SUPERIOR COURT OF THE DISTRICT OF COLUMBIA
CRIMINAL DIVISION—FELONY BRANCH

UNITED STATES	**:**	
v.	**:**	**Case Nos: 2009 CF1 20672**
DARNELL ANDERSON	**:**	**2008 CF1 30319**
JOSEPH JENKINS	**:**	**2008 CF1 29847**
EDWARD WARREN	**:**	**2009 CF1 20614**
JAMES BATES	**:**	**2009 CF1 24565**
OBBIE ENGLISH	**:**	**Judge Lynn Leibovitz**

ORDER[1]

Before the court are defendant Andersons' Motion to Exclude Firearms Identification Testimony; defendant English's Motion in Limine to Strike Firearm and Other Ballistic Testimony and Request for a Pretrial Daubert Hearing; the United States' Opposition to Defendant Anderson's and Defendant English' Motions to Exclude Firearms Identification Testimony; Defendant Anderson's Notice of Supplemental Authority in Support of his Motion to Exclude Firearms Identification Testimony; the United States' Supplemental Opposition to Defendant Anderson's and Defendant English' Motions to Exclude Firearms Identification Testimony; defendant Anderson's Response to Government's Supplemental Opposition to Motion to Exclude Firearms Identification Testimony; and Defendant Anderson's Motion to Modify Order Regarding Firearms Identification Testimony.[2] The government also has filed with the court in support of its opposition all of its pleadings in opposition to a similar defense motion in *United States v. William N. McCorkle, et al.,* 08-CF1-17877, including the Government's Consolidated Opposition to Defendant McCorkle's Motion to Exclude Firearms and Toolmark Identification Testimony (hereinafter, "Government's Opposition (McCorkle)")

[1] This Order supersedes the court's September 1, 2010, Order denying the instant motions. This Order makes no substantive changes to the court's September 1, 2010,Order, and is intended only to correct grammar and to improve clarity.

[2] Defendants Warren, Jenkins and Bates have moved to join in defendants' motions. To the extent that they have moved to join the instant motions, this Order resolves their motions as well. The court will, however, refer to the named movants only, for ease of reference.

and the Government's Supplemental Memorandum Concerning Expert Testimony About Firearms (hereinafter, "Government's Supplemental Memorandum (McCorkle)"). Also before the court are voluminous exhibits and attachments filed by the parties. [3]

Background

Defendants are charged in a 100-count indictment with conspiracy, murder, assault with intent to kill, obstruction of justice, and related firearms and other offenses, and with violations

[3] The materials before the court include: *United States v. Alls*, No. CR2-08-223(1) (Marbley, J., S.D. Ohio December 7, 2009); Government's Opposition to Defendant's Motion to Exclude Expert Testimony Concerning Firearms "Match" Evidence, *United States v. Worsley*, No. 2003 FEL 6856, (D.C. Super. Court); Government's brief, redacted, *United States v. Willie Gayden,* No. 2006 CF1 27899 (D.C. Super. Court); Order of Jackson, J., *United States v. Titus Faison*, No. 2008 CF2 16636 (D.C. Super. Ct. May 28, 2010); Procedural Order: Trace Evidence, Gertner, J., (Mass. Dist. Ct. March 8, 2010); Court's Order Regarding Defendant's Motion to Exclude Expert Testimony Pursuant to Indiana Rule of Evidence 702 (b), *State of Indiana v. Turner*, No. 49G02-0606-MR-101336 (Marion Super. Ct., June 17, 2009) Order Re: Motion to Preclude Expert Ballistic Testimony and *Daubert-Coon* Hearing, *State of Alaska v. Wren*, No. 3AN-03-10649CR (Super. Ct. AK, May 5, 2009); Affidavit of Itiel Dror, *United States v. Willie Gayden*, No. 06 CF1 27899(D.C. Super. Ct.); Affidavit of Adina Schwartz, *United States v. Willie Gayden*, No. 06 CF1 27899 (D.C. Super. Ct.); Affidavit of Pradip Sheth, *United States v. Willie Gayden*, No. 06 CF1 27899(D.C. Super. Ct.); Affidavit of Clifford Spiegelman, *United States v. Willie Gayden*, No. 06 CF1 27899(D.C. Super. Ct.); Affidavit of William Tobin, *United States v. Willie Gayden*, No. 06 CF1 27899(D.C. Super. Ct.); Affidavit of Dr. John E. Rolph, *United States v. Edwards*, No. 2001 FEL 516 (D.C. Super. Ct.); Affidavit of Frederick R. Bieber, Ph.D., *United States v. Edwards*, No. 2001 FEL 516 (D.C. Super. Ct.); Testimony of Ronald G. Nichols, *United States v. Diaz*, No. CR-05-0167, (N.D. Cal. 2007); Transcript of Proceedings [Ruling of the Judge], *State of Maryland v. Whittingham*, Crim. Trial 08-1682X, (Circuit Ct., P.G. County, MD, December 30, 2009); Sworn Statement of Stephen G. Bunch; Sworn Statement of Jonathan Pope; Sworn Statement of Michael Mulderig; Statement of Kenneth E. Melson, *Before the United States House of Representatives Committee on the Judiciary*, May 13, 2009; David J. Brundage, *The Identification of Consecutively Rifled Gun Barrels*, 30 (3) AFTE JOURNAL (1998); *Ballistics Imaging*, (Daniel L. Cork et al. eds., 2008) National Research Council of the National Academy of Sciences (2008); Richard Grzybowski, et al., *Firearm/Toolmark Identification: Passing the Reliability Test Under Federal and State Evidentiary Standards*, 35 (2) AFTE JOURNAL (2003); James Hamby, Ph.D., *The Examination, Evaluation and Identification of 9mm Cartridge Cases Fired from 617 Different Glock Model 17 & 19 Semiautomatic Pistols*, 4 (4) AFTE JOURNAL, (2009); Gregory S. Klees, *Practice and Standards of the Scientific Working Group for Firearms and Toolmarks*, Scientific Working Group for Firearms and Toolmarks SWGGUN (April 23-24, 2007); William Matty, *A Comparison of Three Individual Barrels Produced From One Button Rifled Barrel Blank,* 17 (13) AFTE JOURNAL (1985); J. Miller & M.M. McLean, *Criteria for Identification of Toolmarks*, 30 (1) AFTE JOURNAL (1998); National Research Council of the National Academy of Sciences, *Strengthening Forensic Science in the United States: A Path Forward* (Feb. 2009); Ronald G. Nichols, *Firearm and Toolmark Identification Criteria: A Review of the Literature, Part II,* 48 (2) JOURNAL OF FORENSIC SCIENCE (March 2003); Scientific Working Group for Firearms and Toolmarks *SWGGUN Appendix III – Admissibility Glossary*, (2009), http://www.SWGGUN.org/Resources/Appendix III.htm; Scientific Working Group for Firearms and Toolmarks, *SWGGUN Board Members*, (2010); Scientific Working Group for Firearms and Toolmarks, *SWGGUN Survey Summary* (May 22, 2007); Erich D. Smith, *Cartridge Case and Bullet Comparison Validation Study with Firearms Submitted in Casework*, 36 (4) AFTE JOURNAL (2004); Peter Striupaitis, *Toolmark Identification NAS Presentation*, Scientific Working Group for Firearms and Toolmarks SWGGUN (April 23-24, 2007).

of the recently enacted "Criminal Street Gang" statute, 22 D.C. Code, §951(b)(1)(2007 ed.). The indictment alleges that, between April 11, 2008, and July 25, 2008, defendants were members and associates of the so-called "Todd Place Crew," and engaged in certain illegal activities, including a number of shootings and murders and related gun possession, arising from an ongoing dispute with a rival crew, the so-called "T Street Crew." The government has proffered with specificity in its Supplemental Opposition to the motions, the firearms identification opinions it intends to elicit from firearms examiner, Michael Mulderig.[4] These include opinions identifying specific bullets and shell casings as having been fired from specific firearms recovered in the course of the investigation, as well as opinions that certain groups of bullets were fired in the same firearm and that certain casings were fired from the same firearm.

Defendants seek exclusion at trial of the firearms identification testimony of the government's expert witness in the field of firearms and toolmark examination. Defendants argue that expert testimony in the field of firearms and toolmark examination should be excluded from the defendants' trial[5] because "firearms identification methodology currently is not generally accepted as reliable by the relevant scientific community," and therefore the proffered testimony is inadmissible under the standard set forth in *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923) and *Dyas v. United States,* 376 A.2d 827 (D.C. 1977). In the alternative, defendants argue that, even if the challenged expert testimony is admitted, the expert should be limited in the degree of certainty he may express when testifying to a firearms identification, such that he may not offer such identifications in absolute terms, or with absolute certainty, but may only

[4] Another examiner, Carl Rone, is listed as having performed certain analysis, but it is unclear whether the government intends to call him as a witness.

[5] Defendant English moves for the exclusion of all firearms expert testimony; Anderson agrees that the expert may testify to his observations, but challenges specifically testimony regarding any conclusions the examiner reached as the result of his examination.

conclude that a firearm "more likely than not" was the source of a particular toolmark. Anderson Motion at 25.

The government opposes, arguing that the methodology employed by firearms and toolmark examiners is, and has been, generally accepted in the relevant scientific community, that the methodology underlying identification testimony is reliable, and that expert testimony in the field uniformly has been admitted in our court and in courts nationwide for decades. The government proposes to have its expert express his opinions to a "practical certainty" or to a "reasonable degree of scientific certainty." Government's Supplemental Opposition at 9.

At a status hearing held on July 30, 2010, all parties agreed that an evidentiary hearing was not necessary, and that the court has a sufficient record before it upon which to resolve the instant motions. The court has read and carefully considered the pleadings filed and arguments made by all parties, as well as the extensive documentary record material submitted by the government and the defense. This material includes Orders, pleadings, transcripts and other materials filed in other cases in this jurisdiction and in numerous other jurisdictions, in which challenges to the admissibility of firearms identification testimony have been made, published reference material, journal articles and studies in the field of firearms and toolmark examination and other disciplines related to forensic science, portions of the recent report of the National Research Council of the of the National Academies ("NRC") entitled *Strengthening Forensic Science in the United States: A Path Forward* (2009) ("NRC Report"), and the related, earlier report of the NRC, *Ballistic Imaging* (2008)[6], and numerous affidavits and sworn statements of

[6] In 2009, the National Research Council of the National Academies released an extensive report on the state of forensic science in the United States. National Research Council of the National Academies, Strengthening Forensic Science in the United States: A Path Forward, (2009) ("NRC Report"). The NRC Report, mandated by Congress, calls into question the scientific validity of many long-recognized forensic science disciplines. *See* NRC Report, at *xx.*

experts in the fields of firearms examination and other fields of forensic science, including affidavits of various commentators and critics of the field of firearms examination.

For the reasons stated below, the court concludes that the scientific principle underlying firearm identification -- that firearms transfer unique toolmarks to spent bullets and cartridge cases – is valid, and that the "pattern recognition" methodology used by the firearms examiner in deriving his conclusions about the firearms evidence, is reliable and is generally accepted by the relevant scientific community. The court therefore concludes that the challenged identification testimony is admissible under the standard set forth in *Frye* and *Dyas*. Further, the court concludes that sufficient validation has been done and sufficient standards exist, and were followed in this case, to permit the government's expert to declare a firearms "match" to a "practical certainty," or to a "reasonable degree of certainty in the field of firearms and toolmark examination." The court has determined, however, that the expert may not express his opinions to a "reasonable degree of scientific certainty," or state that there is a match to an exact statistical certainty, or to a level of certainty communicating absolute or exact statistical certainty. In addition, in explaining the meaning of the term "practical certainty," and discussing his degree of certainty in an identification, the examiner may not state that it would be "practically impossible" or "virtually impossible" for another firearm to have contributed the same marks.

Discussion

A. Theory of Firearms and Toolmark Analysis[7]

Here, the court undertakes merely to summarize the basic theory of toolmark examination as it applies to firearms. For far more detailed and eloquent explanations, *see, e.g., United States*

[7] Firerarms and toolmark analysis is sometimes referred to as the field of "ballistics." In fact, ballistics is the study of the movement of projectiles, and is different from the field of toolmark analysis, which involves examination of the markings on firearms and ammunition. *Mouzone,* 696 F. Supp. 2d 536, 561 n. 10 (quoting *United States v. Green,* 405 F. Supp. 2d 104, 118 (D.Mass. 2005)).

v. Mouzone, 696 F. Supp. 2d 536, 555 (D.Md. 2009); *United States v. Glynn,* 578 F.Supp. 2d 567, 569 (S.D.N.Y. 2008); *United States v. Monteiro,* 407 F. Supp. 2d 351, 359, *et seq*., (D.Mass. 2006); NRC Report, at 150-155; Sworn Statement of Stephen G. Bunch (Government's Supplemental Memorandum (McCorkle), Tab 3 ("Bunch Affidavit")).

The underlying principle of firearm identification is that each firearm will transfer a unique set of marks, known as "toolmarks," to ammunition fired from that gun. A toolmark is a mark "generated when a hard object (tool) comes into contact with a relatively softer object," such as the marks that result "when the internal parts of a firearm make contact with the brass and lead that comprise ammunition." *Mouzone*, 696 F. Supp. 2d at 555 (quoting NRC Report at 150). By using a "comparison microscope" to compare ammunition test-fired from a recovered gun with ammunition – that is, fired "bullets" or "projectiles," and spent "cartridge casings" -- from a crime scene, a trained firearms examiner may determine whether the recovered ammunition was fired from that particular gun. *Monteiro*, 407 F.Supp. 2d at 359-361 (citing Brian J. Heard, Handbook of Firearms and Ballistics 127 (1997)).

Toolmarks result from firearms manufacturing processes such as "cutting, drilling, grinding, hand-filing, and, very occasionally, hand-polishing," particularly upon the interior of the barrel of the firearm, and other processes involving manufacture of the "breech face," the "firing pin," the "extractor" and the "ejector." *See, Mouzone*, 696 F. Supp. 2d at 555-56; *Monteiro*, 407 F. Supp. 2d at 359-60 (citation omitted); Bunch Affidavit, ¶¶11-17. Firearms examiners classify these types of marks in three categories: "class," "subclass," and "individual" characteristics. "Class characteristics are defined as 'family resemblances which will be present in all weapons of the same make and model.'" *Monteiro*, 407 F. Supp. 2d at 359-60 (quoting Heard at 132). Subclass characteristics appear on a smaller subset of a particular make and model

of a firearm. They are "produced incidental to manufacture" and "can arise from a source which changes over time." *See Id.* Individual characteristics are defined as "random imperfections produced during manufacture or caused by accidental damage . . . which are unique to that object and distinguish it from all others." *Id.* (quoting Heard at 132). Because these "individual characteristics" are deemed to be, in most cases, unique to the object such that they distinguish it from all others, firearms and toolmark examiners seek to make a "match" only on individual characteristics. *Mouzone*, 696 F. Supp. 2d at 558; Sworn Statement of Michael Mulderig, ¶ 12. It should be noted, however, that "non-unique marks may comprise individual characteristics, and wear and tear can cause individual characteristics to change over time to some extent." *Mouzone*, 696 F. Supp. 2d at 558.

Ammunition is composed primarily of the bullet, the cartridge case, the propellant and the primer. Bunch Affidavit, ¶11. The bullet is the projectile that moves toward a target after firing. The cartridge case is the part of the ammunition situated behind the bullet containing the primer and propellant. When a "round" of ammunition is fired from a particular firearm, the various components of the ammunition come into contact with the firearm at very high pressures, and essentially cause an explosion that propels the bullet through the barrel. *Id*; *Mouzone*, 696 F. Supp. 2d at 556-59 (quoting *Monteiro*, 407 F. Supp. 2d at 359-60). As a result of firing, the individual markings on the firearm components are transferred to the ammunition, along with markings caused by the act of firing itself. *Id.*

The marks left by firing on bullets are "rifling" impressions transferred from the "lands" and "grooves"[8] cut into the barrel of the gun. Bunch Affidavit, ¶12. The marks and impressions

[8] "Lands" and "Grooves" are the terms for the spiraling grooves cut into the inside of a gun barrel during manufacturing for the purpose of steadying and improving the accuracy of a projectile as it passes down and out of the barrel. *See* NRC Report at 151. The number, and microscopic measurements, of grooves cut into a barrel and the direction (right or left) in which they "twist" are "class characteristics" that vary

made on cartridge casings fired from a semi-automatic handgun derive mainly from the action of the firing pin, the slamming of the cartridge against the "breech," and the contact between the spent cartridge casing and the parts of the firearm that are involved in the ejection of the casing from the gun at the time of firing. *Id.* at ¶13; NRC Report at 151; *Mouzone*, 696 F. Supp. 2d at 556-59; *Monteiro* 407 F. Supp. 2d at 359-60.

B. The Firearm Examination Process

Firearm identification has been a forensic discipline since the 1930s. *United States v. Diaz*, 2007 U.S. Dist LEXIS 13152, 2007 WL 485967, at *8-10 (N.D. Cal. 2007); Bunch Affidavit, ¶9. The Association of Firearm and Tool Mark Examiners ("AFTE") is the leading proponent of the theory of firearms and toolmark identification, sometimes called "pattern recognition," or "pattern matching," that is followed by the vast majority of examiners. AFTE Theory of Identification ("*AFTE Theory*"), 30 AFTE JOURNAL 86 (1998); *Mouzone*, 696 F. Supp. 2d at 554 n.7; Statement of Michael Mulderig, ¶8; Bunch Affidavit, ¶19. *See also,* NRC Report at 151.[9] Examiner Michael Mulderig utilizes the AFTE method of identification in his work, and did so in the examinations conducted in this case. Statement of Michael Mulderig, ¶8. According to Mr. Mulderig's sworn statement, all of the examiners currently employed by the Metropolitan Police Department for the District of Columbia ("MPD") use this same methodology and technology, and "subscribe to the AFTE theory of identification." *Id.*

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from gun model to gun model. Marks left on a spent bullet by a barrel's lands and grooves help examiners distinguish the manufacturer and type of firearm that fired the bullet.

[9] An alternative or supplemental identification method, the Consecutive Matching Striae ("CMS") method, is used by some, though a small percentage of, firearms examiners. Critics of the firearms identification field argue, however, that CMS, though "better than the traditional subjective approach" to toolmark identification, is nonetheless a "highly imperfect attempt to incorporate statistical empirical data into toolmark identifications." *Mouzone*, 696 F. Supp. 2d at 556 (quoting Affidavit of Professor Adina Schwartz, ¶32)

An examiner employing the AFTE methodology uses a comparison microscope to compare the tiny markings left on firearms evidence. *Mouzone*, 696 F. Supp. 2d at 559. "The task of the firearms and toolmark examiner is to identify the individual characteristics of microscopic toolmarks apart from class and subclass characteristics and then to assess the extent of agreement in individual characteristics in the two sets of toolmarks to permit the identification of the individual tool or firearm." NRC Report at 151. The examiner can make: (1) an "identification" of the components, concluding that they came from the same source; (2) an "elimination" of the components, concluding that they did not come from the same source; and (3) a determination that the result of a comparison is "inconclusive," meaning that there is not enough evidence to identify whether the components either do or do not come from the same source. *Diaz*, 2007 U.S. LEXIS 13152 *at *3*; Bunch Affidavit, ¶24. In addition, an examiner may determine that an examined piece of evidence is in a condition "unsuitable" for comparison. Bunch Affidavit, ¶24.

According to the AFTE, a match exists "when the unique surface contours of two toolmarks are in 'sufficient agreement,'" and the examiner may offer an opinion that a specific tool or firearm was the source of those marks. NRC Report at 153 (quoting *AFTE Theory*); *Monteiro*, 407 F. Supp. 2d at 363*; see also Mouzone*, 696 F. Supp. 2d at 559-60; *Glynn*, 578 F. Supp. 2d at 571-72. "Sufficient agreement" is defined in terms of "'the significant duplication of random toolmarks,'" and "'[a]greement is significant when it exceeds the best agreement demonstrated between tool marks known to have been produced by different tools and is consistent with the agreement demonstrated by tool marks known to have been by the same tool.'" *Mouzone*, 696 F. Supp. 2d at 560 (quoting *Monteiro*, 407 F. Supp. 2d at 363; *AFTE Theory*). If there is sufficient agreement to make an identification, a firearms examiner will

often state that the chance that another firearm could have made the mark is a "practical impossibility." *Diaz*, 2007 U.S. Dist LEXIS 13152 at *10; Bunch Affidavit, ¶ 26.

Firearms identifications are largely subjective determinations based on the experience, training and observations of the examiner in applying AFTE techniques and theory, and are not stated in terms of probabilities. The NRC Report notes that, "although the AFTE has adopted a theory of identification, it does not provide a specific protocol." NRC Report at 155. The AFTE acknowledges that "'the interpretation of individualization/identification is subjective in nature, founded on scientific principles and based on the examiner's training and experience.'" *Monteiro*, 407 F. Supp. 2d at 363 (quoting *AFTE Theory*). "AFTE standards acknowledge that these decisions involve subjective qualitative judgments by examiners and that the accuracy of examiners' assessments is highly dependent on their skill and training." NRC Report at 153.

C. Legal Standard

Defendants seek exclusion of the firearms examiner's testimony, arguing that he "should not be permitted to draw any inferences or conclusions from his observations." Anderson Motion at 2, 22 n. 9.[10] In support, they argue (1) that the validity of the "fundamental assumptions of uniqueness and reproducibility" of toolmarks has not been adequately demonstrated, Anderson Motion at 2; (2) that the methodology used by examiners "lacks reliable, objective standards and protocols to guide identifications," *id.;* (3) that there is no "established scientific or statistical basis" for declaring a firearms "match," *id* at 14.; and (4) the prejudicial effect of the testimony would substantially outweigh the probative value of it because the experts' expressions of opinions would mislead the jury as to the weight the opinions

[10] Defendant English' motion states without elaboration that it seeks to "strike" the firearms testimony. Defendant Anderson apparently does not seek wholesale exclusion of the examiners' testimony, and concedes that he may testify about the physical characteristics he observed in his examinations, without stating conclusions drawn from those observations. Anderson Motion at 22 n.9.

should be given. *Id* at 3. Alternatively, if the court determines the examiner should be allowed to state an opinion, defendants argue that the witness should be limited in the degree of certainty with which he may express his conclusions regarding identification to a conclusion that a firearm "more likely than not" was the source of a particular toolmark. *Id.* at 25.

The government opposes defendants' motion as well as the assertions underlying the motions.[11] The government argues that the assumptions underlying the AFTE firearms examination methodology – those of "uniqueness" and "reproducibility" of toolmarks on firearms – have been validated. The government further disputes that there exist no standards or protocols in the field, and argues that AFTE standards for conducting, confirming by re-testing and documenting examinations, as well as training, proficiency testing requirements and rigorous peer review, promote consistency in methodology and reliability of results. Finally, the government argues that there exists a scientific basis for declaring a "match" that has been validated in controlled studies as well as in practice. The government seeks therefore to elicit from its firearms examiner "any firearm and toolmark identification 'to a practical certainty' or 'to a reasonable degree of scientific certainty.'" Government's Supplemental Opposition at 9.

In the District of Columbia, the admissibility of expert testimony is governed by the three-part test adopted by the Court of Appeals in *Dyas v. United States*: "(1) the subject matter must be so distinctively related to some science, profession, business or occupation as to be beyond the ken of the average layman; (2) the witness must have sufficient skill, knowledge or experience in that field or calling as to make it appear that his opinion or inference will probably aid the trier in his search for truth; and (3) expert testimony is inadmissible if the state of the

[11] For a thorough statement of the government's position with respect to the instant motions, the court has relied upon the Government's Supplemental Memorandum Concerning Expert Testimony About Firearms Evidence, *United States v. William N. McCorkle, et al.,* 08-CF1-17877, (hereinafter, "Government's Supplemental Memorandum (McCorkle)") which is the government's opposition to motions raising the same issues in another case and with which the government has supplemented its pleadings in this case.

pertinent art or scientific knowledge does not permit a reasonable opinion to be asserted even by an expert." *Dyas*, 376 A.2d 827, 832 (D.C. 1977) (internal citations, emphases, and quotation marks omitted). The third of the three *Dyas* criteria incorporates the so-called *Frye* test, under which scientific testimony is admissible only if the theory or methodology on which it is based has gained general acceptance in the relevant scientific community. *See Frye v. United States*, 293 F. 1013, 1014 (D.C. Cir. 1923) ("[W]hile courts will go a long way in admitting expert testimony deduced from a well-recognized scientific principle or discovery, the thing from which the deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs."). If the *Dyas* criteria are met, the court then evaluates whether the probative value of the evidence is substantially outweighed by its prejudicial effect before deciding whether to admit the testimony. *See Jones v. United States*, 548 A.2d 35, 42 (D.C. 1988)("*Jones I*").

Where *Frye* applies, the court's duty is to determine whether the proponent of the evidence has demonstrated by a preponderance of the evidence that the opinion testimony to be offered "is based on theory, technique, method, or technology that actually does enjoy general acceptance among scientists (not other courts) in the relevant field of inquiry." *Jones v. United States*, No. 07-CF-783, 2010 D.C. App. LEXIS 135, at *30-31 (D.C. Mar. 18, 2010)("*Jones II*"). In making this determination, the court's chief concern is scientific consensus, rather than scientific validity. *See Jones I*, 548 A.2d at 42 ("[T]he focus is primarily on counting scientists' votes, rather than on verifying the soundness of a scientific conclusion. . .").

The Court of Appeals has held that *Frye* is typically triggered only where a litigant seeks to admit into evidence testimony concerning a truly novel scientific technique or methodology, *See, e.g., United States v. Porter*, 618 A.2d 629, 633 (D.C. 1992) ("[U]nder *Frye*, the proponent

of a new technology must demonstrate by a preponderance of the evidence that this technology has been generally accepted in the relevant scientific community."); *Cook v. Edgewood Management Corporation*, 825 A.2d 939, 950-51 (D.C. 2003)("cobalt field test" used to establish the presence of illegal narcotics in tenant's apartment was not a "new scientific technique" or a "unique controversial methodology," and proponent of the evidence therefore had no burden to demonstrate by a preponderance of the evidence that the test had been generally accepted in the relevant scientific community). The government has argued, in part, in this case that the court should not revisit the validity of the methodology employed in firearms and toolmark examination, or the admissibility under *Frye* of opinions derived from application of the methodology, because firearms examination traditionally has been accepted in the scientific community and in our courts.

There is, however, a recognition that a science, though long accepted, may fall into disrepute and thus become ripe for reevaluation. The Court of Appeals has at least suggested that a litigant may attack a long-recognized science by presenting evidence of "a change in the attitude of the scientific community." *Jones I*, 548 A.2d at 46 n.9 ("One court has observed that, once a trial court has admitted evidence based upon a new scientific technique, and that decision is affirmed on appeal by a published appellate decision, the precedent so established may control subsequent trials, *at least until new evidence is presented reflecting a change in the attitude of the scientific community.*") (internal citation and quotation marks omitted) (emphasis added).

Other *Frye* jurisdictions have recognized this principle somewhat more directly. *See, e.g., State v. Lucero*, 85 P.3d 1059, 1062 ("This is not to say that, once admitted, scientific evidence is forever after unassailably admissible. After all, some theories once generally accepted ultimately have been rejected in favor of new ones."); *People v. Kelly*, 549 P.2d 1240,

1245 (Cal. 1976) (recognizing the potential need to reexamine a long-recognized science upon presentation of evidence "reflecting a change in the attitude of the scientific community"). However, although these decisions assert that a long-recognized science may become subject to reexamination, they also suggest that such reexamination is appropriate only where the party challenging the science can show a shift in the consensus of the general scientific community—and not merely that some small subset of that community has questioned the science's validity. *See Lucero*, 85 P.3d at 1062 ("To earn the right to a *Frye* hearing on previously accepted scientific evidence, the party opposing its admissibility must preliminarily demonstrate that the method is no longer accorded general scientific acceptance. . . The question is not whether the scientific community has concluded that the scientific principle or process is absolutely perfect, but whether the principle or process is generally accepted to be capable of doing what it purports to do.") (internal citations and quotation marks omitted). And, indeed, our Court of Appeals has stated, "*Frye* does not require that a scientific method be infallible." *Veney v. United States,* 936 A.2d 811, 830 (D.C. 2007).

In the recent case of *Benn v. United States*, 978 A.2d 1257 (D.C. 2009), the Court of Appeals addressed the inverse possibility that a science or area of expertise – in that case, the study of the potential unreliability of eyewitness identification testimony – may evolve and gain reliability. "[T]he art of the inquiry or the scientific methodology governing the psychological study of eyewitness identification . . . reflect new development since" *Benn,* 978 A.2d at 1276. The Court, in remanding the case for a *Dyas* inquiry into the admissibility of expert testimony regarding the reliability of eyewitness identifications, cautioned that "the court's determination [whether to admit expert testimony] must be case-specific, based on the proffered expert testimony," and consideration of the *Dyas* criteria. *Benn*, 978 A.2d at 1276, n. 90.

D. NRC Report

In 2009, the National Research Council of the National Academies released an extensive report on the state of forensic science in the United States. National Research Council of the National Academies, Strengthening Forensic Science in the United States: A Path Forward, (2009) ("NRC Report"). The NRC Report, mandated by Congress and authored by a committee comprised of numerous judges, lawyers, scientists, and academics, calls into question the scientific validity of many long-recognized forensic science disciplines. *See* NRC Report at *xx* ("The forensic science system, encompassing both research and practice, has serious problems that can only be addressed by a national commitment to overhaul the current structure that supports the forensic science community in this country.").[12]

The defendants concede that it was not the purpose of the authors of the NRC Report to render an opinion as to the admissibility of firearm and tool mark evidence in criminal prosecutions. Anderson Motion at 13 n. 7. In *Melendez-Diaz v. Massachusetts*, 129 S. Ct. 2527 (2009) (holding that DEA Reports of narcotics analysis were "testimonial"), Justice Scalia's majority opinion repeatedly cited the NRC Report as support for the Court's assertion that forensic evidence is not immune from the risks of manipulation, fraud, incompetence, human error, and unreliability. *Melendez-Diaz*, 129 S. Ct. at 2536–38. However, Justice Kennedy criticized Justice Scalia's reliance on the NRC report in his dissent, stating, "The Court . . . errs when it relies in such great measure on the recent report of the National Academy of Sciences.

[12] The section in the NRC Report on Toolmark and Firearms Identification, NRC Report at 150-155, incorporates many of the conclusions reached in the NRC's more detailed 2008 *Ballistics Imaging* Report, which recommended against establishing a nationwide computerized firearms database.

That report is not directed to this Court, but rather to the elected representatives in Congress and the state legislatures, who, unlike Members of this Court, have the power and competence to determine whether scientific tests are unreliable and, if so, whether testimony is the proper solution to the problem." *Melendez-Diaz*, 129 S. Ct. at 2555 (Kennedy, J., dissenting) (internal citations omitted).

Nevertheless, the preparation and issuance of the NRC Report has spawned challenges to the admission of testimony in many of the traditionally accepted fields of forensic science. *See, e.g.*, *Hooper v. Warden*, No. 08-cv-426, 2010 U.S. Dist. LEXIS 27385, at *18–20, n.4 (D.N.H. Mar. 23, 2010) (rejecting a criminal defendant's suggestion that the NRC Report had brought into question fingerprint and boot print evidence used against him at trial, primarily on the grounds that such claims would need to be presented in state court, and not upon federal habeas review); *United States v. Boyd*, No. 09 Cr. 347, 2010 U.S. Dist. LEXIS 18511, at *6 (S.D.N.Y. Mar. 1, 2010) (citing the NRC Report for the proposition that DNA testing, "though providing the 'gold standard' for forensic testing, is not immune from error or falsification"); *United States v. Rose*, No. CCB-08-0149, 2009 U.S. Dist. LEXIS 114256, at *7–8 (D. Md. Dec. 8, 2009) (acknowledging that the NRC Report has cast some doubt on the validity of fingerprint identification, but also noting that "the Report itself did not conclude that fingerprint evidence was unreliable such as to render it inadmissible under [Federal Rule of Evidence] 702"); *United States v. Prokupek*, No. 8:08CR183, 2009 U.S. Dist. LEXIS 72291, at *10–11 (D. Neb. Aug. 14, 2009) (ruling that a Magistrate Judge did not err in refusing to admit the NRC Report as support for the defendant's assertion that the Nebraska State Patrol's methods for training drug dogs is not scientifically based and is unreliable); *Johnston v. State*, No. SC09-839, 2010 Fla. LEXIS 62, at *21–28 (Fla. Jan. 21, 2010) (affirming the denial of a criminal defendant's claim that the NRC

Report constituted newly discovered evidence that he had been convicted "on infirm forensic evidence").

Because of recent challenges to the validity of the methodology used by firearms examiners and the criticisms leveled in the NRC Report, "[s]torm clouds . . . are gathering" in the form of challenges to the admissibility of firearms identification testimony. *Monteiro* 407 F. Supp. 2d at 364. In the United States District Courts and elsewhere, there have been a number of well-briefed, carefully considered decisions applying both *Daubert* and *Frye* analyses. Despite these reexaminations, however, the defendants have cited no case, and the court is aware of none, from any jurisdiction in which, upon such reexamination, traditionally accepted identification opinion testimony of a firearms examiner has been excluded, although a number of courts have imposed limitations on the degree of certainty an examiner may express in stating his conclusions. [13]

The court is mindful that, once a trial court has admitted evidence based upon a new scientific technique, and that decision is affirmed on appeal by a published appellate decision, "the precedent so established may control subsequent trials." *See Jones I*, 548 A.2d at 46 n. 9. The government is correct that firearms identification testimony has long been admitted in the District of Columbia Courts, *see United States v. Andrews,* 922 A.2d 449, 454 (D.C. 2007), and the other cases cited in the Government's Supplemental Memorandum (McCorkle) at 18, and every other trial court in the country. The NRC Report does not report any new developments in

[13] *But see, e.g., Sexton v. State*, 93 S.W.3d 96 (Tex. Crim. App. 2002) (rejecting matching of cartridge cases based on magazine marks alone without recovery of underlying magazine); *Ramirez v. State*, 810 So. 2d 836 (Fla. 2001) (rejecting toolmark analysis matching ***knife*** to fatal stab wounds). "One commentator from within the firearm identification profession has cited *Daubert* objections as 'perhaps the biggest challenge facing the firearms discipline since it was firmly established in the 1920's.' Sgt. Gerard Dutton, Ethics in Forensic Firearms Investigation, 37 AFTE JOURNAL. 79, 82 (2005)." *Monteiro,* 407 F. Supp. 2d at 364.

the field that detract from the level of reliability of the methodology used for almost a century by firearms examiners. The court recognizes, nevertheless, that the NRC Report raises certain legitimate concerns about the scientific underpinnings of the methods by which firearms identifications have been made for a long time. These concerns actually were raised before the issuance of the NRC Report in 2009, (or the NRC's prior report evaluating the merits of the establishment of a nationwide firearms database, NRC *Ballistics Imaging* (2008)), in reexaminations of the admissibility of expert testimony in the firearms field under *Daubert*. *See, e.g., Diaz*, 2007 U.S. Dist LEXIS 13152 at *1; *Monteiro* 407 F. Supp. 2d at 372; *Glynn,* 578 F.Supp. 2d 567 (S.D.N.Y. 2008). The court concludes that a reexamination of the admissibility of firearms testimony in light of the recent commentary is warranted, and therefore will address the challenge to the firearms identification testimony proffered in this case under the standard for admissibility set forth in *Frye* and *Dyas*.

E. Analysis

In this case, defendant Anderson concedes that Mr. Mulderig may testify about his examination of the firearms evidence and his observations during the examination. Although defendant English seeks wholesale exclusion, he does not suggest that the firearms field is within the ken of the average layperson. There is no question that the firearms expert's testimony satisfies the first prong of the *Dyas* inquiry requiring that it be "beyond the ken of the average layman," in that "inexperienced persons are unlikely to prove capable of forming a correct judgment" regarding the import of the markings on the firearms evidence, because the subject of firearms analysis "does not lie within the range of common experience or common knowledge." *Dyas*, 376 A.2d at 832. Defendants also have not challenged the qualifications of the firearms examiner. Mr. Mulderig's qualifications are indeed extensive, *see* Mulderig Statement at ¶¶1-7,

and the court concludes that the second prong of the *Dyas* inquiry – that the witness must have "sufficient skill, knowledge or experience in the field or calling as to make it appear that his opinion or inference will probably aid the trier in his search for truth" – also is satisfied. *Id.*

The third *Dyas* criterion is the one at issue in this case, and requires the court to answer the question whether the state of the methodology of firearms and toolmark identification would permit a reasonable opinion to be asserted even by an expert. *Id.* This criterion reflects the *Frye* standard that, in order for the expert's opinion testimony to be admissible, there must be "general acceptance" of the underlying methodology in the relevant scientific community. *Frye*, 293 F. at 1014.

1. <u>Is it a Science?</u>

It is a threshold question – though not a dispositive one in the court's view – whether the expert testimony proffered in this case is "scientific." In *Benn, supra*, the Court of Appeals held that the standard for admissibility of expert testimony regarding the reliability of eyewitness identification testimony was whether the "art of inquiry or the scientific methodology" was generally accepted in the relevant community, without deciding which category the field fell into. *Benn*, 978 A.2d at 1276, n. 90. Testimony from a broad range of arguably non-scientific subject areas is potentially admissible under *Dyas*. *See, e.g., Reed v. United States*, 828 A.2d 159, 163-64 (D.C. 2003) (affirming a trial court's decision to permit a police detective to testify as an expert in "the nature of the drug trade"); *Mindombe v. United States*, 795 A.2d 39, 42-48 (D.C. 2002) (affirming the admission of expert testimony regarding a child's reactions to sexual abuse); *Karamychev v. District of Columbia*, 772 A.2d 806, 811-12 (D.C. 2001) (affirming a trial court's decision to permit a police officer to testify as an expert witness on the admission and interpretation of field sobriety tests); *Eason v. United States*, 687 A.2d 922, 924-26 (D.C. 1996)

(affirming a trial court's decision to permit a police officer and a forensic scientist to testify as experts in blood spatter analysis); *Otis Elevator Co. v. Tuerr*, 616 A.2d 1254, 1256-57 (D.C. 1992) (affirming a trial court's decision to permit "a self-employed elevator consultant" to testify as an expert in "the field of elevator maintenance, 'how elevators work,' elevator codes and their interpretation, the standard of care for elevators, and elevator maintenance contracts"); *Griggs v. United States*, 611 A.2d 526, 527-28 (D.C. 1992) (affirming a trial court's decision to permit a police detective to testify as an expert in "the sale, packaging, and distribution of drugs in the District of Columbia"); *Irick v. United States*, 565 A.2d 26, 31 (D.C. 1989) (affirming a trial court's decision to permit a police detective to testify as an expert in "the role of an 'enforcer' in a drug organization"); *Hinnant v. United States*, 520 A.2d 292, 293-94 (D.C. 1987) (affirming a trial court's decision to permit a police detective to testify as an expert in heroin dealing); *Adams v. United States*, 502 A.2d 1101, 1020-22 (D.C. 1986) (affirming a trial court's decision to permit a psycholinguistics expert to testify that a "sunburst symbol represented anal sodomy wherever the symbol appeared in the [defendant's] diary").

In *Monteiro*, the court concluded as a threshold matter that:

> [f]irearm identification evidence straddles the line between testimony based on science and experience. As the AFTE Theory describes it, the methodology is 'subjective in nature, founded on scientific principles and based on the examiner's training and experience.' Science is in the background, at the core of the theory, but its application is based on experience and training.

Monteiro, 407 F. Supp. 2d at 365. In *Mouzone,* 696 F. Supp. 2d at 569, the court stated,

> if firearms toolmark evidence is characterized exclusively as "science," it has a long way to go before it legitimately can claim this status. . . . The more difficult task, but one which *Daubert, Kumho Tire*, and Rule 702 demand, is to determine whether, even if not fully grounded in scientific principles, toolmark identification evidence is sufficiently relevant, reliable, and helpful to a jury to be permitted as technical or specialized evidence.

The court went on to conclude,

> And, as the *Taylor, Glynn, Diaz, Monteiro*, and *Green* courts have agreed, even with its increasingly obvious limitations, toolmark identification evidence is relevant, reliable, and helpful if offered (a) by a qualified examiner (b) who followed the AFTE theory (despite its subjectivity) and (c) who documents with notes, photographs, or sketches the conclusions reached in sufficient detail to permit (d) confirmation by a second qualified examiner of how an identification was reached (and, at trial, challenge by a defense expert if one has been engaged for this purpose), so long as (e) the examiner is prevented from making outlandish and unsupported pronouncements about the degree of certainty of his or her identification.

Id. at 569. [14]

To the extent that it is helpful to decide whether the firearms and toolmark methodology is scientific, the court agrees with the court in *Monteiro* that the methodology "straddles the line" between science and other specialized or technical expertise. *Monteiro,* 407 F. Supp. 2d at 365. The degree to which it is a science is advancing with the efforts to apply statistical probabilities to determinations of identity of toolmarks and the application of more and more standardized techniques and protocols. *See, Id.* at 369-370. As the courts in the above *Daubert* reexaminations and as the Court of Appeals in, *e.g., Benn,* 978 A.2d 1257, have recognized, either way, the question remains whether the proffered testimony is sufficiently helpful to a jury and whether it is supported by a methodology that is sufficiently recognized in the relevant scientific community to be admitted as expert testimony.

2. <u>Validity of the Fundamental Assumptions</u>

The defendants assert that the assumption that firearm toolmarks are unique and reproducible "has not yet been fully demonstrated." NRC Report at 154. The defense concedes,

[14] In *Glynn*, by contrast, the court concluded that, because of a lack of "defining standards," the field of firearms analysis "not only lacks the rigor of science, but suffers from greater uncertainty than many other kinds of forensic evidence." *Glynn*, 578 F. Supp 2d. at 574. Nevertheless, stating that the "methodology has garnered sufficient empirical support as to warrant its admissibility," the court ultimately admitted the expert's testimony, not as expert testimony under *Daubert,* but as relevant evidence admissible under Fed. R. Evid. 401, and allowed the witness to testify to matches only as "more likely than not." *Id.* at 573-574.

however, that the NRC did not take a position for or against the assumptions of uniqueness and reproducibility. Instead the NRC stated that additional research on the uniqueness and reproducibility of firearms related toolmarks would have to be done "to put the basic premises of firearms identification on a "more solid scientific footing." NRC *Ballistics Imaging* at 81-82.

The government responds that the uniqueness and reproducibility of toolmarks has been established, asserting that validation studies have repeatedly demonstrated that consecutively manufactured firearms produce individual toolmarks that can be distinguished from one another and can be matched to a single firearm, "to a high degree of reliability." Bunch Affidavit, ¶26. Studies involving consecutively manufactured firearms are particularly persuasive, because consecutively manufactured firearms are most likely to produce similar microscopic marks on bullets or cartridge cases. This is because machine tool wear between the production of each firearm is at a minimum, giving rise to the greatest possibility of a false positive conclusion based upon the presence of "subclass" marks. Bunch Affidavit, ¶29. Nevertheless, in validation studies, the error rates were extremely low, revealing that the microscopic marks on consecutively manufactured gun barrels were readily distinguishable. *Id.* ¶28. *Accord, e.g., Diaz,* 2007 U.S. Dist Lexis 13152 at *21-22 (referencing Amy C. Coody, *Consecutively Manufactured Ruger P-89 Slides,* 35 AFTE J. 157 (2003), which found that tool marks created by consecutively manufactured firearms were "easily distinguishable and individually unique"); David J.Brundage, *The Identification of Consecutively Rifled Gun Barrel,* AFTE Journal, Volume 30, Number 3 (1998)).

Defendants disagree with the government's characterization of the value of these studies. In support of their contention that there are "limitations" on the assumptions of uniqueness and reproducibility, defendants cite, for example, the results of empirical research conducted by

Alfred A. Biasotti and reported in Alfred A. Biasotti, *A Statistical Study of the Individual Characteristics of Fired Bullets*, 4 J. Forensic Sci., 34, 34-50 (1959). The results (to simplify grossly) showed that upon examination of matching striae (the tool marks left on bullets as the result of travel through the barrel) on bullets fired from Smith and Wesson .38 revolvers, without regard to consecutiveness of the striae, striae on bullets fired from the same gun matched at rates (21-24%) not very much higher than the rates at which striae matched on bullets fired from different guns (15-20%). This result has been cited, e.g. by the court in *Mouzone* as evidence of the challenges to the principles of uniqueness and reproducibility of toolmarks. *Mouzone*, 696 F.Supp.2d at 560.[15]

However, Stephen G. Bunch, formerly Supervisory Physical Scientist at the FBI responsible for managing the Firrearms and Toolmark Unit argues persuasively in his Affidavit, filed as a government exhibit, that the use in this context of the 1959 Biasotti study to illustrate the limitations of the AFTE theory actually is somewhat misleading, and includes the entire passage from the Biasotti study to make his point:

> The late researcher Alfred Biasotti recently has been selectively quoted . . . in such a way that suggests reliable bullet comparisons were problematic. The passage in Biasotti's 1959 article reads more fully as follows:
>
> > "Two basic types of data were recorded: (1) The total line count and total matching lines per land or groove mark from which the percent matching lines were derived (Tables 3 and 4); and (2) the frequency of occurrence of each series of consecutive matching lines for which probability estimates were calculated (Figures 4 to 8).

[15] "Indeed, Biasotti's 1959 study revealed that "only 21-38 percent of the marks will match up on bullets fired from the same gun. The significance of that figure comes to light when it is noted that a correspondence between 15-20 percent of the marks of bullets fired by two different .38 special Smith & Wesson revolvers of the same make and model" has been observed." (citations and quotations omitted). *See Diaz*, 2007 U.S. Dist. LEXIS 13152, 2007 WL 485967, at *12 ('According to Schwartz, Biasotti found that there was a 15-24% overlap in matching striae between bullets fired from different guns.')." *Mouzone*, 696 F.Supp.2d at 560.

> "Dealing first with the data for percent matching lines given by Tables 3 and 4, it will be seen that the average percent match for bullets fired from the same gun ranged from 36 to 38% for lead bullets and from 21 to 24% for metal-cased bullets. For bullets fired from different guns (not tabulated) 15 to 20% matching lines per land or groove mark was frequently found. Relatively speaking, this data indicates that even under such ideal conditions the average percent match for bullets from the same gun is low and the percent match for bullets from different guns is high, which should illustrate the limited value of percent matching lines ***without regard to consecutiveness***. . . [Alfred Biasotti, A Statistical Study of the Individual Characteristics of Fired Bullets. *Journal of Forensic Sciences*; volume 4, number 1, 1959].

Bunch Affidavit at ¶36 (emphasis added). Bunch goes on to state:

> The point Biasotti was making was that there is no value in counting the percentage of matching lines (straie) in a bullet comparison, which is a fact understood by firearms examiners for about as long as firearms identification has been practiced. **Biasotti went on to re-affirm instead that it is consecutiveness that matters:**
>
> > "Since no two objects are ever absolutely identical, a realizable or practical identity must be based on the occurrence of a sufficiently high number of corresponding individual characteristics having a very low probability of having occurred as a result of chance, and therefore must be the result of a common cause. **It should be obvious that consecutiveness; viz., the compounding of a number of individual characteristics, is the very basis of all identities**. And it is the consecutiveness of matching straie that counts for much when examiners use the traditional pattern-matching methods in their examinations.

Id at ¶36 (emphasis added). Bunch thus points out that the method of firearms examination used by the examiners who follow the AFTE methodology yields more valid results than those demonstrated by the Biasotti study referenced by defendants, because the methodology requires examiners to consider consecutiveness of matching striae in determining whether there is a match.

Another criticism leveled at the pattern matching methodology is that examiners may confuse "subclass" markings, which are not unique to individual firearms, with "individual" markings, which are unique to individual firearms and therefore are the marks that examiners rely upon to make identifications. *See* Adina Schwartz, *A Systemic Challenge to the Reliability*

and Admissibility of Firearms and Toolmark Identification, 6 Colum. Sci. & Tech. L. Rev. 2, 8 (2005); Bunch Affidavit at ¶17. Subclass characteristics occur on firearm components, for example, within a "particular production run in the manufacturing process of a certain brand of firearm," from, for example, "imperfections in a particular machine tool." *Id.* Once the tool is replaced, or the imperfection dulls with wear, for example, the marks created by the imperfection will no longer appear on firearms of the same make and model. Subclass markings can be deceptive because they are not class characteristics common to all units of a particular make and model of firearm, and they can be mistaken, according to critics, for individual markings. In his Affidavit, at ¶31, Bunch disagrees that subclass marks are a serious problem for firearms examiners. He states that "examiners are always alert to new manufacturing techniques that could possibly produce subclass marks and publish any positive findings to the community at large. . ." and that even when not alerted to them by other examiners, a trained examiner is alert to the possibility that they might exist. *Id.* Bunch also notes that "by all accounts subclass marks appear to be rare in actual casework" and that they have not surfaced in any significant way in validation and proficiency tests. *Id.*

The NRC ultimately recognized that "[a]lthough they are subject to numerous sources of variability, firearms related toolmarks are not completely random and volatile; one can find similar marks on bullets and cartridge cases from the same gun." NRC Report at 154. Thus the NRC did not, as defendants suggest, "squarely reject" firearms examiners' assertion that they can declare a match. Anderson Motion at 22. Similarly, in *Glynn*, the court stated,

> The gun manufacturing process never operates identically in any given case, and therefore causes differences between any two guns that, while tiny, may still be detected by use of such techniques as the comparison microscope. While this assertion has not been put to the rigorous testing that science demands, it has been sufficiently well-documented as to support a reasonable hypothesis of its validity. The same is true of the

assumption that these unique characteristics of each firearm are to an appreciable degree copied onto some or all bullets and casings fired from that gun.

Glynn, 578 F. Supp. 2d at 572-573 (internal citations omitted). *Accord, Monteiro,* 407 F. Supp. 2d at 366 ("the government has met its burden with regard to demonstrating that the underlying scientific principle that firearms leave unique marks on ammunition is reliable. . .").

The court is satisfied that the principles of uniqueness and reproducibility have been demonstrated and validated sufficiently to support the basis of the AFTE theory and the methodology of firearms identification utilized in this case.

3. Reliability of the Methodology

Defendants also argue that there exists "significant" controversy in the scientific community regarding the reliability of the methodology used by Mr. Mulderig and by most firearms and toolmark examiners in the field. In support, defendant Anderson has cited, among other materials, harsh criticism leveled at the field by Adina Schwartz, Professor of Criminology at John Jay College,[16] the NRC Report itself and the AFTE acknowledgment that "these decisions involve subjective qualitative judgments by examiners and that the accuracy of examiners' assessments is highly dependent on their skill and training." NRC Report at 153.

The factors significant to the determination whether a theory or technique is reliable are "whether a theory or technique is testable and has been tested; whether it has been subject to peer review and publication; the rate of error of the specific scientific technique; the existence of standards controlling the technique employed; and the degree of acceptance within the scientific community." *Benn*, 978 A.2d at 1273 (citing *Daubert,* 509 U.S. at 593-594).

[16] It should be noted that Professor Schwartz is not a firearms and toolmark examiner. She is a professor of criminology who has written and testified critically about the reliability of the methods employed in the field. The court takes no position in this Opinion as to whether she could be qualified to testify as an expert witness in the field.

The AFTE has adopted requirements – and the practitioners in the field have adopted and standardized these practices – that lend greater reliability and consistency to findings of firearms examiners. First, examiners are required to document their work and their "reasons for concluding there is a match" in a particular examination including, where appropriate, diagrams, photographs or written descriptions. *See*, *Mouzone,* 696 F.Supp.2d at 560-61; *Monteiro*, 407 F. Supp. 2d at 366-368; *Diaz*, 2007 U.S. Dist. LEXIS 13152, 2007 WL 485967, at *5. Examiner Mulderig documents his findings in a report and supporting materials. Statement of Michael Mulderig, ¶18; Bunch Affidavit, ¶32 (best practices in laboratories around the country include requirement that examiners document and explain their conclusions in written narratives and in photographs as necessary). Second, firearms examiners are required to have their work reviewed by, and to obtain a second opinion from, another qualified firearms and toolmark examiner. *See Mouzone,* 696 F.Supp.2d at 561; *Monteiro*, 407 F. Supp. 2d at 355; *Diaz*, 2007 U.S. Dist. LEXIS 13152, 2007 WL 485967, at *5. These requirements ensure the reliability and the reproducibility of the examiner's results. *Mouzone,* 696 F.Supp.2d at 561; *Monteiro*, 407 F. Supp. 2d at 369. This practice also is adhered to as a standard matter by Mr. Mulderig and the other MPD firearms examiners. Statement of Michael Mulderig, ¶17. Third, the AFTE theory and other firearms identification methodologies are subject to "peer review," in the sense that the AFTE Journal and other publications are dedicated to the publication of articles both criticizing and validating the current techniques of firearm identification and the AFTE theory of identification. *Monteiro*, 407 F. Supp. 2d at 366-367. In addition, firearms examiners undergo regular "proficiency testing," *id,* and examiner Mulderig attests that he has successfully undergone such proficiency testing twice per year since 1999. Statement of Michael Mulderig, ¶16.[17] In addition

[17] Critics of the proficiency testing process note that it is unclear how rigorous the testing really is, especially in light of consistently almost-perfect proficiency scores it tends to yield. *Monteiro*, 407 F.

to following these procedures, Mr. Mulderig states, “I will not make an identification unless I am absolutely certain in my own judgment that the fine microsopic marks warrant an identification.” Statement of Michael Mulderig, ¶12.

The absence of quantitative standards is the basis for much of the criticism of the AFTE methodology. Agreeing that a firearms identification "is largely a subjective determination," *Monteiro*, 407 F. Supp. 2d at 355, the *Monteiro* court elaborated: "this conclusion is not based on any quantitative standard for how many striations or marks need to match or line up. Instead, it is based on a holistic assessment of what the examiner sees." *Id*. at 364 (quoted in *Mouzone*, 696 F.Supp.2d at 560). *See also Glynn,* 578 F. Supp. 2d at 572 ("sufficient agreement" standard " is inherently vague"). “Toolmark analysis does not follow an objective standard requiring, say, a certain percentage of marks to match. Rather, . . the threshold is currently held in the mind’s eye of the examiner.” *Monteiro,* 407 F. Supp. 2d at 370 (internal quotation and citation omitted).

However, the same courts leveling this criticism, and the NRC Report itself, acknowledge the reliability of the AFTE methodology. NRC Report at 154; s*ee also, e.g.. Diaz*, 2007 U.S. Dist. LEXIS 13152, 2007 WL 485967, at *1, 8 ("the standards and criteria for traditional pattern matching are subjective," but "it is the subjective judgment of trained professionals with a keen practiced eye for discerning the extent of matching patterns"). Similarly, in *Monteiro* the court concluded that a method that “relies on the individual examiner's training and experience to distinguish between characteristics on a cartridge casing” is “not fatal to the reliability of the technique on the whole.” *Monteiro,* 407 F. Supp. 2d at 371-

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Supp. 2d at 366-367. The court in *Monteiro* noted, however, that “nonetheless, there is no evidence that the tests are inaccurate or otherwise deficient.” *Id* at 368. Moreover, the court in *Monteiro* concluded that the high rates of proficiency demonstrated by reported results of such proficiency testing in the record before it demonstrated that, contrary to defense assertions that there is no known error rate with respect to the AFTE methodology, “the government has established that known error rate is not unacceptably high.” *Id.*

72.[18] The *Monteiro* court held ultimately that "the methodology of firearms identification is sufficiently reliable." *Id.*; *accord, e.g., Diaz,* 2007 U.S. Dist Lexis 13152 at *33-34; *Mouzone,* 696 F.Supp.2d at 569.

That further work on quantitative or statistical articulations of uniqueness remains to be done is acknowledged by the government, *see* Bunch Affidavit, Second Supplement, ¶3:

> Over the past few decades, there have been attempts by some researchers and firearms examiners, including myself, to explore the application of statistical methods to firearms and toolmark identification.

The government concedes that "there is no way to be absolutely certain of any identification without comparing a particular set of marks to marks created by every firearm produced . . . " Bunch Affidavit ¶26. The government asserts, however, and the court agrees, that efforts to develop the application of statistical probabilities to firearms identification methodology do not invalidate the the traditional pattern matching theory. These efforts confirm, however, the NRC's assertions that the methodology will be able to claim firmer scientific basis once statistical methods have successfully been applied in the field.[19]

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[18] In *Monteiro, Diaz, Glynn, Mouzone, et al.,* each court was applying the "reliability" standard for admissibility of expert testimony stated in *Daubert v. Merrill Dow Pharms, Inc.,* 509 U.S. 579 (1993) and Rule 702 of the Federal Rules of Evidence, a standard different from that applied under *Frye.* In *Daubert,*the Supreme Court rejected *Frye's* requirement of "general acceptance" as a precondition to admissibility and required instead that the trial judge, acting as "gatekeeper" determine whether the proffered expert testimony is based in scientific knowledge, so that "evidentiary reliability will be based upon scientific validity." 509 U.S. at 590 and n. 9. *Daubert* has not been adopted in this jurisdiction. This distinction in the applicable standards of admissibility raises to some degree the question of the weight to be given the recent federal court cases deciding admissibility of firearms identification testimony under the *Daubert* standard. Nevertheless, those cases, *see, e.g., Diaz, Monteiro, Mouzone and Glynn, supra,* provide such thoughtful analysis of the issues presented by this motion that they must be given weight here. In addition, in *Daubert* the Supreme Court affirmed the continued relevance of the question whether the technique at issue is generally accepted within the relevant scientific community, *Daubert*, 509 U.S. at 594, and this question is resolved in the *Daubert* analyses regarding firearms evidence in the affirmative. *See Montiero* 407 F. Supp. 2d at 371-372.

[19] The court notes that the "CMS" methodology discussed *supra* is one development in this direction. It is not the method used by most examiners in the field, however, or by Mr. Mulderig in this case, and itself apparently remains subject to certain criticism as a methodology despite its claims of greater quantitative reliability in results. *See Affidavit of Adina Schwartz, Defense Tab G.*

4. General Acceptance in the Scientific Community

On the basis of the foregoing, including the AFTE standards for documentation, confirmatory testing, proficiency examination, the existence of peer reviewed publications dedicated to the advancement and standardization of the field of firearms and toolmark examination and the existence of studies and proficiency test results reflecting an apparently low "error rate," (though it is not yet possible to calculate an absolute error rate), the pronouncements by the NRC and the entire record before the court, the court concludes that the methodology of "pattern recognition" used by Mr. Mulderig and by most firearms and toolmark examiners in the field is reliable, and that it is generally accepted in the relevant scientific community. *Accord, e.g., Diaz,* 2007 U.S. Dist Lexis 13152 at *33-34; *Mouzone,* 696 F.Supp.2d at 569; *Monteiro,* 407 F. Supp. 2d at 366-372 ("the community of firearm and toolmark examiners accepts the current identification methodology as reliable.")

The court further concludes that, because the reliability and validity of the firearms identification methodology have been demonstrated sufficiently, the prejudicial effect of the proffered expert testimony will not substantially outweigh its very high probative value. Although the NRC has stated that "no forensic method other than nuclear DNA analysis has been rigorously shown to have the capacity to consistently, and with a high degree of certainty, demonstrate a connection between evidence and a specific . . . source," NRC Report at 7, "[t]his is not to say that toolmark analysis needs to be as objective as DNA in order to provide value." *Id.* at 155. To the extent that there are weaknesses in the reliability of the science, these can be exposed by cross examination and/or the presentation of evidence contradicting the expert's conclusions and criticizing the reliability of the methodology. The proffered firearms examiner's testimony therefore will be admitted, subject to the following limitations.

5. Limiting Opinion Testimony

Despite its firm position that the reliability of firearms identifications is well settled in the field, the government agrees that it will not elicit from its firearm examiners any identifications with "absolute (100 %) certainty," and asserts that an examiner's qualification of an identification by stating that a match is made with "practical certainty" or to "a reasonable degree of scientific certainty" communicates the examiner's high degree of confidence in an identification without overstating the significance of a match. Bunch Affidavit ¶ 26; Government's Supplemental Opposition at 9. In support of this proposition, the government cites, e.g., *Diaz*, 2007 U.S. Dist LEXIS 13152 *1(examiner permitted to testify that a match was made to a "reasonable degree of certainty in the ballistics field"); *Monteiro* 407 F. Supp. 2d at 372 ("a qualified examiner who has documented and had a second qualified examiner verify her results may testify based on those results that a cartridge case matches a particular firearm to a reasonable degree of ballistic certainty") and *State v. Riley*, 568 N.W.2d 518, 527 (Minn. 1997) ("it was proper for [the firearms expert] to state his opinion that, to a 'reasonable degree of scientific certainty,' the Smith & Wesson handgun was the source of the collected shell casings").

The defense in turn asks the court to limit the articulation of a firearms and toolmark examiner's opinions regarding identification to assertions that the opinion is held "more likely than not." In support, defendant cites cases in which limitations recently have been imposed as follows, e.g.: *Mouzone*, 696 F.Supp.2d at 581-82 (Magistrate Judge recommendation that firearms expert be permitted to express opinions without stating any degree of certainty, or alternatively "more likely than not," or, alternatively, to a "reasonable degree of ballistic or technical certainty"); *Glynn,* 578 F. Supp. 2d at 568-70 (court admitted examiner's opinions but

allowed the examiner to testify only that a firearms match was "more likely than not"; *United States v. St. Gerard* (U.S. Army Tr. Judiciary, 5th Jud. Cir. June 7, 2010); Anderson Notice of Supplemental Authority, Exh. A at 4 (court excluded testimony that it would be a practical impossibility for the cartridge case to have been fired by any weapon other than the seized weapon); *United States v. Willock,* Crim. No. WDQ-08-0086, 682 F. Supp. 2d 512, 535-36 (D. Md. Mar 23, 2010) (firearms examiner required to state his opinions and conclusions without any characterization as to the degree of certainty with which he held them).

The court concludes, for all of the reasons stated above, that the methodology used to reach the firearms identifications and other results in this case, while a generally accepted and reliable methodology, established in its validity and improving in scientific underpinning as we speak, is not yet supported by a sufficient statistical foundation to permit a declaration by an examiner of an identification to a "scientific certainty." The government has cited authority showing that some courts still permit the use of the term "scientific certainty" to describe firearms opinions, *see, e.g. State v. Riley*, 568 N.W.2d at 527. However, in the wake of the recent reexamination of the discipline, a number of courts who have written extremely thoughtful analyses of the proper degree of certainty to apply to the field, have stopped short of allowing firearms identification opinions to be given the weight of "science" when articulated to a jury. *See, e.g., United States v. Taylor*, 663 F.Supp.2d 1170, 1180 (D.N.M. 2009) (examiner not permitted to testify that his methodology "allows him to reach his conclusion as a matter of scientific certainty" but permitted to state his opinion to "within a reasonable degree of certainty in the firearms examination field"); *See also Mouzone*, 696 F.Supp.2d at 581-82; *Glynn,* 578 F. Supp. 2d at 568-70; *Monteiro,* 407 F. Supp. 2d at 372. The court therefore will not permit the government's expert to state his opinions to a "reasonable degree of scientific certainty."

The court concludes, however, upon consideration of all of the authority before it, that a firearms examiner should not be limited to stating an identification as "more likely than not." This, the court concludes, sharply understates the reliability of the opinion, given the level of reliability that has been demonstrated to underpin the AFTE methodology itself – despite the as-yet unripe efforts at quantification and application of statistical probabilities to identifications. This level of reliability is enhanced where examiners follow AFTE standards for training, documentation, confirmation by retesting, peer review and publication and where the methodology is used by an examiner who is experienced and qualified. All of these hallmarks of reliability exist in this case. For all of these reasons, the court agrees with the reasoning in *Taylor*, *Diaz* and *Monteiro* and the other authority cited above and in the government's submissions in this regard, and will permit the examiner to state his opinions to a "reasonable degree of certainty in the field of firearms and toolmark identification."[20] *Accord, e.g., Diaz; Monteiro; Taylor, supra.* The court concludes that this formulation is consistent with the state of the "science" of firearms identification and therefore is one that may reasonably be asserted by an expert in the field who has applied the methodology consistent with AFTE standards. *Dyas,* 376 A.2d at 832.

The court disagrees with the defense assertion that juries will give undue deference to any firearms identification testimony just because it is given by an expert. Anderson Motion at 22-23. The court respectfully disagrees with the *Glynn* court's suggestion that juries are so handicapped by a lack of "background knowledge" that they will impart greater reliability to opinion testimony than a fair articulation of the opinion permits, and that the only way to protect against this was for the court to "play a greater role, not only in excluding unreliable testimony, but also

[20] If the government prefers a reasonable degree of "ballistic" certainty" despite the technical distinction between the field of "ballistics" and the field of firearms and toolmark analysis, the court will permit this articulation.

in alerting the jury to the limitations of what is presented." *Glynn*, 578 F. Supp. 2d. at 574.[21] In rejecting the reasoning of cases that have more restrictively limited the expression of certainty in firearms experts' opinions, such as *Glynn* and *Mouzone*, the court is mindful of the District of Columbia Court of Appeals' admonition in *Benn* that

> "the Supreme Court has remarked on the 'liberal thrust' of the federal Rules [of Evidence] and their general approach of relaxing the traditional barriers to opinion testimony.' The Court advised that judges should rely on the adversary system, rather than on the exclusion of evidence, to guard against potential juror confusion from the presentation of scientific evidence, noting that '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." Any remaining concern a trial judge may have that admission of expert testimony could confuse or overwhelm the jury is more properly dealt with, not by exclusion, but by placing reasonable limitations on the expert's testimony . . . ."

Benn, 978 A.2d at 1274. The defendants in this case will have the opportunity to expose weaknesses in the firearms methodology both on cross examination and by presenting their own witnesses, if they choose, to challenge the methodology as well as the opinions expressed by the government's witness. They may propose appropriate jury instructions regarding expert testimony and the burden of proof. They may argue vigorously to the jury the reasons to disregard the opinions of the witness. All of these measures will put the jury in a position properly to weigh the expert's testimony.

In the government's alternative formulation, it seeks to elicit firearms identification testimony "to a practical certainty." Stephen Bunch, the FBI's firearms affiant, and the government in its pleadings, define the term as follows:

> Practical certainty means that the determination of identity correlates to features whose frequency (or likelihood) of reoccurrence by another tool is so remote that it can be considered **practically impossible**.

[21] The court also notes that the court's recommendation in *Mauzone* that the witness be limited either to stating no level of certainty at all or that the opinion was held "more likely than not " was based, in part, on the fact that the testifying firearms examiner was going to testify to conclusions derived from comparisons conducted by another examiner in another laboratory. *Mauzone*, 696 F.Supp.2d. at 573-74.

Bunch Affidavit ¶26 (emphasis added). Although the court is satisfied with the use of the term "practical certainty" to express the level of certainty underpinning a firearms match, the court rejects the government's definition of the term "practical certainty" for the following reasons.

First, it turns out that the government's definition actually is not the definition of the term **"practical certainty"** in the FBI's Scientific Working Group for Firearms and Toolmarks ("SWGGUN") SWGGUN Glossary of terms, but is instead very close to the definition of the term **"practical identity."**[22] SWGGUN Glossary at 4. The SWGGUN Glossary defines the term **"practical certainty"** as

> sureness related to, or manifested in practice or action. In the context of a scientific conclusion, practical certainty occurs when an examiner can affirm all of the following necessary conditions: (1) he or she believes the conclusion is true and accurate; (2) he or she has rational grounds for believing the conclusion is true and accurate; and (3) he or she acknowledges that, in the abstract, it is not possible to achieve absolute certainty for results flowing from a scientific theory or technique.

SWGGUN Glossary at 4.

Second, the term "practical impossibility," which is incorporated into the government's definition to explain the likelihood that a firearm other than the one identified by an examiner could have contributed the toolmarks at issue, overstates the level of certainty an examiner properly may express. It communicates what could be viewed by a jury as absolute certainty. As the court stated in *Mauzone,* "there is no meaningful distinction between a firearms examiner saying that the likelihood of another firearm having fired these cartridges is so remote as to be considered a practical impossibility" and saying that his identification is "an absolute certainty." *Mouzone*, 2009 U.S. Dist. LEXIS 100718, at *71. *See also United States v. St. Gerard*, *supra*, Op. at 4 (court excluded testimony that it would be a practical impossibility for the cartridge case

[22] "Practical identity is the subjective or empirical determination of identity by features whose frequency (or likelihood) of reoccurrence is so remote that it can be considered virtually impossible." SWGGUN Glossary at 4.

to have been fired by any weapon other than the seized weapon); *United States v. Willock,* 682 F. Supp. 2d at 535-36 (firearms examiner not permitted to opine that it was a "practical impossibility" for another firearm to have fired the questioned cartridges).

The court is satisfied that the SWGGUN definition of "practical certainty" does not overstate the level of certainty a firearms examiner may express in declaring an identification. The court therefore will allow the government to elicit from its firearms examiner an identification "to a practical certainty," and to characterize his level of certainty using the SWGGUN definition of that term.[23] However, the court will not permit the witness to define his level of certainty by stating that it would be a "practical impossibility," (or a "virtual impossibility," the term used in the SWGGUN definition of "practical identity," *supra)*, for another firearm to have imparted the marks.

The government argues that "the chance of finding two bullets from different guns that are exactly alike in every detail of their surface markings is infinitesimally small." Government's Supplemental Memorandum at 15 (citations omitted). This is the basis for the government's argument that its firearms expert should not be limited as to his expressions of certainty. The assertion that no two guns would create identical markings does not truly support the government's position, however, because, as Stephen Bunch states, "[n]o two sets of

[23] In Defendant Anderson's Motion to Modify Order Regarding Firearms Identification Testimony, defendants argue that the term "practical certainty" should be barred from the examiner's testimony in this case. In support they cite *Ingram v. United States,* 592 A.2d 992, 1002 (D.C. 1991), in which the Court of Appeals, in discussing the *mens rea* that was then required for accomplice liability, stated in *dicta* that if an accomplice has "practical certainty" of something, this is "the equivalent of knowledge." First, nothing in this Opinion should be construed to bar an examiner from stating that he has "knowledge" of the propositions he states in rendering his opinions derived in the course of a firearms examination. Second, notwithstanding the language in *Ingram,* it is the SWGGUN Glossary that defines the term "practical certainty" from the point of view of a firearms examiner. The fact that in a wholly unrelated context – and in a discussion that has been supplanted by subsequent case law on aiding and abetting – the Court of Appeals defined the term differently should not control here. In addition, it goes without saying that it is the definition of the term provided to the jury that matters here, and the jury in this case will never hear the Court of Appeals' epistemological discussion in *Ingram.* Accordingly, the court will deny the Motion to Modify Order.

toolmarks are identical. Said differently, all toolmarks are different on some level." Bunch Affidavit at ¶22. So while it may be true that no two firearms will make absolutely identical markings on bullets fired from them, neither will one firearm make absolutely identical markings on different bullets fired from it. The court in *Monteiro* stated:

> A perfect correspondence between the lines on a test-fired cartridge and the evidence recovered from the scene is impossible; in the real world, there is no such thing as a "perfect match." Alfred A. Biasotti, A Statistical Study of the Individual Characteristics of Fired Bullets, 4 J. Forensic Sci. 34, 44 (1959) (noting the "erroneous conception of a perfect match' which is actually only a theoretical possibility and a practical impossibility").

Monteiro, 407 F. Supp. 2d at 361. The court is satisfied that, as Mr. Bunch asserts, "the marks on the items [of firearms evidence], however, need not be identical for an examiner to declare a match. There need only be 'sufficient agreement' between the marks based on the examiner's training and experience. Bunch Affidavit, ¶22. But where a match may be declared in the absence of a "perfect" match, and where there can be no "perfect" match, it is an overstatement to suggest that there is in practical terms no possibility – or even an "infinitesimally small" one – that a second firearm could have produced the questioned marks. These terms suggest a statistical probability that does not apply to firearms examiners' conclusions derived from the current methodology.

The defense further seeks an order precluding any firearms identification testimony declaring a "match." Anderson Motion at 22. The term "match" is not included in the SWGGUN Glossary of terms, although the term "identification" is defined as the "association of distinctive features to an individual." SWGGUN Admissibility Glossary at 3. Webster's American Dictionary, College Edition (Random House, 2000) defines "match" variously as "a person or thing that equals or resembles another in some respect; … a person or thing that is an exact counterpart of another; a corresponding, suitably associated or harmonious pair." The term

"match" thus states a condition of compatibility or correspondence without stating any degree of statistical probability or certainty. A firearms examiner declaring a "match" must not suggest that he is absolutely, 100%, or to any other statistical degree, certain of it, but the court concludes that he may state the fact of his determination based upon his observations, training and experience that certain toolmarks "match" one another.

This determination is supported by the decisions in *Taylor*, 663 F. Supp. 2d at 1180 (examiner "permitted to give to the jury his expert opinion that there is a match" between the rifle and the bullet at issue); *Mouzone*, 696 F.Supp.2d at 572 (although court recommended limiting expression of certainty to "more likely than not," jury could be told that "matches" between bullets and casings from the same gun exceeded "matches" between those from different guns); *Glynn,* 578 F. Supp. 2d at 575(examiner could testify that firearms "match" was "more likely than not"); *Diaz*, 2007 U.S. Dist LEXIS 13152 *39 (high degree of agreement in patterns supports a "match" to a "reasonable degree of ballistic certainty"); *Monteiro,* 407 F. Supp. 2d at 372(examiner may testify that a cartridge case "matches" a particular firearm to a "reasonable degree of ballistic certainty").[24]

Conclusion

For all of the reasons stated above, the court finds that the AFTE theory and methodology of firearms identification, which is the one used by the government's examiner in this case, is reliable, is sufficiently scientifically valid and is generally accepted in the relevant scientific community. Because the subject matter of the testimony is beyond the ken of the average layperson, and because the examiner is sufficiently qualified to offer the proffered testimony, the

[24] The court cautions that, although the witness may not mislead as to the level of certainty the methodology permits or suggest a statistical basis for his conclusion, the defense is on notice of Mr. Mulderig's high degree of confidence in his conclusions and should cross examine with this in mind. Defendants have given notice that they intend to call a firearms and toolmark expert to question both the methodology and the conclusions of the government's examiner, and thus will be able to present to the jury a critique of the firearms methodology by various means.

court finds that the testimony will aid the jury in its search for truth. *Dyas,* 376 A.2d 827; *Frye*, 293 F. 1013. The testimony therefore is admissible subject to limitations on the degree of certainty with which the expert may state a firearms "match."

Accordingly, it is, this 13th day of September, 2010, *nunc pro tunc* to September 1, 2010, hereby,

ORDERED that defendant Andersons' Motion to Exclude Firearms Identification Testimony is **DENIED.** It further is

ORDERED that defendant English's Motion in Limine to Strike Firearm and Other Ballistic Testimony and Request for a Pretrial Daubert Hearing is **DENIED**. It further is

ORDERED that the government's firearms examiner may declare a firearm toolmark "match" to a "reasonable degree of certainty in the field of firearms and toolmark identification," or to a "practical certainty," but not to a "reasonable degree of scientific certainty;" the examiner also may not state that it is a "practical impossibility" or a "virtual impossibility" that another firearm could have imparted the marks. It further is

ORDERED that defendant Andersons' Motion to Modify Order Regarding Firearms Identification Testimony is **DENIED.**

Lynn Leibovitz
Associate Judge
(Signed in Chambers)

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