

Volume 4, Issue 1

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ASCLD/LAB accredited since 2004.

In this first issue of 2014, we are providing the reader with articles regarding the following topics: NSP Crime Lab accreditation to ASCLD/LAB-*ISO*, details on the collection of footwear impressions, latent fingerprint evidence (photographs vs lifts). NIBIN backlog reduction information, and CODIS submission tips if a private DNA laboratory is utilized. We will also highlight some of our laboratory's ongoing community outreach efforts, a spotlight on one of our forensic scientists, some hints on submitting photographic evidence for analysis, and current backlog statistics!

In This Issue...

For convenience, any links that are imbedded in <u>The Lab Report</u> documents can be accessed simply by clicking on the link! This includes the newest feature in the newsletter - links to laboratory staff contact information (see page 14). This feature allows for quick and easy contact with analysts and supervisors with a quick "click" of the mouse!

If you have any questions/concerns regarding the topics related to this issue of <u>The Lab</u> <u>Report</u>, please do not hesitate to contact us (laboratory staff contact information - pg. 14).

Enjoy!

Amy Weber (Firearm/Toolmark Section Analyst - editor, The Lab Report)

The Backlog Corner

<u>Biology Unit</u>: 143 assignments (approx. 3 month turnaround time)

Physical Sciences Unit:

<u>Firearm/Toolmark cases:</u> 40 assignments (approx. 8 month turnaround time)

<u>NIBIN</u>: 83 assignments (approx. 5 month turnaround time)

Latent Fingerprints Section: 63 assignments (approx. 2-2.5 month turnaround time)

Chemistry Unit:

Controlled Substances: 880 assignments (approx. 3 month turnaround time)

Toxicology: 80 assignments (approx. 2 month turnaround time)

<u>Trace</u>: 3 assignments (approx. 3 month turnaround time)

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ASCLD/LAB accredited since 2004.

Upcoming NSP Crime Lab ASCLD/LAB-International (ISO) Accreditation

Accreditation for forensic, private, and commercial labs is a means of determining the technical competence of laboratories to perform specific types of testing, measurement, and calibration. In order to maintain accreditation status, laboratories are re-accredited every 5 years to ensure the continued compliance of the lab with accreditation requirements. **One of the greatest benefits of accreditation is that it provides the laboratory customers, the public, and all interested parties with a ready means to identify the testing laboratory as a competent source of testing and/or calibration services.**

Specialist technical assessors who evaluate the specific types of testing and/or measurements being performed conduct site visits as often as annually to the laboratory in order to check that their standard of operation is being maintained. The site visits typically take several days and involve using specific criteria based on international standards. The accreditation body uses these standards to assess factors relevant to the ability of the laboratory to produce precise and accurate test and calibration data to include:

Technical competency of staff
 Validity and appropriateness of test methods
 Measurement and traceability of calibrations to national standards
 Suitability, calibration, and maintenance of test equipment
 Testing environment
 Sampling, handling, and transportation of test items
 Quality assurance of test and calibration data



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Upcoming NSP Crime Lab ASCLD/LAB-International (ISO) Accreditation

The Nebraska State Patrol Crime Laboratory staff is preparing for the American Society of Crime Laboratory Directors/Laboratory Accreditation Board (ASCLD/LAB) re-accreditation later this year. The laboratory has been accredited under the national standards of the ASCLD/LAB Legacy Program since 2004. The re-accreditation process this year will move the NSP Crime Laboratory to the ASCLD/LAB - *International* (ISO) Program, ensuring that the laboratory meets all of the rigorous standards currently in place for forensic crime laboratories on an international level. With the ASCLD/LAB ISO standards, the FBI's Quality Assurance Standards for DNA casework and the FBI's Quality Assurance Standards for DNA Databasing labs, the Crime Laboratory will be responsible for ensuring continued compliance with over 1200 standards!

The move to ISO accreditation is necessitating a great deal of administrative work and increased documentation. Submitting agencies can expect to see an increase in customer focus activities such as notifications and some changes in report wording. The Crime Laboratory asks that all agencies use the NSP website link below to access their submission forms to ensure use of the most current versions!

http://www.statepatrol.nebraska.gov/crimelab.aspx

If you have any questions/concerns regarding the NSP Crime Lab reaccreditation process and how it might affect your agency, please do not hesitate to contact either our Quality Assurance Manager, Vicki Hopkins (<u>Vicki.Hopkins@nebraska.gov</u>) or our Laboratory Director, Pam Zilly (<u>Pam.Zilly@nebraska.gov</u>)





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Collecting Footwear Impression Evidence

Through our efforts to provide statewide education with regard to the collection/analysis of footwear/tire impression evidence via the NSP Crime Lab Road Show, we have been seeing greatly increased amounts of submissions of footwear/tire impression evidence to the laboratory for analysis! Below are some helpful reminders to keep in mind when collecting and submitting footwear impression evidence for analysis to the Nebraska State Patrol Crime Laboratory:

General Photography

Take **multiple photographs** of an impression before any further collection or enhancement efforts. **This should include the use of oblique (side lighting) from different angles and directions.**



When using a **chemical/reagent/product** to enhance a

footwear impression, make sure that you take multiple photographs to document each step in the process. For example, when using Snow Print Wax or spray paint to enhance a footwear impression in snow, multiple photographs with oblique lighting should be captured each time a layer of the product is applied.

- Include a proper scale. Ensure that the scale is placed in the same plane as the impression. When dealing with snow/sand/mud impressions, it may be necessary to dig a shallow recess for the scale. Please make sure that <u>no</u> snow/sand/mud is covering the scale and that the measurements can be read.
- Make sure that you fill the frame with the whole impression. Ensure that the scale is in focus and not just the impression.
- When submitting CD/DVD-R to the laboratory with digital photos, please make sure they are saved in TIFF or RAW file formats. Other types of file formats (such as NEF, CRW, etc.) require specific software or applications in order to open the image. This can lead to conversion issues and the lab requesting that you send in another CD/DVD-R with the images saved in the proper file format.

<u>Firearm/Toolmark</u> <u>Section</u> $\sqrt{}$

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Collecting Footwear Impression Evidence

Lifts (Gel/Adhesive/Electrostatic Dust Lifts)

- ✓ If possible, please label all lifts and cross-reference lifts to photographs of the impression the lift represents. This will save us time!
- Please <u>do not</u> place anything (such as scales, sticky notes, or arrows) directly on the lifts. These items are not necessary and cannot be removed.
 There is the potential that placing these types of items on the lift will result in covering up part of the impression or other important information that is needed. We will photograph lifts at the lab (with a scale).
- $\sqrt{}$ If there is a protective cover to the lift, please make sure that you reapply it once you have recovered the impression. This cover will protect the lift during transport and prevent any additional dust/debris from coming into contact with the lift.
- $\sqrt{}$ Make sure that you secure and protect all lifts prior to transport. Taping the corners of the lift down to a box or envelope is great.
- ✓ If you are submitting the lift to the lab, it is not necessary to photograph it and include these images on the CD/DVD-R. We will photograph the lift at the lab.

Suspect Shoes

- $\sqrt{}$ It is not necessary to photograph (side view & outsole design) the suspect shoes and submit these images to the lab on the CD/DVD-R. We have a specific way of photographing the suspect shoe and recording the information that we need.
- $\sqrt{}$ Please make sure that you include the date of shoe recovery on the laboratory submittal form.

If you have any questions/concerns with regard to the collection and/or submission of footwear impression evidence for analysis, please feel free to contact any of the listed NSP Crime Laboratory Firearm/Tool Mark Analysts!



<u>Firearm/Toolmark</u> <u>Section</u>

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Latent Print Evidence - Lifting vs. Photography

The most common means of developing latent print evidence in the field is by applying latent fingerprint powders onto a surface of an object, and subsequently lifting the developed impressions with a lift tape. Depending on the type of surface, lifting those latent impressions can present a great challenge, and what appeared to be of a high value impression on an item, can become a smudge with broken ridge detail once the impression is lifted!

With the ready availability of digital cameras, we are seeing an increase in latent impressions being digitally captured, and as such being submitted to the NSP Crime Laboratory for examination. While this <u>can</u> be the best practice in majority of cases, we would like to remind officers in the field of certain rules that should be followed when photographing latent impressions:

- \Rightarrow If feasible, ALWAYS photograph latent impression(s) on an item <u>prior</u> to attempting to lift them! This is especially important to remember when dealing with textured surfaces (e.g. vehicle dashboard, window/door frames, floor boards, etc.)
- ⇒ Do NOT photograph latent lifts, and then submit those photographs to the Crime Lab! If you can take a digital photograph of the developed impression(s), you should do so before lifting the impression(s). In doing so, please make sure to include a scale in your photograph(s). In order for the NSP Latent Section to conduct a full latent examination, you should submit digital photos of the latent impression(s) before lifting them and your latent lift(s). But there is no need to submit photographs of your latent lifts.
- ⇒ Your camera should be set to capture images either in RAW or TIFF file formats which are lossless file formats (i.e. the quality of the TIFF digital images will not degrade after being processed for best possible detail, unlike impressions that are captured in JPEG file format). Latent impressions should be submitted to the laboratory in TIFF format.
- \Rightarrow The lens of the camera should be positioned at 90° angle to the surface of the item on which latent impression is **deposited**, in order to avoid depth of space distortion.



<u>Latent Fingerprint</u> Section

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Latent Print Evidence - Lifting vs. Photography

- \Rightarrow If tripod is available, it should be utilized when taking photographs of the latent prints (to avoid shaking of the camera, and blurring of the images)
- ⇒ Latent impression should fill out the frame of the camera as much as possible, while still allowing for the (metric) scale to be captured within the frame (with both short and long lines of the scale being recognizable). This allows for proper calibration of the digital image, prior to its submission through AFIS/IAFIS. Without a scale captured within the image, your latent photographs will be considered to be of No Value for AFIS/IAFIS entry.



- ⇒ Latent impression(s) should be captured as whole: two images of one latent impression cannot be stitched together! By cutting off a part of the latent impression we are running into a possibility that the image will be of no value for comparison purposes due to lack of friction ridge detail
- \Rightarrow The captured impressions should always be in focus blurry images are considered to be of no value for comparison purposes.
- ⇒ Photograph (and/or lift) any friction ridge detail developed on an item. You may not always be able to tell if the impression(s) you are looking at are of value for comparison purposes. What appears to be a faint ridge detail can turn out to be an impression of high quality detail after being digitally processed by the Latent examiner.

NEVER circle or write over the impressions you have lifted - the best value impression may be right under your markings!



Your latent impression is only as good as the method you used to capture it!



Latent Fingerprint Section

Mariana Ward (Sup.) Steven Burke Bridget Driver

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Latent Print Evidence - Lifting vs. Photography

As you are getting ready to submit your digital images to the NSP Crime Lab for examination keep in mind the following points:

- ⇒ Only images of latent impressions you want examined should be copied to a CD/DVD (do NOT submit evidentiary images of the crime scene)
- \Rightarrow Please convert all your RAW images into TIFF file format. There are a variety of digital cameras being used in the field, and each one has its own proprietary RAW file format that we may not be able to open at the Crime Lab.
- ⇒ Ensure that the electronic device (CD/DVD) you are sending to the Crime Lab is properly packaged and protected from being damaged during shipping.



The NSP Crime Lab DOES NOT retain any evidence. Any item(s) submitted for forensic analysis will be returned to the submitting agency at the completion of examination. This rule also applies to the CD's/DVD's containing latent impressions.

If you have any questions/concerns with regard to the collection and/or submission of latent fingerprint impression evidence for analysis, please feel free to contact any of the listed NSP Crime Laboratory Latent Fingerprint Analysts!

NIBIN Reduction Days: A Backlog Strategy

Submissions to the National Integrated Ballistic Information Network (NIBIN) have been increasing over the past couple of years. Prior to 2012, one NIBIN technician was assigned solely to work NIBIN only entries. With the promotion of the NIBIN technician to full forensic scientist, the handling/entry of NIBIN evidence needed to be re-evaluated.

NIBIN submissions are handled separately from Firearm/Toolmark (FA/TM) casework - FA/TM casework is considered our <u>first priority</u> as a section. However, we recognize that the NIBIN entries need to be effectively managed as well, due to the fact that NIBIN hits CAN impact and drive firearm analysis casework through NIBIN hits linking previously un-linked cases together!

For the past year, the FA/TM section as a group has set aside a block of a couple of days per month in which a large amount of NIBIN only firearms (~ 40) are documented, test fired, and entered into NIBIN. These NIBIN Reduction Days have not only increased the number of NIBIN entries by nearly 100%, they have also freed up analysts to focus on strictly casework the remainder of the month. As a direct result of this strategy, NIBIN turnaround times have been greatly decreased and we have been able to increase casework analysis as well! Decreased Backlog = Increased Results!

NIBIN Stats – our handling/output of guns, etc. for NIBIN			
	Completed Assignments	Firearm entries (IBIS)	Cartridge case entries & correlations (IBIS)
2012	227	217	320
2013	345	431	584
% change	52%	98.5%	82.5%

For questions/concerns regarding the NIBIN Reduction Days Strategy, please contact Kent Weber (Firearm/Toolmark Section Supervisor), <u>Kent.Weber@nebraska.gov</u> or 402-471-8950



<u>Firearm/Toolmark</u> <u>Section</u>

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CODIS Submission Procedures: Agency Samples from Private DNA Laboratories

The Nebraska State Patrol Crime Laboratory (NSPCL) is the only laboratory in the state of Nebraska that has access to the Combined DNA Index System (CODIS). All evidence submitted to the NSPCL for DNA analysis will *automatically* be evaluated for CODIS eligibility and submitted to CODIS if the DNA profile is eligible.

In order for a laboratory to participate in the National DNA Index System (NDIS) (i.e. the National Level of CODIS), they must follow the requirements specified by the DNA Identification Information Act (42 U.S.C. §14132(b)):

- Must comply with the Quality Assurance Standards Issued by the FBI Director
- Must be accredited by a non-profit professional association of persons actively engaged in forensic science that is nationally recognized with the forensic science community
- Must undergo an external audit every two years to demonstrate compliance with the FBI Director's Quality Assurance Standards
- Must be a federal, state, or local criminal justice agency ("or the Secretary of Defense in accordance with section 1565 of title 10, United States Code")
 - Must limit access to the DNA samples and records in accordance with federal law

The NSPCL has signed a Memorandum of Understanding (MOU) with the FBI Laboratory documenting our agreement to abide by the DNA Identification Act requirements as well as record-keeping and other operational procedures. Failure to abide by these requirements would result in the termination of access to CODIS for the state of Nebraska.

With Regard to Private Laboratories...

Private laboratories, or non-CODIS participating laboratories, are not allowed to enter DNA profiles into CODIS directly. There are policies and procedures that allow NDIS participating laboratories to take ownership of the data and enter a DNA profile developed by a private laboratory into CODIS. Since the University of Nebraska Medical Center Human DNA Identification (UNMC HDI) Laboratory is a non-CODIS participating laboratory, the DNA profiles they develop from evidence are not automatically put into CODIS. The NSPCL recognizes that Nebraska law enforcement agencies do submit evidence to the UNMC HDI Laboratory and therefore, they have a signed MOU that allows the NSPCL to enter eligible DNA profiles developed by the UNMC HDI Laboratory into CODIS, <u>if and only if requested by</u> the law enforcement agency.

Jason Linder (Mgr.) Katie Rector (Sup.) Heidi Young Hillary Duin

CODIS

CODIS Submission Procedures: Agency Samples from Private DNA Laboratories

If a Nebraska law enforcement agency submits evidence to the UNMC HDI Laboratory and a DNA profile is developed that they would like to be put into CODIS, the law enforcement agency must fill out a CODIS search request form (NSP 751) in its *ENTIRETY* (follow below link to access the NSP 751 Form)

http://www.statepatrol.nebraska.gov/crimelab.aspx

The completed NSP 751 must be submitted by the law enforcement agency to the NSPCL via fax (402-471-8954) or email (nsp.codis@nebraska.gov). Once the NSP 751 is received by the NSPCL it will be evaluated for eligibility. Please **be as specific as you can** when describing where the item was located, who the item belonged to, and how the item is related to the crime. **In order for the DNA profile to be entered into CODIS the NSPCL must take ownership of the data and therefore, a full review of the UNMC HDI Laboratory's case file must be completed.** After the NSPCL receives the NSP 751 from the law enforcement agency, the NSPCL will request a copy of the UNMC HDI Laboratory case file in order for the NSPCL to perform a full technical review and determine CODIS eligibility. The NSPCL will issue a Laboratory Letter informing the law enforcement agency if the DNA profile was entered into CODIS or not.

It is important to note that the UNMC HDI Laboratory is the ONLY private laboratory that the NSPCL will accept data from. If you would like to submit a DNA profile to CODIS that was obtained from a private laboratory <u>other than the</u> <u>UNMC HDI Laboratory</u>, arrangements must be made with the NSPCL *PRIOR to the analysis* of that evidence at that private laboratory.

Key Points

- DNA profiles obtained from the UNMC HDI Laboratory are *NOT automatical*ly entered into CODIS.
- If a Nebraska law enforcement agency submits evidence to the UNMC HDI Laboratory and a DNA profile is developed that they would like put into CODIS, the law enforcement agency **must complete a NSP 751 form** and submit it to the NSPCL for review.
- The UNMC HDI Laboratory is the *ONLY* private laboratory that the NSPCL will accept data from.
- If a Nebraska law enforcement agency submits evidence to the NSPCL for DNA analysis, they do *NOT* need to fill out any additional paperwork (e.g. NSP 751) because all DNA profiles obtained by the NSPCL are *automatically* evaluated for CODIS eligibility and submitted to CODIS if the DNA profile is eligible.





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Hastings Museum Science Fair: Forensic Sciences

Community Outreach and Education

On February 1, 2014, representatives from the NSP Crime Laboratory were invited to the Hastings Museum Science Fair to educate a group of approximately 75 children and their parents about the forensic sciences. The children participated in hands-on activities involving serial number recovery, latent fingerprints, trace evidence, and DNA!



On March 20, 2014, representatives from the NSP Crime Laboratory participated in the Lincoln Public Schools annual science fair for the second year in a row! Hundreds of students, parents, and educators were able to participate in activities related to forensic science!

Spotlight on Forensics - Mandy Dahlberg (Chemistry Unit)



Name: Mandy Z. Dahlberg

Hometown: Colorado Springs, CO

Education: B. S. in Chemistry (emphasis on Analytical Chemistry) and a B.S. in Biology (emphasis in Cellular & Molecular Biology) - both from Seattle Pacific University

Work Experience:

Nebraska State Patrol - Crime Laboratory - Forensic Scientist (Controlled Substances) (July 2013 - present).



Things I enjoy: I enjoy hiking, camping, climbing mountains over 14,000 feet tall, and being outdoors in general. I also enjoy spending time and playing card games with my family and friends, reading, watching The Big Bang Theory, cooking, and eating frozen yogurt!

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Hints on Evidence - Submitting Photographs/Photo CD's

There are many instances in which an investigating officer/agency would have the need to submit photographs to a laboratory analytical section for analysis in a case. Typical types of photographs that are submitted to the lab include autopsy photographs, footwear/tire impression photographs, and photographs of latent fingerprint impressions. The photographs may come to the lab in many forms (e.g. paper copies, images burned on a photo CD-R or DVD-R, etc.).

It is important to understand that, although the submitting agency may regard photographs as strictly a form of scene/evidence documentation, the crime laboratory treats photographs used for analysis as a form of evidence with its own traceable chain of custody. There have been several instances where a submitting agency will send photographs/photo CD's in the mail or via hand delivery without including a submittal form. Due to the fact that photographs/photo CD's are considered <u>evidence</u> by the laboratory, these MUST be accompanied by an NSP Crime Lab Evidence Submittal Form 750. (Use the below link to access the aforementioned lab submittal forms). This policy is also applicable when crime lab analysts make a request for additional photographs to be submitted for case analysis.

http://www.statepatrol.nebraska.gov/crimelab.aspx







Laboratory Director: Pam Zilly Pam.Zilly@nebraska.gov

Nebraska State Patrol Crime Lab 1233 Arapahoe St. Lincoln. NE 68506

(main) 402-471-8950
(fax) 402-471-8954

Hours of Operation: Monday-Friday 8am—5pm

Evidence Receipt Hours: Monday-Friday 9am-4pm

To contact the crime lab with general laboratory questions, call the main phone number or email Vicki Hopkins at:

Vicki.Hopkins@nebraska.gov

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