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FBI Laboratory

2501 Investigation Parkway
Quantico, Virginia 22135

4940 Fowler Road
Huntsville, Alabama 35898

LABORATORY REPORT

To: Jose Cortez
Special Agent
Albuquerque

Date: May 3, 2022

Case ID No.: AQ-3514414

Lab No.: 2021-02245-4

Communication(s): October 28, 2021; December 14, 2021

Agency Reference(s):

Subject(s):

Victim(s): Halyna Hutchins

Discipline(s): Explosives Chemistry

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FBI Laboratory Evidence Designator(s):

Item 4	Cartridge from top of cart (1B5, E6842165; SFSO Item #26)
Item 5	Cartridge from top of cart (1B5, E6842165; SFSO Item #26)
Item 6	Cartridge from bandolier on top of cart (1B6, E6842166; SFSO Item #27)
Item 7	Cartridge from holster inside building (1B7, E6842167; SFSO Item #28)
Item 13-1	Cartridge from Item 12 Tray (1B2, E6842162; SFSO Item #2)
Item 24-1	Cartridge from Item 24 (SFCSO Item #211) (1B16, E6842266)
Item 25-1	Cartridge from Item 25 (SFCSO Item #211) (1B16, E6842266)
Item 28-1	Cartridge from Item 28 (SFCSO Item #233) (1B19, E6842269)
Item 28-2	Cartridge from Item 28 (SFCSO Item #233) (1B19, E6842269)
Item 34-1	Cartridge from Item 34 (SFCSO Item #235) (1B21, E6842271)
Item 34-2	Cartridge from Item 34 (SFCSO Item #235) (1B21, E6842271)

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This report contains the results of the chemistry examinations conducted in the Explosives Unit.

Results of Examinations:

Disk shaped, double base smokeless powder was identified in Items 4 through 7 and 13-1. Smokeless powders are low explosives.

Disk shaped, single base smokeless powder with a single perforation was identified in Items 24-1, 25-1, 28-1, 28-2, 34-1, and 34-2.

The following techniques were used during the analysis of the above Items: visual and microscopic inspection, thermal susceptibility testing, Fourier transform infrared spectroscopy, and gas chromatography/mass spectrometry.

Remarks:

For questions about the content of this report, please contact Forensic Examiner Robert W. Gillette at [REDACTED] or [REDACTED].

For questions about the status of your submission, including any remaining forensic examinations and disposition of the evidence, please contact Elizabeth Small at [REDACTED].

This report contains the opinions and interpretations of the issuing examiner(s) and is supported by records retained in the FBI Laboratory files. Please allow a minimum of thirty days from the date of a discovery request for the FBI Laboratory to provide the related materials. The FBI cannot ensure timely delivery of discovery requests received in less time.

The work described in this report was conducted at the Quantico Laboratory.

Robert W. Gillette
Explosives Unit

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FBI Laboratory

2501 Investigation Parkway
Quantico, Virginia 22135

4940 Fowler Road
Huntsville, Alabama 35898

LABORATORY REPORT

To: JOSE CORTEZ
Special Agent
Albuquerque

Date: July 26, 2022

Case ID No.: AQ-3514414

Lab No.: 2021-02245-3

Communication(s): October 28, 2021; December 14, 2021

Agency Reference(s):

Subject(s):

Victim(s): Halyna Hutchins

Discipline(s): Firearms/Toolmarks

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FBI Laboratory Evidence Designator(s):

- Item 1 Bullet from Joel Souza (1B4, E6842164; SFSO Item #25)
- Item 2 Revolver (1B1, E6842161; SFSO Item #1)
- Item 3 Cartridge case from top of cart (1B3, E6842163; SFSO Item #3)
- Item 4 Cartridge from top of cart (1B5, E6842165; SFSO Item #26)
- Item 5 Cartridge from top of cart (1B5, E6842165; SFSO Item #26)
- Item 6 Cartridge from bandolier on top of cart (1B6, E6842166; SFSO Item #27)
- Item 7 Cartridge from holster inside building (1B7, E6842167; SFSO Item #28)
- Item 8 Ammunition box (1B2, E6842162; SFSO Item #2)
- Item 9 Tray from Item 8 Ammunition box (1B2, E6842162; SFSO Item #2)
- Item 10 Cartridges from Item 9 Tray (1B2, E6842162; SFSO Item #2)
- Item 11 Ammunition box (1B2, E6842162; SFSO Item #2)
- Item 12 Tray from Item 11 Ammunition box (1B2, E6842162; SFSO Item #2)

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Item 13 Cartridges from Item 12 Tray (1B2, E6842162; SFSO Item #2)
Item 13-1 Cartridge from Item 12 Tray (1B2, E6842162; SFSO Item #2)
Item 13-2 Cartridges from Item 12 Tray (1B2, E6842162; SFSO Item #2)
Item 13-2-1 Cartridge from Item 12 tray (1B2, E6842162; SFSO Item #2)
Item 13-2-2 Cartridge from Item 12 Tray (1B2, E6842162; SFSO Item #2)
Item 13-3 Cartridges from Item 12 Tray (1B2, E6842162; SFSO Item #2)
Item 13-3-1 Cartridge from Item 12 Tray (1B2, E6842162; SFSO Item #2)
Item 13-3-2 Cartridge from Item 12 Tray (1B2, E6842162; SFSO Item #2)
Item 20 Box with tape from prop truck (SFCSO Item #140) (1B12, E6842262)
Item 20-1 Tray from Item 20 Box with tape (SFCSO Item #140) (1B12, E6842262)
Item 21 Cartridges from Item 20 Box with tape (SFCSO Item #140) (1B12, E6842262)
Item 21-1 Cartridge from Item 21 (SFCSO Item #140) (1B12, E6842262)
Item 21-2 Cartridge from Item 21 (SFCSO Item #140) (1B12, E6842262)
Item 21-3 Cartridge from Item 21 (SFCSO Item #140) (1B12, E6842262)
Item 22 Cartridge from Item 20 Box with tape (SFCSO Item #140) (1B12, E6842262)
Item 23 Cartridge provided by Seth Kenney (SFCSO Item #210) (1B15, E6842265)
Item 24 Cartridges provided by Seth Kenney (SFCSO Item #211) (1B16, E6842266)
Item 24-1 Cartridge from Item 24 (SFCSO Item #211) (1B16, E6842266)
Item 25 Cartridges provided by Seth Kenney (SFCSO Item #211) (1B16, E6842266)
Item 25-1 Cartridge from Item 25 (SFCSO Item #211) (1B16, E6842266)
Item 26 Ammunition box from box at 126 Monroe Street (SFCSO Item #233) (1B19, E6842269)
Item 27 Tray from Item 26 Ammunition box (SFCSO Item #233) (1B19, E6842269)
Item 28 Cartridges from Item 27 Tray (SFCSO Item #233) (1B19, E6842269)
Item 28-1 Cartridge from Item 28 (SFCSO Item #233) (1B19, E6842269)
Item 28-2 Cartridge from Item 28 (SFCSO Item #233) (1B19, E6842269)
Item 29 Ammunition box from box at 126 Monroe Street (SFCSO Item #233) (1B19, E6842269)
Item 30 Tray from Item 29 Ammunition box (SFCSO Item #233) (1B19, E6842269)
Item 31 Cartridges from Item 30 Tray (SFCSO Item #233) (1B19, E6842269)

- Item 32 Cartridge from box at 126 Monroe Street (SFCSO Item #234) (1B20, E6842270)
- Item 33 Cartridge from box at 126 Monroe Street (SFCSO Item #235) (1B21, E6842271)
- Item 34 Cartridges from box at 126 Monroe Street (SFCSO Item #235) (1B21, E6842271)
- Item 34-1 Cartridge from Item 34 (SFCSO Item #235) (1B21, E6842271)
- Item 34-2 Cartridge from Item 34 (SFCSO Item #235) (1B21, E6842271)
- Item 35 Cartridge from box at 126 Monroe Street (SFCSO Item #236) (1B22, E6842272)
- Item 36 Cartridges from box at 126 Monroe Street (SFCSO Item #236) (1B22, E6842272)
- Item 37 Cartridges from box at 126 Monroe Street (SFCSO Item #236) (1B22, E6842272)
- Item 43 FTU Secondary Evidence (12 bullets, 12 cartridge cases, 1 barrel cast, 2 live cartridges with toolmarks, 5 fired primed cartridge cases)

The results of the firearms examinations are included in this report.

Results of Examinations:

Firearm

Item 2 is a .45 Colt (.45 Long Colt) caliber F.lli Pietta single-action revolver, Model 1873 SA (Californian), Serial Number E52277, which functioned normally when tested in the Laboratory. Item 2 contains $\frac{1}{4}$ and $\frac{1}{2}$ cock manual safeties, which are intended to prevent slippage of the hammer during cocking and the release of the hammer by a normal pull of the trigger. Additionally, Item 2 has a hammer with a fixed firing pin and does not contain any internal safety mechanisms to prevent the firing pin from striking the primer of a chambered cartridge, such as a transfer bar or hammer block. This is consistent with normal operation for a single-action revolver of this design.

A National Integrated Ballistic Information Network (NIBIN) search was not conducted on Item 2 due to revolver-type cartridge case images not being entered into the database.

Microscopic Comparisons

Item 1 is a .44/.45 caliber lead, flat nose bullet which was fired from a barrel rifled with a right twist and was significantly damaged at the time of examination. A pattern examination of

the Item 1 bullet compared to the Item 2 revolver was inconclusive due to damage and a lack of sufficient corresponding microscopic marks of value.

Item 3 is a .45 Colt caliber cartridge case which bears the headstamp of Starline brass. The Item 3 cartridge case was identified as having been fired in the Item 2 revolver.

Accidental Discharge Testing

Hammer at rest (de-cocked on a loaded chamber)

With the hammer at rest on a loaded chamber, Item 2 detonated a primer without a pull of the trigger when the hammer was struck directly. With a revolver of this design, when the hammer is at rest on a loaded chamber, the firing pin sits directly on the primer of the cartridge. When force is applied to the hammer, such as striking or dropping, it can fire the cartridge without a pull of the trigger. This is consistent with normal operation for a single-action revolver of this design.

Hammer at ¼ and ½ cock positions

With the hammer in the ¼ and ½ cock positions, Item 2 could not be made to fire without a pull of the trigger. When enough pressure was applied to the trigger, each of these safety positions were overcome and the hammer fell. This is consistent with normal operation for a single-action revolver of this design.

With the hammer in the ¼ cock position, pressure was applied to the trigger and the hammer fell, however the firing pin did not have enough force to detonate the primer and resulted in light firing pin strikes.

With the hammer in the ½ cock position, pressure was applied to the trigger and the hammer fell, however the cylinder could not be properly aligned to the bore, the firing pin struck the outer headstamp area and did not detonate the primer.

Hammer at full cock position

With the hammer in the full cock position, Item 2 could not be made to fire without a pull of the trigger while the working internal components were intact and functional. During this testing, portions of the trigger sear and cylinder stop fractured while the hammer was struck. The fracture of these internal components allowed the hammer to fall and the firing pin and detonated the primer. This was the only successful discharge during this testing and it was attributed to the fracture of internal components, not the failure of the firearm or safety mechanisms.

Ammunition

For the purposes of this report, the following ammunition definitions will be used:

Cartridge: A single round of ammunition consisting of the case, primer and propellant with or without one or more projectiles. Also applies to a shotshell.¹

Functional live cartridge: A single unit of ammunition consisting of the case, primer, propellant, and projectile.

Dummy cartridge: An inert cartridge which cannot be fired under any circumstances. In America, an inert cartridge for gun functioning is usually black oxidized and may or may not have holes in the side wall of the case. An inert cartridge for display may be natural colored and should have a hole in the primer cup with holes in the side wall of the case optional.¹

Blank cartridge: A cartridge loaded without a projectile designed to produce a loud noise. Often sealed at the mouth with a cardboard, plastic or fiber wad which is propelled from the muzzle with a dangerous force for a short distance when fired.¹

Items 4 through 7 are .45 Colt (.45 Long Colt) caliber cartridges which bear the headstamp of Starline brass. The Item 4 through 7 cartridges contain the design and components of functional live cartridges.

Item 10 consists of fifty .45 Colt caliber cartridges which bear the headstamp of Starline brass. The Item 10 cartridges are physically consistent with blank cartridges.

Item 13 consists of two .44-40 caliber cartridges which bear the headstamp of Starline brass. The Item 13 cartridges are physically consistent with dummy cartridges.

Item 13-1 is a .45 Colt caliber cartridge which bears the headstamp of Starline brass. The Item 13-1 cartridge contains the design and components of functional live cartridges.

Item 13-2 consists of four .45 Colt caliber cartridges which bear the headstamp of Starline brass. Two cartridges were sub-divided from Item 13-2 for disassembly and were designated Items 13-2-1 and 13-2-2. The Item 13-2 cartridges are physically consistent with dummy cartridges. The Item 13-2-1 and 13-2-2 cartridges contain the design and components of dummy cartridges.

Item 13-3 consists of thirty .45 Colt caliber cartridges which bear the headstamp of Starline brass. Two cartridges were sub-divided from Item 13-3 for disassembly and were designated Items 13-3-1 and 13-3-2. The Item 13-3 cartridges are physically consistent with

¹ <https://saami.org/saami-glossary>, © 2022 Sporting Arms and Ammunition Manufacturers' Institute, Inc. All rights reserved

dummy cartridges. The Item 13-3-1 and 13-3-2 cartridges contain the design and components of dummy cartridges.

Item 21 consists of fifteen .45 Colt caliber cartridges which bear the headstamp of Starline brass. Two cartridges were sub-divided from Item 21 for disassembly and were designated Items 21-2 and 21-3. The Item 21 cartridges are physically consistent with dummy cartridges. The Item 21-2 and 21-3 cartridges contain the design and component of dummy cartridges.

Item 21-1 is a .45 Colt caliber cartridge which bears the headstamp of Starline brass. The Item 21-1 cartridge is physically consistent with dummy cartridges.

Item 22 is a .45 Colt caliber cartridge which bears the headstamp of Starline brass. The Item 22 cartridge contains the design and components of dummy cartridges.

Item 23 is a .45 Colt caliber cartridge which bears the headstamp of Winchester ammunition. The Item 23 cartridge was reported as being a live exemplar from the manufacturer and is physically consistent with functional live cartridges.

Item 24 consists of three .45 Colt caliber cartridges which bear the headstamp of Starline brass. One cartridge was sub-divided from Item 24 for disassembly and was designated Item 24-1. The Item 24 cartridges were reported as being live exemplars from the manufacturer and are physically consistent with functional live cartridges. The Item 24-1 cartridge contains the design and components of functional live cartridges.

Item 25 consists of three .45 Colt caliber cartridges which bear the headstamps of Starline brass, CBC/Magtech, and Focchi ammunition. One cartridge was sub-divided from Item 25 for disassembly and was designated Item 25-1. The Item 25 cartridges were reported as being live exemplars from the manufacturer and are physically consistent with functional live cartridges. The Item 25-1 cartridge contains the design and components of functional live cartridges.

Item 28 consists of nine .45 Colt caliber cartridges which bear the headstamps of Starline brass, Black Hills, and Sellier & Bellot ammunition. Two cartridges were sub-divided from Item 28 for disassembly and were designated Items 28-1 and 28-2. The Item 28 cartridges were reported as being live exemplars from the manufacturer and are physically consistent with functional live cartridges. The Item 28-1 and 28-2 cartridges contain the design and components of functional live cartridges.

Item 31 consists of fifty .45 Colt caliber cartridges which bear the headstamps of Starline brass, Black Hills, Western, Remington, and Armscor ammunition. The Item 31 cartridges were reported as being live exemplars from the manufacturer and are physically consistent with functional live cartridges.

Item 32 is a .45 Colt caliber cartridge which bears the headstamp of Black Hills ammunition. The Item 32 cartridge was reported as being a live exemplar from the manufacturer and is physically consistent with functional live cartridges.

Item 33 is a .45 Colt caliber cartridge which bears the headstamp of Starline brass. The Item 33 cartridge was reported as being a live exemplar from the manufacturer and is physically consistent with functional live cartridges.

Item 34 consists of four .45 Colt caliber cartridges which bear the headstamp of Starline brass. Two cartridges were sub-divided from Item 34 for disassembly and were designated Items 34-1 and 34-2. The Item 34 cartridges were reported as being live exemplars from the manufacturer and are physically consistent with functional live cartridges. The Item 34-1 and 34-2 cartridges contain the design and components of functional live cartridges.

Item 35 is a .45 Colt caliber cartridge which bears the headstamp of Armscor ammunition. The Item 35 cartridge was reported as being a live exemplar from the manufacturer and is physically consistent with functional live cartridges.

Item 36 consists of four .45 Colt caliber cartridges which bear the headstamp of Armscor ammunition. The Item 36 cartridges were reported as being live exemplars from the manufacturer and are physically consistent with functional live cartridges.

Item 37 consists of four .45 Colt caliber cartridges which bear the headstamp of Armscor ammunition. The Item 37 cartridges were reported as being live exemplars from the manufacturer and are physically consistent with functional live cartridges.

Toolmarks were observed on the Item 10, 13, 13-2 (13-2-1, 13-2-2), 13-3 (13-3-1, 13-3-2), 21 (21-1, 21-2, 21-3), and 22 cartridges that are physically consistent with being produced by a primer press and shell holder. However, no determination could be made as to whether these toolmarks were produced by ammunition assembly, reloading, or commercial ammunition manufacturing. It should be noted that Starline only manufactures brass (cartridge cases) which must be loaded/assembled by another source.

Miscellaneous

The Item 8, 9, 11, 12, 20, 20-1, 26, 27, 29, and 30 ammunition boxes and trays were not examined in the Firearms/Toolmarks Unit.

Methods:

Firearms Function

The make, model, and caliber of a firearm are normally determined by directly observing manufacturer markings on the firearm in question. When these are not present, published

materials and firearms in the Laboratory's Reference Firearms Collection may be used to make determinations.

Unless otherwise noted, submitted firearms are test fired:

- 1) in the condition they are received in the Firearms/Toolmarks Unit,
- 2) with ammunition from the Laboratory's Reference Ammunition File,
- 3) in a manner that allows for testing of available modes of fire such as manual safety engaged, manual safety disengaged, single action, double action, semi-automatic, fully automatic, etc.

Pattern Examination

Toolmarks, whether they are present on evidence items or secondary evidence created in the Laboratory, undergo two stages of comparison. First, the class characteristics are reviewed and compared. If the class characteristics of the toolmarks are not clearly different, the examination moves to a second stage using comparative microscopy.

A microscopic comparison examination consists of a search of the impressed and striated marks present in two toolmarks to determine if patterns of similarity exist. At the completion of these comparisons, one of the following three opinions is issued:

1) Source Exclusion

Source exclusion is an Examiner's conclusion that two toolmarks did not originate from the same source. This conclusion is an Examiner's opinion that the observed difference(s) in class characteristics provides extremely strong support for the proposition that the two toolmarks came from different sources and extremely weak or no support for the proposition that the two toolmarks came from the same source. A source exclusion based on a minor difference in measured class characteristics requires a verification.

2) Source Identification

Source identification is an Examiner's conclusion that two toolmarks originated from the same source. This conclusion is an Examiner's opinion that all observed class characteristics are in agreement and the quality and quantity of corresponding individual characteristics is such that the Examiner would not expect to find that same combination of individual characteristics repeated in another source. The basis for a source identification conclusion is an Examiner's opinion that the observed class characteristics and corresponding individual characteristics provide extremely strong support for the proposition that the two toolmarks originated from the same source and extremely weak support for the proposition that the two toolmarks originated from different sources. A source identification requires a verification and is the Examiner's opinion that the probability that the two toolmarks were made by different sources is so small that it is negligible.

3) Inconclusive (No Conclusion)

Inconclusive is an Examiner's conclusion that all observed class characteristics are in agreement but there is insufficient quality and/or quantity of corresponding individual characteristics such that the Examiner is unable to identify or exclude the two toolmarks as having originated from the same source. This conclusion is an Examiner's opinion that there is an insufficient quality and/or quantity of individual characteristics to identify or exclude. Reasons for an inconclusive conclusion include the presence of microscopic similarity that is insufficient to form the conclusion of source identification, or a lack of any observed microscopic similarity.

Accidental Discharge

An accidental discharge test is conducted in all modes of fire for a particular firearm, utilizing a primed cartridge case or shotshell case. The firearm is struck with a rawhide or similar styled mallet on its six planes: front of muzzle, butt plate, top of breech and chamber, bottom of trigger guard and frame and both sides of the receiver/frame. If necessary, tests can be undertaken in order to attempt to duplicate the conditions under which the firearm discharged.

Physical and Visual Examinations

Physical and visual evaluations compare the physical and class characteristics of evidence items. A conclusion of "physically consistent with" is reached if the observable or measurable physical dimensions and/or design features of two items are in agreement or are "physically consistent." If these dimensions and features are clearly different, an elimination conclusion is reached. If there is a lack of observable design features or measurable dimensions, the result is inconclusive.

Limitations:

Firearms Function

The results of firearms function examinations describe the operating condition of the firearm as received in the Firearms/Toolmarks Unit.

Pattern Examination

Firearms/Toolmark Identification is an empirical science that relies on objective measurements and a subjective comparison of microscopic marks of value. Due to variation in substrate, changes in tool working surfaces from wear, corrosion, and damage, or the employment of unusual tool/work piece orientations, it may not be possible for an Examiner to reach a source conclusion. Additionally, some tool manufacturing methods routinely produce working surfaces that leave limited microscopic marks of value. Damaged, corroded, or fragmented items may be of little or no value for comparison purposes.

Accidental Discharge

When an accidental discharge examination is performed, it may not be possible to recreate or duplicate all of the circumstances which led to the discharge of a firearm without a pull of the trigger.

Physical and Visual Examinations

A Physical and Visual Evaluation examination is unsuitable for determining a source identification conclusion. A conclusion of "physically consistent with" signifies a restricted group source, based on class characteristics and/or observable features, from which evidence may have originated. Post-manufacture features cannot be used for elimination purposes.

Remarks:

Per communication with SA Jose Cortez on November 16, 2021, the microscopic comparisons of manufacturing toolmarks observed on ammunition components were discontinued at the FBI Laboratory.

For questions about the content of this report, please contact Forensic Examiner Bryce A. Ziegler at [REDACTED] or [REDACTED].

For questions about the status of your submission, including any remaining forensic examinations, please contact Elizabeth K. Small at [REDACTED].

The evidence, which includes secondary evidence, will be returned under separate cover.

This report conforms to the "Department of Justice Uniform Language for Testimony and Reports for the Forensic Firearms/Toolmarks Discipline - Pattern Examinations".

This report contains the opinions and interpretations of the issuing examiner(s) and is supported by records retained in the FBI Laboratory files. Please allow a minimum of thirty days from the date of a discovery request for the FBI Laboratory to provide the related materials. The FBI cannot ensure timely delivery of discovery requests received in less time.

The work described in this report was conducted at the Quantico Laboratory.

Bryce A. Ziegler
Firearms/Toolmarks Unit

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FBI Laboratory

2501 Investigation Parkway
Quantico, Virginia 22135

4940 Fowler Road
Huntsville, Alabama 35898

LABORATORY REPORT

To: Jose Cortez
Special Agent
Albuquerque

Date: March 15, 2022

Case ID No.: AQ-3514414

Lab No.: 2021-02245-6

Communication(s): October 28, 2021

Agency Reference(s):

Subject(s):

Victim(s): Halyna Hutchins

Discipline(s): Latent Prints

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FBI Laboratory Evidence Designator(s):

Assigned evidence from Laboratory number 2021-02245-6:

Item 2 Revolver (1B1, E6842161; SFCSO Item #1)
Item 11 Ammunition box (1B2, E6842162; SFCSO Item #2)
Item 12 Tray from Item 11 Ammunition box (1B2, E6842162; SFCSO Item #2)

Assigned evidence from Laboratory number 2021-02245-14:

Item 15 Fingerprints and palm prints of Hannah Gutierrez (SFCSO Item #206)
(1B13, E6842263)
Item 17 Fingerprints and palm prints of Sarah Zachry (SFCSO Item #229)
(1B17, E6842267)
Item 19 Fingerprints and palm prints of David Halls (SFCSO Item #238)
(1B23, E6842273)

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This report addresses the request for friction ridge print examinations.

RESULTS OF EXAMINATIONS

See Appendix A for key terms and the methods, limitations, and interpretations regarding the results of examinations.

The following table provides information regarding the known friction ridge print records of the individual(s) for comparison. Unless otherwise indicated, record(s) were obtained from NGI. The letter designation will be used throughout this report:

Individual(s) for Comparison			
Letter Designation	Name	UCN/DOB	Record Information
A	HANNAH GUTIERREZ	---	Item 15 (no other record located)
B	SARAH ZACHRY	---	Item 17 (no other record located)
C	DAVID HALLS	---	Item 19 (no other record located)
D	ALEX RAE BALDWIN	509224AB3	Record located

The table below lists results of friction ridge print examinations:

Results of Examinations										
GUTIERREZ (A) ZACHRY (B) HALLS (C) BALDWIN (D)										
Item Number	Analysis			Comparison	Evaluation				NGI Comparisons	
	Total	Fingerprint	Palm print	Impression	Individuals	Anatomical Source	Identification	Exclusion		Inconclusive
Item 11	10	P1 ¹	---	---	A-D	---	---	---	---	Yes
		P2 ¹	---	---	A-D	---	---	---	---	No
		P3 ¹	---	---	A-D	---	---	---	---	Yes
		P4 ¹	---	---	A-D	---	---	---	---	No
		P5 ¹	---	---	A-D	---	---	---	---	Yes
		P6 ¹	---	---	A-D	---	---	---	---	No
		P8	---	---	A-D	#4	A	---	---	Yes
		P9 ¹	---	---	A-D	---	---	---	---	No
		P10 ¹	---	---	A-D	---	---	---	---	Yes
		P11	---	---	A-D	#1	A	---	---	No
Total prints suitable for comparison:	10									

Automated searches of appropriate print(s) were conducted, but no additional identifications were effected.

There are no additional prints suitable for comparison.

REMARKS

Verification(s) and/or blind verification(s) were conducted by the following individuals:

- Michelle Machalka
- Kira Glass
- Vanessa Ramos
- Sabrina Tishko

¹ Identified to a Laboratory employee

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For questions about the content of this report, please contact Forensic Examiner Shannon E. Prince at [REDACTED] or [REDACTED].

For questions about the status of your submission, including any remaining forensic examinations, please contact Elizabeth Small at [REDACTED].

The evidence will be returned under separate cover.

This report contains the opinions and interpretations of the issuing examiner(s) and is supported by records retained in the FBI files. This report is consistent with the current Department of Justice Uniform Language for Testimony and Reports for the Forensic Latent Print Discipline. The work described in this report was conducted at the Quantico Laboratory. Once a written discovery request is received, please allow a minimum of thirty days to process.

Shannon E. Prince
Latent Print Operations Unit

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APPENDIX A

Explanation of Key Terms:

Suitable for Comparison - A print is suitable for comparison (or claimed) when sufficient reliable information may be present such that an identification decision could be reached.

The anatomical source of a print deemed suitable for comparison is designated as follows:

- Fingerprint - coming from any part of a finger and designated as #1 through #10 on a standard fingerprint card
- Palm print - coming from any part of the palm area of a hand and designated as LP or LPP for left palm and RP or RPP for right palm
- Toe print - coming from any part of a toe and designated as #1t through #10t in the same manner as a standard fingerprint card
- Footprint - coming from any part of the sole of a foot and designated as Lftpt for left foot and Rftpt for right foot
- Handprint - coming from fingerprint(s) and palm print that appear to be deposited by the same touch and designated as LHP for left handprint and RHP for right handprint
- Impression - coming from an anatomical region that cannot be determined and may have come from any of the above sources

A print deemed suitable for comparison that is detected on an item of evidence may be assigned a print number, 'P'.

NGI - Next Generation Identification system, the FBI's national friction ridge print database

OGA - Information sharing efforts with Other Government Agency

UCN/DOB - Universal Control Number (formerly FBI #)/Date of Birth

CJIS - Criminal Justice Information Services Division

Methods, Limitations, and Interpretations:

Friction ridge skin consists of ridges, which are raised portions of skin, and furrows, which are the valleys in between the ridges. Friction ridge skin is found on the fingers, palms, and soles of the feet. A friction ridge print is a reproduction of the friction ridge features when the skin comes into contact with an item. Items of evidence submitted for friction ridge print examinations may be examined visually, examined with various light sources, and processed with chemicals and powders to detect the presence of friction ridge prints. The specific sequence of examinations and processes depends upon the nature of the evidence.

Friction ridge print examinations are conducted using Analysis, Comparison, and Evaluation (ACE) (1), which includes an assessment of the quantity and quality of the information present. The steps of ACE are applied to friction ridge prints as appropriate.

Analysis is the assessment of a friction ridge print by a qualified examiner, accounting for the quantity and quality of the features detected in the print. An examiner will assess the types of features and the spatial relationships of the features to one another, which may be affected by factors such as pressure and movement when the print is transferred (2) (3). A print is deemed suitable for comparison when sufficient reliable information may be present such that an identification decision could be reached.

A thorough analysis is conducted on friction ridge prints prior to conducting comparisons. Analysis is documented by marking observed information in accordance with the Latent Print Units' standard operating procedures (4).

Comparison is the direct side-by-side observation of friction ridge prints deemed suitable for comparison to determine whether the information observed during Analysis is in disagreement or agreement between two prints. When determining if features correspond, an examiner accounts for variation in the appearance of the friction ridge prints due to factors such as pressure and movement (2).

Evaluation is the formation of a conclusion based on the examiner's observations, assessments, and documentation generated during the analysis and comparison of the friction ridge prints. Decisions that may be reached are as follows (5):

- Identification is an examiner's conclusion that two friction ridge prints originated from the same source. The conclusion is an examiner's decision that the observed friction ridge skin features are in sufficient correspondence such that the examiner would not expect to see the same arrangement of features repeated in a print that came from a different source and insufficient friction ridge skin features in disagreement to conclude that the prints came from different sources. The basis for an identification conclusion is an examiner's decision that the observed corresponding friction ridge skin features provide extremely strong support for the proposition that the two prints came from the same source and extremely weak support for the proposition that the two prints came from different sources. An identification is the

statement of an examiner's opinion (an inductive inference¹) that the probability that the two prints were made by different sources is so small that it is negligible. An identification is not based upon a statistically-derived or verified measurement or comparisons of all friction ridge print features in the world's population. While an identification to the exclusion of all others is not supported by research, studies have shown that as more reliable features are found in agreement, it becomes less likely to find that same arrangement of features in a print from another source (6).

- Exclusion is an examiner's conclusion that two friction ridge prints did not originate from the same source. The basis for an exclusion is an examiner's decision that there are sufficient friction ridge skin features in disagreement to conclude that the two impressions came from different sources.
- Inconclusive is an examiner's conclusion that there is insufficient quantity and clarity of corresponding friction ridge skin features between two prints such that the examiner is unable to identify or exclude the two prints as originating from the same source. The basis for an inconclusive conclusion is an examiner's decision that an identification or exclusion cannot be made due to insufficient information in either of the two prints examined. The conclusion can be based on either a latent print or a known print.
 - Inconclusive is reported when there is insufficient information in the known print. Additional recordings from the compared individual may allow for a conclusive decision to be reached.
 - Latent inconclusive is reported when there is insufficient information in the print deemed suitable for comparison. Additional recordings of the compared individual are not expected to allow for a conclusive decision to be reached.

While the examination process is subjective in nature (7), the Latent Print Units have quality assurance measures in place to minimize variability and reduce the chance of error. Examples include but are not limited to verification and blind verification, which are implemented in accordance with the Latent Print Units' standard operating procedures (4).

- Verification is the application of ACE to a friction ridge print by another qualified examiner.
- Blind verification is a type of verification by another examiner who has limited case information and does not know the evaluation decision of the primary examiner.

¹ "By the process of induction or inference, predictions about new situations are inferred or induced from the existing body of knowledge. In other words, an inference is a generalization, but one that is made in a logical and scientifically defensible manner." Oxford Dictionary of Forensic Science 130 (2012).

There is no meaningful predictive rate of error for the entire comparison process (9) (10); however, studies have demonstrated that examiners reach accurate and reliable conclusions under specific test conditions (11) (12).

The presence of a friction ridge print on an item of evidence indicates contact was made between the source and the item. The presence of a friction ridge print alone does not necessarily indicate the significance of the contact or the time frame during which the contact occurred.

Due to a variety of factors, the recovery of friction ridge prints on items of evidence is not always successful. A lack of friction ridge prints on an item or the exclusion of a friction ridge print from a given source does not necessarily mean that the given source did not come into contact with the item.

References:

1. Ashbaugh, D. R. (1999). *Quantitative and Qualitative Friction Ridge Analysis: An Introduction to Basic and Advanced Ridgeology*. New York, New York: CRC Press.
2. SWGFAST. (2013). *Standards for Examining Friction Ridge Impressions and Resulting Conclusions - Latent/Tenprint*. Retrieved from <http://www.swgfast.org/Documents.html>.
3. Maceo, A. (2009). Qualitative Assessment of Skin Deformation: A Pilot Study. *Journal of Forensic Identification*, 59(4), 390-440.
4. FBI Laboratory Latent Print Units Operations Manual. Standard Operating Procedures for Examining Friction Ridge Prints. Quantico, Virginia. <http://fbi.labqsd.com>
5. Department of Justice Uniform Language for Testimony and Reports for the Forensic Latent Print Discipline.
6. Neumann, C., Evett, I.W., and Skerrett, J. (2012). Quantifying the Weight of Evidence from a Forensic Fingerprint Comparison: A New Paradigm. *Journal of the Royal Statistical Society*, 175(Part 2), 371-415.
7. Ulery, B.T., Hicklin, A.R., Buscaglia, J., and Roberts, M.A. (2012). Repeatability and Reproducibility of Decisions by Latent Fingerprint Examiners. *PLoS ONE* 7(3), e32800. doi:10.1371/journal.pone.0032800.
8. FBI Laboratory Latent Print Units Quality Assurance Manual. Procedures for Verification and Blind Verification. Quantico, Virginia. <http://fbi.labqsd.com>
9. Budowle, B. et al. (2009). A Perspective on Errors, Bias, and Interpretation in the Forensic Sciences and Direction for Continuing Advancement. *Journal of Forensic Sciences*, 54(4), 798-809.
10. Kellman, P.J., et al. (2014). Forensic Comparison and Matching of Fingerprints: Using Quantitative Image Measures for Estimating Error Rates through Understanding and Predicting Difficulty. *PLoS ONE*, 9(5), e94617. doi: 10.1371/journal.pone.0094617.
11. Tangen, J.M., Thompson, M.B., & McCarthy, D.J. (2011). Identifying Fingerprint Expertise. *Psychological Science*, 22(8), 995-997.
12. Ulery, B.T., Hicklin, A.R., Buscaglia, J., and Roberts, M.A. (2011). Accuracy and Reliability of Forensic Latent Fingerprint Decisions. *Proceedings of the National Academy of Sciences*, 108(19), 7733-7738.

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FBI Laboratory

2501 Investigation Parkway
Quantico, Virginia 22135

4940 Fowler Road
Huntsville, Alabama 35898

LABORATORY REPORT

To: Jose Cortez
Special Agent
Albuquerque

Date: January 11, 2022

Case ID No.: AQ-3514414

Lab No.: 2021-02245-14

Communication(s): December 14, 2021

Agency Reference(s):

Subject(s):

Victim(s):

Discipline(s): Latent Prints

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FBI Laboratory Evidence Designator(s):

- Item 15 Fingerprints and palm prints of Hannah Gutierrez (SFCSO Item #206) (1B13, E6842263)
- Item 17 Fingerprints and palm prints of Sarah Zachry (SFCSO Item #229) (1B17, E6842267)
- Item 19 Fingerprints and palm prints of David Halls (SFCSO Item #238) (1B23, E6842273)
- Item 20 Box with tape from prop truck (SFCSO Item #140) (1B12, E6842262)
- Item 20-1 Tray from Item 20 Box with tape (SFCSO Item #140) (1B12, E6842262)
- Item 21 Cartridges from Item 20 Box with tape (SFCSO Item #140) (1B12, E6842262)
- Item 21-1 Cartridge from Item 21 (SFCSO Item #140) (1B12, E6842262)
- Item 22 Cartridge from Item 20 Box with tape (SFCSO Item #140) (1B12, E6842262)

This report addresses the request for friction ridge print examinations.

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RESULTS OF EXAMINATIONS

See Appendix A for key terms and the methods, limitations, and interpretations regarding the results of examinations.

The following table provides information regarding the known friction ridge print records of the individual(s) for comparison. Unless otherwise indicated, record(s) were obtained from NGI. The letter designation will be used throughout this report:

Individual(s) for Comparison			
Letter Designation	Name	UCN/DOB	Record Information
A	HANNAH GUTIERREZ	---	Item 15 (no other record located)
B	SARAH ZACHRY	---	Item 17 (no other record located)
C	DAVID HALLS	---	Item 19 (no other record located)
D	ALEX RAE BALDWIN	509224AB3	Record located

The table below lists results of friction ridge print examinations:

Results of Examinations										
GUTIERREZ (A) ZACHRY (B) HALLS (C) BALDWIN (D)										
Item Number	Analysis			Comparison	Evaluation			NGI Comparisons		
	Total	Fingerprint	Palm print	Impression	Individuals	Anatomical Source	Identification		Exclusion	Inconclusive
Item 20	3	P1	---	---	A-D	---	---	B,D	A,C	Yes
		P2	---	---	A-D	---	---	B,D	A,C	Yes
		P3	---	---	A-D	---	---	B,D	A,C	Yes
Total prints suitable for comparison:	3									

Automated searches of appropriate print(s) were conducted, but no additional identifications were effected. Print(s) were added to the Unsolved Latent File (ULF) and shared with other agency(ies), and you will be advised in a separate communication if an identification is made.

There are no additional prints suitable for comparison.

REMARKS

The known prints of GUTIERREZ, ZACHRY, and HALLS should be retained in your files for possible future court use. The individual who recorded these prints may be a necessary witness.

The identity of an individual for comparison is based on the biographical information associated with the known record. Fully and clearly recorded fingerprints recorded in connection with this case may be necessary for:

- Confirmation that the appropriate known record was examined (for testimony purposes)
- Further comparison of any inconclusive results
- Comparison when known records were not located at the time

Recorded prints should be submitted to the FBI Laboratory's Evidence Management Unit with correspondence referencing FBI Laboratory number 2021-02245-14.

For questions about the content of this report, please contact Forensic Examiner Shannon E. Prince at [REDACTED].

For questions about the status of your submission, including any remaining forensic examinations, please contact Elizabeth Small at [REDACTED].

The evidence will be returned under separate cover.

This report contains the opinions and interpretations of the issuing examiner(s) and is supported by records retained in the FBI files. This report is consistent with the current Department of Justice Uniform Language for Testimony and Reports for the Forensic Latent Print Discipline. The work described in this report was conducted at the Quantico Laboratory. Once a written discovery request is received, please allow a minimum of thirty days to process.

Shannon E. Prince
Latent Print Operations Unit

APPENDIX A

Explanation of Key Terms:

Suitable for Comparison - A print is suitable for comparison (or claimed) when sufficient reliable information may be present such that an identification decision could be reached.

The anatomical source of a print deemed suitable for comparison is designated as follows:

- Fingerprint - coming from any part of a finger and designated as #1 through #10 on a standard fingerprint card
- Palm print - coming from any part of the palm area of a hand and designated as LP or LPP for left palm and RP or RPP for right palm
- Toe print - coming from any part of a toe and designated as #1t through #10t in the same manner as a standard fingerprint card
- Footprint - coming from any part of the sole of a foot and designated as L Ftpt for left foot and R Ftpt for right foot
- Handprint - coming from fingerprint(s) and palm print that appear to be deposited by the same touch and designated as LHP for left handprint and RHP for right handprint
- Impression - coming from an anatomical region that cannot be determined and may have come from any of the above sources

A print deemed suitable for comparison that is detected on an item of evidence may be assigned a print number, 'P'.

NGI - Next Generation Identification system, the FBI's national friction ridge print database

OGA - Information sharing efforts with Other Government Agency

UCN/DOB - Universal Control Number (formerly FBI #)/Date of Birth

CJIS - Criminal Justice Information Services Division

Methods, Limitations, and Interpretations:

Friction ridge skin consists of ridges, which are raised portions of skin, and furrows, which are the valleys in between the ridges. Friction ridge skin is found on the fingers, palms, and soles of the feet. A friction ridge print is a reproduction of the friction ridge features when the skin comes into contact with an item. Items of evidence submitted for friction ridge print examinations may be examined visually, examined with various light sources, and processed with chemicals and powders to detect the presence of friction ridge prints. The specific sequence of examinations and processes depends upon the nature of the evidence.

Friction ridge print examinations are conducted using Analysis, Comparison, and Evaluation (ACE) (1), which includes an assessment of the quantity and quality of the information present. The steps of ACE are applied to friction ridge prints as appropriate.

Analysis is the assessment of a friction ridge print by a qualified examiner, accounting for the quantity and quality of the features detected in the print. An examiner will assess the types of features and the spatial relationships of the features to one another, which may be affected by factors such as pressure and movement when the print is transferred (2) (3). A print is deemed suitable for comparison when sufficient reliable information may be present such that an identification decision could be reached.

A thorough analysis is conducted on friction ridge prints prior to conducting comparisons. Analysis is documented by marking observed information in accordance with the Latent Print Units' standard operating procedures (4).

Comparison is the direct side-by-side observation of friction ridge prints deemed suitable for comparison to determine whether the information observed during Analysis is in disagreement or agreement between two prints. When determining if features correspond, an examiner accounts for variation in the appearance of the friction ridge prints due to factors such as pressure and movement (2).

Evaluation is the formation of a conclusion based on the examiner's observations, assessments, and documentation generated during the analysis and comparison of the friction ridge prints. Decisions that may be reached are as follows (5):

- Identification is an examiner's conclusion that two friction ridge prints originated from the same source. The conclusion is an examiner's decision that the observed friction ridge skin features are in sufficient correspondence such that the examiner would not expect to see the same arrangement of features repeated in a print that came from a different source and insufficient friction ridge skin features in disagreement to conclude that the prints came from different sources. The basis for an identification conclusion is an examiner's decision that the observed corresponding friction ridge skin features provide extremely strong support for the proposition that the two prints came from the same source and extremely weak support for the proposition that the two prints came from different sources. An identification is the

statement of an examiner's opinion (an inductive inference¹) that the probability that the two prints were made by different sources is so small that it is negligible. An identification is not based upon a statistically-derived or verified measurement or comparisons of all friction ridge print features in the world's population. While an identification to the exclusion of all others is not supported by research, studies have shown that as more reliable features are found in agreement, it becomes less likely to find that same arrangement of features in a print from another source (6).

- Exclusion is an examiner's conclusion that two friction ridge prints did not originate from the same source. The basis for an exclusion is an examiner's decision that there are sufficient friction ridge skin features in disagreement to conclude that the two impressions came from different sources.
- Inconclusive is an examiner's conclusion that there is insufficient quantity and clarity of corresponding friction ridge skin features between two prints such that the examiner is unable to identify or exclude the two prints as originating from the same source. The basis for an inconclusive conclusion is an examiner's decision that an identification or exclusion cannot be made due to insufficient information in either of the two prints examined. The conclusion can be based on either a latent print or a known print.
 - Inconclusive is reported when there is insufficient information in the known print. Additional recordings from the compared individual may allow for a conclusive decision to be reached.
 - Latent inconclusive is reported when there is insufficient information in the print deemed suitable for comparison. Additional recordings of the compared individual are not expected to allow for a conclusive decision to be reached.

While the examination process is subjective in nature (7), the Latent Print Units have quality assurance measures in place to minimize variability and reduce the chance of error. Examples include but are not limited to verification and blind verification, which are implemented in accordance with the Latent Print Units' standard operating procedures (4).

- Verification is the application of ACE to a friction ridge print by another qualified examiner.
- Blind verification is a type of verification by another examiner who has limited case information and does not know the evaluation decision of the primary examiner.

¹ "By the process of induction or inference, predictions about new situations are inferred or induced from the existing body of knowledge. In other words, an inference is a generalization, but one that is made in a logical and scientifically defensible manner." Oxford Dictionary of Forensic Science 130 (2012).

There is no meaningful predictive rate of error for the entire comparison process (9) (10); however, studies have demonstrated that examiners reach accurate and reliable conclusions under specific test conditions (11) (12).

The presence of a friction ridge print on an item of evidence indicates contact was made between the source and the item. The presence of a friction ridge print alone does not necessarily indicate the significance of the contact or the time frame during which the contact occurred.

Due to a variety of factors, the recovery of friction ridge prints on items of evidence is not always successful. A lack of friction ridge prints on an item or the exclusion of a friction ridge print from a given source does not necessarily mean that the given source did not come into contact with the item.

References:

1. Ashbaugh, D. R. (1999). *Quantitative and Qualitative Friction Ridge Analysis: An Introduction to Basic and Advanced Ridgeology*. New York, New York: CRC Press.
2. SWGFAST. (2013). *Standards for Examining Friction Ridge Impressions and Resulting Conclusions - Latent/Tenprint*. Retrieved from <http://www.swgfast.org/Documents.html>.
3. Maceo, A. (2009). Qualitative Assessment of Skin Deformation: A Pilot Study. *Journal of Forensic Identification*, 59(4), 390-440.
4. FBI Laboratory Latent Print Units Operations Manual. Standard Operating Procedures for Examining Friction Ridge Prints. Quantico, Virginia. <http://fbi.labqsd.com>
5. Department of Justice Uniform Language for Testimony and Reports for the Forensic Latent Print Discipline.
6. Neumann, C., Evett, I.W., and Skerrett, J. (2012). Quantifying the Weight of Evidence from a Forensic Fingerprint Comparison: A New Paradigm. *Journal of the Royal Statistical Society*, 175(Part 2), 371-415.
7. Ulery, B.T., Hicklin, A.R., Buscaglia, J., and Roberts, M.A. (2012). Repeatability and Reproducibility of Decisions by Latent Fingerprint Examiners. *PLoS ONE* 7(3), e32800. doi:10.1371/journal.pone.0032800.
8. FBI Laboratory Latent Print Units Quality Assurance Manual. Procedures for Verification and Blind Verification. Quantico, Virginia. <http://fbi.labqsd.com>
9. Budowle, B. et al. (2009). A Perspective on Errors, Bias, and Interpretation in the Forensic Sciences and Direction for Continuing Advancement. *Journal of Forensic Sciences*, 54(4), 798-809.
10. Kellman, P.J., et al. (2014). Forensic Comparison and Matching of Fingerprints: Using Quantitative Image Measures for Estimating Error Rates through Understanding and Predicting Difficulty. *PLoS ONE*, 9(5), e94617. doi: 10.1371/journal.pone.0094617.
11. Tangen, J.M., Thompson, M.B., & McCarthy, D.J. (2011). Identifying Fingerprint Expertise. *Psychological Science*, 22(8), 995-997.
12. Ulery, B.T., Hicklin, A.R., Buscaglia, J., and Roberts, M.A. (2011). Accuracy and Reliability of Forensic Latent Fingerprint Decisions. *Proceedings of the National Academy of Sciences*, 108(19), 7733-7738.



FBI Laboratory

2501 Investigation Parkway
Quantico, Virginia 22135

4940 Fowler Road
Huntsville, Alabama 35898

LABORATORY REPORT

To: Jose Cortez
Special Agent
Albuquerque

Date: January 31, 2022

Case ID No.: AQ-3514414

Lab No.: 2021-02245-5

Communication(s): October 28, 2021; November 24, 2021; December 14, 2021

Agency Reference(s):

Subject(s):

Victim(s): Halyna Hutchins

Discipline(s): DNA

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FBI Laboratory Evidence Designator(s):

- Item 2 Revolver (1B1, E6842161; SFSO Item #1)
- Item 14 Buccal sample from Hannah Gutierrez (SFCSO Item #208) (1B14, E6842264)
- Item 16 Buccal sample from Sarah Zachry (SFCSO Item #231) (1B18, E6842268)
- Item 18 Buccal sample from David Halls (SFCSO Item #240) (1B24, E6842274)
- Item 38 Buccal sample from Alexander Rae Baldwin (1B8, E6842221)
- Item 39 Buccal sample from Alexander Rae Baldwin (1B9, E6842222)
- Item 40 Buccal sample from Alexander Rae Baldwin (1B10, E6842223)
- Item 41 Buccal sample from Alexander Rae Baldwin (1B11, E6842224)

The items listed above were selectively subjected to serological testing and/or nuclear deoxyribonucleic acid (DNA) analysis.¹ Probabilistic genotyping was performed using the STRmix™ software.

RESULTS OF SEROLOGICAL AND NUCLEAR DNA EXAMINATIONS:

Item 2 (revolver)

Blood was not detected on item 2.²

Item 2(1) (swabbing of textured areas of revolver)

Male DNA³ was obtained from item 2(1). Item 2(1) was interpreted as originating from three individuals.

The DNA results from item 2(1) are 110,000 times more likely if BALDWIN and two unknown, unrelated people are contributors than if three unknown, unrelated people are contributors.

Person of Interest (POI)	Likelihood Ratio (LR) ⁴	Level of Support ⁵
BALDWIN	110,000	Strong Support for Inclusion

The DNA results from item 2(1) are [1/LR] times more likely if three unknown, unrelated people are contributors than if [POI] and two unknown, unrelated people are contributors.

Person of Interest (POI)	1/Likelihood Ratio (1/LR) ⁴	Level of Support ⁵
ZACHRY	5	Limited Support for Exclusion
HALLS	24	Limited Support for Exclusion

The DNA results from item 2(1) are equally likely if GUTIERREZ and two unknown, unrelated people are contributors than if three unknown, unrelated people are contributors.⁶

Database Entry Information:

The DNA results obtained from the tested items are not eligible for entry into the Combined DNA Index System (CODIS).

No other serological or nuclear DNA examinations were conducted.

Methods/Limitations:

The following methods and limitations apply to the results/conclusions provided in the results section(s) of this report and are referenced by number in the body of the text for clarity.

¹ DNA analysis was performed using the Quantifiler™ Trio DNA Quantification Kit for the quantitation of human DNA and the GlobalFiler™ PCR Amplification Kit for the DNA typing of short tandem repeats (STRs).

² This conclusion is based on a negative presumptive test. Insufficient quality and/or quantity of biological material may affect the ability to detect blood.

³ The presence of male DNA in a mixture may limit the ability to determine if female DNA is also present in that mixture.

⁴ The likelihood ratio is a statistical approach that compares the probabilities of observing the DNA results under two alternative propositions. Calculations were performed using the African American, Caucasian, Southeastern Hispanic, and Southwestern Hispanic populations. The lowest calculated likelihood ratio is reported.

⁵ These likelihood ratio ranges provide the following support for the conclusion:

<u>Likelihood Ratios:</u>	<u>Qualitative Equivalent:</u>
≤1/100	Exclusion
>1/100 to 1/2	Limited Support for Exclusion
1	Uninformative
2 to <100	Limited Support for Inclusion
100 to <10,000	Moderate Support for Inclusion
10,000 to <1,000,000	Strong Support for Inclusion
≥1,000,000	Very Strong Support for Inclusion

⁶ This conclusion is drawn when the likelihood ratio is equal to 1; this comparison is uninformative.

REMARKS:

Items 39, 40, and 41 were not examined.

The work described in this report was conducted at the Quantico Laboratory, and the results will be maintained by the FBI Laboratory for possible future comparisons. This report contains the opinions and interpretations of the issuing examiner and is supported by records retained in the FBI Laboratory file. This report conforms to the Department of Justice Uniform Language for Testimony and Reports for Forensic Serological Examinations and for Forensic Autosomal DNA Examinations Using Probabilistic Genotyping Systems. For questions about the content of this report, please contact Forensic Examiner Jerrilyn M. Conway at [REDACTED] or [REDACTED]. For questions about the status of your submission, including any remaining forensic examinations, please contact Elizabeth Small at [REDACTED] or [REDACTED].

The submitted items will be returned to you under separate cover. In addition to the evidence in the case, secondary evidence was generated that will also be returned to you. The secondary evidence can be found in a package marked DNA Secondary Evidence.

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Please allow a minimum of thirty days from the date of a discovery request for the FBI Laboratory to provide the related materials. The FBI cannot ensure timely delivery of discovery requests received in less time.

Jerrilyn M. Conway
DNA Casework Unit

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NMS Labs

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200 Welsh Road, Horsham, PA 19044-2208
Phone: (215) 657-4900 Fax: (215) 657-2972
e-mail: nms@nmslabs.com

Robert A. Middleberg, PhD, F-ABFT, DABCC-TC, Laboratory Director

Toxicology Report

Report Issued 11/16/2021 12:11

Patient Name HUTCHINS, HALYNA
Patient ID 2021-08172
Chain NMSCP143084
Age 42 Y **DOB** [REDACTED] 1979
Gender Female
Workorder 21375017

To: 20141
New Mexico Office of Medical Investigators
Attn: Yvonne A. Villalobos
1101 Camino de Salud NE- Ste B
Albuquerque, NM 87102

Page 1 of 3

Positive Findings:

None Detected

See Detailed Findings section for additional information

Testing Requested:

Analysis Code	Description
8051B	Postmortem, Basic, Blood (Forensic)
8050U	Postmortem, Urine Screen Add-On (6-MAM Quantification only) (Forensic)

Specimens Received:

ID	Tube/Container	Volume/ Mass	Collection Date/Time	Matrix Source	Labeled As
001	Gray Top Tube	9.75 mL	10/22/2021	Femoral Blood	2021-08172
002	Gray Top Tube	9.75 mL	10/22/2021	Chest Cavity Blood	2021-08172
003	White Plastic Container	60 mL	10/22/2021	Urine	2021-08172

All sample volumes/weights are approximations.
Specimens received on 10/27/2021.



Detailed Findings:

Examination of the specimen(s) submitted did not reveal any positive findings of toxicological significance by procedures outlined in the accompanying Analysis Summary.

Sample Comments:

001 Physician/Pathologist Name: Heather Jarrell, MD

Chain of custody documentation has been maintained for the analyses performed by NMS Labs.

Unless alternate arrangements are made by you, the remainder of the submitted specimens will be discarded six (6) weeks from the date of this report; and generated data will be discarded five (5) years from the date the analyses were performed.

Workorder 21375017 was electronically signed on 11/16/2021 11:49 by:

Brianna L. Peterson, Ph.D., F-ABFT
Forensic Toxicologist

Analysis Summary and Reporting Limits:

All of the following tests were performed for this case. For each test, the compounds listed were included in the scope. The Reporting Limit listed for each compound represents the lowest concentration of the compound that will be reported as being positive. If the compound is listed as None Detected, it is not present above the Reporting Limit. Please refer to the Positive Findings section of the report for those compounds that were identified as being present.

Acode 8050U - Postmortem, Urine Screen Add-On (6-MAM Quantification only) (Forensic)

-Analysis by Enzyme Immunoassay (EIA) for:

<u>Compound</u>	<u>Rpt. Limit</u>	<u>Compound</u>	<u>Rpt. Limit</u>
Amphetamines	500 ng/mL	Fentanyl / Metabolite	2.0 ng/mL
Barbiturates	0.30 mcg/mL	Methadone / Metabolite	300 ng/mL
Benzodiazepines	50 ng/mL	Opiates	300 ng/mL
Cannabinoids	50 ng/mL	Oxycodone / Oxymorphone	100 ng/mL
Cocaine / Metabolites	150 ng/mL	Phencyclidine	25 ng/mL

Acode 8051B - Postmortem, Basic, Blood (Forensic) - Femoral Blood

-Analysis by Enzyme-Linked Immunosorbent Assay (ELISA) for:

<u>Compound</u>	<u>Rpt. Limit</u>	<u>Compound</u>	<u>Rpt. Limit</u>
Amphetamines	20 ng/mL	Fentanyl / Acetyl Fentanyl	0.50 ng/mL
Barbiturates	0.040 mcg/mL	Methadone / Metabolite	25 ng/mL
Benzodiazepines	100 ng/mL	Methamphetamine / MDMA	20 ng/mL
Buprenorphine / Metabolite	0.50 ng/mL	Opiates	20 ng/mL
Cannabinoids	10 ng/mL	Oxycodone / Oxymorphone	10 ng/mL
Cocaine / Metabolites	20 ng/mL	Phencyclidine	10 ng/mL

-Analysis by Headspace Gas Chromatography (GC) for:

<u>Compound</u>	<u>Rpt. Limit</u>	<u>Compound</u>	<u>Rpt. Limit</u>
Acetone	5.0 mg/dL	Ethanol	10 mg/dL



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Workorder
Chain
Patient ID

21375017
NMSCP143084
2021-08172

Page 3 of 3

Analysis Summary and Reporting Limits:

<u>Compound</u>	<u>Rpt. Limit</u>	<u>Compound</u>	<u>Rpt. Limit</u>
Isopropanol	5.0 mg/dL	Methanol	5.0 mg/dL

POSTMORTEM EXAMINATION

Hutchins, Halyna

OMI Case Number: 2021-08172

Year of Birth: 1979

Age: 42 years

Date/Time of Death Pronouncement: 10/21/2021 3:37:00 PM

County Pronounced: Bernalillo

Law Enforcement:

Agent:

Central Office Deputy Medical Investigator (FDMI): Eric Hunick

Type of Examination: Autopsy

Date of Examination: 10/22/2021

CAUSE OF DEATH:

Gunshot wound of chest

MANNER OF DEATH:

Accident



Heather S Jarrell M.D.

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PATHOLOGIC DIAGNOSES:

- I. Gunshot wound of chest.
 - A. Entrance, right axillary region, distant range of fire.
 - B. Lethal injuries to chest.
 - 1. Right pneumothorax with leftward mediastinal shift.
 - 2. Right hemothorax.
 - a. Greater than 1 liter blood (UNMH records).
 - 3. Perforation of lower lobe, right lung.
 - C. Thoracic spinal cord laceration, T9.
 - D. Exit, left mid-back.
 - E. No projectile recovered.
 - F. Trajectory: front to back, right to left, downward.
- II. Leiomyomata (benign), uterus.

NARRATIVE SUMMARY AND OPINION:

Ms. Halyna Hutchins, a 42-year-old woman, was fatally shot on a movie set at Bonanza Creek Ranch in Santa Fe, New Mexico, on 10/21/2021, shortly before 13:48. Ms. Hutchins was employed on the movie set as the Director of Photography. According to reports, Ms. Hutchins and the film director were shot during rehearsal on set. EMS responded on scene and Ms. Hutchins was flown to UNMH, where she arrived in asystole at approximately 15:20. Despite medical intervention, Ms. Hutchins was pronounced deceased at 15:37.

A full autopsy was performed at the Office of the Medical Investigator on 10/22/2021. Postmortem computed tomography demonstrated large right pneumothorax with mediastinal shift, as well as a right hemothorax, with medical intervention. Autopsy demonstrated a gunshot entrance wound of the right axillary region, that entered the right chest cavity and perforated the right lung, exited the right chest, injured the thoracic spinal column and the thoracic spinal cord, and exited the left aspect of the back. The absence of visible soot on the clothing and the entrance wound is most consistent with a distant range of fire. The direction of wounding is front to back, right to left, and downward.

No significant natural disease findings were present. Toxicology testing of postmortem femoral blood was negative for alcohol and common drugs of abuse.

Review of case supplemental reports provided by law enforcement demonstrated that a firearm (a .45 Long Colt single-action revolver) was loaded by the armorer, handed to the assistant director, and then subsequently handed to the actor on set. According to reports, the firearm was believed to be loaded with dummy rounds for the rehearsal. The actor reportedly raised the firearm toward the camera as part of the rehearsal, which subsequently discharged and struck Ms. Hutchins, as well as the director, who was reportedly standing behind Ms. Hutchins. The projectile was later recovered from the director at a hospital.

A firearms/toolmarks examination was performed by the FBI Laboratory, which was issued on 7/26/2022, that demonstrated that the .45 revolver functioned normally when tested. Additionally, the projectile recovered from the director (Mr. Joel Souza) was a .44/.45 caliber lead bullet that could not be compared to the firearm secondary to damage. Thirdly,

examination of a .45 Colt cartridge case demonstrated that it had been fired in the revolver examined.

Death was caused by a gunshot wound of the chest. Review of available law enforcement reports showed no compelling demonstration that the firearm was intentionally loaded with live ammunition on set. Based on all available information, including the absence of obvious intent to cause harm or death, the manner of death is best classified as accident.