WASHINGTON STATE PATROL

CRIME SCENE RESPONSE TEAM
TRAINING MANUAL

CRIME LABORATORY DIVISION

February 2021
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INTRODUCTION

CRIME SCENE INVESTIGATION TRAINING PLAN
The Crime Scene Investigation Training Plan was adapted from guidelines set forth by trade associations and scientific and technical working groups established and/or sponsored by the Federal Bureau of Investigation.

Refer to WSP CLD Quality Operations Manual, Section 7 Personal Qualifications and Training

PURPOSE
To provide Trainees, Secondary, and Primary Responders on the Crime Scene Response Team (CSRT) with the necessary instruction to allow professional growth and expertise in the Crime Scene Investigation discipline.

TRAINING TO COMPETENCY OBJECTIVES
The trainee must demonstrate knowledge of required objectives by communicating an understanding of the objectives and underlying principles. Competency tests (when required) must also be successfully completed, as determined by the trainer or Technical Lead(s). The training elements and benchmarks have been established to accomplish each of the objectives.

EMPLOYEE DEVELOPMENT
Employees interested in joining the CSRT who have approval through their chain of command will be allowed to enter into a 3 month trial service period. This period is meant as an informal introduction to the nature of CSRT work, where employees will dedicate at least one week toward on-call responses per month. Additional time spent responding to scenes will require Supervisor approval. The Primary CSRT responder will provide feedback to the Technical Leads and CSRT Manager after each response with the trial service member. This feedback will be shared with the employee and their Supervisor throughout the trial service period. At the end of the 3 month period, the evaluation of how the employee fits in with the CSRT program will be discussed with the CSRT Manager, the employee, and their Supervisor. Upon successful completion of the trial service period, the employee will become a Trainee member of the CSRT after approval from the Division Commander.

The length of the training period is a highly variable matter and will be left to the determination of the trainer. Certain individuals may require less time than others, depending on experience, education, availability, and/or learning ability. The training time will also vary depending on the time required to enroll the trainee in the proper adjunctive training courses.

Throughout the training period, the trainee will assist with tasks on scene, only under the direct supervision of a qualified examiner to familiarize the trainee with different forms of case evidence, documentation, packaging, and applied analytical techniques. Once the trainee has successfully completed a module, they may independently perform tasks that fall under the given module with proper authorization.

The training plan consists of three sections: Step One, Step Two, and Step Three. Step One includes modules for a trainee to complete in order to be elevated to a Secondary Responder. If a trainee does not successfully complete these sections within 18 months, consideration should be given to additional training, additional time to focus on crime scene training, or termination of the trainee’s assignment to the CSRT. Promotion to Secondary Responder is at the discretion of the CSRT Manager and will be dependent on the trainee’s scene experience and/or training plan progress.

Step Two includes modules for a Secondary Responder to complete in order to be elevated to a Primary Responder and should be achieved within 12 months after completion of Step One. If a Secondary
Responder does not successfully complete sections within the allotted time period, consideration should be given to additional training or termination of the responder’s services.

Step Three is for Primary Responders and should be completed within 12 months following the completion of Step Two.

A Secondary Responder may be released to respond as a Primary Responder to requests that fall within the training sections completed at the discretion of the CSRT Manager.

All Primary Responders shall participate in continuing education to maintain competency and develop advanced knowledge and abilities. The Bureau shall make every effort to make such training available to all members of the CSRT.

**STEP ONE:** Module 1.0 must be completed first. Unless otherwise noted in the module, the remaining modules do not need to be completed in the order listed.

- 1.0 CRIME SCENE ORIENTATION
- 2.0 COGNITIVE BIAS
- 3.0 CRIME SCENE PHOTOGRAPHY
- 4.0 SEARCHING METHODS
- 5.0 FIREARM SAFETY
- 6.0 AMMUNITION
- 7.0 COLLECTION OF FIRARMS AND AMMUNITION
- 8.0 SEROLOGY
- 9.0 LATENT PRINTS
- 10.0 IMPRESSION EVIDENCE
- 11.0 TOOL MARK EVIDENCE
- 12.0 TRACE EVIDENCE
- 13.0 CRIME SCENE DOCUMENTATION
- 14.0 BLOODSTAIN PATTERN ANALYSIS
- 15.0 DRUG RELATED EVIDENCE AND SAFETY
- 16.0 ARSON AND EXPLOSIVES EVIDENCE
- 17.0 SHOOTING INCIDENT RECONSTRUCTION
- 18.0 ARSON AND EXPLOSIVES EVIDENCE
- 19.0 IMPRESSION EVIDENCE
- 20.0 3D LASER SCANNING
- 21.0 CRIME SCENE REPORTS AND CASE FILE MANAGEMENT
- 22.0 COMPETENCY TEST

**STEP TWO:** Unless otherwise noted in the module, the modules do not need to be completed in the order listed. Module 22.0 must be completed after the completion of the preceding modules in this training manual (except for module 15.0 and 19.0).

- 14.0 BLOODSTAIN PATTERN ANALYSIS
- 17.0 SHOOTING INCIDENT RECONSTRUCTION
- 20.0 3D LASER SCANNING
- 21.0 CRIME SCENE REPORTS AND CASE FILE MANAGEMENT
- 22.0 COMPETENCY TEST
STEP THREE:

- 23.0 TECHNICAL REVIEW

MODULE 15.0 BLOODSTAIN PATTERN ANALYSIS FOR LABORATORY EXAMINATION COMPLETION - must be completed by only those who will be performing laboratory analysis of bloodstains on clothing and other items that have been submitted to the laboratory. Those performing bloodstain pattern analysis in the laboratory may do so with management approval. In addition, anyone performing bloodstain pattern analysis in the laboratory is also required to complete module 14.0 (Bloodstain Pattern Analysis Training).

19.0 RECOVERY AND PROCESSING OF HUMAN REMAINS – Qualification as a Primary Responder can be achieved without the completion of this module. However, the Primary Responder must complete this module before they are able to lead scenes that involve the recovery and processing of human remains.

RECOMMENDED FORMAL TRAINING

In some cases, formal training offered by the WSP Crime Laboratory or agencies and organizations outside the WSP may substitute for all or a portion of the required training. Formal laboratory training for a part-time responder's primary functional area may also substitute for the required training. The content of the formal training shall be reviewed by the trainer and/or the Technical Lead(s) to determine which benchmarks have been met by the formal training and which training elements can be substituted.

MOOT COURT

Each case a forensic examiner analyzes has the potential of involving him/her as an expert witness in courtroom testimony. The trainee must never underrate this important aspect of the work. It is the trainer's responsibility to ensure that the trainee is thoroughly prepared for legal questioning. This can be done by a combination of mock trials, prearranged as well as impromptu question and answer sessions, pertinent literature review, and observation of courtroom testimony given by experienced examiners.

A mock trial may take place at any point after the trainee has completed a block of this training manual, following a practical examination of a mock case incorporating that block of training.

A final mock trial will take place, to include any or all aspects of this training program, as part of Module 22.0 Competency Test. If the trainee has testimony experience, a question and answer session to replicate court testimony may substitute for the mock trial requirement.

TRAINER CRITERIA

The trainer shall be assigned by the CSRT Manager and will direct the trainee to all appropriate training elements and ensure that all of the objectives have been met. The CSRT Manager may also appoint a mentor in addition to a trainer. This mentor will aid the trainer in ensuring the training objectives are met. The Trainer will have the following qualifications:

Essential

Will possess the knowledge, skills, and abilities for the objectives to be achieved.

Has been accepted in court as an expert in crime scene investigation.
INSTRUCTIONS FOR THE TRAINER

The intent of the training program is to ensure that each and every trainee is provided with certain basic principles and fundamentals necessary for the complete education of a Crime Scene Investigator. All of the listed topics must be incorporated into the program. However, education and prior experience of the trainee will be used as a guide to determine the amount of time devoted to each topic. Some of the training elements within an objective will suggest an order of events and this ranking should be followed.

The trainer or the individual providing the training will document the completion of each required training module by the trainee on the designated checklist for that training objective. The Training Checklist is located at the end of each module. Training received outside the FLSB must be documented with a certificate of completion or equivalent.

The completed Training Checklists will be retained by the trainee in the appropriate sections of his/her training notebook. A copy of the completed Training Checklists will also be digitally stored on SharePoint.

The trainee will be evaluated on his/her performance during the course of the program. There should be written evaluations by the Technical Lead(s) of the trainee’s progress after each milestone is reached (secondary and primary status). Written evaluations should include:

- A summation of the progress made.
- An evaluation of the trainee’s notebook.
- An evaluation of the progress.

Written evaluations should be in IOC format and addressed to the CSRT Manager. Each IOC will become a part of the training history of the trainee and will be used to document the trainee’s progress toward qualification.

Should a trainee demonstrate a deficiency which may impact successful completion of the training program, the trainer will notify the CSRT Manager and the Technical Lead(s) within five working days.

A review of the Training Checklists and the trainee’s training notebook by the trainer with the trainee throughout the training program, will enhance the trainer’s ability to prepare the written evaluations, and may also give the trainee a greater sense of accomplishment. Any comments by the trainee are to be included with the evaluation. The Technical Lead(s) are to discuss this evaluation with the trainee.

When the trainee has satisfactorily completed all training requirements in Step One and Step Two, a recommendation will be made by the Technical Lead(s) that the person be qualified to perform the specified duties of a primary responder in the discipline. The CSRT Manager will then evaluate the recommendation and write an approval for specified duties. Final approval for crime scene response is given by the CLD Commander. If the trainee cannot meet the criteria expected of him/her during the period allowed for training in each of the areas, steps will be taken to effect the appropriate action.

INSTRUCTIONS FOR THE TRAINEE

The trainee is expected to keep a notebook on all work completed and crime scenes attended. The completed Training Checklists, training certificates, and the trainer’s feedback will also be included in the notebook. This notebook will be checked by the trainer throughout the training program.

The notebook should contain the types of tests, examinations or experiments observed and performed; notes and comments on each type of test; and the review of pertinent literature.
ASSESSMENT OF EXPERIENCED PERSONNEL

The responsibility for assessing the degree of qualifications of newly hired personnel who have successfully completed a qualifying training program of instruction in Crime Scene Investigation shall lie with the CSRT Manager. In order to substitute for the entirety of the training specified in this manual, the qualifying course must have been formally structured, covered all appropriate facets of the stated objective, and been administered by a reputable organization (or individual). Methods of verifying the completion or prior training could include reviewing the individual's job application, personal interview, review of transcripts or prior training records, checking references, consulting with previous trainers, administering a series of practical exams, and/or written and/or oral technical exams.

Newly hired personnel shall not be considered qualified by the CLD (or appropriate designee) to begin any actual casework until they have successfully completed at least one mock crime scene competency test, consisting of a written report, a technical oral examination and a final moot trial.

Once the employee has been evaluated, the CSRT Manager shall provide written approval (in IOC format) to the CLD Commander who will forward a written approval for qualification through the Standards and Accountability Section (SAS). A copy of the signed IOC shall be retained by the CSRT Manager.
1.0 CRIME SCENE ORIENTATION

1.1 OBJECTIVES

To understand the history of the CSRT and its mandate.

To understand the nature of CSRT requests.

To understand the roles and responsibilities of the Crime Scene Manager, Technical Lead(s), Primary Responder, Secondary Responder, and Trainee.

To understand the balance of responsibilities for part-time Crime Scene personnel.

To understand the staffing and technical capabilities of various WSP Regional Laboratories from which Crime Scene personnel respond.

To understand general regional assignments and areas or instances requiring overlapping coverage.

To become familiar with the crime scene vehicles, including operation of the vehicle and storage locations.

To understand the use and care of equipment utilized by Crime Scene personnel.

To equip the trainee with proper uniforms.

To understand the regional laboratory procedures for care and cleaning of uniforms.

To review expectations for stand-by status and callout procedures currently in use.

To understand the procedures for call back status and rest periods.

To understand proper protocol for arriving at crime scenes and interacting with requesting agencies.

To understand the progression of training and employee responsibility as part of the CSRT.

To clarify expectations of the trainer within the Training Plan.

1.2 METHODS OF INSTRUCTION

1.2.1 LECTURE AND DISCUSSION

1.2.2 REQUIRED READINGS

CLD Quality Operations Manual

CLD Safety Manual

CLD CSRT Technical Procedures Manual

CLD CSRT Training Manual, Introduction section

1.3 MODES OF EVALUATION

The Trainee shall begin responding to scenes and shall demonstrate an understanding of the objectives covered in this section through interview with the trainer.
# MODULE 1.0 CRIME SCENE ORIENTATION CHECKLIST

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**Additional Comments:**

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2.0 COGNITIVE BIAS

2.1 OBJECTIVES

Understand what cognitive bias is and its potential impact to the trainee’s work and forensic science in general.

Understand the various tactics that can be used to minimize the influence of cognitive bias.

Training in cognitive bias will be completed by all new employees.

2.2 METHODS OF INSTRUCTION

2.2.1 LECTURE AND DISCUSSION

Cognitive bias can play a role in all aspects of investigations, from the evidence that is collected (or not collected) at the scene, what is submitted to the lab, what is chosen to be examined, how the exam is conducted, how the data is interpreted, what conclusions are reached, how they are reported, and how they are presented in a court of law. It is critical as scientists to: 1) remain as objective and unbiased as possible from start to finish; 2) not dilute the science with task-irrelevant information; and 3) remain free of influence from the adversarial nature of our court system. While it may be impossible to shield the scientist from all external influences, there are some ways to minimize cognitive bias. Training and understanding is the first step. Just as we take great effort to protect the evidence from physical contamination, so we must take effort to minimize cognitive contamination.

2.2.2 SUGGESTED READINGS

(Available on the FLSB Portal, under the Cognitive Bias section)

Cognitive Bias, PowerPoint presentation

Forensic Science Error Management, various links to NIST website


National Commission on Forensic Science: Ensuring That Forensic Analysis is Based Upon Task-Relevant Information


Contextual bias and cross-contamination in the forensic sciences: the corrosive implications for investigations, plea bargains, trials and appeals, Edmond, G. et al., Law, Probability and Risk (2015) 14, 1–25
Unintentional Bias in Forensic Investigation, Sophie Stammers and Sarah Bunn, Houses of Parliament, Parliamentary Office of Science and Technology, POSTbrief No. 15, October 2015


2.3 MODES OF EVALUATION

2.3.1 QUESTION AND ANSWER SESSION

Describe how cognitive bias may affect crime scene investigation and possible ways it can be minimized in casework.
## MODULE 2.0 COGNITIVE BIAS CHECKLIST

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3.0 CRIME SCENE PHOTOGRAPHY

3.1 OBJECTIVES

Learn the functions of the crime scene camera and how adjusting the settings affects exposure.

Learn to set up the camera on a tripod and use the external flash.

Learn to evaluate a crime scene and determine what areas are of photographic importance.

Understand the importance of overall, midrange, close-up, and examination quality photography and their correct composition.

Understand special considerations required for the photography of night scenes, Luminol/Bluestar, laser trajectories, evidence on mirrors and windows, and taking exam quality photographs of latent prints and impressions.

Note: Examination quality photography of impressions and latent prints will be discussed as part of this module, but these topics are also covered in the relevant later modules of this manual. These modules should be referred to during the photography training.

Learn the proper handling of digital images and documentation of image processing. (Image storage will be covered in Module 21.0)

3.2 METHODS OF INSTRUCTION

3.2.1 LECTURE, DISCUSSION, AND DEMONSTRATION (AS APPROPRIATE)

3.2.2 SUGGESTED READINGS/TUTORIAL VIDEOS

Camera User’s Manual (for CSRT camera make and model)

Scientific Working Group Imaging Technology (these documents can be accessed through the website [www.swgit.org](http://www.swgit.org) and are also located on the CSRT SharePoint under Training Material):

- Section 1 Overview of SWGIT and the Use of Imaging Technology in the Criminal Justice System
- Section 3 Field Photography Equipment and Supporting Infrastructure
- Section 6 Guidelines and Recommendations for Training in Imaging Technologies in the Criminal Justice System
- Section 8 General Guidelines for Capturing Latent Impressions Using a Digital Camera
- Section 9 General Guidelines for Photographing Footwear and Tire Impressions
- Section 19 Issues Relating to Digital Image Compression and File Formats


3.2.3 CASE REVIEW

Review photographs from at least five crime scenes involving vehicles, buildings, and outdoors, with as much diversity of photography types as possible.
3.2.4 PROVIDE WRITTEN ANSWERS TO THE FOLLOWING QUESTIONS:

- What is depth of field?
- How do you increase the depth of field?
- What does aperture refer to?
- How can you adjust the aperture on the camera?
- What does shutter speed mean?
- How do you adjust the shutter speed on the camera?
- What is the bulb setting? When would you use this setting?
- What is ISO?
- How do you adjust ISO on the camera?
- What is the image histogram?

3.2.5 PRACTICAL EXERCISES

- Practice adjusting the camera settings to include the focus, shutter speed, aperture, ISO, metering, white balance, and exposure compensation.
- Practice overall, midrange, and close-up photography.
- Practice examination quality photography to include latent prints, impressions, and tool marks.
- Practice long exposure photography and painting with light.
- Photograph a Luminol or Bluestar enhanced bloodstain.
- Photograph a laser trajectory.
- Using the practice photos, import images into Adobe Lightroom and practice image editing.

3.3 MODES OF EVALUATION

3.3.1 QUESTION AND ANSWER SESSION

3.3.2 TRAINEE PHOTOGRAPHY COMPETENCY

Photograph a vehicle mock crime scene with a variety of evidence. Photo-document the evidence appropriately. The scene must include examination quality photography of at least two latent fingerprints.

Photograph an exterior mock crime scene with a variety of evidence. Photo-document the items of evidence appropriately. The scene must include examination quality photography of at least one impression (footwear or tire). Repeat this exercise at night/in low light conditions.

Trainer will evaluate trainee’s competency and provide written feedback.

RECOMMENDED FORMAL TRAINING

In some cases, formal training offered by agencies and organizations outside the WSP may substitute for the required training. The content of the formal training shall be reviewed by the trainer to determine which objectives have been met.
# MODULE 3.0 CRIME SCENE PHOTOGRAPHY CHECKLIST

Completed:

<table>
<thead>
<tr>
<th>Lecture, Discussion, and Demonstration</th>
<th>Date</th>
<th>Trainee’s Initials</th>
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</table>

Review photographs from at least five crime scenes

Case #1: ___________________

Case #2: ___________________

Case #3: ___________________

Case #4: ___________________

Case #5: ___________________

Written answers to photography questions are complete and have been reviewed:

Date_________________ Trainee’s Initials________

Date_________________ Trainer’s Initials________

The following exercises have been completed:

<table>
<thead>
<tr>
<th>Exercise</th>
<th>Date</th>
<th>Trainee’s Initials</th>
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<tbody>
<tr>
<td>Practice adjusting camera settings</td>
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<tr>
<td>Practice overall, midrange, and close-up photography</td>
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<tr>
<td>Practice examination quality photography</td>
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<tr>
<td>Practice long exposure photography and painting with light.</td>
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<tr>
<td>Photograph a Luminol or Bluestar enhanced bloodstain</td>
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<tr>
<td>Photograph a laser trajectory</td>
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<tr>
<td>Practice editing images in Lightroom</td>
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</table>
Evaluation Completed:

Question and answer session

Date_________________  Trainee's Initials________
Date_________________  Trainer's Initials________

Photography Competencies

Vehicle:

Date_________________  Trainee's Initials________
Date_________________  Trainer's Initials________

Outdoor Scene:

Date_________________  Trainee's Initials________
Date_________________  Trainer's Initials________

Outdoor Scene at Night/low light:

Date_________________  Trainee's Initials________
Date_________________  Trainer's Initials________

Additional Comments:__________________________________________________________________
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4.0 SEARCHING METHODS

4.1 OBJECTIVE

To become familiar with the search techniques that may be used during a crime scene search

4.2 METHODS OF INSTRUCTION

4.2.1 LECTURE AND DISCUSSION

4.2.2 REQUIRED READING


Crime Scene Search Patterns – NFSTC. This document is available on the CSRT SharePoint in Training Material

4.3 MODES OF EVALUATION

4.3.1 QUESTION AND ANSWER SESSION
MODULE 4.0 SEARCHING METHODS CHECKLIST

Lecture and Discussion

Date_________________ Trainee’s Initials_______

Date_________________ Trainer’s Initials_______

The required readings have been completed

Date_________________ Trainee’s Initials_______

Question and answer session

Date_________________ Trainee’s Initials_______

Date_________________ Trainer’s Initials_______

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5.0 FIREARMS SAFETY

5.1 OBJECTIVES

To be able to safely unload a firearm and demonstrate that the firearm is safe for packaging.
To have a basic understanding of the different types of external safeties of a firearm.
To understand the different types of firearms.

5.2 METHODS OF INSTRUCTION

5.2.1 LECTURE AND DISCUSSION

Firearm Safety PowerPoint and/or attend a Firearms Safety course taught by the WSP CLD Firearms Unit. (Firearms/Toolmarks Training Material)

Working with an experienced Firearms examiner, discuss the main types of firearms and how they are to be rendered safe. Discuss the proper ways of securing the firearm to demonstrate that it is safe. It is also recommended the trainee have a basic understanding of the cycle-of-fire for the following firearms:

- Semiautomatic pistol/rifle
- Revolver
- Bolt-action rifle
- Pump-action shotgun/rifle
- Lever-action rifle
- Automatic firearms
- Electronic Control Devices (TASER)
- Pellet/BB guns
- Muzzleloaders

Working with an experienced Firearms examiner, discuss safety rules regarding the handling of firearms. Also discuss the ways in which a firearm could accidentally and unintentionally discharge.

Discuss with the trainer the types of evidence that might be associated with firearms.

5.2.2 REQUIRED READINGS

Review references and resource material in the Firearms Unit.

Association of Firearms and Tool Mark Examiners (AFTE) Glossary

5.2.3 ASSIGNMENTS AND EXERCISES

Working with an experienced Firearms examiner, unload and secure at least four loaded firearms as if found on scene. This should be done with minimal assistance from the Firearms examiner. Pertinent information should be communicated to the Firearms examiner regarding the firearm as it is made safe. It is recommended that the trainee also test fire each type of firearm to understand their function.

Complete Training Assignment 11 of the Firearms Training Manual.
5.3 MODES OF EVALUATION

5.3.1 ASSIGNMENT REVIEW

5.3.2 QUESTION AND ANSWER SESSION
### MODULE 5.0 FIREARMS SAFETY CHECKLIST

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<td>Unload and secure loaded firearms</td>
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6.0 AMMUNITION

6.1 OBJECTIVES

To have a basic understanding of ammunition components.

To be able to recognize fired and unfired ammunition and its components

6.2 METHODS OF INSTRUCTION

6.2.1 LECTURE AND DISCUSSION

Discuss with an experienced Firearm examiner the headstamp information on ammunition and how to properly document it.

Discuss with the trainer the types of evidence that might be associated with ammunition components.

Discuss with an experienced Firearms examiner the TASER cartridge components.

6.2.2 SUGGESTED READINGS

AFTE glossary, most current edition
Cartridges of the World, most current edition
Manufacturer reference material
Headstamp Guide, AFTE website
CartWin Pro database
NRA Sourcebook

6.2.3 EXERCISE AND ASSIGNMENT

Review the standard ammunition file in the firearms unit.

Define the following terms and discuss with the trainer: cartridge, cartridge case, primer, shotshell, mouth, head, headstamp, gauge, wadding, bullet, round-nosed bullet, “hollow-point” bullet, jacketed bullet, bullet core, bullet jacket fragment.

6.3 MODES OF EVALUATION

6.3.1 REVIEW OF EXERCISES

6.3.2 QUESTION AND ANSWER SESSION
## MODULE 6.0 AMMUNITION CHECKLIST

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7.0 COLLECTION OF FIREARMS AND AMMUNITION

Successful completion of Module 5 is required before beginning this module.

7.1 OBJECTIVES

To have an understanding of the proper documentation of firearms and ammunition.

To be able properly package firearms and ammunition.

7.2 METHODS OF INSTRUCTION

7.2.1 LECTURE AND DISCUSSION

Discuss with the trainer and/or an experienced Firearms examiner the markings present on several firearms in the firearms reference collection.

Discuss with the trainer why documenting by pictures and notes is recommended for a firearm prior to movement and securing of the firearm.

Discuss with the trainer the documentation and packaging of ammunition loaded in a firearm, and TASER.

7.2.2 REQUIRED READING


7.2.3 EXERCISE

Demonstrate to the trainer the securing and packaging of a variety of loaded firearms, and TASER.

7.3 MODES OF EVALUATION

7.3.1 QUESTION AND ANSWER SESSION

DEFECT ASSESSMENT

7.4 OBJECTIVES

To understand how to recognize a defect consistent with the impact or passage of a projectile in various target materials.

To understand how to test defects for the presence of copper and lead.

7.5 METHODS OF INSTRUCTION

7.5.1 LECTURE & DISCUSSION

Discuss with the trainer bullet impact marks and defects in various targets.

If possible, attend an autopsy with gunshot wounds present. If not possible, view case photos and discuss the topic with the trainer.
7.5.2 **SUGGESTED READINGS**


7.5.3 **EXERCISES**

Working with an experienced Firearms examiner, shoot various types of targets, to include but not limited to, wood, fabric, drywall, vehicle parts, glass (single, double paned, laminated) at several angles. Choose several different firearms to include a pistol, rifle and shotgun. If possible, using Kevlar filled boxes attempt to capture projectiles after striking target material. Record by written and photographic documentation the defects produced. Discuss with trainer/experienced Firearms examiner.

From the bullet defects created in the previous exercise, test several for copper and lead. Also examine area surrounding these defects for other gunshot residues.

From the bullet defects created in the previous exercise, discuss and record the defects entrance and exit characteristics and whether the bullet defects penetrate, perforate, graze, or ricochet the target material.

7.6 **MODES OF EVALUATION**

7.6.1 **REVIEW EXERCISES**

7.6.2 **QUESTION AND ANSWER SESSION**
MODULE 7.0 COLLECTION OF FIREARMS AND AMMUNITION CHECKLIST

COLLECTION OF FIREARMS

Lecture and Discussion

Date

Trainee’s Initials

Date

Trainer’s Initials

Required reading has been completed

Date

Trainee’s Initials

Packaging of firearms and ammunition

Date

Trainee’s Initials

Date

Trainer’s Initials

Additional Comments:

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MODULE 7.0 COLLECTION OF FIREARMS AND AMMUNITION CHECKLIST

DEFECT ASSESSMENT

Lecture and discussion
Date
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Date
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Trainee’s Initials
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Required reading has been completed
Date
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The exercises have been completed:
Date
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The Trainer has discussed the observations and findings of the exercises with the trainee:
Date
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A question and answer session was completed
Date
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8.0 SEROLOGY/DNA

FORENSIC/ALTERNATE LIGHT SOURCE (FLS/ALS)

8.1 OBJECTIVES

To become familiar with the proper use of the ALS for examining evidence for the presence of biological material and its use to search for or examine other types of evidence (i.e. Trace and latent prints).
To be able to operate the ALS safely to locate possible biological material.

8.2 METHODS OF INSTRUCTION

8.2.1 LECTURE AND DISCUSSION

- Safety and operation of the ALS
- Appropriate wavelengths and filters
- Procedure for examination of evidence
- Materials that may fluoresce
- Documentation of examination
- Interpretation and conclusions

8.2.2 SUGGESTED READINGS

- CLD Biochemical Analysis Procedures Manual, ALS Module
- CLD Material Analysis Technical Procedures Manual, Module 14
- User’s Manual for ALS (unit specific)

8.2.3 EXERCISES

Examine a variety of known and unknown materials from biological, chemical, and physical sources, to become familiar with the range of materials that may be encountered at a crime scene. These substances should be examined on various substrates.

8.3 MODES OF EVALUATION

8.3.1 QUESTION AND ANSWER SESSION

DETECTION OF BLOOD

8.4 OBJECTIVES

To become familiar and comfortable with searching for potential bloodstains
To become familiar with the accepted protocols for the presumptive and confirmatory testing for the presence of blood
To successfully:
- Test stains using proper procedures for Phenolphthalein, Leucocrystal Violet (LCV), Luminol, BlueStar® (if available) and HemaTrace® tests
- Interpret test results and draw appropriate conclusions
• Know the advantages/disadvantages of using a specific test and be able to appropriately pick a test for a specific situation

Be familiar with the potential impact of presumptive blood tests on subsequent testing (e.g. DNA analysis)

Be familiar with other presumptive testing methods

Know the components of blood and their functions

8.5 METHODS OF INSTRUCTION

8.5.1 LECTURE, DISCUSSION, AND DEMONSTRATIONS

Instruction, demonstration, and practical training in techniques for searching for bloodstains on various substrates:

• Bright lights
• Oblique lighting
• Infrared
• Magnification
• General swabs
• Fresh, aged, and treated bloodstain appearance
• Bloodstains mixed with other fluids
• Discussion of serum separated bloodstains
• Apparent biological tissue blood testing results

Instruction, demonstration, and practical training for each test currently in use by the CSRT (Phenolphthalein, LCV, Luminol, BlueStar®, HemaTrace®):

• Safety
• Visual appearance
• Effects of degradation and aging
• Reagent Preparation
• Biochemical basis, procedure, and value of test
• Stock and working solutions
• Quality control testing of reagents and documentation
• Interpretation and conclusions
• False positives
• False negatives
• Sensitivity

8.5.2 SUGGESTED READINGS

CLD Biochemical Analysis Procedures Modules 3 and 4

Abacus HemaTrace® Technical Information Sheet, ABAcard, HemaTrace for the Forensic Identification of Human Blood. Abacus Diagnostics, Inc; 2005
BlueStar® Package Insert

8.5.1 EXERCISES

Practice testing known blood samples using the following: PHT, LCV, Luminol/Bluestar, and HemaTrace®. Test known false positive samples (i.e. rust, plant materials).

8.6 MODES OF EVALUATION

8.6.1 QUESTION AND ANSWER SESSION

8.6.2 COMPETENCY TESTING

A minimum of ten correctly characterized stains. HemaTrace testing of at least two stains will be incorporated in the competency test.

DETECTION OF SEMEN

8.7 OBJECTIVES

To become familiar with the accepted protocols for the presumptive identification of semen

At the end of this module, the trainee should be able to successfully:

- Describe the physical and chemical characteristics of semen
- Test evidence items either directly or with a mapping technique to determine the location of possible semen stains by detecting acid phosphatase (AP)

8.8 METHODS OF INSTRUCTION

8.8.1 LECTURE, DISCUSSION, AND DEMONSTRATIONS

Instruction, demonstration, and practical training:

- Physical and chemical characteristics of semen
- Components of semen
- Persistence of semen
Acid Phosphatase:
- Reagent Preparation
- Quality Control testing of reagents and documentation
- Mapping
- Sample swabbing and/or evidence swab testing
- Biochemistry of reaction; time to color development
- Interpretation and conclusions
- False positives

8.8.2 SUGGESTED READINGS

CLD Biochemical Analysis Procedures Manual, Module 7

8.8.1 EXERCISES

Test a variety of substrates with a variety of stains (e.g., semen, urine, vaginal secretions, etc.) using a combination of ALS and acid phosphatase reagent (spot test and mapping), as appropriate. Use different dilutions and mixtures of body fluids in the above testing.

8.9 MODES OF EVALUATION

8.9.1 QUESTION AND ANSWER SESSION

8.9.2 COMPETENCY TESTING

Test a minimum of ten correctly characterized stains.

COLLECTION AND PRESERVATION OF DNA EVIDENCE

8.10 OBJECTIVES

To become familiar with the capabilities of the Crime Laboratory DNA section
To be able to successfully collect samples intended for DNA analysis using proper techniques

8.11 METHODS OF INSTRUCTION

8.11.1 LECTURE, DISCUSSION, & DEMONSTRATIONS

Instruction, demonstration, and practical training:
- Evidence packaging and storage conditions
- Cleanliness of instruments and contamination risks
• Documentation of examination
• Potential sources of DNA and concentration of DNA in each (biological fluid, cellular-touch/wearer, etc.)
• Sample collection techniques
• Degradation of DNA

8.11.2 SUGGESTED READINGS

FLSB Forensic Services Guide
CLD Biochemical Analysis Procedures Manual

8.11.3 EXERCISES

Practice sample collection techniques of visible and non-visible stains and cellular samples from various substrates

8.12 MODES OF EVALUATION

8.12.1 QUESTION AND ANSWER SESSION
MODULE 8.0 SEROLOGY/DNA CHECKLIST

FORENSIC/ALTERNATIVE LIGHT SOURCE

Completed:

Lecture and Discussion
   Date   Trainee’s Initials
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   Date   Trainer’s Initials
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   Date   Trainee’s Initials
   ___________________________   ___________

User’s Manual for ALS (unit specific)
   ___________________________   ______

The following exercise has been completed:

Examine a variety of known and unknown materials from biological, chemical, and physical sources, to become familiar with the range of materials that may be encountered at a crime scene. These substances should be examined on various substrates.

   Date   Trainee’s Initials
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The trainer has assessed the trainee’s knowledge through discussion and the review of the trainee’s notebook

   Date   Trainer’s Initials
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Additional Comments: ______________________________________________________

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MODULE 8.0 SEROLOGY/DNA CHECKLIST

BLOOD DETECTION

Completed instruction, demonstration, and practical training in the following:

Techniques for searching for bloodstains on various substrates:

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The commonly used tests (Phenolphthalein, LCV, Luminol, and BlueStar©):

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The use of the HemaTrace® test

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### MODULE 8.0 SEROLOGY/DNA CHECKLIST

#### BLOOD DETECTION

The following exercise has been completed:

Practice testing known blood samples using the following: PHT, LCV, Luminol/Bluestar, and HemaTrace®.

Test known false positive samples (i.e. rust, plant materials).

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Test dilute and laundered bloodstains with commonly used reagents.

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The trainer has assessed the trainee’s knowledge through discussion and the review of the trainee’s notebook

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#### BLOOD DETECTION COMPETENCY

A minimum of ten stains have been correctly characterized

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**MODULE 8.0 SEROLOGY/DNA CHECKLIST**

**DETECTION OF SEMEN**

Completed instruction, demonstration, and practical training in the following:

Physical and chemical characteristics of semen, components of semen, and the persistence of semen

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**Acid Phosphatase:**

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**Question and Answer Session:**

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MODULE 8.0 SEROLOGY/DNA CHECKLIST

DETECTION OF SEMEN

The following exercise has been completed:

Test a variety of substrates with a variety of stains (e.g., semen, urine, vaginal secretions, etc.) using a combination of ALS and acid phosphatase reagent (spot test and mapping), as appropriate. Use different dilutions and mixtures of body fluids in the above testing

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DETECTION OF SEMEN COMPETENCY

A minimum of ten stains have been correctly characterized

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MODULE 8.0 SEROLOGY/DNA CHECKLIST

COLLECTION AND PRESERVATION OF DNA EVIDENCE

Completed instruction, demonstration, and practical training in the following:

Evidence packaging and storage condition, cleanliness, contamination risks, documentation, sources of DNA, sample collection, and degradation of DNA.

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The trainer has assessed of the trainee’s knowledge through discussion and the review of the trainee’s notebook.

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9.0 LATENT PRINTS

9.1 OBJECTIVES

Latent print detection and processing: Surface evaluation, cyanoacrylate, powder processing

Latent print preservation and documentation: Photography and lifts

9.2 9.2 METHODS OF INSTRUCTION

LECTURE, DISCUSSION, AND DEMONSTRATIONS

Discuss/observe the appropriate use of various fingerprint powders.

Discuss/observe the following chemical processing techniques and application to different types of evidence, including pros and cons: cyanoacrylate (fuming wand, Hot Shots), small particle reagent, amido black.

Discuss situations in which it is appropriate to use cyanoacrylate.

Discuss/observe appropriate use of lift tape and lift cards.

Discuss/observe the documentation requirements of observed, developed, and preserved latent prints.

9.2.1 SUGGESTED READINGS

Latent Prints Technical Manual, current version


9.2 EXERCISES

Demonstrate cyanoacrylate fuming methods.

Demonstrate the application of various fingerprint powders on a few selected items.

Document, photograph, and lift developed impressions from the selected items.

9.3 MODES OF EVALUATION

9.3.1 QUESTION AND ANSWER SESSION

9.3.2 COMPETENCY TEST

Process the exterior of a vehicle for latent prints (dust and develop friction ridge detail). Document and collect the developed impressions.

Develop several prints in blood on a variety of surfaces using amido black.
Note: Examination quality photography is covered in Module 3.0 and is not required for this competency.

RECOMMENDED FORMAL TRAINING: In some cases, formal training may substitute for the required training. The content of the formal training shall be reviewed by the trainer to determine which objectives have been met.
### MODULE 9.0 LATENT PRINT CHECKLIST

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The following have been discussed/demonstrated:

<table>
<thead>
<tr>
<th>The appropriate use of physical latent print processing supplies</th>
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The chemical processing techniques and their application to different types of evidence, including pros and cons of various techniques:

- Cyanoacrylate (fuming wand, Hot Shots)  
  Trainer's Initials/Date  
  _______ | _______ |

- Small Particle Reagent  
  Trainer's Initials/Date  
  _______ | _______ |

- Amido Black  
  Trainer's Initials/Date  
  _______ | _______ |

Situations in which it is appropriate to use cyanoacrylate  
  Trainer's Initials/Date  
  _______ | _______ |

Lift tapes and lift cards  
  Trainer's Initials/Date  
  _______ | _______ |

Documentation requirements of observed, developed, and preserved latent prints  
  Trainer's Initials/Date  
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The following exercises have been completed by the Trainee and have been reviewed by the Trainer:

<table>
<thead>
<tr>
<th>Application of various fingerprint powders</th>
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<thead>
<tr>
<th>Cyanoacrylate fuming methods</th>
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<th>Document, photograph, &amp; lift developed impressions</th>
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Modes of Evaluation:

- Question and Answer Session

- Discussion/Assessment of knowledge  
  Trainer's Initials/Date  
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MODULE 9.0 LATENT PRINT CHECKLIST

Latent Print Competency:

Date_____________  Trainee’s Initials______

Date_____________  Trainer’s Initials______

Additional Comments:__________________________________________________________________
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10.0 IMPRESSION EVIDENCE

10.1 OBJECTIVES

To become familiar with the recognition, documentation, and recovery of two- and three-dimensional impressions.

To become familiar with the collection of tire tread exemplars.

10.2 METHODS OF INSTRUCTION

10.2.1 LECTURE AND DISCUSSION

10.2.1.1 Background Concepts
Difference between impression, tool mark, and physical match

2D versus 3D impressions

Types of impressions (footwear, tire, fabric, other)

Footwear – recognition of heel, toe, arch, and outsole information

Tires – awareness of noise reduction, sidewalls, and weight of vehicle

Transfer of materials in addition to the impression(s)

Class characteristics

Randomly Acquired Characteristics (RACs)

Collection of impression in addition to photography

10.2.1.2 Collection/Preservation
Collecting the entire object

- Examples: car bumper, car brake pedal, T shirt

- Packaging to prevent damage to impression

Lifting

- Electrostatic Dust Print Lifter (ESDL)

- Lifting films (gel, static, adhesive)

- Types of surfaces (smooth, textured, angled crevices)

- Collection pros and cons of different lifter types (CSRT Responder perspective)

- Analysis pros and cons of different lifter types (Impressions Analyst perspective)

- Black or white gel lifts
Casting

- Choice of materials (Dental Stone, prepackaged products, silicone, etc.)
- Types of substrates (soil, mud, snow)
- Using a casting frame
- Collection pros and cons of different casting materials (CSRT Responder perspective)
- Analysis pros and cons of different casting materials (Impressions Analyst perspective)

10.2.1.3 Tire Exemplars

Choice of methods (rolling method, wet media)

Collection pros and cons of different methods (CSRT Responder perspective)

Analysis pros and cons of different methods (Impressions Analyst perspective)

Adhesive lift exemplars of tire tread and sidewalls

Photography

10.2.1.4 Overview of different types of analyses that may be performed

Impressions comparison – Direct

Impressions comparison – Indirect

Report wording for impressions comparisons

Make and Manufacturer of Footwear

Make and Manufacturer of Tires

Other Questions (e.g. what object made the impression?)

10.2.2 SUGGESTED READINGS


Bodziak, William J., Tire Tread and Tire Track Evidence, CRC Press, 2008; 1-22 tire info; 23-43 track evidence; 45-91 recovering tire impression evidence; 110-118 exemplars

Hilderbrand, Dwane S., Techniques in Preparing a Cast, EVI-PAQ

10.2.3 PRACTICAL EXERCISES

10.2.3.1 Blood Impressions
Take examination quality photographs of a footwear impression in blood on a T shirt.
Properly package the T shirt with the footwear impression on it.

10.2.3.2 Dust Impressions
Take examination quality photographs of a footwear impression in dust.
Lift and preserve a dusty footwear impression using the Electrostatic Dustprint Lifter (ESDL).
Take examination quality photographs of a footwear impression on a multi-depth surface (e.g. car door).
Lift appropriate footwear impressions with a gel, a static (e.g. Stat-Lift®), and an adhesive lift.

10.2.3.3 Soil and Mud Impressions
Take examination quality photographs of a footwear impression in soil or mud.
Cast a footwear impression in soil or mud using dental stone (or equivalent).
Cast a footwear impression filled with water.
Take examination quality photographs of a tire impression in soil or mud.
Cast a tire impression in soil or mud.

10.2.3.4 Snow
Take examination quality photographs of footwear or tire impression in snow.
Cast a footwear or tire impression in snow.

10.2.3.5 Tire Exemplars
Collect a set of front and rear tire exemplars using the rolling method.
Collect a set of front and rear tire exemplars using the wet media method (if available).
Collect a tire sidewall exemplar.
Take examination quality photographs of a tire tread.
10.3 MODES OF EVALUATION

10.3.1 COMPETENCY TESTING

Document (notes) and collect a footwear impression and/or a tire impression in soil, and a footwear impression in dust.

Collect at least one tire exemplar and one sidewall exemplar.

Note: Examination quality photography is covered in Module 3.0 and is not required for this competency.
## MODULE 10.0 IMPRESSION EVIDENCE CHECKLIST

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<td>The following exercises have been completed:</td>
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<tr>
<td>Photograph a blood footwear impression.</td>
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<td>Photograph a dust footwear impression on a flat surface and on a multi-dimensional surface</td>
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<td>Lift a dust footwear impression using the Electrostatic Dustprint Lifter (ESDL).</td>
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<td>Lift a dust footwear impression with gel, Stat-Lift, and adhesive lifts.</td>
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<tr>
<td>Photograph a footwear or tire impression in soil and snow.</td>
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<tr>
<td>Cast a footwear or tire impression in soil.</td>
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<td>Cast a footwear or tire impression in snow.</td>
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<td>Cast a footwear or tire impression filled with water.</td>
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<tr>
<td>Photograph a tire tread</td>
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<td>Collect a set of front or rear tire exemplars.</td>
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<td>Collect a tire sidewall exemplar.</td>
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MODULE 10.0 IMPRESSION EVIDENCE CHECKLIST

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11.0 TOOL MARK EVIDENCE

11.1 OBJECTIVES

To become familiar with the recognition, documentation, and recovery of tool marks.

11.2 METHODS OF INSTRUCTION

11.2.1 LECTURE AND DISCUSSION

11.2.2 SUGGESTED READING

11.2.3 PRACTICAL EXERCISES
Photograph and cast three tool marks in three different substrates.

11.3 MODES OF EVALUATION

11.3.1 COMPETENCY TESTING

Document (notes) and collect a tool mark impression.

Note: Examination quality photography is covered in Module 3.0 and is not required for this competency.
# MODULE 11.0 TOOL MARK EVIDENCE CHECKLIST

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Photograph and collect three tool marks in three different substrates

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12.0 TRACE EVIDENCE

12.1 OBJECTIVES

To become familiar with different transfer mechanisms and persistence of trace evidence.

To become familiar with the recognition, documentation, collection, and packaging of trace materials.

To become aware of the potential for physical/fracture matches in evidence.

To become familiar with the types of questions that can be answered with trace evidence.

To understand the dynamics of glass breakage.

To demonstrate the ability to interpret the characteristics of different types of glass fractures.

12.2 METHODS OF INSTRUCTION

12.2.1 LECTURE AND DISCUSSION

12.2.1.1 Background Concepts

Transference
- Locard’s Principle
- Primary, Secondary, Tertiary, etc.
- Mechanism (airborne, breakage, fusions)
- Cross-transfers

Persistence

Types of Materials
- “Manufactured” versus “Natural”
- Major Categories of Study – Hairs, Fibers/Textiles, Glass, Paint/Polymers, Tape
- Soil – “Natural” Organic, “Natural” Inorganic, Manufactured materials
- Other Categorizations – Wood, Paper, Botanicals (Plants/Fungi), Sealants, Cements, Vehicle Lamps, Foams, etc.

Types of Questions
- Classification/Identification of the Material
- Comparative Associations
- Physical Match
  - Association of fragments from two or more locations
  - Identification of what the original object was (or to gain part # info)
  - Rigid, Flexible, and Rolled Materials
- Damage Analysis
  - Direction of Force? (Glass breakage, plastic fusions)?
  - Cut or torn (fabrics)?
  - Order of impact with multiple materials?
- Generation of an Investigative Lead
  - Make and Model Information
  - Type of material as an indication of use
Types of Samples
- Based on “Source”
  - Questioned
  - Known
  - Reference
- Based on “Location”
  - On the ground
  - Still attached to a structure
- Based on “Use”
  - Ligatures/Bindings – Rope, Tape, Cable Ties
  - Body Wrappings – Plastic Tarps & Sheets, Blankets & Bedding, Bags, Tapes
- Sample Size (Questioned versus Known Samples)

12.2.1.2 Recognition and Documentation
Appearance of Damaged Areas (e.g. scuffs, abrasions, smudges, etc.)
Identification of Question & Known samples (locations)
Order of “Unwrapping” bodies or unpacking “Nested” containers

12.2.1.3 Collection/Preservation
Preventing Cross Contamination
- Frequency of changing gloves
- Cleaning tools versus disposable

Methods
- Collecting the entire object or dismantled object
  - Examples: car bumper, T shirt
  - Packaging to prevent damage to transfer
- Picking
  - Various hand tools (e.g. forceps, hand shovel, gloved hand, etc.)
  - Cleaning methods for tools
- Lifting
  - Sticky notes (contrasting color)
  - Tape Lifts (clear tapes or cellulose acetate film)
- Cutting
  - Manual (e.g. razor blade, scalpel, scissors)
  - Power (e.g. dual saw)

Packaging
- Material and Package Compatibility
- Loss Prevention – Secondary Packaging
- Labeling information from Vehicles
- Preventing further breakage

Method Choice & Packaging Based on Type of Material
- Botanicals
- Fibers/Ropes/Textiles
- Glass, Ceramics
- Hairs
- Paints/Polymers
- Tapes/Adhesives
- Unknowns
- Vehicle Lamps
- Volatiles (e.g. pepper spray)

12.2.1.4 **Glass Breakage Mechanisms**

**Cutting**

Low Velocity Impact (Mechanical)
1. Tempered
2. Flat
3. Container

High Velocity Impact (Bullets)
1. Tempered
2. Flat
3. Laminated

**Thermal**

12.2.1.5 **Direction of Force**

**Hackle Marks**

4R Rule

**Cratering**

12.2.2 **SUGGESTED READINGS**


WSP FLSB Forensic Services Guide - Materials Analysis (Trace Evidence and Glass Direction of Force)


SWGMAT, “Glass Fractures”, Forensic Science Communications, January 2005, Volume 7, Number 1

12.2.3 **EXERCISES**

- Make 2 paper packets, each using a different method outlined in the WSP FLSB FSG.
- Collect, package, and label a loose hair using the picking method.
- Collect, package, and label loose paint chips.
- Collect, package, and label a clump of hairs and fibers using the lift method with a sticky note.
- Collect, package, and label a known sample of vehicle glass.
• Tape lift an upholstered item and properly label and package the tape lifts.
• Collect, package, and label a piece of tape (e.g. strip of duct tape).
• Collect, package, and label an automotive paint sample on a metal substrate with a damaged (Q) and clean (K) region using a dual saw.
• Collect, package, and label a paint sample from a metal substrate using a scalpel.
• Collect, package, and label a paint sample from a wood or plastic substrate using a scalpel.
• Remove and properly package the following types of ligatures from a dummy or volunteer: adhesive tape, knotted cord/rope, zip tie.
• Observe a fiber/plastic fusion and discuss with your trainer how to use dismantling or cutting methods for collection.
• Properly label and package a clothing item to preserve in situ trace evidence.

12.2.4 ASSIGNMENT

Observe plate, laminate, and tempered glass being subjected to multiple bullet impacts (in person or via photos and/or video).

• What are the differences between the types of glass?
• Can directionality of breakage be determined and how?
• Can the multiple shots be sequenced and how?
• How should a fractured window be preserved for analysis?
• When appropriate, what evidence and controls should be collected?

12.3 MODES OF EVALUATION

12.3.1 DISCUSS THE COLLECTED SAMPLES

12.3.2 REVIEW EXERCISES AND ASSIGNMENT

12.3.3 QUESTION AND ANSWER SESSION
MODULE 12.0 TRACE EVIDENCE CHECKLIST

Lecture and Discussion Completed Date Trainee’s Initials

Date Trainer’s Initials

Collect, package and label a loose hair, paint chips, a clump of hair and fibers, a known sample of vehicle glass, and a piece of tape.

Date Trainee’s Initials

Tape lift and upholstered item.

Date Trainee’s Initials

Collect, package, and label automotive paint using a dual saw and scalpel.

Date Trainee’s Initials

Collect, package, and label a paint sample from a wood or Plastic substrate.

Date Trainee’s Initials

Removes and package ligatures from a dummy or volunteer.

Date Trainee’s Initials

Observe a fiber/plastic fusion and discuss collection.

Date Trainee’s Initials

Properly label and package a clothing item to preserve in situ trace evidence.

Date Trainee’s Initials

A question and answer session was completed

Date Trainee’s Initials

Date Trainer’s Initials

The Trainer has reviewed the above exercises and the assignment.

Date Initials

Additional Comments:__________________________________________________________________
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13.0 CRIME SCENE DOCUMENTATION

13.1 OBJECTIVE

To understand the concepts and basic requirements of crime scene note taking and diagramming/sketching.

13.2 METHODS OF INSTRUCTION

Note: Methods of instruction that follow may be incorporated as part of other modules in this training manual

13.2.1 REQUIRED READING

Read the CLD Records Retention Schedule

13.2.2 CASE FILE REVIEW

Review completed case files from three CSRT residence searches. These case files should include notes from the exterior and interior of the buildings.

Review three completed case files involving the presence of deceased individuals.

Review completed case files from three basic CSRT vehicle searches.

Discussion and questions with the trainer and/or analyst should accompany each of the reviewed case files.

13.2.2 EXERCISES

13.2.2.1 Residence Documentation

Document the exterior of a residence accessible to the trainee, including measurements and nearby landmarks.

Document the interior of a residence accessible to the trainee. This will include an overall floor plan and a focus on one room.

13.2.2.2 Decedent Documentation

Document a mock scene which includes a staged decedent. Some complex items should be included, such as blood flow on the body and/or indications of movement by the decedent.

13.2.3.3 Evidence Documentation

This section refers to the documentation of bloodstains, firearms, trajectories, trace, remains, and latent prints. Refer to these respective sections for training plans regarding their appropriate documentation. The trainer will verify that the trainee has met the documentation requirements for these sections.

13.2.3.4 Vehicle Documentation

Document a vehicle accessible to the trainee, as if performing a basic vehicle search.

13.2.4 ASSIGNMENTS

Shadow a Primary Responder on the following types of crime scenes, assisting with supplemental note taking and sketching as deemed appropriate by the Primary:
Scenes (3) involving residence searches
Scenes (3) involving deceased individuals
Scenes (3) involving vehicle searches

This information will be reviewed by the Primary/Trainer. If applicable, these scenes can overlap with those of other documentation training modules.

13.3 MODES OF EVALUATION

A review and discussion of all notes and sketches generated by the trainee.
MODULE 13.0 CRIME SCENE DOCUMENTATION CHECKLIST

The following readings have been completed: Date Trainee’s Initials

CLD Records Retention Schedule

The following case files were reviewed by the Trainee and a discussion and question session was conducted with the trainer:

Three basic CSRT vehicle searches

Case#____________________
Case#____________________
Case#____________________

Date______________________ Trainee’s Initials ________ Trainer’s Initials_______

Three CSRT residence searches (exterior and interior of buildings)

Case#____________________
Case#____________________
Case#____________________

Date______________________ Trainee’s Initials ________ Trainer’s Initials_______

Three CSRT case files with the presence of deceased individuals.

Case#____________________
Case#____________________
Case#____________________

Date______________________ Trainee’s Initials ________ Trainer’s Initials_______
## MODULE 13.0 CRIME SCENE DOCUMENTATION CHECKLIST

The following mock situations will be documented as if performing a CSRT case. This documentation will be reviewed by the trainer and kept in the trainee’s notebook.

<table>
<thead>
<tr>
<th>Residence Exterior</th>
<th>Date</th>
<th>Trainee’s Initials</th>
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</thead>
<tbody>
<tr>
<td>Residence Interior</td>
<td></td>
<td></td>
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<tr>
<td>Mock scene with a staged decedent.</td>
<td></td>
<td></td>
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<tr>
<td>Interior and exterior of a vehicle</td>
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</table>

**Supplemental note-taking on scene:**

**Vehicle search scenes**

<table>
<thead>
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<th>Case#</th>
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<tbody>
<tr>
<td>Scene date</td>
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<tr>
<td>Scene date</td>
<td>Case#</td>
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**Residence search scenes**

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<th>Case#</th>
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<tbody>
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<tr>
<td>Scene date</td>
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**Scenes involving deceased individuals**

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<td>Case#</td>
<td>Circle one: Primary/Trainer Initials</td>
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</tbody>
</table>
MODULE 13.0 CRIME SCENE DOCUMENTATION CHECKLIST

A review and discussion of all notes and sketches generated by the trainee has been completed:

Date__________________  Trainer’s Initials____________

Additional Comments:__________________________________________________________________
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14.0 BLOODSTAIN PATTERN ANALYSIS

Many of the requirements in module 14.0 can be met by completing a 40-hour bloodstain pattern course. A question and answer session will occur between the trainee and an experienced analyst after the completion of the 40-hour course.

THE HISTORY AND EVOLUTION OF BLOODSTAIN PATTERN ANALYSIS

14.1 OBJECTIVES

To understand the history and evolution of the Bloodstain Pattern Analysis discipline, including the work of Dr. Eduard Piotrowski, Paul L. Kirk, and Prof. Herbert MacDonell.

To understand the current status & developments within the discipline.

To understand the value of Bloodstain Pattern Analysis as it relates to criminal investigations.

To understand the role of the Organization of Scientific Area Committees (OSAC) for Forensic Science.

To understand how historical references can refute some of the criticisms posed by the 2009 NAS report.

14.2 METHODS OF INSTRUCTION

14.2.1 LECTURE AND DISCUSSION

Historical information presented in the literature references mentioned below.

14.2.2 SUGGESTED READINGS

Piotrowski, Eduard, Origin, Shape, Direction and Distribution of the Bloodstains following Head Wounds Caused by Blows, The Institute of Forensic Medicine of the k. k. University in Vienna, March 1895


MacDonell, H. L., “Segments of History: The Literature of Bloodstain Pattern Interpretation Segment 00: Literature through the 1800’s”, IABPA Newsletter

MacDonell, H.L., “Segments of History in the Documentation of Bloodstain Pattern Interpretation Segment 01: 1901-1910”, IABPA Newsletter

MacDonell, H.L., “Segments of History: The Literature of Bloodstain Pattern Interpretation Segment 02: Literature from 1911 through 1920”, IABPA Newsletter

MacDonell, H.L., “Segments of History: The Literature of Bloodstain Pattern Interpretation Segment 03: Literature from 1921 through 1930”, IABPA Newsletter

National Research Council Committee on Identifying the Needs of the Forensic Science Community. **Strengthening Forensic Science in the United States: a Path Forward.** Introduction pages 1 to 53 and pages 177 to 179, Washington, D. C: National Academy Press; 2009


14.3 MODES OF EVALUATION

14.3.1 QUESTION AND ANSWER SESSION

BLOODSTAIN PATTERN ANALYSIS TERMINOLOGY & DEFINITIONS

14.4 OBJECTIVES

To understand and become familiar with the accepted terminology used in the Bloodstain Pattern Analysis field.

To understand how terminology applies to case situations and written reports.

14.5 METHODS OF INSTRUCTION

13.5.1 LECTURE AND DISCUSSION

13.5.2 ASSIGNMENTS

A packet will be provided that includes bloodstain pattern terminology. Read this information to become familiar with bloodstain terms.

Complete the written vocabulary quiz associated with bloodstain pattern terminology.

14.6 MODES OF EVALUATION

14.6.1 REVIEW OF ASSIGNMENTS

14.6.2 QUESTION AND ANSWER SESSION

PHYSICAL PROPERTIES OF BLOOD

14.7 OBJECTIVES

To learn the components of blood as they relate to the study of Bloodstain Pattern Analysis.

To understand the principles of fluid dynamics as they relate to the study of Bloodstain Pattern Analysis.

To understand the principles of physics as they relate to the study of Bloodstain Pattern Analysis.

14.8 METHODS OF INSTRUCTION

14.8.1 LECTURE AND DISCUSSION

Fluid Dynamics (cohesion, surface tension and viscosity)
Drying time
Clotting time
Volume of blood drops
Size of stain
Surface effects
Terminal velocity
Effect of Blood Thinners
Capillary action

14.8.2 SUGGESTED READINGS


Anderson, J. W., “Capillarity Distortion Analysis” IABPA 1993 Annual Training Conference


Laber, T. L. “Diameter of Bloodstain as a Function of Origin, Distance Fallen, and Volume of Drop”, Minnesota Forensic Science Laboratory

Epstein, B., Laber, T. L., “Preliminary Results – Clotting Time Studies”, Minnesota Forensic Science Laboratory


14.8.3 ASSIGNMENTS

14.8.3.1 Experiment 1: Passive Drops from different heights (stain diameter vs distance fallen).

- Place a measuring tape against a wall, Mark increments on the tape (3, 12, 36, 72 and 96 inches above the ground) Using a pipette, drip blood onto the smooth and rough target surfaces from each height.

- Target surfaces should include smooth (e.g. paper, glass, tile) and rough (e.g. blotter paper, brick, carpet.

- Document with notes and photography each target surface result at each height.

- Note the type of disruption created when each stain hits the surface (smooth edges, scalloped, spines, satellites, or combination).

- Measure stain diameters in millimeters. Record your measurements in a table for easy comparison.

- Answer the following question: Can distance fallen be determined from stain diameter? Explain.
14.8.3.2 **Experiment 2: Evaluate blood drop stains on fabrics mounted on cardboard.**
- Drop stains onto a variety of fabrics such as a water-repellent treated sheet (e.g. Scotch Guard), a bath towel, panty hose, cotton/polyester sheet, and worn denim.
- Document, through descriptive notes, the differences in appearance of the stains and the potential influence of the fabric on the stain appearance.
- What characteristics of the fabric appear to have had an effect on stain size and shape?

14.8.3.3 **Experiment 3: Passive drops from different originating surfaces.**
- Drip blood from two different objects or tools: one with a large surface area (e.g. wooden board, hammer tire iron) and one with a small surface area (e.g. knife, screw driver, ice pick).
- Target surfaces should include smooth (e.g. paper, glass, tile) and rough (e.g. blotter paper, brick, carpet).
- Document the stain sizes and compare with stains from 14.8.3.1.
- Does the stain size vary more from the distance fallen, volume dropped, or target surface? Can any conclusions be made based on stain size or shape? What factors determine the size of the bloodstain?

14.8.3.4 **Experiment 4: Drip pattern on different surfaces.**
- Target surfaces may include smooth (e.g. tile, paper, glass), and rough (e.g. carpet, and a sidewalk or brick-type surfaces).
- To use both horizontal and vertical targets, position the pipette about 24 inches above the horizontal target and ½ inch in front of the vertical target.
- From a height of about 24 inches above the target, drip one drop at a time (blood into blood) into the same area until 3 ml is used. Document the amount of satellite spatter created at the different stages of the drip pattern. If different surfaces were used, contrast the surface influence.

14.8.3.5 **Experiment 5: Larger volume drops on different surfaces.**
- Target surfaces may include smooth (e.g. tile, paper, glass) and rough (e.g. carpet, and a sidewalk or brick-type surfaces).
- Drop the entire 5 ml volume all at once from a height of at least 24 inches.
- Document the characteristics of each stain pattern and contrast to the patterns created by one drop at a time. If different surfaces were used, contrast the surface influence.

14.8.3.6 **Experiment 6: Horizontal movement at different speeds and different heights.**
- Allow blood to drip from an object (i.e. pipet, eye dropper) while traveling at a brisk walk for a distance of 6 to 10 feet.
- Repeat, increasing speed to run.
- You may attempt the same experiments with the blood source at different heights, such as knee level, waist level, or 3-6 inches from the surface.
- Attempt the same experiment, including a significant swinging motion of the hands.
- Document the differences in sizes, shapes, and satellite spatter created between the heights and the difference in travel speed.
- Can the direction of motion of a dripping object be determined by observing the stain shapes? How is the shape/directionality of the stains changed by speed? By swinging the hands? Is any additional pattern observed in the drip trail produced by swinging?
14.8.3.7 **Experiment 7: Drying time of blood.**

- On a pre-marked target surface (e.g. tile, paper, plexi-glass) deposit a single drop into the areas marked for 0, 15, 30, 45, 60, 75 and 90 seconds. Begin timing this series of drops as they are created.
- Once deposited, immediately disrupt the 0 second stain. Do this by drawing a gloved finger through the stain (you are not trying to wipe the entire stain away; you just want to disrupt the edges of the stain). Repeat the disruption process for all of the stains at the timed intervals of 15, 30, 45, 60, 75, and 90 seconds.
- Once completed, repeat this process for stains timed at intervals of 5, 10, 20, 30 and 40 minutes.
- Consider repeating this process in an area that is different than the original location. Consider an area that has greater air circulation, more/less heat, or direct sunlight.
- Once complete and the stains have dried, measure the width of the perimeter ring that is present (you are not measuring the diameter of the stain, but rather the width of the widest section of the dried perimeter).
- Record your observations.

14.9 **MODES OF EVALUATION**

14.9.1 **REVIEW OF ASSIGNMENTS**

14.9.2 **QUESTION AND ANSWER SESSION**

**SIZE, SHAPE, AND DISTRIBUTION**

14.10 **OBJECTIVES**

To understand the distinguishing characteristics related to size, shape and distribution of bloodstain evidence.

To understand how the characteristics of size, shape and distribution assist in the analysis of bloodstain evidence.

14.11 **METHODS OF INSTRUCTION**

14.11.1 **LECTURE AND DISCUSSION**

Size determination
Shape determination
Measurements and Angle-of-Incidence determination
Distribution determination

14.11.2 **SUGGESTED READINGS**

Gardner, R. M., “Deformation Levels in Blood Droplets Created by Impact Events”, United States Army Criminal Investigation Command
Adair, Thomas W., “False Wave Cast-Off; Considering the Mechanisms of Stain Formation”, Arapahoe County Sheriff’s Office, Littleton, CO.


Christman, D.V., “Expirated Bloodstain Patterns”, Snohomish County Medical Examiner Medicolegal Death Investigator

14.11.3 ASSIGNMENTS

14.11.3.1 Experiment 1: Impact pattern from explosive force
- A firearms examiner shall participate in this experiment, and all safety rules shall be followed. Example stains can be examined in lieu of conducting the experiment.
- Saturate a sponge with blood. Suspend the sponge so that it is in the trajectory line of a firearm.
- Hang targets 6 inches in front and 6 inches behind the sponge.
- Remove the target and record the largest, smallest and average spatter diameter. Describe the pattern dispersal.
- Repeat the experiment using targets at 12 and 18 inches. The experiment can be repeated using different target substrate such as denim or paper.
- Describe the different dispersion patterns for forward and back spatter, and at different distance.

14.11.3.2 Experiment 2: Impact spatter from blunt force
- Take a wooden board or similar type object and strike an amount of blood on an elevated surface approximately 1 foot from a wall.
- Document observations of the changes to the static pool. Document the sizes, shapes, and distribution of the stains on the wall and floor. Document a size range and a predominant stain size. Be sure to document floor pattern observations also.

14.11.3.3 Experiment 3: Expirated patterns
- Place a small amount of blood mixed with saliva on a raised horizontal surface and force the blood mixture onto a vertical surface using a mechanism that mimics expiration. Possible mechanisms include: canned air, or a large transfer pipette that forcibly expels the blood/saliva mixture onto a target surface. Repeating the experiment at varying distances to the target may be useful.
- Document your observations, including any floor patterns.
- Compare impact and expired observations.

14.11.3.4 Experiment 4: Stepping into a static pool
- Create a pool of blood on the floor using approximately 5 ml of blood. Step gently into the pool of blood. Document your observations of the alteration of the static pool. Document your observations of any spatter/stains created. Document your observations of the shoe used to step into the pool. Document your observations of the clothing worn at the time.
- Repeat the experiment creating a new pool of blood and now stomping into the static pool.
- It may be helpful to repeat the experiment creating a new pool of blood and now jumping into the static pool. Document as described previously.
14.11.3.5 Experiment 5: Projected blood (arterial spurts)
- Eject about 3 ml of blood from a syringe using constant pressure, holding the syringe at about 24" from the target and a 45° angle. Record observed blood motion and stains.
- The experiment can be repeated at a variety of distances and angles (6", 18", 24", 36", and 60"), (20°, 45°, and 90°). In addition, the syringe can be moved from right to left while ejecting, and can be angled toward the floor rather than the wall. Amount of pressure can also be varied.
- Document your observations. Using the supplied syringe and tube, release the total amount in the syringe while moving it from left to right.

14.11.3.6 Experiment 6: Arterial Rain
- Release the blood in the syringe in straight forward manner the length of the room. Document your observations of the stains created on the floor between the location of the syringe and the far wall. Document your observations of the pattern created on the far wall.

14.11.3.7 Experiment 7: Stain shape vs. Impact angle
- Place smooth, white-colored targets at known angles from 10° to 90°.
- Mark each target surface with its known angle.
- Allow several drops to fall on each target, forming separate stains and allow each target to dry for at least 5 minutes after the last drop.
- Measure the length and width of the stains and calculate the length/width ratio for the stains at each known angle.

14.12 MODES OF EVALUATION

14.12.1 REVIEW OF ASSIGNMENTS

14.12.2 QUESTION AND ANSWER SESSION
What other events may produce stain patterns with characteristics of impact?
What are the effects of porous/non-porous and smooth/textured target surfaces?

COMMON PATTERN TYPES

14.13 OBJECTIVES

To understand how the size, shape and distribution of stains at the scene or found on items of evidence allows stains to be placed in one of six categories.

- Blood dispersed through the air as a function of gravity (e.g., drip patterns, drip trails)
- Blood ejected in volume under pressure (projected patterns)
- Blood released over time from an object in motion (e.g., cast-off patterns)
- Blood dispersed from a point source by force (e.g., impact patterns, expired)
- Blood that is deposited through transfer (e.g., swipes, wipes, pattern transfers)
- Blood that accumulates or flows on a surface (e.g., pools, flows)
14.14 METHODS OF INSTRUCTION

14.14.1 LECTURE & DISCUSSION

Bloodstains fall into one of six major categories

14.14.2 SUGGESTED READINGS


Barnes, D., “Intermittent Projected Bloodstains”, Crime Scene Unit, Ohio Bureau of Criminal Identification and Investigation, 1997


14.14.3 ASSIGNMENTS

14.14.3.1 Cast-off experiments

- Create two walls and a ceiling using paper or other suitable material.
- Place liquid blood on one end of an object.
- Face one 'wall', such that the second 'wall' is behind you. Produce stains by swinging bloodied objects. Objects should include a variety of surface areas, such as: hammer, knife, bat, board, pry bar, screwdriver.
- Consider trying the following: forward and backward swings, right and left handed swings; overhand swings; different surfaces for the same object and a sudden termination in the swinging of an object.
- Document the results and record your observations.
- Compare the characteristics between the cast-off patterns.

14.14.3.2 Hand contact experiments

- Place blood on your hand and hit the wall with some force with the palm side of your hand.
- Document the results and record your observations.
- Place blood on your hand and touch the wall with the palm side of your hand.
- Document the results and record your observations.
- Compare and contrast the differences in the patterns created.
- First wet your hand, then place blood on your hand and hit the wall with some force with the palm side of your hand.
- Document the results and record your observations.
- First wet your hand, then place blood on your hand and touch the wall with the palm side of your hand.
- Document the results and record your observations.
- Compare and contrast the differences between all the contact patterns created.
• Repeat the previous contact experiments using the back of your hand instead of the palm side of your hand.
• Document the results and record your observations.
• Compare and contrast the differences between all the contact patterns created.

14.14.3.3 **Contact with fabric**
• Use a bloodied towel and perform a contact transfer using the palm side of your hand.
• Document the results and record your observations.
• Use a bloodied towel and perform a contact transfer using the back side of your hand.
• Document the results and record your observations.
• Compare and contrast the differences between the contact patterns.

14.14.3.4 **Contact with wig/hair**
• Place blood on a wig/hair and let sit for the following times before touching the wig/hair to the wall. Use times of 10 seconds, 30 seconds, and 1 minute. Document the results and record your observations for each time interval.
• Place some blood on the wig/hair and swipe it on the vertical surface. Document the results and record your observations.
• Place some blood on the wall and wipe through it with the wig/hair. Document the results and record your observations.
• Place some blood on the wall, wait 5 minutes, wipe through it with the wig/hair. Document the results and record your observations.

14.14.4 **EXERCISE**

Examine a minimum of five past Collaborative Testing Services (CTS) BPA proficiencies. Describe and identify the bloodstain patterns that are present.

14.14.5 **WRITTEN REPORT**

**COMPARE AND CONTRAST THE SIX COMMON PATTERN TYPES.**

14.15 **MODES OF EVALUATION**

14.15.1 **REVIEW OF ASSIGNMENTS AND EXERCISES**

14.15.2 **REVIEW WRITTEN REPORT**

14.15.3 **QUESTION AND ANSWER SESSION**

**ORIGIN DETERMINATION**

14.16 **OBJECTIVES**

To understand the validity and usefulness of a source of origin determination in case work.

To understand the multiple ways to determine and/or document a three dimensional blood source and to be able to discuss the advantages & disadvantages of these techniques.
14.17 METHODS OF INSTRUCTION

14.17.1 LECTURE AND DISCUSSION

- String reconstruction of an impact
- Tangential method of origin determination
- Other methods/computer programs

14.17.2 SUGGESTED READINGS


Griffin, T. J. and Anderson, J. W., “Out on a Tangent with Bloodstain Pattern Interpretation”, February 21, 1993

Wilson, F. E. and Schuessler, D., “Automated Geometric Interpretation of Human Bloodstain Evidence”


14.17.3 WRITTEN ASSIGNMENT

The trainee will be given an impact pattern to string back to a source of origin. Documentation to be turned in should include: (1) descriptions of the stain pattern, (2) the measurements and mathematical figures for your chosen ten stains, (3) the height, distance from an adjacent wall, and the range from a wall for the blood source, and (4) the mathematical workup validating the source location utilizing the tangent method on three of your chosen stains.

14.18 MODES OF EVALUATION

14.18.1 REVIEW OF ASSIGNMENT

14.18.2 QUESTION AND ANSWER SESSION

BLOODSTAIN EVIDENCE PHOTOGRAPHY AND DOCUMENTATION

14.19 OBJECTIVES

To understand the methodology of properly documenting bloodstain patterns using photography, sketching and notes.

To understand what types of conclusions can be reached in regards to bloodstain pattern analysis.

14.20 METHODS OF INSTRUCTION

14.20.1 LECTURE AND DISCUSSION

- Documentation of stains and stain patterns
• Roadmapping technique
• Reconstruction conclusions in crime scene reports

14.20.2 SUGGESTED READINGS


14.20.3 ASSIGNMENT

Properly photograph and document a complex bloodstain pattern in a mock scene using the roadmapping technique. Discuss with the trainer any conclusions that might be reached.

14.20.4 EXERCISE

The trainer will provide 3-5 BPA case files (with reports that include BPA conclusions) for examination by the trainee. The trainee will be provided only with the background information and the relevant photographs. The bloodstains and patterns will be described and any conclusions will be reached. The documentation and conclusions should then be compared to the case file and discussed with the primary responder/trainer.

14.21 MODES OF EVALUATION

14.21.1 REVIEW OF ASSIGNMENT AND EXERCISE

14.21.2 QUESTION AND ANSWER SESSION

14.21.3 COMPETENCY TEST

Successfully complete a mock crime scene that includes several bloodstain patterns. A case scenario will be provided and a report with conclusions must be written.

RECOMMENDED FORMAL TRAINING

In some cases, formal training offered by agencies and organizations outside the WSP may substitute for the required training. The content of the formal training shall be reviewed by the trainer to determine which objectives have been met.
## MODULE 14.0 BLOODSTAIN PATTERN ANALYSIS CHECKLIST

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<thead>
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<th>Trainer’s Initials</th>
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<td>HISTORY OF BLOODSTAIN PATTERN ANALYSIS</td>
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<td>Lecture and discussion</td>
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# MODULE 14.0 BLOODSTAIN PATTERN ANALYSIS CHECKLIST

## BLOODSTAIN PATTERN ANALYSIS TERMINOLOGY & DEFINITIONS

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# MODULE 14.0 BLOODSTAIN PATTERN ANALYSIS CHECKLIST

## PHYSICAL PROPERTIES OF BLOOD

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<th>Experiment</th>
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The following experiments have been completed:

- **Experiment 1**: Passive Drops from different heights
  - Date
  - Trainer’s Initials

- **Experiment 2**: Evaluate blood drop stains on fabrics mounted on cardboard.
  - Date
  - Trainer’s Initials

- **Experiment 3**: Different originating surfaces.
  - Date
  - Trainer’s Initials

- **Experiment 4**: Drip pattern on different surfaces.
  - Date
  - Trainer’s Initials

- **Experiment 5**: Larger volume drops on different surfaces.
  - Date
  - Trainer’s Initials

- **Experiment 6**: Horizontal movement at different speeds and different heights.
  - Date
  - Trainer’s Initials

All the experiments have been reviewed and are complete.

- **Date**
- **Trainer’s Initials**

A question and answer session was completed.

- **Date**
- **Trainer’s Initials**

### Additional Comments:

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## MODULE 14.0 BLOODSTAIN PATTERN ANALYSIS CHECKLIST

### SIZE SHAPE AND DISTRIBUTION

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<th>Lecture and discussion</th>
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The following experiments have been completed

- **Experiment 1:** Impact pattern
- **Experiment 2:** Wood striking a static pool
- **Experiment 3:** Expirated patterns
- **Experiment 4:** Create a hand clap impact
- **Experiment 5:** Finger flicks
- **Experiment 6:** Dropped items into static pool
- **Experiment 7:** Stepping into a static pool
- **Experiment 8:** Simulated arterial
- **Experiment 9:** Arterial Rain
MODULE 14.0 BLOODSTAIN PATTERN ANALYSIS CHECKLIST

SIZE SHAPE AND DISTRIBUTION

The questions have been answered in the trainee’s notebook.

Date Trainee’s Initials
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Date Trainer’s Initials
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Correctly characterize six major bloodstain patterns

Date Trainer’s Initials
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All the experiments have been reviewed and are complete

Date Trainer’s Initials
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A question and answer session was completed

Date Trainer’s Initials
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### MODULE 14.0 BLOODSTAIN PATTERN ANALYSIS CHECKLIST

#### COMMON PATTERN TYPES

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<thead>
<tr>
<th>Lecture and discussion</th>
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<th>Trainee’s Initials</th>
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The following experiments have been completed

<table>
<thead>
<tr>
<th>Experiment 1: Cast-off</th>
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<th>Trainer’s Initials</th>
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<thead>
<tr>
<th>Experiment 2: Hand Contact experiments</th>
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<th>Trainer’s Initials</th>
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<thead>
<tr>
<th>Experiment 3: Contact with fabric</th>
<th>Date</th>
<th>Trainer’s Initials</th>
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<thead>
<tr>
<th>Experiment 4: Contact with wig/hair</th>
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<th>Trainer’s Initials</th>
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A written report comparing and contrasting the six common pattern types has been prepared.

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MODULE 14.0 BLOODSTAIN PATTERN ANALYSIS CHECKLIST

COMMON PATTERN TYPES

All the experiments have been reviewed and are complete

Date

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Trainer’s Initials

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A question and answer session was completed

Date

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Trainer’s Initials

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### MODULE 14.0 BLOODSTAIN PATTERN ANALYSIS CHECKLIST

#### ORIGIN DETERMINATION

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<th>Trainer’s Initials</th>
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<tr>
<td>Lecture and discussion</td>
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<td>Date</td>
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<tr>
<td>The assignment has been completed</td>
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<td>Date</td>
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<tr>
<td>The area of origin was determined in an impact pattern</td>
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<td>All the experiments have been reviewed and are complete</td>
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<td>A question and answer session was completed</td>
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MODULE 14.0 BLOODSTAIN PATTERN ANALYSIS CHECKLIST

BLOODSTAIN EVIDENCE PHOTOGRAPHY AND DOCUMENTATION

<table>
<thead>
<tr>
<th>Lecture and discussion</th>
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<th>Trainee’s Initials</th>
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The following assignment has been completed:

<table>
<thead>
<tr>
<th>Properly photograph and document a complex bloodstain pattern in a mock scene using the roadmapping technique.</th>
<th>Date</th>
<th>Trainer’s Initials</th>
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</table>

All the experiments have been reviewed and are complete

<table>
<thead>
<tr>
<th>All the experiments have been reviewed and are complete</th>
<th>Date</th>
<th>Trainer’s Initials</th>
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A question and answer session was completed

<table>
<thead>
<tr>
<th>A question and answer session was completed</th>
<th>Date</th>
<th>Trainer’s Initials</th>
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BLOODSTAIN PATTERN ANALYSIS COMPETENCY

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15.0 BLOODSTAIN PATTERN ANALYSIS FOR LABORATORY EXAMINATION

Bloodstain pattern analysis is the scientific study of the static consequences resulting from a bloodletting event(s). The role of a bloodstain pattern analyst is to assist in the reconstruction of those events that could have created the bloodstains and bloodstain patterns at a crime scene or on items of physical evidence recovered from that scene. Information that may be obtained includes, but is not limited to: the relative position or locations of a victim and/or suspect at the time of bloodshed; the possible type of weapon used; the minimum number of blows struck; the sequence of bloodstain pattern events; the route taken by individuals during or after bloodshed; possible mechanisms that produced blood staining on clothing or other items.

Prerequisite Training below must be completed:

- 40 Hour course in basic bloodstain pattern analysis or equivalent
- 40 Hour course in advanced bloodstain pattern analysis or equivalent
- 40 Hour course in fluid dynamics of bloodstain pattern formation
- Demonstrate knowledge in general crime laboratory procedure, quality assurance and safety

15.1 OBJECTIVES

This document summarizes a training procedure for bloodstain pattern analysis of physical evidence in the laboratory. These items can include clothing, carpeting, footwear, firearms, and other items of interest. Or the bloodstain pattern analysis can be conducted from photographic documentation submitted for analysis. The bloodstain pattern analysis conducted in the laboratory is meant to answer specific questions relating to the incident.

15.2 METHODS OF INSTRUCTION

15.2.1 LECTURE AND DISCUSSION

Document Technical Knowledge in BSPA on various fabrics and substrates

A. History
B. Terminology
C. Math and Physics
D. Application of the scientific method to bloodstain pattern analysis
E. Analysis of evidence as it relates to lab examination
F. Physical properties of blood on physical evidence
G. Blood drop characteristics on different surface materials
H. Pattern Identification on different surface materials
I. Impact site determinations on different surface materials
J. Environmental/physiological considerations on different surface materials
K. Other considerations on different surface materials
L. Limitations in bloodstain pattern analysis on physical evidence once removed from a scene
M. Procedure for the Examination of Bloodstained items in the laboratory
N. Report Writing
15.2.2 SUGGESTED READINGS


Piotrowski, Eduard, "Origin, Shape, Direction and Distribution of the Bloodstains Following Head Wounds Caused by Blows", Vienna, March 1895.


15.2.3 ASSIGNMENTS

15.2.3.1 Practice Sets: Bloodstain Pattern Analysis on physical evidence
   Evaluation of documents, photographs or other materials supplied with mock evidence being examined
   Examine bloodstained evidence by the method outlined in section 15.2.1 of this manual
   Prepare a written report to be evaluated by BSPA trainer
   Observe video of the making of the mock exam (if available)
   Analyst must successfully complete a minimum of two practice set laboratory examinations of physical evidence including clothing and/or photographs.

15.2.3.2 Review of completed bloodstain pattern analysis casework
   Evaluation of case written documentation and photographs
   Evaluation of bloodstain pattern analysts’ conclusion
   Discuss case with case analyst and/or trainer
   Analyst must review a minimum of four completed laboratory BPA cases

15.3 MODES OF EVALUATION

15.3.1 QUESTION AND ANSWER SESSION

15.3.2 SUPERVISED BLOODSTAIN PATTERN ANALYSIS CASEWORK

Evaluation of documents, photographs and/or other relevant case materials at the appropriate time during the BPA examination
Examine bloodstained evidence by the method outlined in section 15.2.1 of this manual

Prepare a written report

Case discussion and evaluation of results by BPA trainer

Analyst must successfully complete a minimum of three supervised bloodstain pattern analysis cases

15.3.3 BLOODSTAIN PATTERN ANALYSIS COMPETENCY TEST

Competency will be determined by the BPA analyst trainer upon the successful completion of all the above mentioned tasks and a minimum of two competency examinations.

RECOMMENDED FORMAL TRAINING

Completion of an 80-hour advanced course on bloodstain pattern analysis may substitute for some or all of the required training. In order to substitute for the entirety of this module, the qualifying course must have been formally structured, covered all appropriate facets of the stated objectives, and been administered by a reputable organization (or individual). The content of the formal training shall be reviewed by the trainer to determine which portions of the module have been satisfied.
# MODULE 15.0 BLOODSTAIN PATTERN ANALYSIS LABORATORY EXAM CHECKLIST

## DOCUMENT PREREQUISITE TRAINING

<table>
<thead>
<tr>
<th>Course</th>
<th>Date</th>
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<th>Trainer’s initials</th>
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<tr>
<td>40 hour basic course</td>
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<td>40 hour advanced course</td>
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<tr>
<td>40 hour fluid dynamics of bloodstain pattern formation</td>
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<tr>
<td>General Crime Lab Procedures, Quality Assurance and Safety</td>
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**Additional Comments:**

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## REVIEW OF BLOODSTAIN PATTERN ANALYSIS LITERATURE

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<td>Lecture and discussion</td>
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<td>A question and answer session was completed</td>
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MODULE 15.0 BLOODSTAIN PATTERN ANALYSIS LABORATORY EXAM CHECKLIST

DOCUMENT TECHNICAL KNOWLEDGE IN BSPA ON VARIOUS FABRICS AND SUBSTRATES

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<th>Lecture and discussion</th>
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<th>Technical knowledge has been demonstrated</th>
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Approved by CLD Quality Manager}
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Revision 15
## MODULE 15.0 BLOODSTAIN PATTERN ANALYSIS LABORATORY EXAM CHECKLIST

### PRACTICE SETS BLOODSTAIN PATTERN ANALYSIS ON PHYSICAL EVIDENCE

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<td>The following have been completed:</td>
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<tr>
<td>Evaluation of documents, photographs or other materials supplied with mock evidence</td>
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<tr>
<td>Examine bloodstained evidence by the method outlined in Technical Knowledge Section (15.2.1) of this document</td>
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<tr>
<td>Prepare a written report to be evaluated by BSPA trainer</td>
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<td>Observe video of the making of the mock exam (if available)</td>
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<td>Mock exam A</td>
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<td>Mock exam B</td>
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<td>A question and answer session was completed</td>
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Approved by CLD Quality Manager  All Printed Copies Are Uncontrolled  Revision 15
## REVIEW OF COMPLETED BLOODSTAIN PATTERN ANALYSIS CASEWORK

<table>
<thead>
<tr>
<th>Activity</th>
<th>Date</th>
<th>Trainee’s initials</th>
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<tbody>
<tr>
<td>Lecture and discussion</td>
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<td>The following have been completed:</td>
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<td>Evaluation of case written documentation and photographs</td>
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<td>Date</td>
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<tr>
<td>Evaluation of bloodstain pattern analyst’s conclusion</td>
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<td>Date</td>
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<tr>
<td>Discuss case with case analyst and/or trainer</td>
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<tr>
<td>Analyst review of at least four completed cases (list cases reviewed)</td>
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## MODULE 15.0 BLOODSTAIN PATTERN ANALYSIS LABORATORY EXAM CHECKLIST

### BLOODSTAIN PATTERN ANALYSIS COMPETENCY TEST

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<tr>
<th>Activity</th>
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<td>Competency exam</td>
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### MODULE 15.0 BLOODSTAIN PATTERN ANALYSIS LABORATORY EXAM CHECKLIST

#### MOOT COURT

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</thead>
<tbody>
<tr>
<td>Lecture and discussion</td>
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<tr>
<td>Mock trial in bloodstain pattern analysis</td>
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<td>A question and answer session was completed</td>
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**Additional Comments:**

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## MODULE 15.0 BLOODSTAIN PATTERN ANALYSIS LABORATORY EXAM CHECKLIST

### SUPERVISED BLOODSTAIN PATTERN ANALYSIS CASEWORK

<table>
<thead>
<tr>
<th>The following have been completed:</th>
<th>Date</th>
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<tbody>
<tr>
<td>Supervised case 1</td>
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<tr>
<td>Supervised case 2</td>
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16.0 DRUG RELATED EVIDENCE AND SAFETY

16.1 OBJECTIVES

To become familiar with common hiding locations, and to recognize drugs and related paraphernalia.

To recognize scene safety concerns related to the presence of seized drugs and clandestine laboratory materials.

16.2 METHODS OF INSTRUCTION

16.2.1 LECTURE & DISCUSSION

Seized Drug Forms (eg. Pills, Tablets, Powders, Liquids, Vegetative Materials)

Seized Drug Paraphernalia (e.g. Pipes, Bongs, Spoons, Scales, Dishes, Pots)

Fentanyl and Analogues

Counterfeits

Seized Drug Safety (e.g. Buddy System, Gloves, NARCAN)

Packaging

Clandestine Laboratories (Types of Labs, Evidence, WSP SWAT, CLD CLRT, CLAN Lab Analysis)

16.2.2 SUGGESTED READING

Amera-Chem, Inc. Drug Identification Bible

16.2.3 EXERCISES

View examples of paraphernalia and commonly encountered controlled substances.

16.3 MODES OF EVALUATION

16.3.1 REVIEW EXERCISES

16.3.2 QUESTION AND ANSWER SESSION
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17.0 SHOOTING INCIDENT RECONSTRUCTION

DISTANCE DETERMINATION EVIDENCE

17.1 OBJECTIVES

To understand the evidential value of gunshot residue and distance determination.

To recognize and properly collect target material with gunshot residue.

17.2 METHODS OF INSTRUCTION

17.2.1 LECTURE & DISCUSSION

Shadow a firearms examiner during the laboratory examination of evidence for distance determination. Discuss with examiner how these patterns and testing change with the presence of blood or chemical treatment.

17.2.2 SUGGESTED READINGS


17.2.3 EXERCISES

Working with an experienced firearms examiner, shoot a cloth target from a range of distances to replicate contact/near contact, intermediate, and distant shots as defined in the WSP CLD Firearms/Tool marks Technical Procedures Manual for stippling proximity determination. Choose several different firearms to include a pistol and a rifle. A shotgun range determination will also be performed. Record by written and photographic documentation of the gunshot residues produced. Discuss with trainer the results and packaging issues with these patterns.

Working with an experienced firearms examiner, wrap a revolver in cloth and fire the revolver. Examine the residue pattern left on the cloth. Test the distance away the cloth needs to be before the pattern is not transferred.

17.3 MODES OF EVALUATION

17.3.1 REVIEW EXERCISES

17.3.2 QUESTION AND ANSWER SESSION
TRAJECTORY MEASUREMENT

17.4 OBJECTIVES

To understand how to accurately record and document defects for trajectory reconstruction.

To understand how to associate defects to establish trajectory assessment.

To understand the limitations of trajectory analysis.

To understand how to measure the vertical and horizontal angles of a trajectory with a trajectory rod.

To understand the calculations involved in determining possible muzzle heights at certain distances from the bullet defect utilizing the vertical trajectory angle and defect height.

17.5 METHODS OF INSTRUCTION

17.5.1 LECTURE, DISCUSSION, & DEMONSTRATION

Discuss with the trainer the different methods for associating and documenting defects in a trajectory. Topics to discuss are listed below but are not meant to be all inclusive.

Rod placement with and without centering cones.

Measuring trajectory angles using traditional methods such as a protractor and plumb bob and advanced methods employing 3D scanning.

Use of lasers or other methods to show a continuation of a trajectory over a distance.

Bore scope use in trajectory examination.

Cutting ‘viewing windows’ to assess secondary bullet defects.

“French Fry” (foam "core" produced by bullet through foam)

Varying surface heights/thickness along trajectory.

Stringing glass or defects

The different conventions for labeling defects and the limitations and consideration in labeling.

When is it appropriate to measure the vertical and horizontal measurements for trajectories?

Bullet flight – define yaw, tumbling, external ballistics, and terminal ballistics.

Using ellipse calculations to determine trajectory of a projectiles angle of impact in appropriate substrates only.

Using trigonometric calculations to determine possible muzzle heights from the vertical angle and height of a defect.
17.5.2 REQUIRED READING


17.5.3 EXERCISES

Measure the locations of the defects and the horizontal and vertical angles of their trajectories on several mock walls that have been created.
Calculate possible muzzle heights at increasing distance from at least one bullet defect using the vertical angle and defect height.
String a defect in tempered glass to locate the point of impact.
Review several complex trajectory crime scene cases. Discuss with your trainer and/or case analyst how the scene was processed, results obtained and limitations of the scene.

17.6 MODES OF EVALUATION

17.6.1 REVIEW OF EXERCISES

17.6.2 QUESTION AND ANSWER SESSION

EJECTION PATTERN ANALYSIS

17.7 OBJECTIVES

To understand how cartridges are extracted and ejected from semiautomatic firearms.
To understand what affects the pattern of cartridge case ejection.
To understand the limitations of ejection pattern analysis.

17.8 METHODS OF INSTRUCTION

17.8.1 LECTURE AND DISCUSSION

Discuss with trainer when and why ejection pattern analysis is relevant for crime scene response.
Discuss with an experienced firearms examiner ejection pattern analysis and how it is conducted as a request for the laboratory examination. If possible attend an ejection pattern analysis exam and record cartridge case pattern.

17.8.2 SUGGESTED READINGS


17.8.3 ASSIGNMENT

Review a case file that includes ejection pattern analysis.
17.9 MODES OF EVALUATION

17.9.1 REVIEW OF ASSIGNMENT

17.9.2 QUESTION AND ANSWER SESSION

LONG RANGE – DISTANCE SHOOTING

17.10 OBJECTIVES

To understand the difference between long range vs. short range trajectories.
To understand external and terminal ballistics.

17.11 METHODS OF INSTRUCTION

17.11.1 LECTURE & DISCUSSION

Discuss with the trainer the difference between long range and short range trajectory.
Discuss with an experienced examiner downloading ammunition, ballistic coefficient of projectiles, velocity, bullet mass, etc.

17.11.2 SUGGESTED READINGS

Sierra Infinity ballistic program, current version.

17.12 MODES OF EVALUATION

17.12.1 QUESTION AND ANSWER SESSION

17.13 DOCUMENTING SHOTS INTO VEHICLES OBJECTIVE

To understand how to measure and document bullet defect locations into a vehicle using traditional methods such as baseline and squaring and advanced methods utilizing 3D scanning.

17.14 METHODS OF INSTRUCTION

17.14.1 LECTURE & DISCUSSION

17.14.2 REQUIRED READINGS

17.14.3 ASSIGNMENT

Working with an experienced analyst practice locating and taking measurements of defects on the exterior and interior of a vehicle, including hand measurements and utilizing the 3D scanner.

17.15 MODES OF EVALUATION

17.15.1 REVIEW OF ASSIGNMENT

17.15.2 QUESTION AND ANSWER SESSION
**MODULE 17.0 SHOOTING INCIDENT RECONSTRUCTION CHECKLIST**

**DISTANCE DETERMINATION EVIDENCE**

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<p>| Stippling proximity determinations and a shotgun range determination have been performed |</p>
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Wrap a revolver in cloth and fire the revolver. Examine the residue pattern left on the cloth. Test the distance away the cloth needs to be before the pattern is not transferred.

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## MODULE 17.0 SHOOTING INCIDENT RECONSTRUCTION CHECKLIST

### TRAJECTORY MEASUREMENTS

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The following exercises have been completed:

- Measure the locations of the defects and the horizontal and vertical angles of their trajectories on several mock walls that have been created.

- String a defect in tempered glass to locate the point origin.

- Review several complex trajectory crime scene cases. Discuss with you trainer how the scene was processed, results obtained and limitations of the scene.

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All the exercises have been reviewed and are complete.

- A question and answer session was completed.

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## MODULE 17.0 SHOOTING INCIDENT RECONSTRUCTION CHECKLIST

**EJECTION PATTERN ANALYSIS**

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MODULE 17.0 SHOOTING INCIDENT RECONSTRUCTION CHECKLIST

LONG RANGE-DISTANCE SHOOTING

Lecture and discussion

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### MODULE 17.0 SHOOTING INCIDENT RECONSTRUCTION CHECKLIST

#### DOCUMENTING SHOTS INTO VEHICLES

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The following exercises have been completed:

- Locating and taking measurements of defects on the exterior and interior of a vehicle.
  
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- Square a vehicle and practice locating and taking measurements of defects on the vehicle.
  
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18.0 ARSON AND EXPLOSIVES EVIDENCE

18.1 OBJECTIVES

The recognition and preservation of arson evidence.

Recognition of bomb-making materials.

18.2 METHODS OF INSTRUCTION

18.2.1 LECTURE & DISCUSSION

Forensic Services Guide

Fire Scene Evidence

Potential contamination (e.g. evidence containers stored improperly, cross-contamination during collection, fire suppression/investigation with gas or diesel powered equipment)

Collection and Packaging of Volatiles

Molotov Cocktails

Bomb Components

18.2.2 SUGGESTED READINGS


WSP FLSB Forensic Services Guide – Materials Analysis (Fire Debris and Explosives)

18.2.3 EXERCISES

Package a fire debris sample using a metal can and mallet.

Package a fire debris sample using a volatiles approved plastic bag and heat sealer.

Package a fire debris sample using a volatiles approved plastic bag and tape.

Review a crime scene casefile that included fire damaged evidence.

18.3 MODES OF EVALUATION

18.3.1 REVIEW OF EXERCISES

18.3.2 QUESTION AND ANSWER SESSION
**MODULE 18.0 ARSON AND EXPLOSIVES EVIDENCE CHECKLIST**

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<td>Package a fire debris sample using a volatiles approved plastic bag and tape</td>
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19.0 RECOVERY AND PROCESSING OF HUMAN REMAINS

19.1 OBJECTIVES

Learn how to recognize a burial site.
Learn to process, document, and recover buried remains.
Learn the effect of environmental factors on buried remains.
Learn to recognize Native American burial grounds.

19.2 METHODS OF INSTRUCTION

19.2.1 LECTURE AND DISCUSSION

19.2.2 SUGGESTED READINGS

"Archaeological sites and resources, Revised Code of Washington (RCW) 27.53"
"Department of archaeology and historic preservation” RCW 43.334
Skeletal human remains—duty to notify—ground disturbing activities—coroner determination definitions” RCW 68.50.645

19.2.3 Assignment


19.3 MODES OF EVALUATION

19.3.1 QUESTION AND ANSWER SESSION

RECOMMENDED FORMAL TRAINING

IN SOME CASES, FORMAL TRAINING OFFERED BY AGENCIES AND ORGANIZATIONS OUTSIDE THE WSP MAY SUBSTITUTE FOR THE REQUIRED TRAINING. THE CONTENT OF THE FORMAL TRAINING SHALL BE REVIEWED BY THE TRAINER TO DETERMINE WHICH OBJECTIVES HAVE BEEN MET.
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<td>Process, document, and recover previously buried remains.</td>
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<td>Appropriately photograph, measure, document, and collect what you find.</td>
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<td>Collect appropriate soil, botanical, faunal, and entomological samples.</td>
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Revision 15
Revised February 16, 2021

CSRT Training Manual
20.0 3D LASER SCANNING

20.1 OBJECTIVES

To become familiar with the operation of Leica Cyclone and Trimble Forensics Reveal software.

20.2 METHODS OF INSTRUCTION

20.2.1 LECTURE, DISCUSSION, AND DEMONSTRATION

20.2.1.1 Benefits of laser scanning at crime scenes

a. Large quantity of measurements in short time period
b. Quality, or accuracy and precision of measurements
c. Non-intrusive remote capability avoids contamination/ hazard issues
d. Objectively captures all measurement data in field of view

20.2.1.2 Cyclone Software

Review the demonstration tutorial videos
Import .e57 file and create a database
Open a ModelSpace view and demonstrate its functions
Demonstrate how to create virtual trajectory rods and measure azimuth/elevation angles
Demonstrate how to virtually square a vehicle to measure azimuth angles
Demonstrate how to print and create deliverables

20.2.1.3 Reveal Software

Review the demonstration tutorial videos
Import project in Reveal
Mark evidence and attach evidence photos to the placards
Demonstrate how to measure, place models (scale, compass, etc.)
Demonstrate how to print and create deliverables
Open Scan Explorer program and annotate/create saved views

20.2.2 SUGGESTED READING

CSRT Technical Procedures Manual section 19.0

20.2.3 EXERCISES

20.2.3.1 Cyclone Software
1. Import .e57 file
2. Create virtual trajectory rod
3. Measure azimuth angle and elevation angle

20.2.3.2 Reveal Software
1. Import Reveal project
2. Mark and annotate items of evidence
3. Perform measurements
4. Insert scale and compass
5. Create PDF diagrams (2D and 3D)

20.3 MODES OF EVALUATION

20.3.1 REVIEW OF EXERCISE

20.3.2 QUESTION AND ANSWER SESSION

20.3.2 COMPETENCY TEST

Import Reveal project. Annotate items of evidence and prepare a 2D snapshot of the scene as well as 3D snapshots of the evidence item locations.

RECOMMENDED FORMAL TRAINING

IN SOME CASES, FORMAL TRAINING OFFERED BY AGENCIES AND ORGANIZATIONS OUTSIDE THE WSP MAY SUBSTITUTE FOR THE REQUIRED TRAINING. THE CONTENT OF THE FORMAL TRAINING SHALL BE REVIEWED BY THE TRAINER TO DETERMINE WHICH OBJECTIVES HAVE BEEN MET.
## MODULE 20.0 3D LASER SCANNING CHECKLIST

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Reveal Software Competency:

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21.0 CRIME SCENE REPORTS AND CASE FILE MANAGEMENT

21.1 OBJECTIVE

To compile crime scene casefiles and write crime scene reports

21.2 METHODS OF INSTRUCTION

21.2.1 LECTURE AND DISCUSSION

Compiling casefiles and report format

Image handling and processing in Lightroom

- Watch the Lightroom tutorial video on the CSRT Shared drive

Archiving and using ADAMS (images and digital files)

21.2.2 ASSIGNMENT

Review and discuss at least five different crime scene casefiles from several primary responders.

21.3 MODES OF EVALUATION

21.3.1 QUESTION AND ANSWER SESSION
## MODULE 21.0 CRIME SCENE REPORTS AND CASE FILE MANAGEMENT CHECKLIST

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22.0 COMPETENCY TEST

22.1 OBJECTIVE

To be become a Primary Responder

22.2 METHODS OF INSTRUCTION

22.2.1 ASSIGNMENT

Complete a mock crime scene which may include, but not limited to, the following items for identification, documentation, and collection:

- Ammunition
- Trajectory
- Bloodstain Pattern
- Latent prints
- Damage evidence

Write up crime scene report and compile case file (including notes and photographs).

22.3 MODES OF EVALUATION

22.3.1 REVIEW ASSIGNMENT

22.3.2 MOOT COURT (if trainee has testimony experience, this requirement may be substituted with a question and answer session)
MODULE 22.0 COMPETENCY CHECKLIST

The Mock Crime Scene has been completed:

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The Mock Crime Scene photographs, notes, processing, and report have been reviewed

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A moot court was completed.

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23.0 TECHNICAL REVIEW

23.1 OBJECTIVE

To become eligible to technically review crime scene reports

23.2 METHODS OF INSTRUCTION

23.2.1 LECTURE AND DISCUSSION

The co-technical reviewer will discuss with each assigned technical reviewer the process of technical review. The appropriate modules of the CLD QOM and the CSRT Technical Procedures Manual will be discussed. The case record, casefile, and report requirements will be discussed for the given case. The CSRT Technical Review checklist will also be discussed.

Each co-technical reviewer may have a different approach for technical review so the responder will have an opportunity to learn different methods for completing technical reviews.

23.2.2 ASSIGNMENT

Conduct at least 5 co-technical reviews.

23.3 MODES OF EVALUATION

The scientist will be assigned cases as a co-technical reviewer. The cases will begin as less complex and will gradually include more complex cases. The cases will be independently reviewed by the scientist and co-technical reviewer. All findings/observations and questions will be discussed together. At the completion of the co-technical review, the technical reviewer will compile the comments from both reviewers and present them to the analyst as with a normal review. Written feedback will be provided by the co-technical reviewer to a technical lead(s) following each review.

Following the successful completion of 5 co-technical reviews, written feedback in the form of an IOC will be provided by the Technical Lead(s) to the CSRT Manager recommending the scientist for sign-off. If, after the completion of 5 co-technical reviews, the responder is not proficient in technical review, consideration should be given to additional training and additional co-tech reviews will be assigned.
## MODULE 23.0 TECHNICAL REVIEW CHECKLIST

Lecture and discussion

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Perform at least five co-technical reviews:

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Tech reviewer feedback reviewed by technical lead(s):

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