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Forensic Services Division Newsletter

FIELD INVESTIGATIONS FYI

SO YOU'RE HANDLING A DEATH INVESTIGATION. NOW WHAT?

Death investigations can be stressful, multifaceted, lengthy, and require vast resources. Here's the good news: We can help! Whether the scene is a vehicle, residence, autopsy, office building, forested area, or anything in between, the OSP Field Investigation (FI) Team is motivated, trained, and qualified to assist. OSP dispatchers will connect you with the on-call OSP forensic supervisor who will walk you through the process of requesting an OSP FI team to assist. Note: response times will vary depending on the location. The FI team may also be able to assist with scenes of other serious crimes or unusual scenarios; requests are evaluated on a case-by-case basis.

How can the OSP Field Investigation Team assist the investigation?

The FI team is thoroughly trained in evidence recognition, development, and collection. By far the most common assistance afforded to requesting agencies is comprehensive scene documentation in the form of notes, photography, and diagrams. FI team members are trained in a broad spectrum of forensic techniques including:

- Bloodstain detection and enhancement techniques
- Bloodstain pattern recognition, interpretation, and possible event sequencing
- Identification and collection of potential DNA evidence
- Sexual assault evidence identification and collection
- Bullet trajectory analysis and impact site interpretation, limited gunpowder residue collection
- Evidence searches using a metal detector
- Trace evidence collection and comparison standard collection (paint, glass, hairs/fibers, other debris)
- Processing, imaging, and collection of latent print evidence
- Buried bodies and human remains recovery
- Preservation and collection of impression evidence (shoes, tires, fabric, toolmarks)
- Arson evidence collection (Note: FI team members are not arson investigators, but they can assist with evidence collection and process the scene for other types of evidence.)
- Team members are also able to assist at autopsy in the documentation of the body, wounds, collection of clothing and other probative evidence, and the collection of major case prints for future latent print comparisons.



If your agency has an investigative question or crime scene scenario which requires a reconstruction, our team is qualified to handle reconstruction requests as well. When provided with scene photographs, officer reports, victim/suspect/witness statements, medical reports, etc., the FI team can apply scientific reasoning to address specific questions and/or purported scenarios. Reconstruction questions can be addressed at the scene, or in some cases, even if the OSP FI team did not respond. With sufficient information and photographs, an FI analyst may be able to answer reconstruction questions after-the-fact. **Continue to page 2 for related information.**



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FIELD INVESTIGATIONS FYI

SHOOTING INCIDENT SCENE RESPONSE CAPABILITIES

Shooting incident investigation cases represent a large portion of the requests received by the forensic scientists within the Field Investigation (FI) Unit. As part of the Forensic Services Division's continual effort to improve its service to the agencies it supports, nearly the entire team of OSP FI analysts recently took part in a week-long course focused on the reconstruction of shooting incidents. The course was taught by internationally-renowned firearms examiner Mike Haag. During the course, experiments were conducted at a shooting range to explore variables such as incident angle, bullet type, firearm caliber, firearm type, target surface, and muzzle-to-target distance using known examples. Armed with this knowledge, OSP FI analysts are even more prepared to analyze shooting incident scenes at the request of your agency.

As with other types of crime scene reconstruction, there may not be enough physical evidence at a shooting scene to answer broad questions such as "What happened here?" The data collected at a shooting incident scene could, however, allow our scientists to answer a variety of more narrowly-focused investigative questions. The following are some examples of specific investigative questions our FI analysts may be able to answer utilizing the techniques of shooting scene reconstruction:

- What was the trajectory of the bullet that created two (or more) related bullet impacts?
- What is the range of positions where the shooter could have been located when a particular shot was fired?
- Can any shooter positions be eliminated?
- Is it likely there was only one shooter or more than one?
- What was the possible sequence of shots that were fired?
- What general category of bullet or firearm created a particular impact site?
- Did a particular bullet pass through an object before coming to rest?
- What was the minimum number of shots fired?
- Was a vehicle door open or closed when the shot was fired?
- How many firearms were fired?
- Did a particular bullet create a particular impact site?
- Where was the victim positioned when shot?
- Does the evidence support or refute the witness statement?



OSP Forensic Scientists Scott Hanna and Kori Barnum measure a trajectory in the roof of a van



The OSP FI Team and other class attendees observe Mike Haag discussing shotgun spread patterns

Each shooting incident scene is different. Both the probative investigative questions and the evidence left behind vary a great deal from scene to scene. Remember that forensic support is just a phone call away. If you have a question, call and discuss the scene and evidence with your friendly neighborhood FI analyst. They can provide advice concerning identified evidence, and they are more than happy to respond to assist further. On-site evaluation may help to determine what can and cannot be concluded from the evidence at a given scene. There may be more information there than you realize to address the investigative questions in the case.

As an example, an FI analyst recently responded to the scene of a shooting incident where the bullet impacts had been repaired after the initial investigation. With the help of photographs and measurements of the impacts taken before they were repaired, the analyst was able to determine the trajectory of the bullet that created the impacts and extrapolate it back to determine a fairly narrow range of possible shooter positions. **Continue to page 3 for related information.**



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AFTER THE CRIME SCENE...

WHAT CAN YOUR AGENCY EXPECT FROM THE OSP FIELD INVESTIGATION TEAM AFTER THE SCENE IS PROCESSED?

- ✓ At the scene, evidence will be collected and packaged by the laboratory and released to an agency representative. Alternatively, the evidence may be identified for agency collection, depending on agency preference and available resources.
- ✓ Images from the scene processing will be provided on an evidentiary DVD or BluRay disk. Typically, a non-evidentiary copy of the images is also provided.
- ✓ A report detailing the collection of evidence, analysis of the scene, and any reconstruction conclusions will be completed and available through the Laboratory Online Information System (LOIS).
Website link: <http://lois.osp.state.or.us/LOIS/Login.aspx>
- ✓ The FI analysts will be available to investigators and district attorneys to assist, guide, and triage the submission of the collected evidence to the appropriate forensic disciplines.
- ✓ FI analysts will be available for testimony to discuss and provide information regarding their role in the investigation as well as any resulting conclusions.

Shooting Incident Fun Facts:

- A bullet fired from a horizontal barrel will take the same amount of time to fall to the ground as the same bullet dropped from the same height.
- A typical 223 Remington caliber bullet fired vertically will reach a maximum height of 8024 feet and take 77 seconds to fall back to the ground (if tumbling).
- A bullet can ricochet off of a glass window without cracking it when fired from a shallow enough angle.
- Hollow point bullets typically will not expand when fired through solid material but will expand if they are fired through water or tissue.





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HOW TO...

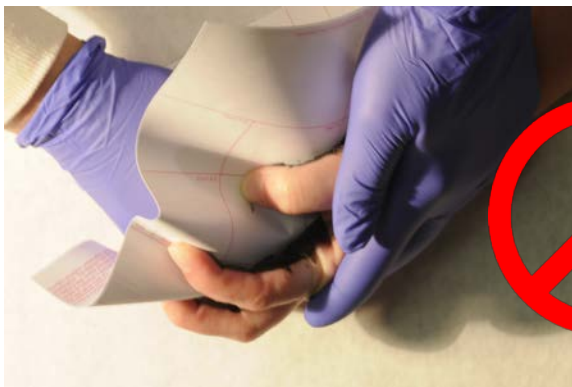
OBTAINING QUALITY MAJOR CASE PRINTS FROM DECEASED INDIVIDUALS

Obtaining latent prints at a crime scene is very important, as latent prints are an excellent way to link individuals to an object involved in a crime or to the scene of a crime itself. However, developing quality latent prints is only half of the equation. The developed latent prints ultimately need to be compared to known standards in order to provide an answer to the question at hand: Who do the prints belong to? Therefore, it is equally important to obtain quality known standards from *all* involved individuals, including the victim, especially if he or she is deceased. If known standards are not collected from a homicide victim during autopsy there will likely not be another opportunity. This could impact the forensic results, leaving unidentified latent prints and unanswered questions.

An important consideration is the quality of the known standards. If areas are unrecorded and/or smudged and smeared, those areas may not be clear enough to be usable for a latent print comparison. All areas of the hands should be *clearly* recorded from a deceased individual. Items are often handled with the extreme fingertips, sides of the fingers, finger joints, and palms. Think about turning a door knob or how you might hold a soda can. Look at what areas of the fingers and palms may be touching the surfaces. All of those areas should be recorded clearly and completely. Standards collected from the entire ridged surface of the fingers and palms are typically referred to as *major case prints*.

It can be a difficult task to obtain clear major case prints from deceased individuals, especially from the palm area. Inking the hand and attempting to press a piece of paper against it may result in prints that are smeared and smudged, and large areas may be missing due to movement of the paper and the hand position. Powdering and lifting is often the easiest and most forgiving way of collecting major case prints from a deceased individual. Lightly inking and lifting can also give very good results. It is best to use two people for this process: one to hold the deceased's hand and one to collect the actual lifts.

Remember that you can always contact your local crime lab with questions or requests for help. Forensic lab personnel may also be available to collect the known standards from the deceased during the autopsy. Especially consider reaching out to your local lab if the deceased individual's hands are decomposed, burnt, or in otherwise poor condition. Additionally, your local lab is available to provide additional training regarding how to collect major case prints from a deceased individual and to give tips for collecting the best quality elimination standards from living individuals as well.



The method of pressing an inked decedent's hand onto paper produces prints that are often incomplete or smeared. This method is not recommended. Instead, use the step-by-step method found on page 5.



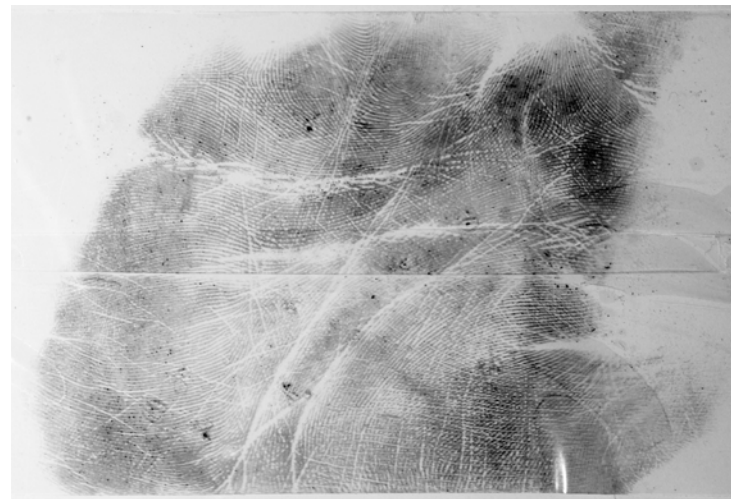
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STEP-BY-STEP: DECEDENT PRINTS

To obtain good quality elimination standards from a deceased individual:

- Practice this technique first on a colleague to gain confidence and to work out some of the difficulties that can be encountered when using tape.
- Enlist someone to help and allow plenty of time.
- Clean and dry the decedent's hands.
- Lightly powder or lightly ink the area to be lifted and brush off any excess powder.
- Have the assistant hold the decedent's fingers back so the skin on the palm or finger being worked on is taut. (Note: Rigor may need to be broken to pull the fingers back.)
- Place the tape down on the starting edge and slowly continue to press the tape down and into the creases and/or around the sides of the fingers. (Note: Flexible lifting tape such as 3M™ fingerprint lifting tape works very well, especially on contoured surfaces.)
- Wide or thin strips of tape can be used, but try to ensure all ridged areas are recorded and that the tape overlaps between areas.
- Pull all of the pieces of tape off together starting at one edge. Place the tape either on a contrasting latent print card or a clear sheet protector. Start at one edge of the tape and smooth the tape across.
- Examine the lift with a magnifier, if available, to make sure there are no gaps or unusable areas.
- Repeat for all areas of ridged skin on the palms and fingers, including the entire fingers (sides and finger joints) and the complete palm print.
- Label each area/lift as it is placed on the backing.



Pro-Tip: Commercial pre-inked sheets can be purchased which work very well to evenly ink the surface of a decedent's hand. One supplier's website:

<http://www.sirchie.com/catalogsearch/result/index/?q=SIS610C&t=p>