APANJ PRESENTS:

BALLISTICS 101:

EVERYTHING YOU NEED TO KNOW ABOUT FIREARM EVIDENCE IN COMPLEX HOMICIDE CASES

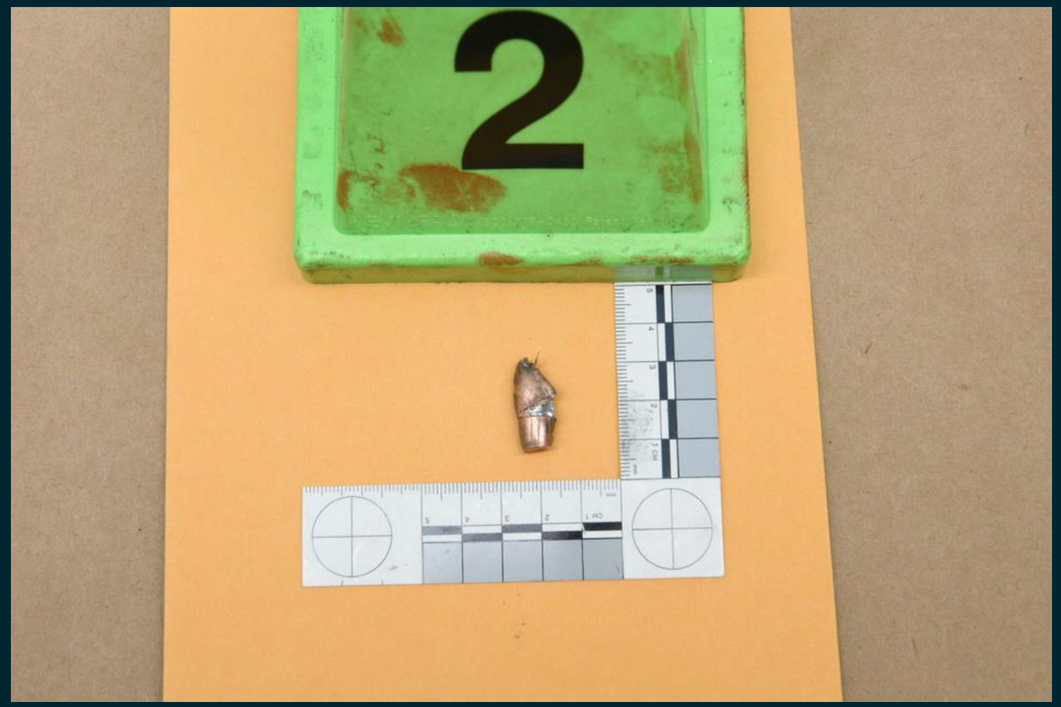
A.P. CHRISTINE CAPUTO HOWLAND

BULLET BASICS

THE HOMICIDE CRIME SCENE

What evidence can help you?

- **projectiles**
- **casings (or lack thereof)**
- **trajectory rods**
- **gun powder reside (clothing--not hands!)**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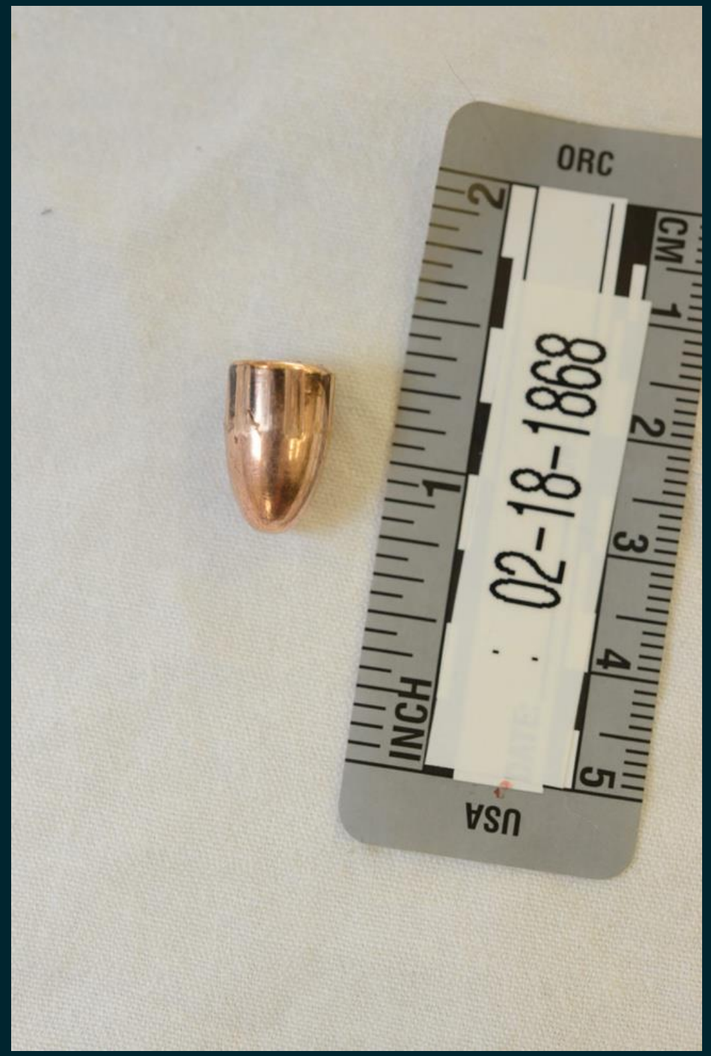
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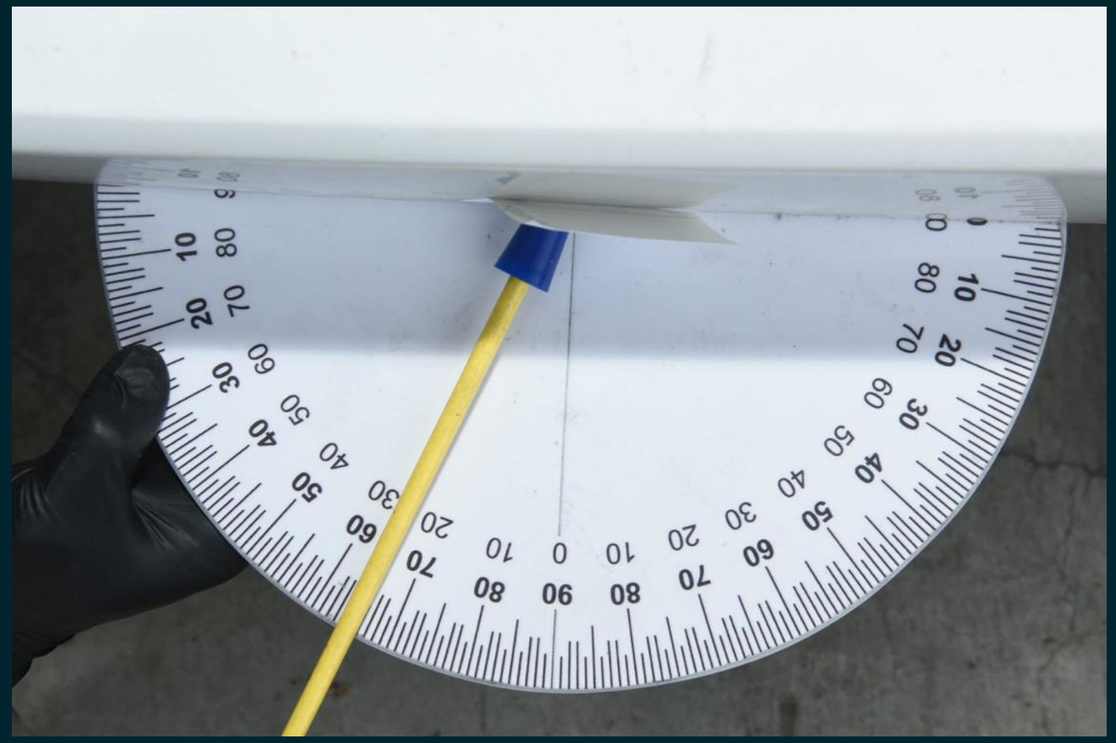


IDENTIFYING YOUR EXPERTS

- **Medical Examiner**
  - Need to establish cause and manner of death (ie: gunshot wound and homicide)
- **Ballistics/Firearms Expert**
  - Need to establish operability, caliber, potential NIBIN match, bullet striations
- **Fingerprint Expert**
  - May establish if fingerprints were on any spent cartridges and why (or why not) fingerprints on firearm
- **Gunshot Residue Expert**
  - May establish existence of GSR

QUALIFYING YOUR EXPERTS

F.R.E. 702 :A witness is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if the proponent demonstrates to the court that it is more likely than not that:
(a) the expert’s scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;
(b) the testimony is based on sufficient facts or data;
(c) the testimony is the product of reliable principles and methods; and
(d) the expert's opinion reflects a reliable application of the principles and methods to the facts of the case.

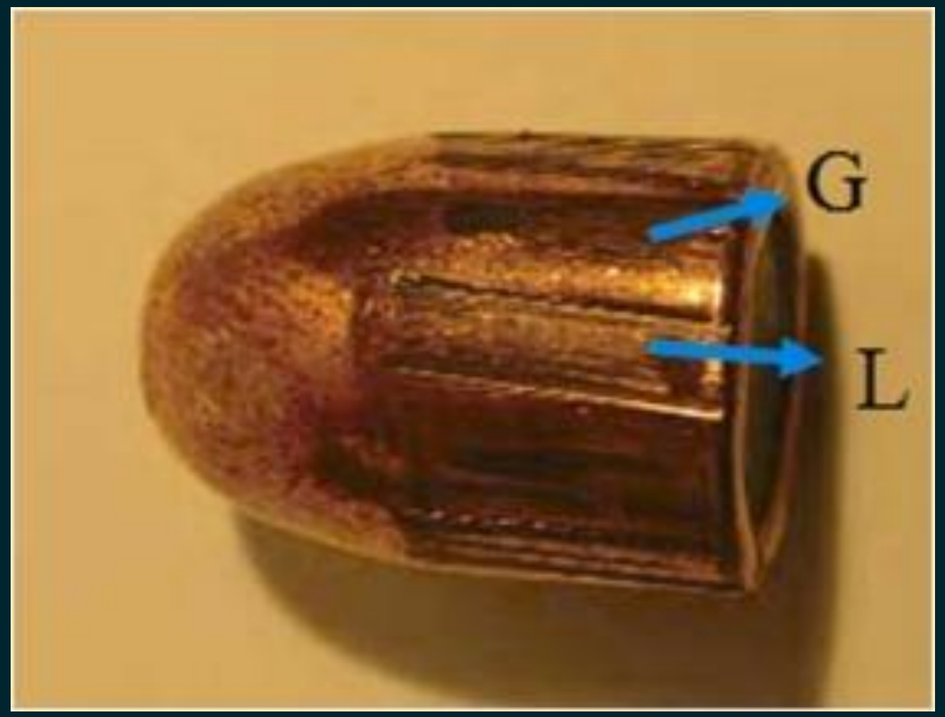
FIREARM IDENTIFICATION AND BALLISITCS EXPERT

- If you have the gun…
  - What type of gun?
  - Is it operable and how was that tested?

- If you have the projectile…
  - What are the striations (lands and grooves)?

- If you have the casing…
  - What caliber?

- If you have everything…
  - Was the gun test fired with bullets?
  - Do those projectiles match what was recovered?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ANTHONY CURETON
SHERIFF

FIREARMS IDENTIFICATION AND BALLISTICS LABORATORY REPORT

BS Number: BS-18-076249
BCI Number: BAL-18-00153
Lab Case Number: 41718
Requesting Agency Case Number: Bergen County Prosecutor BCP1801083
Event Type: Murder
Suspect: Lawson, Talek
Victim: Johnson, Dakota
Date received into the lab: December 13, 2018
Storage location: Ballistic Case Jacket
Date of Report: October 10, 2019

Examination Requested by:

Detective Kevin Dempsey Bergen County Prosecutor's Office

Examination Requested:

The discharged projectile is to be examined for evidentiary value.

Submitted Items:

(1) Discharged projectile marked as KD-1

Results of Examination:

KD-1 is a discharged copper jacketed lead round nosed projectile that weighs 115 grains and indicates six sets of land and grooves with a left hand twist. (6L)

KD-1 measures .355 in diameter at its projectile base and is consistent with 9mm/.38 Caliber Class. (9mm Luger, .380 Auto, .357 Magnum & .38 Special)

No other ballistic evidence was submitted in this case for further examination and comparison.

Respectfully Submitted:

Det. Sgt. Robert Sloma

Detective Sergeant Robert Sloma #1345

NJSP OFFICE OF FORENSIC SCIENCES
FORENSIC SERVICES BUREAU

Ballistics Unit Laboratory Report

Laboratory Number
B20-2095

Crime
Murder

Agency	Agency Number	Date of Report
New Jersey State Police Major Crime – North Unit	H640202000016	11/05/2020

Specimens in this case were submitted to the Forensic Services Bureau for examination.
See attached *Evidence Receipt* for list of specimens.

Results of Examination:

PART I

Examined the two specimens marked #1 and #21. They weigh 97.5 and 121.2 grains respectively. They are lead core portions of discharged metal jacketed bullets. This portion of the bullet does not engage the barrel rifling and as a result, cannot be identified as having been discharged from a particular firearm.

Examined the three specimens marked #4, #22, and #22A. They weigh 19.4, 17.2, and 4.7 grains respectively and each indicates eight lands and groove with a right hand twist. They are portions of 38 caliber class discharged metal jackets (of bullets).

The three bullet specimens marked #4, #22, and #22A were compared microscopically against each other and identified as having been discharged from the same firearm. The two bullet specimens marked #22 and #22A are consistent with being portions of the same bullet.

PART II

Examined the three specimens marked #18, #19, and #20. They weigh 124.2, 111.1, and 130.0 grains respectively and each indicates eight lands and grooves with a right hand twist. They are 38 Special caliber discharged full metal jacketed bullets.

Examined the four specimens marked #9 through #9C. They are 38 Special caliber discharged cartridge cases, headstamped SIG.

Examined the specimen marked #9D. It is a 38 Special caliber discharged cartridge case, headstamped FEDERAL.

Examined and test fired the 38 Special caliber Charter Arms revolver, serial number 173138. It is operable and capable of being discharged.

The three bullets marked #18, #19, and #20 were compared microscopically against test bullets and identified as having been discharged from the submitted revolver.

The three bullets marked #4, #22, and #22A were compared microscopically against test bullets and eliminated as having been discharged from the submitted revolver.

Administrative/Technical Reviewer	Signature	Verified By	Signature
DSG Edward Burek #6835	DSG E Burek #6835	Stephen M Deady	Stephen M Deady

S.P. 688 (01/18)

Ballistics Unit Laboratory Report

Laboratory Number	Date of Report
B20-2095	11/05/2020

The five cartridge cases marked #9 through #9D were compared microscopically against test cartridge cases and identified as having been discharged in the submitted revolver.

The three bullets marked #4, #22, and #22A were compared microscopically against test bullets and eliminated as having been discharged from the submitted revolver.

PART III

Examined the five specimens marked #2, #3, #5, #6, and #17. They weigh 87.9, 89.2, 88.8, 89.3, and 87.0 grains respectively and each indicates six lands and grooves (polygonal) with a right hand twist. They are 9mm Luger caliber discharged copper bullets.

Examined the seven specimens marked #10 through #16. They are 9mm Luger caliber +P+ discharged cartridge cases, headstamped UNDERWOOD.

Examined and test fired the 9mm Luger caliber Glock semiautomatic pistol, serial number TBS300. It is operable and capable of being discharged.

The five bullets marked #2, #3, #5, #6, and #17 were compared microscopically against test bullets and identified as having been discharged from the submitted pistol.

The seven cartridge cases marked #10 through #16 were compared microscopically against test cartridge cases and identified as having been discharged in the submitted pistol.

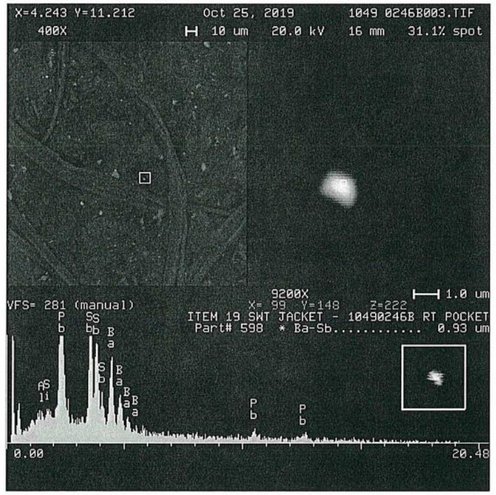
The three bullets marked #4, #22, and #22A were compared microscopically against test bullets and eliminated as having been discharged from the submitted pistol.

James R. Storey
NJSP Ballistics Unit

S.P. 688 (01/18)

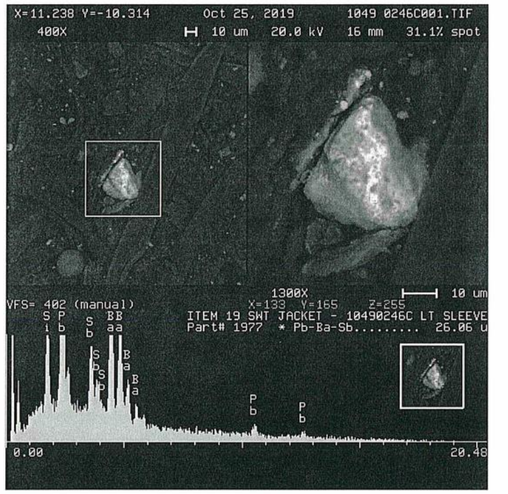
GUNSHOT RESIDUE EXPERT

- Gunshot Residue (GSR): composed of Lead, Barium and Antimony
- Where it was located and collected?
- Use of the scanning electron microscope (SEM):
  - a sample of potential GSR is scanned, and when a GSR particle is detected an x-ray analysis is taken, the image is stored and saved for manual confirmation



Pb-Sb-Ba Particle • TIFF Image No. 0246B003

Figure 1. Backscattered electron image and elemental spectrum of the particle characteristic of GSR detected on Item 19 - Grey Hooded Sweat Jacket, Right Pocket Inside & Outside PE (RJ Lee Group Sample No. 10490246B).



Pb-Sb-Ba Particle • TIFF Image No. 0246C001

Figure 2. Backscattered electron image and elemental spectrum of the particle characteristic of GSR detected on Item 19 - Grey Hooded Sweat Jacket, Left Sleeve PE (RJ Lee Group Sample No. 10490246C).

automated stage, backscattered electron (BSE) detector, energy dispersive x-ray spectrometer (EDS) and automated GSR analysis software.

The SEM analysis, on a particle-by-particle basis, retains the individual feature characteristics and can relate the presence of lead (Pb), antimony (Sb) and barium (Ba) to a single particle. When the instrument detects particles with the presence of Pb, Sb and/or Ba, it flags the particles as potential GSR. The images are stored along with the composition and coordinate data for relocation and confirmation by manual microscopy after the automated analysis is completed. A summary run sheet is printed with stored images and spectral data for relocation and confirmation applications. Representative flagged particles are relocated for compositional confirmation.

A particle is confirmed as being characteristic of GSR when Pb, Sb, and Ba, condense into a single particle, exhibiting the proper morphology and chemistry. Any particle, with these features, and a combination of two of the three elements (Pb/Sb and Pb/Ba or Sb/Ba) is classified as a two component particle. Any particle with one of the three elements (Pb, Sb, or Ba) that exhibits the proper morphology and chemistry is classified as a one component particle.

Analytical Results

A list of confirmed particles detected during the analysis is as follows:

Sample ID	RJLG Sample No.	Classification and Number of Particles
[1]Item 19 - Grey Hooded Sweat Jacket, Right Sleeve PE	10490246A	Total Particles Characteristic of GSR – 0 Total Two Component Particles – 1
Item 19 - Grey Hooded Sweat Jacket, Right Pocket Inside & Outside PE	10490246B	Total Particles Characteristic of GSR – 1 Total Two Component Particles – 0
Item 19 - Grey Hooded Sweat Jacket, Left Sleeve PE	10490246C	Total Particles Characteristic of GSR – 1 Total Two Component Particles – 3
Item 19 - Grey Hooded Sweat Jacket, Left Pocket Inside & Outside PE	10490246D	Total Particles Characteristic of GSR – 0 Total Two Component Particles – 0
Item 19 - Grey Hooded Sweat Jacket Inside Front Waist Area PE	10490246E	Total Particles Characteristic of GSR – 0 Total Two Component Particles – 0

[1] The element tin (Sn) was found in combination with a two component particle.

Conclusions

Item 19 - Grey Hooded Sweat Jacket
Right Sleeve PE (RJLG Sample Number 10490246A) contained a two component particle.

THANK YOU