The Lab Report

Volume 2, Issue 4 December 2012

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The Lab Report Wrap Up - 2012

As we all wrap up the year 2012, the Nebraska State Patrol Crime Lab would like to focus on not only the upcoming year, but also on recapping the past year in numbers. In the final quarterly issue of The Lab Report for 2012, we are providing year-end statistics for the lab. These statistics include the total number of case assignments per unit/section received for the year, the total number of agencies who submitted cases to the lab in 2012, total number of presentations/training provided, and the total number of court appearances by laboratory staff. This issue also provides information pertaining to common myths/misconceptions with regard to the crime laboratory, how to utilize the NSP website to find proper lab forms/information, and a detailed description of firearm General Rifling Characteristic (GRC) reports (what are they and what can they do for you).

If you have any questions/concerns regarding the topics related to this issue of The Lab Report, please do not hesitate to contact us (laboratory staff contact information - pg. 10).

Enjoy!

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

The Backlog Corner

Biology Unit: 196 assignments (approx. 6 month turnaround time)

Physical Sciences Unit:

Firearm/Toolmark cases: 57 assignments (approx. 8 month turnaround time)

NIBIN: 137 assignments (approx. 11 month turnaround time)

Latent Fingerprints Section: 20 assignments (approx. 2 week turnaround time)

Chemistry Unit:

Controlled Substances: 748 assignments (approx. 3 - 3.5 months turnaround time)

Toxicology: 43 assignments (approx. 2 month turnaround time)

Trace: 5 assignments (approx. 2 month turnaround time)

NSP Crime Laboratory 2012 Statistical Recap

As we close out the year 2012, the NSP Crime Lab would like to provide year-end statistics for the agencies we serve across the state. The crime lab staff have been involved in not only case analysis, but also court appearances as expert witnesses and providing educational presentations/trainings throughout the state. Listed below are the NSP Crime Lab year to date totals (current as of December 28, 2012):

Total Number of Assignments in 2012: 9106 (4706 case assignments + 4275 CODIS offender samples)

Chemistry Unit:

- **Controlled Substances —— 3095**
- **Toxicology ——————— 506**
- **Trace ——————————— 62**

Biology Unit:

- **Biology ——————————- 604**
- **CODIS ——————————— 3954**

Physical Sciences Unit:

- **Firearms/Toolmarks ———- 136**
- **NIBIN ——————————- 274**
- **Latent Fingerprints ———- 463**
- **Questioned Documents ——- 12**

Total Number of Different Agencies Served in 2012: 166

Total Number of Presentations/Trainings Provided in 2012: 43

Total Number of Persons Trained/In Attendance: over 1150

Total Number of Court Appearances by Lab Staff in 2012: 83

NSP Crime Laboratory Statistical Recap (continued)

In comparison to statistics reported from the NSP Crime Laboratory for 2011, we have seen increases/decreases in the following casework areas:

Total number of case assignments: 9.48% increase

Chemistry Unit
Controlled substances: 11.7% increase
Toxicology: 8.8% increase
Trace: 12.7% decrease

Physical Sciences Unit
Firearms/Toolmarks: 20.4% increase
NIBIN: 8.3% increase
Latent fingerprints: 7.8% decrease
Questioned documents: no change

Biology Unit
Biology: 16.6% increase
CODIS: 7.5% decrease

NSP Crime Lab: Internet Resources / Navigation

At times, website navigation to retrieve information and/or proper forms can prove confusing. Below is a short guide on how to navigate the NSP website in order to easily find appropriate forms specific to crime lab use, as well as general lab information and back issues of The Lab Report.

The NSP Crime Lab falls under the NSP division of Investigative Services.

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

From the link listed above (NSP home page), go to the "Divisions" tab and select "Investigative Services". Located on the right hand side of the NSP Investigative Services home page is a "Quick Links" section (see below link).

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

Selection of "Crime Laboratory" from the Quick Links section will bring you to the NSP Crime Lab home page (see below link).

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

From this page, you will be able to access general laboratory information as well as discipline-specific information from the Crime Lab Quick Links section on the right side of the page. Selection of "The Lab Report Newsletter" from Quick Links will direct you to all of the back issues of the quarterly crime lab newsletter.

Forms you may need for evidence submittal to the crime lab are accessed from the NSP home page (top link). From the NSP home page Quick Links section, select "Forms You May Need". Then select "CrimeLab" for all appropriate online laboratory forms (see below link).

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

Common NSP Crime Lab Myths and Misconceptions

Through correspondence, word-of-mouth, trainings, etc., lab analysts often hear myths and misconceptions with regard to many of the services provided at the NSP crime laboratory. As a result, a list has been compiled of the commonly encountered myths/ misconceptions pertaining to the crime lab.

Myth vs. Fact

Myth: The NSP Crime Lab charges submitting agencies for services.

Fact: ALL of the services provided by the NSP Crime Lab are FREE to any law enforcement agency in the state of Nebraska.

Myth: The backlog at the NSP Crime Lab is so large that a case will not get worked for over a year.

Fact: Backlogs and resulting case turnaround times are very fluid and differ dramatically depending on the type of examinations needed for each individual case. Some cases are currently completed within only 1-2 weeks; some may take a number of months. Changes in caseload, staffing, court testimony demands, and testing methods can ALL impact turnaround times. Don't assume that a turnaround time that you heard about in the PAST is accurate TODAY! If you have timing concerns, it is best to call the lab and ask about anticipated turnaround times for the specific types of examinations relevant to your case.

Myth: The NSP Crime Lab will not work misdemeanor cases.

Fact: The NSP Crime Lab will work misdemeanor cases with a few, rare exceptions. Exceptions are evaluated on a case-by-case basis. If you have questions pertaining to submissions of misdemeanor cases to the lab, please contact the appropriate section for further information.

Myth: The NSP Firearm Section won't examine certain types of firearms for analysis therefore agencies must screen firearms prior to submittal.

Fact: The NSP Firearm Section can examine all types of firearms (black powder, shotgun, rifle, pistol, revolver) and items/parts believed to have come from or been attached to said firearms. These can be examined to determine functionality, serial number restoration, comparative analysis of fired ammunition components, sound suppressors, and distance determination.

Common NSP Crime Lab Myths and Misconceptions

Myth: NIBIN entry is the same thing as comparative analysis.

Fact: NIBIN entry is a database entry ONLY. The NIBIN system is designed to locate potential case linkages between fired ammunition evidence (bullets/cartridge cases) from the same or different jurisdictions. Due the limitations of information in the system, NIBIN entries are essentially a presumptive conclusion regarding evidence linkages. In order to confirm firearm case linkages, the evidence must be microscopically examined and the linkage confirmed by a firearm section analyst. NIBIN hits/linkages can occur anytime from the day evidence is entered into the database to many years after the entry.

Myth: The Crime Lab can't do anything with fired/damaged bullets.

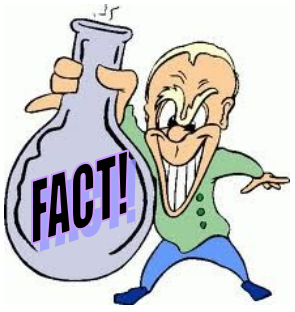
Fact: Contrary to popular belief, fired and damaged bullets are useful in forensic analysis and can often tell the analyst (and therefore the investigating agency) more about the make/model of firearm used than a fired cartridge case. Fired bullets also frequently display clues to a bullet's path in a crime scene, as indicated by adhering substances, hollow-point cavities filled with a foreign material, abrasions or impressions indicative of specific crime scene objects, etc.

Myth: Latent section screens the evidence that can be submitted for latent processing / analysis.

Fact: There are very few items of evidence that the Latent Section will not accept for processing. Items such as .22 caliber cartridges, paper clips, needles/pins, rubber bands, sponges, (explosive) fuses and fabric are not conducive to latent print deposition either because of the insufficient area needed to contain sufficient amount of ridge detail for comparison; or, the texture/weave of the item interferes and brakes up the ridge detail.

Myth: The NSP Crime Lab Latent Print Section examiners develop latent impressions and do AFIS entry only. They do not perform comparisons between latent and known impressions.

Fact: The staff of the NSP Crime Lab Latent Print Section are highly qualified to conduct analysis, evaluation, comparison and identification of latent and tenprint impressions. The staff receives annual training in the field of expertise, and is also proficiency tested in the area of latent print comparison and identification annually.



Common NSP Crime Lab Myths and Misconceptions

Myth vs. Fact

Myth: Electrostatic dust lifters can be used to "lift" latent impressions.

Fact: While electrostatic dust lifters are extremely useful for shoeprint impressions, they are NOT suitable for lifting latent impressions.

Myth: All people who have been arrested have fingerprints in the AFIS database.

Fact: Although most booking agencies submit the impressions of arrestees for AFIS entry, there are still agencies that don't capture fingerprints on every arrest. If in doubt on whether or not arrestee fingerprints may be on file with Nebraska AFIS, please contact the NSP Latent Section, and we will check the system. We will also provide information on whether or not the available impressions are of value for comparison purposes, or if we may need better exemplars submitted.

Myth: Once the item is fumed with superglue for latent prints, the officer doesn't have to worry about how he/she handles the item.

Fact: Latents are extremely fragile. While supergluing the item helps to "fix" the impressions, they can still be destroyed with careless handling.

Myth: We can determine how old a latent impression is.

Fact: There is no scientific way to determine the physical age of a latent impression. There is also no scientific way to positively determine the age of an individual, sex, etc. from a latent impression.

Myth: Paper evidence should be processed with fingerprint powder.

Fact: Latent impressions are comprised of amino acids, oils and water, which all absorb into the paper. Fingerprint powder on paper may work if the impressions have been freshly deposited. However, the more suitable processing technique for paper and cardboard evidence is application of chemicals such as Ninhydrin or DFO. These chemicals penetrate the paper and through chemical reaction develop latent impressions. Both of these processes should be applied in a laboratory setting.

Common NSP Crime Lab Myths and Misconceptions

Myth: If I wear gloves, there is no way that my fingerprint / palm print impressions can transfer on an item of evidence.

Fact: There are two parts to this topic:

Part 1: Depending on a type of gloves a scene responder wears, this may not be completely true. Although wearing gloves helps in keeping a scene responder's impressions off of the items of evidence, if the gloves are too tight, thin and contain residue (grease, sweat, etc) on them, it can be possible to deposit impressions through gloves. If the gloves are too thin, the scene responder should "double glove" before handling the evidence.

Part 2: If your hands contain grease, sweat or any other sort of residue, it may be possible to deposit latent impressions on the outside of your gloves as you are trying to put them on. As a result of this, there is a chance that this impression can then be transferred as a mirror image onto an item of evidence during handling. While this is not a common occurrence, it has been known to happen. To prevent this from happening, a scene responder should ensure that their hands are clean, and should attempt to touch the outside of their gloves as little as possible.

Myth: Photographs of footwear and tire tread impressions will not be examined for comparative purposes without a the presence of a scale.

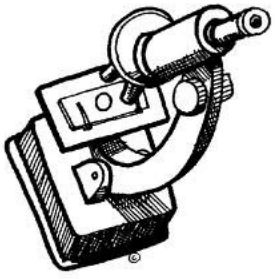
Fact: While the absence of a scale does limit the results of footwear/tire comparative analysis, there are conclusions that can be rendered depending on the quality of the evidence itself (e.g. tread pattern similarity, wear, etc). All photos of footwear/tire tread evidence should be submitted for analysis!

These are just a few of the commonly encountered myths and misconceptions heard with regard to testing and services provided by the NSP Crime Lab. If you have ANY questions concerning specific laboratory analysis, current section-specific backlog/turnaround times, general evidence submission, quality control system, etc., please feel free to contact the lab staff! We are here to help make your understanding and use of the laboratory system clear and easy.

General Contact Information

Basic/general evidence questions: 402-471-8950 (main number)

Discipline-specific questions: see page 10 for individual section information



General Rifling Characteristics (GRC) Reports

The NSP Firearm Section often receives fired bullet evidence from crime scenes where there is no recovered firearm for analysis. A common case example is when a fired bullet is recovered from a structure or victim after a drive-by shooting has occurred. In the majority of these situations, a firearm has not been recovered from the scene or from a suspect by the time the fired bullet has reached the lab.

When a fired bullet is submitted to the lab, the firearm examiners can provide valuable information about the bullet to aid in the investigative process. Information gathered consists of: determination of caliber, bullet design, bullet manufacture (if possible), and general rifling characteristics (GRC).

General rifling characteristics (GRC) are the general traits imparted on a bullet from the firearm barrel during the firing process. These characteristics consist of the number of lands/grooves in the firearm barrel, the measured widths of these land/groove impressions on the fired bullet, and the type of rifling observed. These traits are entered into the FBI General Rifling Characteristic (GRC) Database along with caliber and information derived from fired cartridge cases or other ammunition components (if available). The result of this process is a list of possible makes/models of firearms that possess the same general rifling characteristics as the fired evidence bullet. This list is printed and distributed to the submitting case officer along with the laboratory firearm analysis report.

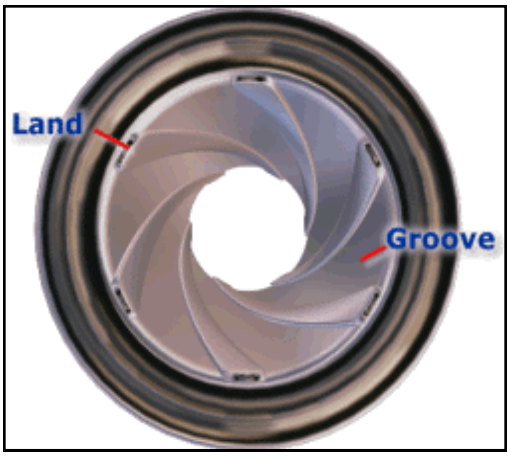
The GRC report is a very valuable piece of information for the investigating officer to use during his/her investigation as it provides a list of possible makes/models of firearms that could have fired the evidence bullet. The GRC report can be used as an investigative aid for officers searching for a suspect firearm or a tool to evaluate the candidacy of firearms recently received into agency property/evidence rooms. Once a suspect firearm is located, it should then be submitted to the crime lab for comparative analysis to the fired evidence bullet to make the final determination as to whether or not that firearm fired the evidence bullet!

Firearm/Toolmark Section Analysts

Kent Weber (sup.)

Amy Weber

Sarah Zarnick

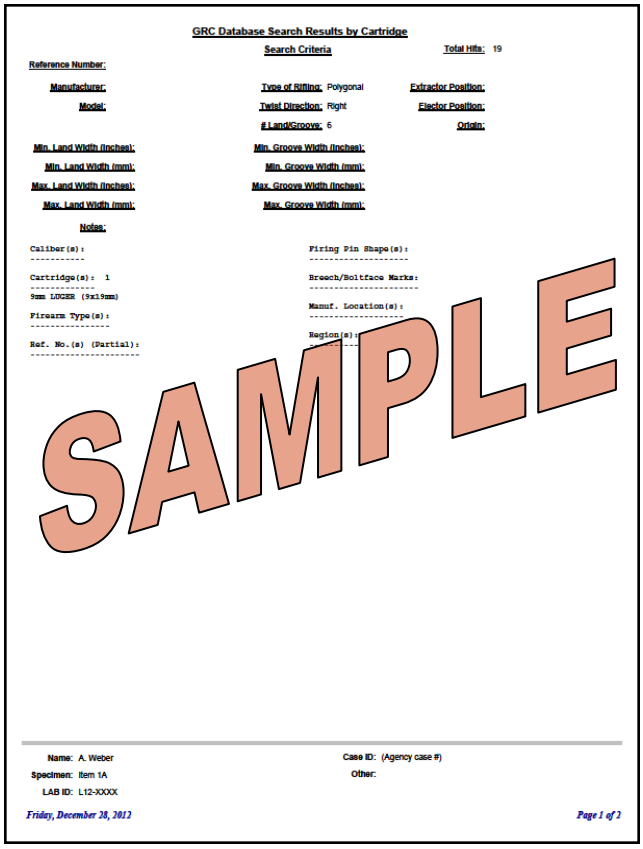


Rifling in a firearm barrel

Rifling on a fired bullet

General Rifling Characteristics (GRC) Reports

Below is an example of a GRC report you might receive:



GRC Database Search Results by Cartridge

Search Criteria

Total Hits: 19

Reference Number:

Manufacturer:

Model:

Type of Rifling: Polygonal

Twist Direction: Right

Land/Grooves: 6

Extractor Position:

Ejector Position:

Origin:

Min. Land Width (inches):

Min. Land Width (mm):

Max. Land Width (inches):

Max. Land Width (mm):

Min. Groove Width (inches):

Min. Groove Width (mm):

Max. Groove Width (inches):

Max. Groove Width (mm):

Notes:

Caliber(s):

Cartridge(s): 1

9mm LUGER (9x19mm)

Firearm Type(s):

Ref. No.(s) (Partial):

Firing Pin Shape(s):

Breech/Boltface Marks:

Manuf. Location(s):

Region(s):

SAMPLE

Name: A. Weber

Specimen: Item 1A

LAB ID: L12-XXXX

Case ID: (Agency case #)

Other:

Friday, December 28, 2012

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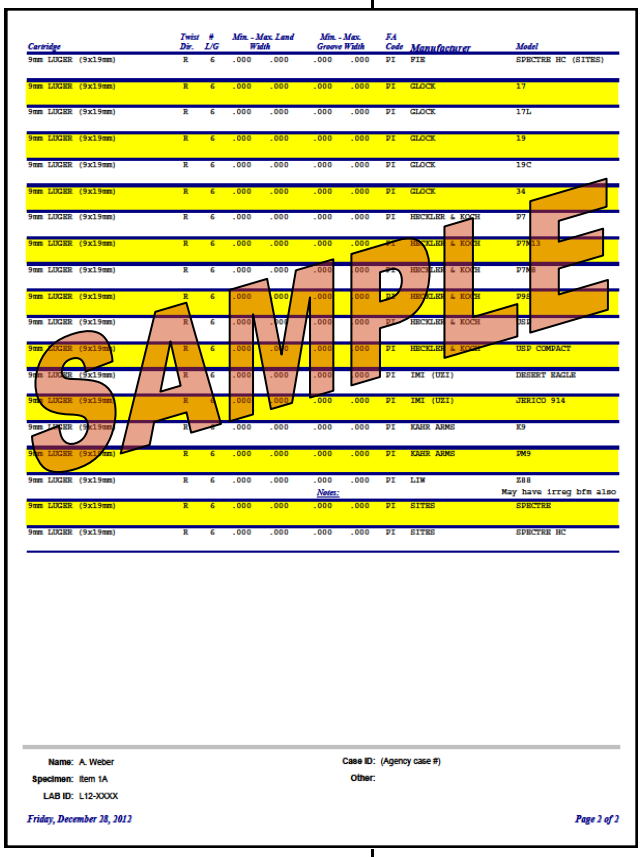
First page (general information)



Cartridge	Twist Dir.	# L/G	Min. - Max. Land Width		Min. - Max. Groove Width		FA Code	Manufacturer	Model
9mm LUGER (9x19mm)	R	6	.000	.000	.000	.000	PI	FIE	SPECTRE HC (SITES)
9mm LUGER (9x19mm)	R	6	.000	.000	.000	.000	PI	GLOCK	17
9mm LUGER (9x19mm)	R	6	.000	.000	.000	.000	PI	GLOCK	17L
9mm LUGER (9x19mm)	R	6	.000	.000	.000	.000	PI	GLOCK	19
9mm LUGER (9x19mm)	R	6	.000	.000	.000	.000	PI	GLOCK	19C
9mm LUGER (9x19mm)	R	6	.000	.000	.000	.000	PI	GLOCK	34
9mm LUGER (9x19mm)	R	6	.000	.000	.000	.000	PI	HECKLER & KOCH	P7
9mm LUGER (9x19mm)	R	6	.000	.000	.000	.000	PI	HECKLER & KOCH	P7M13
9mm LUGER (9x19mm)	R	6	.000	.000	.000	.000	PI	HECKLER & KOCH	P7M8
9mm LUGER (9x19mm)	R	6	.000	.000	.000	.000	PI	HECKLER & KOCH	P9S
9mm LUGER (9x19mm)	R	6	.000	.000	.000	.000	PI	HECKLER & KOCH	SR9
9mm LUGER (9x19mm)	R	6	.000	.000	.000	.000	PI	HECKLER & KOCH	USP COMPACT
9mm LUGER (9x19mm)	R	6	.000	.000	.000	.000	PI	IMI (UZI)	DESERT EAGLE
9mm LUGER (9x19mm)	R	6	.000	.000	.000	.000	PI	IMI (UZI)	JERICO 914
9mm LUGER (9x19mm)	R	6	.000	.000	.000	.000	PI	KAHR ARMS	K9
9mm LUGER (9x19mm)	R	6	.000	.000	.000	.000	PI	KAHR ARMS	PM9
9mm LUGER (9x19mm)	R	6	.000	.000	.000	.000	PI	LIW	Z88
					Notes:				May have irreg btm also
9mm LUGER (9x19mm)	R	6	.000	.000	.000	.000	PI	SITES	SPECTRE
9mm LUGER (9x19mm)	R	6	.000	.000	.000	.000	PI	SITES	SPECTRE HC

SAMPLE

Name: A. Weber

Specimen: Item 1A

LAB ID: L12-XXXX

Case ID: (Agency case #)

Other:

Friday, December 28, 2012

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List of firearm makes/models

Whether you recover one fired bullet or a dozen from a scene in which there has been no suspect firearm recovered, ALL of them should be submitted to the crime lab! Ammunition components that appear to be similar to the naked eye, may in fact be representative of several firearms used at the scene. The resulting GRC report could prove to be a valuable investigative aid in the search for all possible suspect firearms.

If you have any questions pertaining to the GRC report, feel free to contact the NSP Crime Lab Firearm/Toolmark Section for further information!

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Pam Zilly

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(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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