limited to training received, observed events (crime scene response or court testimony), activities performed by the trainee, and completed assignments/exercises. All steps in training shall be documented as they are completed.

As training sections are completed, the trainee will advance to supervised work. This shall be supervised by the Lead CSI, trainer, and/or Discipline Lead.

Supervised work will not begin until approval has been granted by the Quality Manager.

The CSI trainee shall ensure that all training records for outside classes are forwarded to the Quality Manager for inclusion in their training file and shall ensure that their curriculum vitae (CV) accurately reflects successfully completed training.

3.0 Foundational Information

The purpose of this section is to provide introductory information to the CSI trainee.

3.1 Introduction to Procedures

3.1.1 Required Reading

Initials/Date

Crime Scene Manual _____/_____

3.2 Safety

3.2.1 Background and Theory

Safety at the crime scene is an essential part of the job of a CSI. The Occupational Safety & Health Administration (OSHA) was created in 1970 to protect workers. It mandates that each person be knowledgeable about blood borne pathogens, chemical hygiene, universal precautions, biohazard disposal, decontamination, and vaccinations. It requires that all of the applicable information for the scene is given to the CSI so that they may maintain safety. It is also imperative that employees are able to access the Safety Data Sheets (SDS) from the laboratory in order to maintain safety around applicable chemicals.

Crime scenes present a unique challenge to safety because they are not controlled environments. CSIs may encounter natural hazards (e.g., uneven terrain, weather), man-made hazards (e.g., structural instability, chemicals, etc.), and biohazards (i.e., biological materials).

When crime scenes are on a roadway, traffic moving through the area must be considered. If a suspect is still at large, the potential risk of the suspect returning to the scene must be considered. Distraught family members and/or friends may be present and could present a variety of risks to CSIs. If news media is on scene, they may present difficulties in entering and/or exiting the scene.

While officers and/or detectives should be present while CSIs are on scene, the CSI shall always remain aware of their surroundings and potential threats.

3.2.2 Required Reading/viewing

Initials/Date

Criminalistics, Saferstein, Richard, Eighth Edition, Chapter 2: The Crime Scene, pp. 49-50, Pearson Education, Inc., 2004 _____/_____

Heat Stress video:
https://www.youtube.com/watch?v=kuGqzVgPTso _____/_____

3.3 Vicarious Trauma

Vicarious trauma is experiencing trauma through the course of your work, while not experiencing the trauma yourself. Due to exposure to the aftermath of violent crime and its victims, vicarious trauma is an occupational hazard to CSIs.

Vicarious trauma may be present after a single exposure to a traumatic incident. It may also have a cumulative effect after responding to multiple crime scenes.

Those experiencing vicarious trauma may have numerous symptoms, some of which may seem completely unrelated to the trauma itself; including but not limited to: trouble sleeping, nightmares, irritability, outbursts of anger, difficulty concentrating, a constant feeling of alertness, being easily startled, physical aches and pains, feelings of detachment, mistrust, or betrayal.

There are a number of ways to treat and deal with the symptoms of Vicarious Trauma. Idaho State Police offers the Employee Assistance Program (EAP) and peer support services. Other helpful activities include exercise, journaling, meditation, and massage.

3.3.1 Locate and Review "Vicarious Trauma Resources" folder (I drive/Crime Scene) and choose 3 readings

Initials/Date

_____

_____ _____/_____

_____

_____ ____/_____

_____

_____ ____/_____

3.3.2 Helpful resources

3.3.2.1: The Vicarious Trauma Toolkit, Office for Victims of Crime (OVC)
https://ovc.ojp.gov/program/vtt/introduction
https://ovc.ojp.gov/program/vtt/compendium-resources

3.3.2.2: EAP resources
https://www.guidanceresources.com/groWeb/login/login.xhtml

3.3.2.3: ISP Mindbase App
ISP Intranet-wellness page for information for downloading

3.4 Testimony

3.4.1 Background and theory

The CSI must be able to explain and defend what they did on scene and why they did it. Through observation of actual testimony, discussion with the trainer, and participation in technical sessions, the trainee will gain familiarity with presenting testimony in court. In the course of a discipline meeting, at least annually, testimony questions should be reviewed.

3.4.2 Exercise

Create a list of testimony questions as they relate to crime scene. Discuss answers with trainer.

_____	_____	_____
Trainee	Date	Trainer

4.0 Documentation

4.1 Background and Theory

4.1.1 Investigative notes are a staple of any crime scene examination. The notes begin with notification of the crime, identify specific actions taken upon arrival, and provide a clear and detailed record of all observations and actions taken while in the scene.

4.1.2 The crime scene sketch serves as a graphic document to show the layout, orientation, and interrelationships of the scene and the evidence.

4.1.3 Notes and sketches are used in conjunction with photographs to corroborate and support each other.

4.2 Objectives, Principles, and Knowledge

4.2.1 Ability to demonstrate proper documentation of the observations made and actions taken during crime scene processing. Documentation should be such that the report can be composed from the notes and sketch without referencing photographs taken.

4.2.2 Understand which worksheet(s) may be utilized to streamline the note taking process and what information should be completed for each worksheet.

4.2.3 Understand the benefits and drawbacks of several types of sketches to determine which would be most appropriate to document the details of the scene.

4.2.4 Ability to demonstrate the creation of a cross-projection/exploded sketch, an elevation sketch, and a three-dimensional sketch.

4.2.5 Understand the different methods for recording locations of items (mapping) in the scene in order to determine which would be the most appropriate.

4.2.6 Ability to demonstrate the recording of locations of items (mapping) within an area by rectangular coordinates, triangulation, and/or baseline coordinates.

4.3 Health and Safety Hazards

4.3.1 Do not direct the laser measuring device's beam at persons or animals. Do not stare into the laser beam. The laser measuring device produces class 2 laser radiation and looking into the beam can lead to blindness. Never aim the beam at an object with a reflective surface as it could direct the beam back towards the operator.

4.4 Reading and Practical Exercises

4.4.1 Required Reading Initials/Date

Practical Crime Scene Processing and Investigation, Gardner, Ross M., Second Edition, Chapter 7: Crime Scene Sketching and Mapping, pp. 183-222, and Chapter 8: Narrative Descriptions, pp. 223-228, CRC Press, 2012. _____/_____

4.4.2 Practical Exercise- Trainer led lessons on sketching and documenting item location to include:

- How to use the laser measuring device
- When/how to use a Reference Point (RP)
- How to document locations of items based on type of mapping

_____ _____ _____

Trainee Date Trainer

4.4.3 Competency Test 1: Trainee shall independently document an area using one of the following (circle choice):

- Cross-projection or exploded sketch
- Elevation sketch
- Three-dimensional sketch
- Rectangular coordinates
- Triangulation
- Baseline coordinates

Pass/Fail

4.4.4 Practical Exercise- Trainer led lessons on note taking. Trainee shall take notes for practice, at a minimum of two crime scene responses. Trainer will provide feedback.

_____ _____ _____ _____

Trainee Date Trainer Case number

_____ _____ _____ _____

Trainee Date Trainer Case number

4.4.5 Competency Test 2: Trainee shall take full crime scene notes at a response, that will not be used in the case record but shall be used for this competency test.

Pass/fail

Training successfully completed:

_____	_____
Analyst	Date
_____	_____
Trainer/ Crime Scene Discipline Lead	Date

5.0 Photography

5.1 Background and Theory

5.1.1 Crime scene photographs are intended to lead the viewer of the photographs through the scene, from an overall perspective through the details of specific items of evidence. Someone viewing the crime scene photographs should comprehend significant details and aspects of the scene. The crime scene photographs should accurately depict the scene without introducing distortion or visual bias.

5.1.2 Photographic composition is accomplished by organization of the space and items depicted in the photographs so that the various visual elements relate to one another properly. Composition involves controlling contrast, properly framing the subject, and maintaining simplicity in the photograph.

5.1.3 The shutter speed, ISO, and aperture settings are inter-related and affect the depth of field and exposure of the resulting photograph. Understanding how the settings relate to and affect one another is fundamental in creating the intended image.

5.1.4 The type and quality of light will significantly affect the resulting photograph. Understanding how to manipulate light will provide the photographer with the ability to create the photograph they intend.

5.1.5 The LizQ imaging system utilizes traditional photographic techniques and marries them with modern software to create a three-dimensional representation of a crime scene location. By utilizing the LizQ system, a more complete and robust representation of the crime scene can be documented. With the tools available in the software, our law enforcement partners can virtually revisit the crime scene at any time. This enhanced documentation of the crime scene may assist agencies with their investigations, assist attorneys with understanding of the scene for presentation in court.

5.2 Objectives, Principles, and Knowledge

5.2.1 Understand the proper procedures for capture of digital images using a Digital Single Lens Reflex (DSLR) camera.

5.2.2 Familiarization with common digital photography terminology to include camera parts (e.g., body, lens, shutter diaphragm, shutter release) and function, file types (JPEG, RAW), compression, resolution, depth of field, bracketing, f-stop, shutter speed, aperture, exposure, etc.

5.2.3 Understand the interrelationships between aperture, shutter speed, depth of field, and ISO.

5.2.4 Understand the properties of light and how those properties relate to the use of lighting techniques (e.g., oblique lighting, bounce lighting, etc.).

5.2.5 Ability to manipulate the aperture (f-stop), shutter speed, ISO, and external flash to capture a photograph as intended, to accurately depict the scene or item.

5.2.6 Ability to utilize camera accessory items (e.g., tripod, shutter release, etc.).

5.2.7 Understand the capabilities and limitations of the LizQ camera system.

5.2.8 Understand how the LizQ system utilizes bracketing and other photographic techniques to create sphericals.

5.3 Health and Safety Hazards

5.3.1 The LizQ camera system and the tripod are heavy. Care should be taken to lift and carry the items in such a way as to prevent movements that could cause injury.

5.3.2 When a tripod is in place in the scene, care should be taken to avoid the tripod legs, which can present a tripping hazard.

5.4 Reading and Practical Exercises

5.4.1 Required Reading Initials/Date

Practical Crime Scene Processing and Investigation, Gardner, Ross M., Second Edition, Chapter 6: Crime Scene Photography, pp. 135-181, CRC Press, 2012. _____/_____

A Short Course in Photography- Digital, London, Barbara and Stone, Jim, Third Edition, Chapter 1, Camera, pp. 14-19, 22-23, 26-29; Chapter 2, Lens, 31-35, 43-49; Chapter 3, Light and Exposure, pp. 53-59, 66, 70-72, 85; Chapter 8, Using Light, pp. 135-143, 146-149; Chapter 10, History of Photography, pp. 181-187, 210-213; Pearson Education Inc., 2015. _____/_____

LizQ Manual, pages 1-30 and 37 _____/_____

5.4.2 Practical Exercise- Trainer led lessons on photography techniques to include fill flash, long exposure, paint by light, depth of field, oblique lighting, overall/relationship/identification methodology, and impression photography (finger/palm/footprints, shoe, tire).

_____ _____ _____

Trainee Date Trainer

5.4.3 Practical Exercise- Trainer led lessons on LizQ capture and spherical creation to include:

- Becoming familiar with LizQ equipment (camera, tripod, laptop, remote).
- LizQ capture.
- LizQ camera card download.
- LizQ spherical creation.
- How to provide LizQ images/sphericals to agencies.

_____	_____	_____
Trainee	Date	Trainer

5.4.4 Competency Test 1 : Trainee shall independently document areas, indoors and outdoors, to illustrate the use of each of the following:

- Fill flash
- Long exposure
- Paint by light
- Depth of field Pass/Fail

Competency Test 2 : Trainee shall independently photograph a location (e.g., residence, business) using overall, relationship, and identification photographs. Evidence markers should be utilized. Pass/Fail

Competency Test 3 : Trainee shall independently photograph a bloodstain or item of evidence, using appropriate photography techniques and tools. Pass/Fail

5.4.5 Competency test 4: Trainee will independently capture and create spherical of three (3) locations using the LizQ system. Spherical will be evaluated by the Trainer. The Trainee will discuss with the Trainer the procedures utilized during the capture and they chose specific locations for LizQ capture.

Pass/fail

5.4.6 Written test onphotography. Pass/Fail

Training successfully completed:

_____	_____
Analyst	Date
_____	_____
Trainer/ Crime Scene Discipline Lead	Date

6.0 Storage of Digital Images

6.1 Background and Theory

6.1.1 Digital images from crime scenes are captured and stored using digital devices.

6.1.2 Digital images captured using a regular DSLR camera may be for documentation of the scene or may be for capture of impression evidence. Both types of images are stored in a digital imaging system (Adams Web).

6.1.3 Adams Web maintains a log of all actions taken on every image from the time it is uploaded into the system. This log maintains the integrity of each image.

6.1.4 Digital images captured and sphericals created using the LizQ system are stored in duplicate on external drives due to their large size.

6.2 Objectives, Principles, and Knowledge

6.2.1 Understand the process to upload and document digital images in Adams Web.

6.2.2 Proficiency in navigating Adams Web.

6.3 Health and Safety Hazards

6.3.1 As with other electrical appliances, guard against electrical shock. This can be accomplished by ensuring that all connections are proper and that no loose, damaged, or frayed wires exist.

6.4 Reading and Practical Exercises

Initials/Date

6.4.1 Read "Introduction to Foray" _____/_____

6.4.2 Practical Exercise- Trainer led lessons on the digital imaging system to include navigation, features, how to upload, storage settings, locations, etc.

6.4.3 Competency Test: The Trainee will acquire training images from SD cards into the digital imaging system as practice. Pass/Fail

Training successfully completed:

_____ _____

Analyst Date

_____ _____

Trainer/ Crime Scene Discipline Lead Date

7.0 Presumptive Blood Testing

7.1 Background and Theory

7.1.1 Most screening tests for blood depend on the catalytic action of the heme group. To minimize false positives, the test is frequently performed as a multi-step test.

7.1.2 In crime scenes, there may be a variety of reddish-brown stains to be considered for collection as biological evidence. By utilizing a presumptive test, the CSI can eliminate stains that are not presumptive positive for blood, thereby reducing unnecessary collection of stains from the scene.

7.2 Objectives, Principles, and Knowledge

7.2.1 Understand the way presumptive blood tests work and what kinds of materials could cause a false positive result.

7.2.2 Understand how to determine which stains can be tested, and which should be collected without testing.

7.2.3 Become competent at utilizing the chemicals of the presumptive blood test to determine if a substance is presumptive positive, indicating the presence of blood.

7.3 Health and Safety Hazards

7.3.1 Any possible blood should be treated as if it is infectious. Appropriate personal protective equipment (PPE) should be utilized.

7.3.2 Phenolphthalein: Zinc is flammable. When using lab-prepared Phenolphthalein, the unreacted portions and used filter paper are to be disposed of properly.

7.3.3 O-tolidine: designated as a potential carcinogen and should be used with caution.

7.3.4 Chemicals/Reagents shall be labeled using NFPA labels in accordance with the Health and Safety Manual.

7.4 Reading and Practical Exercises

7.4.1 Required Reading — Initials/Date

A Study of the Sensitivity and Specificity of Four Presumptive Tests for Blood. Journal of Forensic Sciences, September 1991; 36(5): 1503-1511. _____/_____

Effect of Fabric Washing on the Presumptive Identification of Bloodstains. Journal of Forensic Sciences, November 1990; 35(6): 1335-1341. _____/_____

Evaluation of Six Presumptive Tests for Blood, Their Specificity, Sensitivity, and Effect on High-Molecular Weight DNA. Journal _____/_____

Of Forensic Sciences, 2007; 52(1): 102-109.

Sourcebook in Forensic Serology, Immunology, and Biochemistry, Gaensslen, R. (1983) U.S. Dept. of Justice, Washington, D.C., p. 101-105. _____/_____

A Study of the Sensitivity, Stability, and Specificity of Phenolphthalein As an Indicator Test for Blood, Higaki, R.S. and Philp, W.M.S., (1976) Canadian Journal of Forensic Science, Vol 9, No. 3, p. 97-102. _____/_____

Practical Crime Scene Processing and Investigation, Gardner, Ross M, Second Edition, Chapter 11: Applying Bloodstain Pattern analysis in the Crime Scene, "Presumptive Tests for Bloodstains", pp. 353-355, CRC Press, 2012. _____/_____

Principles of Bloodstain Pattern Analysis, Theory, and Practice, James, Stuart H., Kish, Paul E., and Sutton, T. Paulette, Chapter 14: "Presumptive Testing and Species Determination of Blood and Bloodstains", pp. 349-356, CRC Press, 2005. _____/_____

Idaho State Police Forensic Services, Quality Documents, "Field Services", "Presumptive blood testing" _____/_____

Powerpoint presentation, "Presumptive Blood testing training" _____/_____

7.4.2 Using the Phenolphthalein test kit, test stains on a minimum of five (5) different types of substrates. Note your results.

Substrate:	Results:
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

_____ _____ _____

Trainee Date Trainer

7.4.3 Using the Phenolphthalein test kit, test stains on a minimum of three (3) different stain dilutions. Note your results.

Dilution:	Results:
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

_____ _____ _____

Trainee Date Trainer

7.4.4 Written test on presumptive blood testing. Pass/Fail

7.4.5 Competency test on presumptive blood testing. Pass/Fail

Process items with various stains to determine if any of the stains are presumptive positive, indicating the presence of blood. Include detailed notes/sketches/photographs to indicate what was observed that prompted the analyst to determine that the area(s) should be tested Write a report indicating the results of the presumptive blood test.

Training successfully completed:

_____ _____

Analyst Date

_____ _____

Trainer/ Crime Scene Discipline Lead Date

8.0 Alternate Light Source (ALS)

8.1 Background and Theory

8.1.1 Alternate light sources (ALSs) allow the crime scene investigator (CSI) to employ a variety of wavelengths of the light spectrum to identify, visualize, and document a variety of different types of physical evidence.

8.1.2 The spectrum of visible light is a small part of a much broader band of radiant energy. When light energy encounters an object, it can act on the object in different ways; the energy will be reflected, absorbed, transmitted, converted, or any combination of those.

8.1.3 Light energy can be converted from one wavelength to another, creating the condition known as luminescence. Luminescence occurs as both fluorescence, which happens as long as the object is exposed to an active energy source (e.g., the continued presence of an ALS), and phosphorescence, in which the object continues to give off light even after the removal of the ALS. It is in the conversion of light energy in which the ALS can be most widely utilized at a crime scene.

8.1.4 The use of barrier filters for the eyes or the camera lens allows the converted light energy from the object to be observed. Through the barrier filter, the CSI can observe and document the fluorescence.

8.1.5 The Crime Lite Auto (CLA) combines the functionality of a camera, video recorder, alternate light source (ALS), filters, and a touch screen controller to visualize and document potential biological and other types of evidence at crime scenes.

8.2 Objectives, Principles, and Knowledge

8.2.1 Knowledge of luminescence, fluorescence, absorbance, light wavelengths, and barrier filters as they relate to the visualization and documentation of potential evidence at the crime scene.

8.2.2 Knowledge of equipment procedures and maintenance as it relates to the use of an ALS at a crime scene.

8.2.3 Document the presence of potential evidence on surfaces using photography and/or videography in combination with lights and filters.

8.3 Health and Safety Hazards

8.3.1 ALSs may be a hazard to the eyes and skin. Care should be taken to avoid direct exposure to the ALS beam or LEDs. Clothing such as gloves and long-sleeved shirts should be worn when using the ALS.

8.3.2 Barrier filter goggles, or other barrier filters, appropriate based on the wavelength used, shall be worn/used by the ALS operator and all people within approximately 50 feet of an operating ALS unit (not applicable when using the CLA).

8.3.3 Care should be taken around highly reflective surfaces as the light may be reflected and scattered off the surface being examined.

8.3.4 Do not use it outdoors if conditions are wet.

8.3.5 The ALS may overheat and become excessively hot. Allow the equipment to cool down before resuming its use.

8.3.6 When using an ALS powered by electricity, guard against electrical shock. Ensure all connections are tightly made and that no damaged or frayed wires exist. Unplug the ALS before attempting any maintenance.

8.4 Reading and Practical Exercises (note: the CLA is currently only available in Meridian, CLA training listed below may not apply to all trainees):

8.4.1 Required Reading Initials/Date

Rofin Polilight-Flare Plus 2 User Guide (Version 3.0) _____/_____

Crime Lite Auto User Manual _____/_____

Practical Crime Scene Processing and Investigation, Gardner, Ross M, Second Edition, Chapter 9: Basic Skills for Scene Processing, "Applying Light Technology", pp. 239-253, CRC Press, 2012. _____/_____

Illuminating the benefits and limitations of forensic light sources, Finnis, Jonathan, Davidson, Geraldine; Fraser, Isla; Murphy, Charlotte; Hargreaves; Charlotte, Stevenson, Nighean; Doole, Sharon; and Rogers, Carol; Science and Justice, Vol 63, p. 127-134. _____/_____

"Infrared Imaging of the Crime Scene: Possibilities and Pitfalls", Edelman, Gerda J; Hoveling, Richelle; Roos, Martin; van Leeuwen, Ton G; and Aalders, Maurice; *Journal of Forensic Science*, September 2013, Vol. 58, No. 5, pp. 1156-1162. _____/_____

"Forensic Light Sources for Detection of Biological Evidence in Crime Scene Investigation: A Review; Lee, Wee-Chuen and Khoo, Bee-Ee; *Malaysian Journal of Forensic Sciences*, 2010, Vol. 1, pp. 17-27. _____/_____

8.4.2 Practical Exercise: Using both a Rofin PoliLight-Flare and CLA, examine training samples/stains made from known biological and other materials using a variety of wavelengths and barrier filters. Determine which wavelength/filter combination should be utilized for the type of stain/material, visualize the stain/material using the appropriate wavelength, and compare the results with other wavelength/filter combinations. If the above ALS are not available, do the exercise above with the ALS that is available in your laboratory.

8.4.3 Written test on ALS. Pass/Fail

8.4.4 Competency test on ALS. Pass/Fail

Using both a Rofin PoliLight Flare and CLA, to examine items with possible stains. Write detailed notes/sketches and photos to indicate what was observed, including what ALS unit/wavelength/filter was used. Write a report indicating the results of the examination. If the above ALS are not available, do the exercise above with the ALS that is available in your laboratory.

Training successfully completed:

_____	_____
Analyst	Date
_____	_____
Trainer/ Crime Scene Discipline Lead	Date

9.0 Friction Ridge Exemplars

9.1 Background and Theory

9.1.1 Recording inked finger, palm, and footprints is necessary for latent print examinations. These impressions can be made in the field using different techniques, including traditional ink,powder/ adhesive lift methods and photography. Care and determination in recording the prints should always be exercised in order to obtain the best quality recordings for comparison. Only those analysts who have completed the crime scene photography section, or equivalent photography training in the Latents section, shall be signed off in photography exemplar collection given they have also completed the below.

9.2 Objectives, Principles, and Knowledge

9.2.1 Understand the various methods for recording known friction ridges for criminal history or personal identification including knowledge of chemical (inkless) systems, printer's ink, and the black powder / adhesive (Handiprint®) method.

9.2.2 Understand the quality of friction ridge detail produced by each method.

9.2.3 Understand the benefits associated with obtaining victim/elimination prints and complete friction ridge exemplars (i.e., major case prints).

9.2.4 Understand the proper method of completing finger and palm print card information, sequence for recording fingers, and method of printing plain impressions.

9.2.5 Demonstrate the ability to properly use ink and brayer to record finger, palm, and footprints.

9.2.6 Demonstrate the ability to properly record complete friction ridge exemplars (i.e., major case prints).

9.3 Health and Safety Hazards

9.3.1 Safety concerns when using commercial fingerprint powders are minimal.

9.3.2 When fingerprint powders are to be used for an extended period of time, a dust mask or half face respirator with dust filters should be worn to minimize the inhalation of the powder particles.

9.4 Reading and Practical Exercises

9.4.1 Required Reading Initials/Date

Video, YouTube, "How to Roll Ink Fingerprints", How to Fingerprint https://www.youtube.com/watch?v=Q5jib9Zu-PI _____/_____

Scott's Fingerprint Mechanics, Robert D. Olsen Sr., Chapter 2, "Taking Finger, Palm, and Footprints" _____/_____

Finger Prints, Palm and Soles, Harrold Cummins, Charles Midlo, Chapter 3, "Methods of Printing", pages 45-55. _____/_____

The Fingerprint Sourcebook, Brent T. Cutro, Sr., Chapter 4, "Recording Living and Postmortem Friction Ridge Exemplars" _____/_____

9.4.2 Practical Exercise – Rolling inked prints- Instruction by trainer followed by hands-on exercise on at least three people (one fingerprint card per person). Exemplars will be evaluated by and discussed with trainer.

Pass/Fail

9.4.3 Practical Exercise- Black Powder Adhesive Lift method- instruction by trainer followed by hands-on exercise on at least three people (one set of palms per person). Exemplars will be evaluated by and discussed with the trainer. Pass/Fail

9.4.4 Practical Exercise- Taking Complete Friction Ridge exemplars (i.e., major case prints). Instruction by trainer followed by hands-on exercise on at least three people (one set per person-full fingers including tips, sides, joints/phalanges, and one set of plams including sides of palms). Exemplars will be evaluated by and discussed with the trainer.

Pass/Fail

9.4.5 Written test on collecting friction ridge exemplars.

Pass/Fail

_____	_____	_____
List previous photography training	Trainee	Trainer

Training successfully completed:

_____	_____
Analyst	Date
_____	_____
Trainer/ Crime Scene Discipline Lead	Date

10.0 Powder Processing to Develop Latent Prints

10.1 Background and Theory

10.1.1 The development of latent prints using powder involves the application of fine particles that physically adhere to the aqueous or oily components in latent print residue. Powder is one of the most common methods of latent print development utilized on non-porous and some semi-porous surfaces. It is also one of the oldest dating back to 1891. At that time, available substances including charcoal, lead powder, soot, and cigar ashes, were used for latent print development.

Most commercial powders use two essential elements to provide adhesion to latent print residue: pigment and binder. The pigment in the powder provides effective visualization, giving contrast against the background surface. The binder provides for maximum and preferential adhesion to latent print residue. There are different kinds of powders including black powder, bi-chromatic powder, and magnetic powder. No powder is universally applicable to all types of evidence.

There are several different types and sizes of brushes that can be used when applying fingerprint powders. Types include fiberglass, animal hair, and magnetic wants. Certain types of brushes are used in conjunction with certain types of powders.

10.2 Objectives, Principles, and Knowledge

10.2.1 Understand the basic types of powders and brushes.

10.2.2 Knowledge of surfaces and environmental factors determining brush type and powder type.

10.2.3 Understand the proper procedures for using different types of fiberglass and magnetic brushes.

10.2.4 Knowledge of lifting tape and lifting procedures.

10.2.5 Understanding of elements that should be included on the latent lift card.

10.3 Health and Safety Hazards

10.3.1 When fingerprint powders are to be used for an extended period of time, a dust mask should be worn to minimize the inhalation of the powder particles.

10.3.2 When fingerprint powders are used, the user should self-monitor for skin and respiratory reactions (if any) to the fingerprint powders.

10.4 Reading and Practical Exercises

10.4.1 Required Reading Initials/Date

Video, YouTube, "Developing Latent Fingerprints with Black Powder", CSInetwork
https://www.youtube.com/watch?v=tqFzVfPRd5s _____/_____

The Fingerprint Sourcebook, Brian Yamashita and Mike French, et.al. Chapter 7, Sections 7.1 and 7.3; Laura Hutching, Chapter 8, Section 8.6; Alice V. Maceo, Chapter 10, Sections 10.1.4, and 10.2.1-10.2.4 _____/_____

Practical Crime Scene Processing and Investigation, Gardner, Ross M, Second Edition, Chapter 2: Understanding the Nature of Physical Evidence, pp. 28-30, and Chapter 9: Basic Skills for Scene Processing, "Recovering Fingerprints", pp. 254-272, CRC Press, 2012. _____/_____

Section 5 Powder Detection Methods, ISPFS Latent Print Analytical Methods Qlutch _____/_____

10.4.2 Practical Exercise- Trainer led orientation on powder processing to include standard, magnetic, and bi-chromatic powders.

_____ _____ _____

Trainee Date Trainer

10.4.3 Practical Exercise- Trainer led orientation on lifting techniques to include various tapes (e.g., clear, frosted, and 3-M) and lifts (e.g., gel).

_____ _____ _____

Trainee Date Trainer

10.4.4 Practical Exercise- hands-on powder and lifting exercises by the trainee utilizing training samples. The trainee will be able to explain to the trainer the reasoning behind powder and tape choices.

_____ _____ _____

Trainee Date Trainer

10.4.5 Written test on powder processing. Pass/Fail

10.4.6 Competency test on powder processing. Pass/Fail

Use appropriate powder and brush to develop latent prints on various item types. Use appropriate lifting medium and fill out latent lift card completely. Take notes using the Impression Evidence Notes page. Write a report indicating the results of the examination.

Training successfully completed:

_____ _____
Analyst Date

_____ _____
Trainer/ Crime Scene Discipline Lead Date

11.0 Casting and Lifting Shoe and Tire Impressions

11.1 Background and Theory

11.1.1 Tire and shoe impression evidence may be present as two-dimensional or three- dimensional impressions at a crime scene.

11.1.2 Tire and shoe impressions may offer class characteristics that can lead to recognizing the type, brand, and even model of the tire or shoe that left the mark.

11.1.3 Tire and shoe impressions may offer individual characteristics that can lead to the identification or exclusion of an impression left at the scene.

11.2 Objectives, Principles, and Knowledge

11.2.1 Understand the different types of lifters and casting compounds.

11.2.2 Knowledge of surfaces and environmental factors determining lift type.

11.2.3 Understand the proper procedures for using different types of lifting media casting material.

11.2.4 Knowledge of lifters and lifting procedures.

11.2.5 Understanding of identifying elements that should be included on the lift or cast.

11.2.6 Understand how to properly document the location and orientation of an impression at a crime scene.

11.2.7 Knowledge as to how to package a cast to preserve it against breakage.

11.3 Health and Safety Hazards

11.3.1 Dry casting material may be an inhalation hazard; a dust mask should be used when using the dry material in an enclosed environment.

11.4 Reading and Practical Exercises

11.4.1 Required Reading Initials/Date

Video, YouTube, “How to Cast Footwear Impression Evidence at a Crime Scene”, National Forensic Academy https://www.youtube.com/watch?v=_WYU2f0anjU _____/_____

Video, YouTube, “Casting Footwear Impressions”, CSInetwork https://www.youtube.com/watch?v=mquyNZaNbPo _____/_____

Video, YouTube “Casting Shoe Impression Evidence in Snow using Snow Print Plaster”, James Wolfe https://www.youtube.com/watch?v=5OeqF2klF1g _____/_____

Video, YouTube, “How to use a Gelatin Lifter for Evidence _____/_____

Collection", National Forensic Academy
https://www.youtube.com/watch?v=aOz7Bqq4g4w

Practical Crime Scene Processing and Investigation, Gardner, Ross M, _____/_____
Second Edition, Chapter 2: Understanding the Nature of Physical Evidence, "Impression Evidence", pp. 51-54, and Chapter 9: Basic Skills For Scene Processing, "Casting Impression Evidence", pp.278-297, CRC Press, 2012.

11.4.2 Practical Exercise- Photograph and cast a shoe/tire impression in soil.

_____ _____ _____

Trainee Date Trainer

11.4.3 Practical Exercise- Photograph and lift a dust impression from a solid surface using a gel lifter.

_____ _____ _____

Trainee Date Trainer

11.4.4 Practical Exercise- Photograph and cast a shoe/tire impression in snow.
While this is important to practice, failing to complete this exercise in a certain time frame will not keep the Trainee from becoming signed off. Due to the seasonality of this exercise, it may not be possible to complete it for an extended period of time. This exercise can be completed as available.

_____ _____ _____

Trainee Date Trainer

11.4.5 Competency test on Shoe/Tire impressions. Pass/Fail
Correctly document and preserve a shoe/tire impression in a mock crime scene.

Training successfully completed:

_____ _____
Analyst Date

_____ _____
Trainer/ Crime Scene Discipline Lead Date

12.0 Shooting Reconstruction Documentation

12.1 Background and Theory

12.1.1 Crime scene reconstruction is the use of scientific methods, physical evidence, deductive and inductive reasoning, and their interrelationships to gain explicit knowledge of the series of events that surround the commission of a crime. Reconstruction uses reductivism; the analysis is reverse engineered from physical evidence.

12.1.2 Reconstruction of the events that transpired during the commission of a crime is not a new concept; it has been practiced since at least 1898.

12.1.3 Reconstruction relies heavily on the quality of the crime scene processing. The context and evidence recovered from the scene is the only data available to the reconstructionist.

12.1.4 Proper documentation of the elements of a shooting scene allow a reconstructionist the details necessary to make determinations as to what may have transpired.

12.2 Objectives, Principles, and Knowledge

12.2.1 Knowledge of what a reconstructionist requires to make conclusions as to the events in a shooting scene.

12.2.2 Knowledge of the general principles of shooting reconstruction in order to document elements of a shooting crime scene that would be utilized by a reconstructionist.

12.2.3 Knowledge of, and the ability to demonstrate the recognition of, lead-in marks, pinch points, plugs, and other characteristics related to bullet holes.

12.2.4 Knowledge of, and the ability to demonstrate the recognition of, bullet ricochets, strikes, and/or deflections.

12.2.5 Knowledge of, and the ability to demonstrate, proper procedures for documenting the angle of impact, horizontal angles, and vertical angles.

12.2.6 Knowledge of, and the ability to demonstrate, how to photograph horizontal and vertical angles, using trajectory rods and/or laser lights.

12.3 Health and Safety Hazards

12.3.1 Biological materials, such as blood, may be present in the crime scene or on items of evidence. All biological materials should be treated as if they are infectious and appropriate personal protective equipment (PPE) should be utilized.

12.3.2 Sharp objects may be present in the crime scene and may be encountered while searching for evidence. Care should be taken to avoid cuts, punctures, or other injury from sharp objects.

12.3.3 Firearms may be present in the crime scene and shall be treated as if they are loaded and ready to fire. The firearm shall be pointed in a safe direction, away from any person. When handling a firearm, care must be taken to be aware of surroundings, in case of an accidental discharge. Care shall also be taken to avoid the handler putting their finger on the trigger.

12.3.4 Laser lights can cause damage to the eyes. Care should be taken to avoid reflected, refracted, or direct light from the laser to the eye. Extreme care should be taken around highly reflective surfaces. A CSI should never look directly into the laser light or allow beams to bounce off the surface into their own eyes, or another persons' eyes.

12.4 Reading and Practical Exercises

12.4.1 Required Reading Initials/Date

Practical Crime Scene Processing and Investigation, Gardner, Ross M., Second Edition, Chapter 10: Shooting Scene Documentation and Reconstruction, pp. 299-329, CRC Press, 2009. _____/_____

Practical Crime Scene Analysis and Reconstruction, Gardner, Ross M., and Bevel, Tom, Second Edition, Chapter 3: A practical methodology for Crime Scene reconstruction, pp.37-72; Chapter 7: Shooting Scene Processing and Reconstruction, pp.131-174, CRC Press, 2012. _____/_____

12.4.2 Practical Exercise- Trainer led session on differentiating between different types of marks/artifacts left by bullets (e.g. pinch points, ricochets, lead-in marks, etc.).

_____	_____	_____
Trainee	Date	Trainer

12.4.3 Practical Exercise- Trainer led session on determining angle of impact, horizontal angles, and vertical angles and using trajectory rods and/or laser lights to document the angles using photography.

_____ _____ _____

Trainee Date Trainer

12.4.4 Competency Test: Correctly describe and document shooting artifacts in items of mock evidence. Pass/Fail

12.4.5 Completion of a 40-hour Shooting Reconstruction Course Date _____
(A 40-hour course would satisfy all of the requirements of this Section)

Training successfully completed:

_____ _____
Analyst Date

_____
Trainer/ Crime Scene Discipline Lead Date

13.0 Collection and Preservation of Evidence

13.1 Background and Theory

13.1.1 Evidence can be defined as anything that tends to prove or disprove a fact in contention. Physical evidence takes the form of specific items found at the scene that are often collected for subsequent analysis and presentations.

13.1.2 Physical evidence has a great power and can define what happened at a crime scene. Physical evidence can provide an objective foundation for any theory of the crime and can confirm or refute testimonial evidence. In order to collect physical evidence, the Crime Scene Investigator (CSI) must first recognize it. Before a CSI can expect to process a scene for evidence, they must have a working knowledge of the nature of physical evidence, what the forensic laboratory can do with it, and how best to collect it. It is part of the job of the CSI to take an interest in all aspects of forensics and to try to remain current.

13.1.3 Edmund Locard, a French criminologist, is considered by many to be the father of the modern crime laboratory. Locard's principle of exchange is stated simply: every contact leaves its trace. Locard believed that whenever two objects come in contact with one another, material from one would be transferred to the other. This principle is the underlying theory behind collection and examination of evidence.

13.1.4 Physical evidence must be handled and processed in a way that prevents any change from taking place between the time it is removed from the crime scene and the time it is received by the crime laboratory. Changes can arise through contamination, breakage, evaporation, accidental scratching or bending, or loss through improper or careless packaging.

13.1.5 The chain of custody is a record of the continuity of possession from the time the item is collected at the scene until it is submitted in court. Failure to substantiate the evidence's chain of custody may lead to significant questions regarding the authenticity and integrity of the evidence and the examinations rendered upon it.

13.2 Objectives, Principles, and Knowledge

13.2.1 Knowledge of, and the ability to demonstrate, proper procedures for collection and packaging of all types of evidence.

13.2.2 Knowledge of, and the ability to demonstrate, proper procedures for maintaining the chain of custody.

13.3 Health and Safety Hazards

13.3.1 Biological materials, such as blood, semen, or other bodily fluids, may be present in the crime scene or on items of evidence. All biological materials should be treated as if they are infectious and appropriate personal protective equipment (PPE) should be utilized.

13.3.2 Sharp objects may be present in the crime scene and may be encountered while searching for evidence. Care should be taken to avoid cuts, punctures, or other injury from sharp objects.

13.3.3 Firearms may be present in the crime scene and shall be treated as if they are loaded and ready to fire. The firearm shall be pointed in a safe direction, away from any person. When handling a firearm, care must be taken to be aware of surroundings, in case of an accidental discharge. Care shall also be taken to avoid the handler putting their finger on the trigger.

13.4 Reading and Practical Exercises

13.4.1 Required Reading Initials/Date

Practical Crime Scene Processing and Investigation, Gardner, Ross M., Second Edition, Chapter 2: Understanding the Nature of Physical Evidence, pp. 25-60, CRC Press, 2012. _____/_____

13.4.2 Complete the "How to Package Evidence" written exercise. Pass/Fail

13.4.3 Attend "Collection and Preservation of Evidence" class.

*May have been completed as a part of Core training.

_____ _____ _____

Trainee Date Trainer

13.4.4 Competency Test: Package five items of provided mock evidence correctly. Pass/Fail

Training successfully completed:

_____ _____

Analyst Date

_____ _____

Trainer/ Crime Scene Discipline Lead Date

14.0 Report Writing and Review

14.1 Background and Theory

14.1.1 In order to accurately document the condition of the scene, the narrative should be detailed, with all pertinent facts and conditions documented; accurate, with few inferences or subjective evaluations; and understandable, i.e., logical and organized.

14.1.2 The crime scene report should be a combination of the facts, observations, actions, and efforts taken, combined into a functional organized document.

14.1.3 A report should not include every detail contained in the notes. It should include the salient details so that the reader can understand the scene and the actions taken there. Organizing the report into sections is a way to organize the report so it can be easily comprehended.

14.1.4 Entry of crime scene processing details into the ILIMS system is a way to document the work completed and a way to route the report to all responders to verify the report content. It also contains report wording samples for consistency between reports.

14.2 Objectives, Principles, and Knowledge

14.2.1 Ability to navigate and query ILIMS for field services cases.

14.2.2 Ability to make entries into ILIMS to accurately reflect the work done on the crime scene.

14.2.3 Knowledge of, and the ability to demonstrate, proper procedures for reporting results of crime scene investigations in an accurate, concise, and clear manner.

14.2.4 Understand release of information policies, i.e., with whom, when, and how results may be given to customers.

14.3 Health and Safety Hazards

14.3.1 N/A

14.4 Reading and Practical Exercises

14.4.1 Required Reading Initials/Date

Practical Crime Scene Processing and Investigation, Gardner, Ross M, _____/_____
Second Edition, Chapter 8: Narrative Descriptions,
"Crime Scene Reports", pp. 228-237, CRC Press, 2012.

14.4.2 Practical Exercise – Trainee review of three (3) approved crime scene reports and associated notes.

Lab Number: Reviewed by:

_____ _____
_____ _____
_____ _____

14.4.3 Practical Exercise- Trainer led session on entry of crime scene information into matrix of ILIMS.

_____ _____ _____

Trainee Date Trainer

14.4.4 Competency Test: Using your Documentation competency test, write a mock report for a crime scene response. Have the report writer from that scene review the report for content and to provide feedback. Have the Discipline Lead review the report for content, provide feedback and grade. Complete the mock report process for three (3) crime scene responses.

Pass/Fail

Lab Number: Reviewed by:

_____ _____
_____ _____
_____ _____

Training successfully completed:

_____ _____
Analyst Date

_____ _____
Trainer/ Crime Scene Discipline Lead Date