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Attorney for Plaintiff

142

MONTANA THIRTEENTH JUDICIAL DISTRICT COURT, YELLOWSTONE COUNTY

STATE OF MONTANA Plaintiff, vs. PATRICK O. NEISS, Defendant.	Cause No. DC 14-0627 Judge Gregory R. Todd **STATE'S RESPONSE TO DEFENDANT'S MOTION IN LIMINE – EXPERT TESTIMONY**

Comes now, the State of Montana, by and through Deputy County Attorney Paul Chaon, and responds to the Defendant's motion to exclude or limit expert testimony on (1) toolmark or ballistics comparisons and (2) shoe print testimony or comparisons. Montana State Crime Lab Forensic Science Supervisor Travis Spinder will testify based on his extensive training and experience about the identification of shell casings found on the properties of the Defendant and victim, Frank "Trey" Greene. This evidence is relevant and universally accepted in state and federal courts. Detectives Fritz, Bancroft, and Paris all personally observed the shoe prints. These observations and subsequent documentation are probative and relevant for the trier of fact, and they should not be excluded from trial.

FACTS

The State anticipates the following facts will be presented at trial through testimony and other evidence:

AD

Greene was shot and killed on the evening of March 8, 2013, in front of his home at 800 Homewood Park Drive in Yellowstone County, Montana. The Yellowstone County Sheriff's Office responded to 911 calls made beginning at approximately 10:46 p.m. and secured the scene that evening. Investigators remained on scene through the evening into the following morning.

I. Spent Casings

On the morning of March 9, 2013, investigators observed five .40 caliber spent cartridge casings near Greene's body. These casings were seized as evidence. On March 14, 2013, YCSO investigators executed a search warrant at the Defendant's residence of 7200 Central Avenue. On the east side of the Defendant's home, investigators found 11 .40 caliber spent cartridge casings. On the south side of the Defendant's home, investigators found an additional two .40 caliber spent cartridge casings. Investigators seized all 13 casings as evidence.

YCSO investigators sent the 13 casings found at the Defendant's home and the five casings found at the scene of the crime to the Montana State Crime Lab. There, firearm and toolmark examiner Travis Spinder tested the casings. On March 20, 2013, Spinder authored a report that concluded that two separate firearms were used to shoot the cartridges.

The first firearm was used on the following:

- The five .40 caliber spent casings found at 800 Homewood Park Drive, and
- The 11 .40 caliber spent casings found on the east side of the Defendant's residence.

The second firearm was used on the following:

- The two .40 caliber spent casings on the south side of the Defendant's residence.

On July 22, 2014, YCSO investigators met with Randy Michel, a friend of the Defendant. Michel consented to a crime lab test of his .40 caliber Glock pistol. Spinder test fired bullets in a laboratory setting. On August 4, 2014, Spinder authored a report that concluded the Glock was the firearm that fired the two spent casings found on the south side of the Defendant's residence, but not the casings found at 800 Homewood Park Drive or the east side of the Defendant's

residence.

Spinder has extensive training and experience in firearm and toolmark examinations. He has testified a total of 163 times in state and federal courts in Montana, Texas, Wyoming, and Washington, D.C. on matters related to firearm and toolmark examinations. No court has ever excluded his testimony as unreliable scientific testimony. Spinder has also authored numerous forensic science publications and currently is the Montana State Crime Lab Forensic Science Supervisor – Firearm and Toolmark Section (Spinder's curriculum vitae is attached hereto as Exhibit 1).

II. Shoe Prints

On the morning of March 9, 2013, investigators observed several shoeprints on the property of 800 Homewood Park Drive near the location of Greene's body. The shoe prints appeared to be fresh.[1] Investigators followed the shoeprints and observed they led away from the scene in a southeastern direction towards the Defendant's property. There are no residences or other buildings between the Defendant's property and Greene's property. Investigators stopped following the shoe prints when they reached a barbed wire fence between the two properties because they did not want to trespass. Investigators also observed a second set of the same shoe prints that they followed. These shoe prints came from the direction of the Defendant's property and led up to 800 Homewood Park Drive. There were no other shoe prints leading away from or towards 800 Homewood Park Drive, and investigators took GPS coordinates of each of the shoe prints.

Investigators observed a distinctive zig-zag pattern on the shoe prints and a Nike swoosh on the heel of the shoe. Detective Bancroft took castings of several of the shoe prints at the scene on March 9, 2013. Investigators also sought and were granted a warrant to search the vehicle that the Defendant was driving on the evening of March 8, 2013. In the bed of the truck investigators found a pair of black men's size 11 boots. The tread pattern did not match the pattern of the shoe prints

[1] This observation was confirmed when Detectives returned two days later and the shoe prints were visibly faded due to changing weather conditions.

from the scene. However, Detective Bancroft compared the size of the shoe prints from the castings and the size of the boots and they appeared to be generally the same size.

ARGUMENT

I. Firearm and Toolmark Examination

Spinder's testimony is based on well-established methods, and there can be little debate as to the validity of those methods. His testimony about test results should be admitted, and the jury can determine the weight to give Spinder's testimony after defense has the opportunity to cross examine him regarding his methods. Montana Rule of Evidence 702 governs the testimony of expert witnesses:

> If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education may testify thereto in the form of an opinion or otherwise.

In *McClue v. Safeco Ins. Co. of Illinois*, 2015 MT 222, ¶¶ 19-21, 2015 WL 5006137, __P.3d __, the Montana Supreme Court provided a thorough summary of a district court's role as a gatekeeper for expert testimony under Rule 702:

> Montana has not adopted any of the recent versions of Federal Rule of Evidence (F.R.Evid.) 702, which sets the standard for the admission of expert testimony in many jurisdictions. As currently written, both F.R. Evid. 702 and M. R. Evid. 702 state that a witness who is "qualified as an expert" may testify if her "knowledge will help the trier of fact to understand the evidence or determine a fact in issue." F.R. Evid. 702(a); M. R. Evid. 702. That is where the Montana rule stops. F.R. Evid. 702, however, further conditions admission on whether, "(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 has reliably applied the principles and methods to the facts of the case." F.R. Evid. 702(b–d).
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> According to the Advisory Committee's Notes to the Federal Rules of Evidence, F.R. Evid. 702 incorporated the latter requirements in response to *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 113 S.Ct. 2786, 125 L.Ed.2d 469 (1993), and *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 119 S.Ct. 1167, 143 L.Ed.2d 238 (1999). *Daubert* emphasized a trial court's "gate-keeping" role and suggested that a trial court should determine whether expert testimony is admissible based on whether the testimony is grounded in "a theory or technique" that "can be (and has been) tested," that has been "subjected to peer review and publication," and that "enjoys 'general acceptance' within the 'relevant scientific community.' " *Kumho Tire*, 526 U.S. at 149, 119 S.Ct. at 1175 (quoting *Daubert*, 509 U.S. at 592–94, 113 S.Ct. at 2796–97). *Kumho Tire* held that the *Daubert* factors apply to essentially all proffered expert testimony. *Kumho Tire*, 526 U.S. at 141, 119 S.Ct. at 1171.

> In contrast to its status in the federal system, *Daubert* is not generally applicable in Montana. In *State v. Moore*, 268 Mont. 20, 885 P.2d 457 (1994), overruled on other grounds by *State v. Gollehon*, 274 Mont. 116, 121, 906 P.2d 697, 701 (1995), we observed that *Daubert* was consistent with our previous precedent "concerning the admission of expert testimony of novel scientific evidence," and we adopted *Daubert* "for the admission of scientific expert testimony." *Moore*, 268 Mont. at 42, 885 P.2d at 471. We later clarified, however, that *Daubert* does not apply to all expert testimony; instead, it applies only to "novel scientific evidence." *State v. Cline*, 275 Mont. 46, 55, 909 P.2d 1171, 1177 (1996); see *Hulse v. DOJ, Motor Vehicle Div.*, 1998 MT 108, ¶ 69, 289 Mont. 1, 961 P.2d 75 (reasoning that because "the HGN test is not novel scientific evidence," a district court "need not employ" *Daubert* to determine the admissibility of the test results).

Firearm identification, a subset of toolmark identification, has been a discipline since the 1930's. *See United States v. Diaz*, 2007 WL 485967 (N.D. Cal., 2007). The Defendant cites *United States v. Green*, 405 F.Supp.2d 104 (D. Mass., 2005), and *United States v. Monteiro*, 407 F.Supp.2d 351 (D. Mass., 2006) for the premise that the State should not be able to call an expert to testify about the identification of shell casings. Importantly, as the federal district court in *Green* stated, the "points the defense wishes to make about subjective testing, error rates, and other methodological weaknesses can be easily understood by the jurors. Moreover, since there was no destructive testing in the case at bar, the defense [could have] its own expert in a position to review the evidence. The issues are not so complex, not so technical, that the jury will not understand." 405 F.Supp.2d at 122. The Court in *Green* ultimately allowed specific testimony about firearm and ballistics examinations. 405 F.Supp.2d at 124. The court in *Monteiro* reached the same conclusion, holding that if the testimony meets "established standards in the field for peer review and documentation," then "the expert may testify that the cartridge cases were fired from a particular firearm to a reasonable degree of ballistic certainty." 407 F.Supp.2d at 375.

Spinder's testimony is not novel scientific evidence. On the contrary, firearm identification of cartridges has been permitted in courts across the country. Recently, the District Court of Arapahoe County, Colorado, issued an Order in *People of the State of Colorado v. James Eagan Holmes* addressing toolmark analysis (attached hereto as Exhibit 2). The court specifically addressed the NRC

Forensic Science Report cited by the Defendant in the present matter, noting that it does in fact recognize "that a scientific basis exists for toolmark and firearms identification evidence." Exhibit 2, page 16. Ultimately, the court there allowed testimony about firearm and toolmark identification. Exhibit 2, page 31.

Under Rule 702, this Court need not consider the *Daubert* factors because firearm and toolmark identification is not novel scientific evidence. Courts across the country have repeatedly admitted such evidence, including courts cited in the Defendant's motion. Spinder has testified in Montana and other jurisdictions numerous times about firearm and toolmark examination. In fact, his full time work for the past 17 years has been as a firearm and toolmark examiner. He is on the board of directors for the national "Association of Firearm and Tool Mark Examiners." The Defendant will have an opportunity to cross examine Spinder about his qualification and methods at the pre-trial hearing on September 8, 2015, and during his testimony at trial.

The Defendant argues briefly the Court should exclude the evidence under Rule 403 and based on the Defendant's right to due process, but provides limited substantive explanation for this request. In *State v. Stewart*, 2012 MT 317, ¶ 68, 367 Mont. 503, 291 P.3d 1187, the Montana Supreme Court succinctly stated:

> Rule 403 does not require the exclusion of relevant evidence simply because it is prejudicial. In a criminal prosecution, most of the evidence offered by the prosecution is prejudicial to the defendant. That is why the evidence is offered: to prove that the defendant committed the charged crime.

In the present case Spinder's testimony is certainly prejudicial to the Defendant, and that is exactly why it is being offered. The fact that spent casings from the crime scene were fired from the same firearm as spent casings on the Defendant's property is powerful circumstantial evidence of the Defendant's guilt. The probative value of such evidence is not outweighed by danger of unfair prejudice. The Court should deny the Defendant's motion to exclude or limit Spinder's testimony about his ballistics and toolmark examinations.

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II. Shoe Prints

Investigators observed shoe prints leading from Greene's home towards the Defendant's property. They also observed shoe prints coming from the direction of the Defendant's property towards Greene's home. This evidence is relevant at trial as circumstantial proof of the offense of deliberate homicide and tampering with evidence. The Court should allow testimony about the shoe prints, photo evidence of the shoe prints, and castings of the shoe prints to be admitted at trial.

Under Montana Rule of Evidence 401, "Relevant evidence means evidence having any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be without the evidence." Under Rule 402, relevant evidence is admissible at trial. The Montana Supreme Court has repeatedly held that a trial court "has broad discretion in admitting or excluding evidence." *Henricksen v. State*, 2004 MT 20, ¶ 83, 319 Mont. 307, 84 P.3d 38.

The Defendant cites one case, *State v Storm*, 125 Mont. 346, 238 P.2d 1161 (1951), in support of its motion to exclude testimony about shoe prints found at the scene. There, investigators found a single print in the grass near the scene of a homicide where the victim was shot inside his home through his window. *Storm*, 125 Mont at 350, 238 P.2d at 1163. The print was "so faint and indistinct that neither photograph nor cast could be taken of it..." *Id.* Investigators located a "second so-called track" 50 yards away and a "third so-called track" 80 yards away from the first print. *Id.* at 351, 238 P.2d at 1164. Further away investigators located additional prints that generally led in the direction of the defendant's home. *Id.* at 353-54, 238 P.2d at 1165. The trial court allowed evidence of the prints to be admitted. On appeal, the Montana Supreme Court stated the following:

> There was no evidence tending to show that Track No.1 being the 'depression' in the grass had any connection whatever with either Track No. 2 or Track No. 3 or that these tracks were either made by the same object or the same person.

Id. at 351, 238 P.2d at 1164. The Court held, "There being no evidence that connects or identifies the defendant with any of the footprints," evidence about the prints should not have been admitted

at trial. *Id.* at 359, 238 P.3d at 1168.

Testimony will be presented that fresh shoe prints were found mere feet from Greene's body. Unlike the prints in *Storm*, the prints here were clearly distinguishable and made by a person wearing Nike shoes. Investigators were able to follow two clear paths traveling towards and away from Greene's residence. The shoe prints matched the prints found near the scene. Additionally, a single shoe print that appears to match the pattern of the shoe prints near Greene's house was found near the fence line bordering the Defendant's property. There are no residences or other structures between the two properties, and the area was pitch black at the time of the offense.

Detectives Fritz and Bancroft are trained crime scene investigators and can recognize shoe prints leading to and from Greene's property. The shoe prints were witnessed by multiple detectives on scene, photos of the prints were taken, and Detective Bancroft obtained casts of the prints. The prints lead towards the Defendant's property and are clearly documented as such. The same shoe impressions with the 'zig-zag' pattern were located into the area of the gate leading to the Defendant's property. The shoe prints relevant to the investigation were documented, flagged, photographed, and mapped.

Detective Bancroft compared the shoe size of the castings and boots found in the Defendant's truck and observed they were similar in size. The investigators should be allowed to testify about their observations; this testimony and evidence are relevant as circumstantial proof of the crimes of Deliberate Homicide and Tampering with Evidence. The Court should allow testimony about the shoe prints, their location, and castings at trial.

CONCLUSION

Travis Spinder is an experienced and qualified firearm and toolmark examiner. He should be allowed to testify about his testing of spent casings in the present proceeding. This evidence is relevant and universally accepted in state and federal courts. Evidence of shoe prints found near the scene should also be admitted at trial. Detectives Fritz, Bancroft, and Paris all personally observed

the shoe prints. These observations are probative and relevant for the trier of fact, and they should not be excluded from trial. The Court should deny the Defendant's Motion *in limine* on expert and shoe print testimony.

DATED this 4 day of September 2015.

Paul Chaon
Deputy County Attorney

CERTIFICATE OF SERVICE
Yellowstone County Attorney's Office

This is to certify that a true and correct copy of the foregoing document was hand delivered, picked up by courier or sent via U.S. Mail, postage paid, this 4 day of September 2015 to the following and a courtesy copy was hand delivered to the office of the Honorable Gregory R. Todd:

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CURRICULUM VITAE

TRAVIS Y. SPINDER
Forensic Science Supervisor-Firearm & Toolmark Section

Business Address:	2679 Palmer Street, Missoula, MT 59808
Business Phone:	(406) 728-4970
Desk:	(406) 329-1127
Fax:	(406) 549-1067
Born:	October 19, 1974; Missoula, MT

EDUCATION

B.A. Sociology/Criminology – University of Montana, Missoula, MT 1997

CERTIFICATIONS

Association of Firearm and Tool Mark Examiners (AFTE) Certifications
-Firearm Evidence Examination and Identification (December 19, 2012)

CURRENT FIELD OF ACTIVITY

Forensic Science Supervisor-Firearm & Toolmark Section, Montana Department of Justice, Division of Forensic Science, Missoula, MT – September 2007 to Present

PREVIOUS EXPERIENCE

Forensic Firearm and Toolmark Examiner, Montana Department of Justice, Division of Forensic Science, Missoula, MT – May 2002 to September 2007

Forensic Firearm and Toolmark Contractor, Southwestern Institute of Forensic Sciences, Criminal Investigation Laboratory, Dallas, TX – May 2005 to September 2009

Forensic Firearm and Toolmark Contractor, Metropolitan Police Department, Firearm Examination Section, Washington D.C. – June 2, 2003 to August 26, 2003 & March 26, 2007 to September 24, 2007

Forensic Firearm and Toolmark Examiner, Southwestern Institute of Forensic Sciences, Criminal Investigation Laboratory, Dallas, TX – August 1998 to May 2002

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PROFESSIONAL ORGANIZATION/AWARDS

Association of Firearm and Tool Mark Examiners (Distinguished Member 2002)

Association of Firearm and Tool Mark Examiners - Board of Directors (June 2012 – Present)

Scientific Working Group for Firearms and Toolmarks - SWGGUN (November 2006 – November 2012)

National Shooting Sports Foundation - Shot Show - Safety Advisor (February 2008 – Present)

American Society of Crime Laboratory Directors/Laboratory Accreditation Board - Firearm/Toolmarks Proficiency Review Committee (June 2008 – Present)

Association of Firearm and Tool Mark Examiners - Bylaws Committee (June 2008 – Present)

Association of Firearm and Tool Mark Examiners - Board of Admissions Committee (September 2009 – June 2011)

Virginia Department of Forensic Science - Scientific Advisory Committee (October 2013 – Present)

TECHNICAL/SPECIALIZED TRAINING

Resident training course in the field of Firearm and Toolmark Examination, Montana Department of Justice, Division of Forensic Science, Missoula, MT – May 1997- July 1998

Passed Competency Testing at the Southwestern Institute of Forensic Sciences in Firearm and Toolmark Examination, Dallas, TX – August 1998

Beretta Armorers School offered by Beretta, Tampa, FL – July 1998

NIBIN/Drugfire Training Course, Rosslyn, VA – March 1999

Heckler & Koch Armorers School offered by Heckler & Koch, St. Louis, MO – June 2000

NIBIN/IBIS Training Course, Largo, FL – June 2001

Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) Serial Number Restoration Course, Dallas, TX – August 2001

Ruger Armorers School offered by Ruger, Denton, TX – November 2001

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Smith & Wesson "SW99" Armorers School offered by Smith & Wesson, Coeur d'Alene, ID – October 2002

Colt "Rifle, Carbine & SMG" Armorers School offered by Colt, Missoula, MT – March 2004

"Trends in Ammunition" Northwest Association of Forensic Scientists, Missoula, MT – April 2004

"Shooting Scene Reconstruction" Northwest Association of Forensic Scientists, Missoula, MT – April 2004

"ISO Standards and Firearm and Toolmarks" offered by ASCLD/LAB at AFTE 2007, San Francisco, CA – May 2007

Federal Bureau of Investigation (FBI) Gunpowder and Gunshot Residue School, Spokane, WA – August 2008

"Trajectory Measurement/Documentation" offered by Michael Haag at AFTE 2010, Henderson, NV – May 2010

PROFESSIONAL TRAINING CONFERENCES

29th Annual Training Conference, Association of Firearm and Tool Mark Examiners, Tampa, FL – July 1998

31st Annual Training Conference, Association of Firearm and Tool Mark Examiners, St. Louis, MO – June 2000

Northwest Association of Forensic Scientists, Missoula, MT – April, 2004

35th Annual Training Conference, Association of Firearm and Tool Mark Examiners, Vancouver, BC, Canada – May 2004

37th Annual Training Conference, Association of Firearm and Tool Mark Examiners, Springfield, MA – June 2006

38th Annual Training Conference, Association of Firearm and Tool Mark Examiners, San Francisco, CA – May 2007

39th Annual Training Conference, Association of Firearm and Tool Mark Examiners, Honolulu, HI – May 2008

40th Annual Training Conference, Association of Firearm and Tool Mark Examiners, Miami, FL – June 2009

41st Annual Training Conference, Association of Firearm and Tool Mark Examiners, Henderson, NV – May 2010

42nd Annual Training Conference, Association of Firearm and Tool Mark Examiners, Chicago, IL – June 2011

43rd Annual Training Conference, Association of Firearm and Tool Mark Examiners, Buffalo, NY June 2012

44th Annual Training Conference, Association of Firearm and Tool Mark Examiners, Albuquerque, NM – June 2013

45th Annual Training Conference, Association of Firearm and Tool Mark Examiners, Seattle, WA – May 2014

FIREARM/AMMUNITION FACTORY TOURS

The Hunting Shack (Ammunition), Stevensville, MT – April 1998

Cooper Firearms, Stevensville, TX – April 1998

Blount Inc. (CCI & Speer Ammunition), Lewiston, ID – May 1998

Hi-Point Firearms, Mansfield, OH – December 2000

Shilen Barrel, Ennis, TX – March 2001

Outback (Outback Shooting Range - Custom Ammunition), Cumby, TX – March 2001

Smith & Wesson Firearms, Springfield, MA – June 2006

Savage Arms, Springfield, MA – June 2006

MasterPiece Arms, Carrollton, GA – November 2007

Advanced Armament (Silencers), Norcross, GA – November 2007

Glock Firearms, Smyrna, GA – November 2007

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Olympic Arms, Olympia, WA – April 2009

Rainier Ballistics, Tacoma, WA – April 2009

DCA Inc., Barrington, IL – November 2009

Klein Tools, Lincolnshire, IL & Skokie, IL – November 2009

Red Jacket Firearms, Baton Rouge, LA April 2010

Ithaca Gun Company, Upper Sandusky, OH – November 2010

Hi-Point Firearms, Mansfield, OH – November 2010

Bitterroot Valley Ammunition and Components, Stevensville, MT – December 2010

Kel-Tec CNC Industries, Inc (Firearms) . Cocoa. FL – April 2012

Diamondback Firearms, Cocoa, FL – April 2012

FORENSIC LABORATORY TOURS

Idaho State Police Forensic Services Laboratory – Coeur d'Alene, ID

Washington State Patrol Forensic Laboratory Services – Spokane, WA

Florida Department of Law Enforcement Crime Lab – Tampa, FL

U.S. Army Criminal Investigation Laboratory – Forest Park, GA

Ohio Bureau of Criminal Identification and Investigation Crime Lab – London, OH

Ohio Bureau of Criminal Identification and Investigation Crime Lab – Richfield, OH

Columbus Police Department Crime Laboratory – Columbus, OH

Indianapolis - Marion County Forensic Services Agency – Indianapolis, IN

Federal Bureau of Investigation Laboratory Services – Quantico, VA

Georgia Bureau of Investigation – Decatur, GA

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U.S. Army Criminal Investigation Laboratory (new facility) – Forest Park, GA

Washington State Patrol Forensic Laboratory Services (new facility) – Cheney, WA

Washington State Patrol Forensic Laboratory Services – Seattle, WA

Oregon State Police Forensic Services Division – Clackamas, OR

Southwestern Institute of Forensic Sciences (new facility) – Dallas, TX

Idaho State Police Forensic Services Laboratory (new facility) – Coeur d'Alene, ID

Louisiana State Police Crime Laboratory – Baton Rouge, LA

Miami Valley Regional Crime Laboratory – Dayton, OH

Virginia Department of Forensic Science Central Laboratory – Richmond, VA

FORENSIC SCIENCE PUBLICATIONS

T.Y. Spinder, "Suppressed Ruger 10/22" AFTE Journal, Volume 33, Number 4, pp. 332.

T.Y. Spinder, S.B. Allen and D.S. Engel, "Comet Tailing" AFTE Journal, Volume 33, Number 4, pp. 336-337.

T.Y. Spinder and S.B. Allen, "Full-Auto Intratec or Not" AFTE Journal, Volume 34, Number 1, pp. 49.

T.Y. Spinder and S.B. Allen, "Specialty Shotgun Ammunition from All Purpose Ammunition"

AFTE Journal, Volume 34, Number 1, pp. 53.

FORENSIC SCIENCE PRESENTATIONS

T.Y. Spinder, "Effects of 5,000 Ejector-to-Breechface Strike of a Single Shot Shotgun" presented at the 29th Annual Meeting of the Association of Firearm and Toolmark Examiners, Tampa, FL – July 1998

T.Y. Spinder, "1999 Firearm Proficiency Test Overview" presented at the 31ST Annual Meeting of the Association of Firearm and Toolmark Examiners, St. Louis, MO – June 2000

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T.Y. Spinder, "1999 Toolmark Proficiency Test Overview" presented at the 31st Annual Meeting of the Association of Firearm and Toolmark Examiners, St. Louis, MO – June 2000

T.Y. Spinder. "1999 Firearm Research Test Overview" presented at the 31st Annual Meeting of the Association of Firearm and Toolmark Examiners, St. Louis, MO – June 2000

TESTIMONY

Called by both Prosecution and Defense to provide Expert Testimony pertaining to Firearm and Toolmark Examinations 163 times in the following courts:

Criminal District Court (Texas, Wyoming & Montana)
Juvenile Court (Texas)
United States Federal District Court (Montana, Texas, Washington, D.C.)

REDACTED

DISTRICT COURT, ARAPAHOE COUNTY, STATE OF COLORADO 7325 S. Potomac St. Centennial, Colorado 80112	▲COURT USE ONLY▲
PEOPLE OF THE STATE OF COLORADO v. **JAMES EAGAN HOLMES,** **Defendant**	Case No. **12CR1522** Division: **202**

ORDER REGARDING DEFENDANT'S MOTION TO PRECLUDE EXPERT OPINION TESTIMONY CONCERNING FIREARMS, BALLISTICS, AND TOOLMARK IDENTIFICATION, PURSUANT TO CRE 702 AND 403, DUE PROCESS, AND *PEOPLE V. SHRECK*, 22 P.3D 68 (COLO. 2001) (D-110-A)

INTRODUCTION

In Motion D-110, the defendant "objects to the admission of any and all expert opinion testimony concerning firearms, ballistics, and/or toolmark identification" at trial. Motion at p. 1. The defendant requests an evidentiary hearing "and/or an order precluding" this evidence. *Id.* The prosecution opposes the motion. *See generally* July 2 Response.[1] The Court held an evidentiary

[1] The prosecution filed an initial response on July 2, 2013. In that response, it advised the Court that it intended to have its firearms evidence re-analyzed by a new firearms examiner because the first examiner misplaced a piece of evidence. July 2 Response at p. 15. The prosecution requested leave to file an updated response after the new examiner completed his analysis. *Id.* After the Court granted the prosecution's request, *see* Order C-49 at p. 1, the prosecution filed an updated response on September 5, 2013. This Order refers to the initial response as the "July 2 Response" and the updated response as the "September 5 Response."

hearing on the motion on July 23, 2014.[2] For the reasons articulated in this Order, the Court finds that the proffered expert testimony identified in Motion D-110 is admissible under CRE 702 and the standard set forth by the Colorado Supreme Court in *People v. Shreck*, 22 P.3d 68 (Colo. 2001). Accordingly, the defendant's motion is denied.

CREDIBILITY DETERMINATIONS

At the hearing held on July 23, the prosecution presented testimony from Agent Dale Higashi, who is employed by the Colorado Bureau of Investigation ("CBI"). The defendant did not present any testimony.

The Court observed Agent Higashi's manner, demeanor, and body language while on the stand, and considered his means of knowledge, strength of memory, and opportunity for observation. The Court assessed the reasonableness or unreasonableness of his testimony, the consistency or lack of consistency of his testimony, and whether his testimony was contradicted or supported by other evidence. The Court examined whether Agent Higashi had a motive to lie, and whether bias, prejudice, or interest in the case affected his testimony. Finally, the Court took into account all other facts and circumstances shown by the evidence which affected his credibility.

[2] The Court initially denied the defendant's request for an evidentiary hearing. *See* Order C-51; Order D-174. However, after further consideration, the Court asked the parties to schedule a hearing. Order C-101 at p. 1.

The Court found Agent Higashi credible. This credibility determination is reflected in the Analysis section of this Order.

ANALYSIS

I. Standard of Review Governing the Admissibility of Expert Testimony in Colorado—CRE 702 and *People v. Shreck*

The admissibility of expert testimony in Colorado is governed by Rule 702 of the Colorado Rules of Evidence and the Colorado Supreme Court's decision in *People v. Shreck*, 22 P.3d 68 (Colo. 2001). Rule 702 provides:

> If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise.

CRE 702. To be admissible under Rule 702, expert testimony must be both reliable and relevant. *People v. Ramirez*, 155 P.3d 371, 378 (Colo. 2007).

In determining whether expert testimony is reliable, the Court must consider: (1) whether the scientific principles underlying the witness's testimony are reasonably reliable; and (2) whether the witness is qualified to render an opinion on such matters. *Shreck*, 22 P.3d at 77 (citation omitted). The Court's inquiry "should be broad in nature" and take into consideration "the totality of the circumstances of each specific case." *Id.* (citations omitted). The Court may consider "a wide range of factors" that may be pertinent to the evidence at issue,

including: (1) whether the scientific principles or techniques have been tested; (2) whether the theories or techniques have been peer reviewed and published; (3) whether there are standards controlling a technique's operation and its known or potential rate of error; (4) whether a technique has been generally accepted by the relevant scientific community; (5) the relationship of the proposed techniques to more established methods of scientific analysis; and (6) the non-judicial uses to which the techniques are put, if any. *Id.* at 77-79 (citing *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 593-94, 113 S.Ct. 2786, 125 L.Ed.2d 469 (1993) and *United States v. Downing*, 753 F.2d 1224, 1238-39 (3rd Cir. 1985)).

The Court is not required to consider any particular set of factors. *Id.* at 78. Rather, it may "consider [any] factors . . . to the extent that it finds them helpful in determining the reliability of the proffered evidence." *Id.*; *see also Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 150, 119 S.Ct. 1167, 143 L.Ed.2d 238 (1999) (noting that "[t]he factors identified in *Daubert* may or may not be pertinent in assessing reliability, depending on the nature of the issue, the expert's particular expertise, [] the subject of his testimony," and the particular circumstances of the case) (quotation omitted); *Brooks v. People*, 975 P.2d 1105, 1114 (Colo. 1999) (declining to "give any special significance" to the factors listed in *Daubert*, and directing trial courts to "focus instead on whether the evidence is reasonably reliable information that will assist the trier of fact").

In deciding whether expert testimony is relevant, the Court must consider its usefulness to the jury. *Shreck*, 22 P.3d at 77 (citing *Brooks*, 975 P.2d at 1114). Testimony is "useful" for purposes of Rule 702 if it will assist the jury to either understand other evidence or determine a fact at issue. *Ramirez*, 155 P.3d at 379 (citation omitted). There must be "a logical relation between the [expert] testimony and [a] factual issue involved in the case." *Id.* (citation omitted).

A number of factors are pertinent to a determination regarding the usefulness of proffered expert testimony. *Id.* Specifically, the Court should consider: (1) the elements of the particular offense; (2) the nature and extent of other evidence in the case; (3) the witness's expertise; (4) "the sufficiency and extent of the foundational evidence" upon which the witness's ultimate opinion is to be based; and (5) the scope and content of the opinion itself. *Id.*; *Masters v. People*, 58 P.3d 979, 990 (Colo. 2002) (citing *Lanari v. People*, 827 P.2d 495, 504 (Colo. 1992)).

Even if an expert's proposed testimony is reliable and relevant, before admitting it, the Court must apply CRE 403. *Ramirez*, 155 P.3d at 379. The Court must ensure that the probative value of the evidence is not "substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury, or by considerations of undue delay, waste of time, or needless presentation of cumulative evidence." *Id.* (quoting CRE 403). Expert testimony

that "has an undue tendency to suggest a decision on an improper basis" should be excluded. *Id.* (citation omitted).

Shreck requires the Court to make "specific findings on the record" regarding the reliability and relevance of proposed expert testimony. *Shreck*, 22 P.3d at 78 (citations omitted). "The [Court] must also issue specific findings as to its consideration under CRE 403 as to whether the probative value of the evidence is substantially outweighed by its prejudicial effect." *Id.* While the Court may hold an evidentiary hearing if appropriate, it is not required to do so, "provided it has before it sufficient information to make specific findings . . . about the reliability of the scientific principles involved, the expert's qualification to testify to such matters, the helpfulness to the jury, and potential prejudice." *People v. Rector*, 248 P.3d 1196, 1201 (Colo. 2011) (citations omitted); *see also People v. Whitman*, 205 P.3d 371, 383 (Colo. App. 2007) ("*Shreck* does not require trial courts to hold hearings to inquire into the reliability of evidence . . . . Rather, *Shreck* requires the trial court to receive sufficient information to make specific findings about the reliability of the scientific principles involved and the expert's qualification to testify to such matters") (citations omitted).

II. Application

A. Reliability

The defendant claims that courts, scholars, and members of the scientific community have "increasingly recognized" that expert testimony regarding forensic firearms and toolmark identification "lack[s] [] sufficient reliability."[3] Motion at p. 4. He contends that the validity of the fundamental assumption underlying toolmark identification – that tools impart unique and reproducible marks that can be matched – has not fully been demonstrated. *Id.* He further asserts that firearms toolmark identification is unreliable because "the final conclusion [of the examiner] is . . . . a subjective decision based on unarticulated standards." *Id.* (quotation omitted). These arguments focus on two of the reliability factors identified in *Shreck*: (1) whether the principles underlying the technique have been tested (i.e. validated); and (2) whether there are standards controlling the technique's operation. *See id.* at pp. 4-5.

The defendant's challenges go to the weight of the evidence, not its admissibility. The Court concludes that the prosecution's proposed expert evidence is reliable.

[3] In the July 2 Response, the prosecution indicated that it intended to introduce non-firearms toolmark expert evidence regarding the tool used to cut the fishing line that allegedly formed part of the booby trap at the door to the defendant's apartment. July 2 Response at pp. 13-14. However, at the July 23, 2014 motions hearing, the prosecution advised the Court that it will not present such evidence. Accordingly, the Court limits its analysis to firearms-related toolmark evidence.

1. Underlying Principles and Techniques

Toolmarks are left when a hard object imprints itself on a softer one. Toolmark identification is a broad forensic discipline that involves examining the marks left by tools on a variety of surfaces in an attempt to "match" a mark to the tool that made it. *United States v. Williams*, 506 F.3d 151, 158 (2d Cir. 2007). Firearms identification is a subset of toolmark identification. *Id.* It is based on the premise that unique microscopic markings left on a gun during the manufacturing process will be transferred to a bullet fired from that gun, enabling an examiner to match a bullet to the weapon that fired it. *United States v. Taylor*, 663 F. Supp. 2d 1170, 1174 (D.N.M. 2009). In this sense, the gun is the "tool" and the bullet is the surface being imprinted upon. *Williams*, 506 F.3d at 158.

When a gun is fired, the ammunition's components come into contact with the firearm at very high pressures.[4] *United States v. Monteiro*, 407 F. Supp. 2d 351, 359-60 (D. Mass. 2006). This causes the individual markings on the firearm to be transferred to the ammunition. *Id.* at 360. These markings are divided into

[4] Ammunition is comprised of two components: a bullet and a cartridge case. *United States v. Monteiro*, 407 F. Supp. 2d 351, 360 (D. Mass. 2006). "The bullet is the missile-like component of the ammunition that is actually projected from the firearm, through the barrel, toward the target." *Id.* The cartridge case is located behind the bullet and contains the primer and propellant. *Id.* When the shooter pulls the trigger, a firing pin is released, which strikes the back of the cartridge case and ignites the primer. *Id.* The resulting chemical reaction causes the bullet to be pushed down the barrel by the expanding gases. *Id.* "These gases also exert an equal and opposite force on the cartridge case which forces the slide and breechblock to the rear," ejecting the spent cartridge case through a port on the slide. *Id.* (citation omitted). Because the defendant's motion does not differentiate between these two components, *see generally* Motion, for the sake of convenience, this Order refers to both the bullet and the cartridge case as a "bullet."

three categories: class characteristics, subclass characteristics, and individual characteristics. *Taylor*, 663 F. Supp. 2d at 1174. "Class characteristics" are markings that appear on all bullets fired from the same type of weapon. *Id.* (citation omitted). These include markings caused by the width and number of the barrel's lands and groves, the direction or "twist" of the barrel's rifling, the type of breech face, and the type of firing pin. *United States v. Willock*, 696 F. Supp. 2d 536, 558 (D. Md. 2010) (citation omitted). A bullet's weight and caliber is also considered a class characteristic. *Id.* (citation omitted). "Subclass characteristics" are markings left on all bullets fired from a group of guns mass-produced at the same time. *Taylor*, 663 F. Supp. 2d at 1174 (citation omitted). For example, a subclass characteristic could be caused by an imperfection on a rifling tool that creates similar toolmarks on a number of consecutively manufactured barrels before the rifling tool is altered by repeated use or refinishing. *Willock*, 696 F. Supp. 2d at 558 (citation omitted). "Individual characteristics," as the name implies, are markings that are unique to a single gun. *Taylor*, 663 F. Supp. 2d at 1174 (citation omitted).

Individual characteristics are most commonly caused by "rifling," the process whereby the manufacturer purposefully cuts spiral grooves into the barrel of a gun so that bullets fired from it will travel straighter and for longer distances. *Id.* "[R]ifling . . . will leave raised and depressed striae, known as lands and

grooves, on the bullet as it is fired from the weapon." *United States v. Otero*, 849 F. Supp. 2d 425, 428 (D.N.J. 2012). Individual characteristics are also formed when "chips [and] debris" created by the rifling tool as it cuts the barrel blank "interact[] with the inside of the barrel . . . [and] change[] the profile that's left behind by that particular tool." "[T]he final step in production of most firearm parts requires some degree of hand-filing," which also "imparts individual characteristics to the firearm." *Monteiro*, 407 F. Supp. 2d at 359.

In order to determine whether an expended bullet collected from a crime scene and a firearm match, a firearm examiner visually compares the expended bullet with a bullet he test-fires from the suspect gun into a cotton-filled container. *Willock*, 696 F. Supp. 2d at 558 (citations omitted).[5] This ensures that the only marks left on the bullet are from the gun's barrel and other mechanisms. The examiner should use the same type of ammunition as the expended bullet when creating the exemplar bullet to reduce variations in the toolmarks due to differences in the manufacturing of the bullets.[6]

After the examiner has obtained an exemplar bullet, the examiner compares it to the expended bullet using a comparison microscope. *Willock*, 696 F. Supp. 2d

[5] Test-firing the weapon has the added benefit of affording the examiner an opportunity to ascertain whether it is fully functional.

[6] Agent Higashi testified that he usually test-fires "a couple" of bullets "so [he] can compare those two [bullets] first to kind of get a lay of the land" and "[s]ee what kind of marks [he's] going to expect to find."

at 558. The examiner will first try to distinguish which toolmarks are class, subclass, and individual characteristics. *Williams*, 506 F.3d at 158-59. He will then attempt to find an area of the expended bullet that appears to have a significant number of individual characteristics. *Id.* at 159. Further, the examiner will look for "a good spot on the [expended] bullet [that has] a lot of . . . repeatable damage" and can be used for comparison. According to Agent Higashi, toolmarks created by a barrel remain largely unchanged over time, assuming the firearm is used as intended and not subjected to purposeful damage. Thus, the toolmarks on "[b]ullet one to bullet 5,000 are still identifiable."

Once the examiner has isolated an area with sufficient individual characteristics, he views the expended bullet and the exemplar bullet side-by-side and "compares the height, depth, width, length, and spatial relations" of the striations. *Williams*, 506 F.3d at 159. There must be "sufficient agreement" between the individual markings on the exemplar bullet and the expended bullet for the examiner to find a match. *Id.* The Association of Firearms and Toolmark Examiners ("AFTE"), the primary professional organization for firearms and toolmark examiners, defines "sufficient agreement" as follows:

> "[S]ufficient agreement" is related to the significant duplication of random toolmarks as evidenced by the correspondence of pattern or combination of patterns of surface contours . . . . Agreement is significant when it exceeds the best agreement demonstrated between toolmarks known to have been produced by different tools and is consistent with agreement demonstrated by toolmarks known to have

> been produced by the same tool. The statement that "sufficient agreement" exists between two toolmarks means that the likelihood that another tool could have made the mark is so remote as to be considered a practical impossibility.

Monteiro, 407 F. Supp. 2d at 363 (quotation omitted).

There is no "quantitative standard for how many striations or marks need to match or line up" to make a positive identification; rather, the examiner's conclusion is "based on a holistic assessment of what the examiner sees." *Id.* at 364. Thus, an examiner's finding of a match is highly dependent on the individual examiner's training and experience. *Id.* at 365 (firearms identification is "subjective in nature, ... [s]cience is in the background, at the core of the theory, but its application is based on experience and training"). In the past, examiners relied exclusively on their previous casework experience to distinguish between individual, class, and subclass characteristics. National Research Council, *Strengthening the Forensic Sciences in the United States: A Path Forward*, 153 (The National Academies Press, 2009) (hereinafter "NAS Report"). More recently, however, examiners have increasingly relied on training programs and the emergence of ballistic imaging technology and databases to expand their knowledge base. *Id.* Ballistic databases not only assist examiners in finding possible matches, they "also permit[] examiners to become more familiar with similarities in striation patterns made by different firearms." *Id.* Newer imaging techniques also allow examiners to evaluate toolmarks by gathering three-

dimensional surface measurement data. *Id.* Nevertheless, the final determination regarding the presence or absence of a match remains a subjective determination based on the visual comparison of the evidence by the examiner. *Id.* at pp. 153-54.

In some circumstances, an examiner may be unable to perform a comparison because an individual characteristic on the expended bullet is masked or erased by damage to the bullet. For instance, Agent Higashi testified that bullets fired from an AR-15 rifle, such as the one recovered in this case, travel at much higher speeds than other types of ammunition. As a result, those bullets often suffer significant damage upon impact. An examiner may also be unable to complete a standard comparison if he does not have a suspect gun from which to obtain an exemplar bullet. However, even without a suspect gun, a firearms examiner may be able to determine that two bullets were fired from a common source based on similarities in their toolmarks.

Once an examiner has formed an opinion as to whether a bullet and a gun are a match, his work is reviewed by another toolmark examiner. In order to facilitate this review, the first examiner must take care to sufficiently document the bases for his opinion. *Willock*, 696 F. Supp. 2d at 561. Indeed, because "the examiner's opinion as to the existence of a match is predicated on [his] experience,

it is essential that the examiner provide a sufficient explanation for the basis of the opinion." *Id.*[7]

Peer review is required in every firearms examination conducted at CBI. According to Agent Higashi, the reviewing examiner independently evaluates the evidence and reaches his own findings regarding the presence or absence of a match. The reviewing examiner has the "bench notes" created by the first examiner, which generally identify each evidentiary item, but the reviewing examiner does not view the first examiner's other notes and conclusions until his independent examination is completed. Once the reviewing examiner has finished his examination, he compares his findings with those of the first examiner. He also performs a technical review of the first examiner's notes to ensure that the first examiner followed established protocols. The first examiner's report is additionally subjected to an administrative review to ensure that there are no "clerical errors."

Here, Agent Higashi's work was reviewed by Alecia Vallario, another toolmark examiner at CBI. Agents Higashi and Vallario reached the same conclusions with respect to each evidentiary item examined.

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[7] Some firearm examiners use photographs to document their observations. However, Agent Higashi testified that he does not use photographs because there is always some distortion in the image or "something that's out of focus." He further testified that trained examiners do not rely on photographs for purposes of a comparison; therefore, in his opinion, showing photographs to a jury to demonstrate the presence or absence of a match is of limited usefulness.

As indicated, the defendant contends that the underlying premise for firearms-related toolmark identification has not been sufficiently tested to establish that its underlying scientific basis is reliable. *See* Motion at pp. 4-5. In support of this contention, the defendant cites the NAS Report. *Id.* at p. 4. Specifically, he relies on the following observation in that report: "the scientific knowledge base for toolmark and firearms analysis is fairly limited." *Id.* (quoting NAS Report at p. 155). Additionally, the defendant relies on a 2008 report published by the National Research Council, *Ballistic Imaging*, which noted that "[t]he validity of the fundamental assumptions of uniqueness and reproducibility of firearms-related toolmarks has not yet been fully demonstrated." *Id.* (quoting National Research Council, *Ballistic Imaging*, 81 (The National Academies Press, 2008)). The Court finds these reports unpersuasive.

The committee that drafted the NAS Report specifically noted that the purpose of the report was not "to develop a detailed evaluation of each [forensic] discipline in terms of its scientific underpinning, level of development, and ability to provide evidence to address the major types of questions raised in criminal prosecutions and civil litigation." NAS Report at p. 7. Indeed, the section of the NAS Report dealing with toolmark and firearms identification is merely six pages in length and does not set forth any opinion on whether toolmark and firearms

identification evidence is sufficiently reliable to be admissible in court. *See id.* at pp. 150-55.

Similarly, the committee that prepared the *Ballistic Imaging* report "explicitly ruled out" the "question of [the] legal admissibility" of firearms identification evidence. *United States v. Casey*, 928 F. Supp. 2d 397, 399 (D.P.R. 2013) (quotation omitted). The purpose of the *Ballistic Imaging* report was "to assess the feasibility of creating a ballistics [database]," "not to pass judgment on the admissibility of ballistics evidence in legal proceedings." *Id.* The *Ballistic Imaging* committee "did not actually evaluate the fundamental assumptions of firearms and toolmark identification that underlay many courts' allowance of ballistics and firearm expert testimony." *Id.* at 399-400.

Significantly, both the NAS Report and the *Ballistic Imaging* report recognized that a scientific basis exists for toolmark and firearms identification evidence.[8] For instance, the *Ballistic Imaging* report acknowledged that "the research studies conducted to date have established 'a baseline level of credibility' that toolmarks are not 'so random and volatile that there is no reason to believe that any similar and matchable marks exist on two [bullets] fired from the same gun.'" *Willock*, 696 F. Supp. 2d at 570 (quoting *Ballistic Imaging* at p. 81). It further

[8] Even if firearms identification is not a "science," "that would not presage the exclusion of all firearms toolmark identification evidence . . . because Rule 702 is not limited to admissibility of scientific evidence alone, but also governs 'technical' or 'specialized' evidence which . . . does not meet the rigors of scientific analysis." *Willock*, 696 F. Supp. 2d at 569.

agreed that "the existing research, and the field's general acceptance in legal proceedings for several decades, is more than adequate testimony to that baseline level." *Id.* (quoting *Ballistic Imaging* at p. 81). Likewise, the NAS Report explained that "[i]ndividual patterns from manufacture or from wear might, in some cases, be distinctive enough to suggest one particular source." NAS Report at p. 154. Thus, contrary to the defendant's implication, neither the NAS Report nor the *Ballistic Imaging* report is a resounding condemnation of the reliability of toolmark and firearms identification evidence.

At the hearing, Agent Higashi testified that "many empirical studies" have been undertaken to "help verify the reliability of [firearms identification]." In one study, firearms examiners were given known and unknown samples fired from ten consecutively manufactured gun barrels. The examiners were then asked to examine both sets of samples and to match the unknown samples with the known samples. According to Agent Higashi, such proficiency testing "helps validate . . . that [toolmarks] are unique and are discernible and are repeatable by properly trained scientists" because consecutively manufactured barrels "are [as] similar as humanly possible" but still have unique toolmarks that can be used by examiners to match fired bullets to their source. Agent Higashi informed the Court that he has participated in "one or two" proficiency tests during which he was able to correctly match the unknown samples to the known samples.

Numerous courts have addressed challenges to firearms identification and have found that its underlying premises have been shown to be sufficiently validated. *See e.g.*, *Monteiro*, 407 F. Supp. 2d at 365 (finding "recent scientific studies have demonstrated that the underlying principle that firearms leave unique marks on ammunition has continuing viability"); *Willock*, 696 F. Supp. 2d at 571 ("the theory underlying firearms-related toolmark identification has gone through sufficient testing and publication of studies regarding its reliability and validity to establish a 'baseline level of credibility'") (quotation omitted); *United States v. Foster*, 300 F. Supp. 2d 375, 376 n.1 (D. Md. 2004) (noting that "[b]allistic evidence has been accepted in criminal cases for many years . . . [and] numerous cases have confirmed the reliability of ballistics identification"); *United States v. Cooper*, 91 F. Supp. 2d 79, 82 (D.D.C. 2000) (holding defendant was not entitled to a pretrial hearing on ballistic evidence because a court is not required to hold a hearing "if the expert testimony is based on well-established principles"). Moreover, courts that have considered challenges to firearms identification based on the criticisms raised in the NAS Report and the *Ballistic Imaging* report have uniformly held that ballistics evidence is sufficiently reliable to be admissible. *See e.g.*, *Willock*, 696 F. Supp. 2d at 564-70; *United States v. Sebbern*, 2012 WL 5989813, *5-7, *9 (E.D.N.Y. 2012); *Taylor*, 663 F. Supp. 2d at 1175-80; *Otero*,

849 F. Supp. 2d at 427; *Commonwealth. v. Pytou Heang*, 942 N.E.2d 927, 937-50 (Mass. 2011).

The defendant also attacks the reliability of firearms identification evidence on the ground that there are no clear protocols governing the requirements for declaring a "match." *See* Motion at p. 4. The Court is unconvinced.

It is undisputed that, as a methodology, firearms identification is heavily dependent upon an examiner's subjective assessment of whether there is "sufficient agreement" between toolmarks on two pieces of evidence. Bullets and casings recovered from a crime scene are often "damaged, fragmented, crushed, or otherwise distorted in ways that create new markings or distort existing ones;" therefore, an examiner must rely on his experience "to distinguish the undistorted toolmarks from other markings" when completing a comparison. *Sebbern*, 2012 WL 5989813 at *4 (quotation omitted). However, "[t]he lack of a universal standard for declaring a match," though troubling, is "not fatal . . . because a court may admit well-founded testimony based on specialized training." *Monteiro*, 407 F. Supp. 2d at 371.

"[T]here are many situations in which an expert's manifestly subjective opinion (an opinion based . . . on 'one's personal knowledge, ability and experience') is regarded as admissible evidence in an American courtroom." *United States v. Llera Plaza*, 188 F. Supp. 2d 549, 570 (E.D. Pa. 2002) (citations

omitted). "In each instance the expert is operating within a vocational framework that may have numerous objective components, but the expert's ultimate [opinion] is likely to depend in some measure on experiential factors that transcend precise measurement and quantification." *Id.* at 571. Assuming an expert witness has the requisite training and experience to render the proffered opinions, the Court may not exclude his testimony simply because his ultimate conclusion is subjective. *See United States v. Baines*, 573 F.3d 979, 991 (10th Cir. 2009) ("subjectivity does not, in itself, preclude a finding of reliability"); *United States v. Santiago*, 199 F. Supp. 2d 101, 112 (S.D.N.Y. 2002) (quoting *Kumho Tire*, 526 U.S. at 151, 119 S.Ct. 1167) ("a witness whose expertise [is] based ***purely*** on experience, such as that of a perfume tester, would qualify as an expert if 'his preparation is of a kind that others in the field would recognize as acceptable'") (emphasis in original).

Moreover, as AFTE noted in its response to the *Ballistic Imaging* report, "if the subjective component of the identification process were a problem, it would be exposed in [] error rates." July 2 Response Ex. 3 at p. 241 (citation omitted). Yet, according to AFTE, validation studies have shown that the error rate for toolmark identification, which is defined as "the rate of identifications of a toolmark to the wrong tool," is extremely "low" and has never "exceeded one percent," while "validation studies involving firearms and firearms-related evidence" have shown that the error rate "has not exceeded zero." *Id.* Error rates in proficiency tests are

similarly low, at "approximately 1% for firearms and approximately 1.3% for toolmarks." *Id.* Agent Higashi's testimony is consistent with AFTE's response to the *Ballistic Imaging* report. He indicated that "typically for a firearms and toolmark proficiency test . . . the error rate is below 1 percent and for toolmarks it's about 2 percent or below."

Many courts, recognizing that firearms identification is inherently subjective, have placed limitations on how an expert may express an opinion that a particular bullet and firearm match. For instance, some courts prohibit firearms examiners from testifying that a match exists to "an absolute certainty." *Monteiro*, 407 F. Supp. 2d at 372. Instead, examiners may only opine that a match exists to a reasonable degree of ballistic certainty:

> Because an examiner's bottom line opinion as to an identification is largely a subjective one, there is no reliable statistical or scientific methodology which will currently permit the expert to testify that it is a "match" to an absolute certainty, or to an arbitrary degree of statistical certainty. Allowing the firearms examiner to testify to a reasonable degree of ballistic certainty permits the expert to offer her findings, but does not allow her to say more than is currently justified by the prevailing methodology.

Id.; *see also Taylor*, 663 F. Supp. 2d at 1180 (holding that the "limitations on the reliability of firearms identification evidence" precluded an examiner from testifying that his methodology allowed him to conclude that a bullet was a match as a matter of scientific certainty or to the exclusion of all other weapons; rather, he could only opine that a match existed "within a reasonable degree of certainty in

the firearms examination field"); *Willock*, 696 F. Supp. 2d at 570 (holding expert testimony regarding toolmark identification evidence admissible "so long as [] the examiner is prevented from making outlandish and unsupported pronouncements about the degree of certainty of his or her identification"); *but see Casey*, 928 F. Supp. 2d at 400 ("the Court declines to follow sister courts who have limited expert testimony . . . and, instead, remains faithful to the long-standing tradition of allowing the unfettered testimony of qualified ballistic experts") (citations omitted).

The defendant acknowledges these court decisions in his motion. Motion at p. 5. However, he does not expressly ask the Court, as an alternative to exclusion, to restrict the form of the proposed testimony. *See id.* Nor does the defendant identify what restrictions he believes are appropriate. *See id.* In any event, Agent Higashi testified that he does not intend to opine that a particular bullet was fired by a particular gun to an absolute degree of certainty or to the exclusion of all other firearms. He will only testify that he is certain of his finding "to a reasonable degree of scientific certainty." The Court is comfortable that Agent Higashi's proposed opinion comports with the limitations placed on firearms-related toolmark identification expert evidence in the majority of jurisdictions.

The defendant insists, however, that there are no objective standards controlling firearms identification as a methodology. The Court disagrees.

Objective standards are found in "the requirements of documentation and peer review" related to each examiner's analysis. *Monteiro*, 407 F. Supp. 2d at 369. At least one court has found that the maintenance of these standards "is a strong factor in favor of admissibility." *Id.*

Other factors identified in *Shreck* also weigh in favor of finding firearms identification evidence reliable. First, firearms identification has been subject to peer review and publication. Articles on firearm-related toolmark identification are routinely published in the *AFTE Journal*, a peer-reviewed publication put out by AFTE. *See Willock*, 696 F. Supp. 2d at 571; *Taylor*, 663 F. Supp. 2d at 1176. Peer-reviewed articles on firearms identification have also been published in the *Journal of Forensic Science*. *Taylor*, 663 F. Supp. 2d at 1176. Further, it is standard procedure to have a second examiner review the first examiner's work and conclusions. *Monteiro*, 407 F. Supp. 2d at 369. Thus, there is peer review on a case-by-case basis as well.

Second, as Agent Higashi testified, firearms toolmark comparison, as a technique, has been generally accepted by the relevant scientific community. *See Jones v. United States*, 27 A.3d 1130, 1137 (D.C. 2011) ("comparison matching remains widely accepted . . . within the relevant scientific community"); *United States v. Hicks*, 389 F.3d 514, 526 (5th Cir. 2004) ("the matching of spent shell casings to the weapon that fired them has been a recognized method of ballistics

testing in this circuit for decades"). Courts have uniformly rejected challenges to the reliability of firearms identification. "[T]here is a dearth of appellate or indeed any case law accepting a *Daubert* [] challenge to ballistics evidence." *Avila v. Clarke*, 938 F. Supp. 2d 151, 174 (D. Mass. 2013); *see also Willock*, 696 F. Supp. 2d at 568 ("While [] critics of the science underlying ballistic toolmark analysis raise legitimate concerns about whether the process has been demonstrated to be sufficiently reliable to be called a 'science,' . . . every federal court to have examined the issue . . . [has] concluded that it is sufficiently plausible, relevant, and helpful to the jury to be admitted in some form").

Third, as the Court mentioned, the error rate for firearms analysis evidence appears to be exceptionally low. July 2 Response Ex. 3 at p. 241. The same is true for toolmark identification evidence.

In sum, the Court finds that the proposed expert testimony is grounded in reliable principles and techniques. The Court need not find that the expert's opinion is correct, only that the "testimony rests upon good grounds, based on what is known." *Monteiro*, 407 F. Supp. 2d at 358 (quotation omitted). The defendant's challenges go to the weight of the evidence and may be adequately explored in the crucible of cross-examination. *See Daubert*, 509 U.S. at 596, 113 S.Ct. 2786 ("Vigorous cross-examination, presentation of contrary evidence, and careful

instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence").

2. Expert's Qualifications

The Court concludes that Agent Higashi has sufficient knowledge, skill, education, training, and experience to be qualified as an expert at trial in the field of "forensic examination of ballistics, firearms, and toolmarks," People's Endorsement of Experts (P-58) at p. 1, and to offer the opinions contained in his report. Agent Higashi is imminently qualified to render expert opinions in the field of forensic examination of ballistics, firearms, and toolmarks.

Agent Higashi examined the four firearms collected at the scene of the shooting as well as the magazines for two handguns and a rifle.[9] September 5 Response at p. 2; P-PT-85 at p. 1. He also examined expended shell casings for all four weapons and "[b]ullets, bullet fragments, and other projectile parts" removed from the theater and the victims. September 5 Response at p. 3. In total, Agent Higashi examined between 150 and 160 evidentiary items, and authored a report detailing his findings. The prosecution will call Agent Higashi to testify regarding the conclusions and opinions expressed in his report, including his findings that some of the shell casings, bullets, and bullet fragments collected inside the theater

[9] Specifically, Agent Higashi examined one Glock model 22 semi-automatic pistol, one Glock model 23 semi-automatic pistol, one Smith & Wesson model MP15 rifle, and one Remington model tactical shotgun. P-PT-85 at p.1.

and from the victims were fired from the weapons allegedly purchased by the defendant.[10] *See id.* at 4-12.

For the past ten years, Agent Higashi has worked for CBI as a forensic scientist in the firearms and toolmark section. P-PT-84 at p.1. He has also worked as an armorer for CBI maintaining guns for law enforcement personnel, including replacing parts when needed, and as a firearms instructor "help[ing] instruct [] agents on shooting techniques and their qualification skills." In his capacity as a forensic scientist, Agent Higashi is responsible for examining firearms evidence, performing function tests on firearms submitted to the laboratory, analyzing fired ammunition evidence collected from crime scenes and by the coroner's office, and assisting with shooting incident reconstructions.

Prior to his employment at CBI, Agent Higashi worked for the Los Angeles Sheriff's department for 18 years. In Los Angeles, he participated in a two-year firearms examiner training program where he worked under the guidance of four experienced firearms examiners doing case work and satisfying parts of AFTE's training manual. He also completed a "mock court" component as part of his training. Even though Agent Higashi was a fully qualified firearms examiner in

[10] Agent Higashi testified that, generally, a firearms examiner will reach one of three conclusions based on his examination of the evidence: (1) that there is sufficient agreement between the toolmarks left on the known and unknown samples to declare a match; (2) that differences in the toolmarks on the known and unknown sample eliminate the unknown sample as having been fired by the suspect weapon; and (3) that there is insufficient evidence for the firearms examiner to either exclude the unknown sample or declare a match.

Los Angeles, he had to undergo a seven-month review process before beginning independent casework at CBI.

As a condition of his employment with CBI, Agent Higashi has to complete annual competency and proficiency testing. He participates in professional training courses in the area of firearms toolmark identification, and has attended several seminars presented by AFTE. P-PT-84. Agent Higashi has been qualified as an expert in firearms identification "at least 500 times," and has testified in the area of firearms analysis in over 100 cases in Colorado.

B. Relevance

The second prong under CRE 702 is whether the proposed testimony is relevant – that is, whether it will be useful to the jury. *Shreck*, 22 P.2d at 77. The defendant does not demonstrate why he believes the proposed testimony is irrelevant. *See generally* Motion. The prosecution contends that the proposed evidence is relevant because it shows that the firearms purchased by the defendant were functional, that three of the firearms were used inside the theater, and that victims were killed or injured by bullets fired by those weapons.[11] September 5

[11]Agent Higashi also determined that one fired rifle cartridge that was recovered from the dumpster outside the defendant's residence was fired by the same rifle used during the theater shooting. September 5 Response at p. 6. The prosecution asserts that this evidence is probative of the defendant's identity as the perpetrator of the shooting and "establish[es] that other [] evidence located in the very same dumpster," such as practice targets, empty ammunition boxes, empty handcuff boxes, instructions for the ballistic helmet the defendant was wearing, and packaging for items used to create the explosive and incendiary devices in the apartment are "associated with the defendant." *Id.*

Response at p. 10. Applying the five factors set forth in *Ramirez* and *Masters*, the Court finds that Agent Higashi's proposed opinions are clearly relevant. *Ramirez*, 155 P.3d at 379; *Masters*, 58 P.3d at 990.

1. Elements of the Offenses Charged

The defendant is charged with shooting, and killing or injuring, numerous people inside auditoriums 8 and 9 of the Century 16 Theatres in Aurora, Colorado, on July 20, 2012, during the midnight premiere of "The Dark Knight Rises." Specifically, he is charged with two counts of Murder in the First Degree for each of twelve deceased victims, two counts of Attempt to Commit Murder in the First Degree for each of seventy injured victims, one Count of Possession of Explosive and Incendiary Devices, and one sentence-enhancing crime of violence count. The proposed evidence is clearly relevant to the murder and attempted murder charges because it shows that weapons purchased by the defendant were used in the commission of the shooting, and that bullets fired from those weapons were responsible for injuring and killing numerous victims.[12]

2. The Nature and Extent of Other Evidence in the Case

The challenged evidence is not overly duplicative when compared to the nature and extent of other evidence available in this litigation. *See Ramirez*, 155

[12] The defendant does not dispute that he committed the acts charged. Rather, his position throughout this litigation has been that he "was in the throes of a psychotic episode when he committed the acts that resulted in the tragic loss of life and injuries sustained by moviegoers on July 20, 2012." Pleading D-76a at p. 2.

P.3d at 379. This is particularly the case given that the prosecution has the burden of proving beyond a reasonable doubt 165 substantive charges.

3. The Expertise of the Proposed Witnesses

The Court has already considered Agent Higashi's expertise in section (II)(A)(2) of this Order. The Court incorporates by reference the discussion in that section here.

4. The Sufficiency and Extent of the Foundational Evidence Underlying the Experts' Ultimate Opinions

Agent Higashi conducted the firearms analysis and identification described in his report. As mentioned, he is well-suited to opine about the methods employed during his examination. Given his aforementioned qualifications, there is sufficient foundational evidence for his anticipated testimony.

5. The Scope and Content of the Expert's Opinions

Agent Higashi's testimony will be limited to the opinions summarized in his report and at the July 23 hearing. He will not offer any opinions regarding the defendant's mental state, or otherwise usurp the province of the jury. Thus, the content and scope of his opinions will be appropriately limited to his field of expertise. Moreover, as indicated, he will only express his opinions "within a reasonable degree of scientific certainty."

C. Rule 403

Before allowing expert testimony, the Court must consider whether it is admissible under CRE 403. The defendant has not shown, or even asserted, that the probative value of the proposed testimony is substantially outweighed by the danger of unfair prejudice, confusion of the issues, misleading the jury, or any of the other considerations identified in Rule 403.

The fact that the evidence may be detrimental to the defendant does not require the Court to exclude it. *People v. Dist. Court*, 869 P.2d 1281, 1286 (Colo. 1994) ("Proffered evidence should [] not be excluded by the district court as unfairly prejudicial simply because it damages the defendant's case") (citation omitted). All evidence offered by the prosecution is likely to be prejudicial to the defendant. The question for the Court under Rule 403 is whether the evidence "unfairly prejudices [the] defendant." *Id.* (citation omitted).

Based on its review of the record, the Court finds that the probative value of the proffered expert testimony is not substantially outweighed by the danger of unfair prejudice. Further, the Court concludes that it is unlikely that the proposed testimony will mislead the jury or risk confusion of the issues. Nor is there any danger of undue delay, waste of time, or the needless presentation of cumulative evidence.

Because the prosecution's proposed expert testimony does not have "an undue tendency to suggest a decision on an improper basis," there is no reason to exclude it. *Ramirez*, 155 P.3d at 379 (citation omitted). Therefore, the Court finds that it is admissible under CRE 403.

CONCLUSION

For all the foregoing reasons, Motion D-110 is denied. However, at trial, the prosecution must still qualify Agent Higashi and provide an adequate evidentiary foundation for his expert testimony.

Dated this 2nd day of September of 2014.

BY THE COURT:

Carlos A. Samour, Jr.
District Court Judge

CERTIFICATE OF SERVICE

I hereby certify that on September 2, 2014, a true and correct copy of the **Order Regarding Defendant's Motion to Preclude Expert Opinion Testimony Concerning Firearms, Ballistics, and Toolmark Identification, Pursuant to CRE 702 and 403, Due Process, and *People v. Shreck*, 22 P.3d 68 (Colo. 2001) (D-110-A)** was served upon the following parties of record:

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