

1 DANA SEVIGNY, civilian, was called as a witness for the  
2 prosecution, was sworn, and testified as follows:

3 DIRECT EXAMINATION

4 Questions by the assistant trial counsel:

5 Q. For the record, you are Mrs. Dana Sevigny, Firearms  
6 Examiner at the U.S. Army Criminal Investigation Laboratory in  
7 Forest Park, Georgia?

8 A. That's correct.

9 Q. Okay. Mrs. Sevigny, can you please tell us what your  
10 current position is?

11 A. I'm currently a Firearm and Toolmark Examiner with the  
12 U.S. Army Crime Lab.

13 Q. And what are your specific duties there?

14 A. My primary duties are to determine whether or not a  
15 firearm-- ammunition components were fired in a particular  
16 firearm; also, to examine toolmarks, in general, to determine  
17 whether a specific tool made a certain mark. Additionally, we  
18 do serial number restorations and firearms examination to  
19 determine the type of firearm; and, also, muzzle to target  
20 distance determination.

21 Q. And how long have you been employed at USACIL?

22 A. Approximately 2½ years.

1 Q. And were you previously employed by another agency  
2 within this field?

3 A. By two other agencies: The Vermont Forensic Laboratory  
4 as well as the Georgia Bureau of Investigation Laboratory.

5 Q. And how long have you overall worked as a Firearms  
6 Examiner?

7 A. Approximately 8 years, including training.

8 Q. And how many firearm and toolmark examinations have you  
9 conducted throughout this period?

10 A. Approximately 700.

11 Q. Okay. And what formal education prepared you to work  
12 in this field?

13 A. I have a Bachelor of Science Degree in chemistry from  
14 Emory University in Atlanta. Additionally, I have a Master of  
15 Science in Forensic Science from Virginia Commonwealth  
16 University in Richmond Virginia.

17 Q. Now you mentioned Emory University. Did you receive  
18 any awards or recognition at Emory University?

19 A. I graduated Magna Cum Laude after defending my honors  
20 thesis; and, also, I received the American Institute of Chemists  
21 Award my senior year.

22 Q. And have you done any other internships related to  
23 firearms and toolmark examinations?

1           A. During my graduate studies I did an internship in the  
2 Firearms Section of the Virginia Forensic Laboratory.

3           Q. And on top of all of this educational background, have  
4 you received any specialized training for firearm and toolmark  
5 examination?

6           A. Yes, I did. I participated in a yearlong program  
7 called the National Firearm Examiner Academy, which is sponsored  
8 by the Bureau of Alcohol, Tobacco, Firearms and Explosives; and  
9 it's specifically designed to train new firearm examiners.

10          Q. And do you belong to any professional organizations  
11 that pertain to the field of firearm and toolmark examination?

12          A. Yes, I belong to the Association of Firearm and  
13 Toolmark Examiners.

14          Q. And this association, does it offer any certifications  
15 within your field?

16          A. Yes, it does.

17          Q. What kind of certification?

18          A. There are three different certifications that are  
19 offered in different sub-disciplines of firearm examination:  
20 Firearms, Toolmarks, and Gunshot Residue Distance Determination.

21          Q. And in which areas are you certified?

22          A. I'm certified in all three areas.

1 Q. What is required for you to obtain these  
2 certifications?

3 A. First there's an initial application to determine that  
4 you have the sufficient qualifications; basically, 5 years of  
5 training and experience. In addition, you have to have a  
6 Bachelor of Science Degree. Then, upon being accepted into the  
7 program, you-- there is a written examination for each of the  
8 disciplines. Once you-- Once the written examination is  
9 passed, then there's a practical examination for each of the  
10 sub-disciplines.

11 Q. Okay. And have you done any scientific research  
12 concerning the science of firearm and toolmark identification--  
13 examination?

14 A. Yes, I did. During my National Firearm Examiner  
15 Academy Training, I performed research on filed toolmarks, which  
16 I then presented to about 3 to 4 hundred firearm examiners at  
17 the Regional Training Conference. And, additionally, it was  
18 recently published in the Journal of the Association and fire--  
19 of Firearm and Toolmark Examiners.

20 Q. And have you provided any other additional training to  
21 other persons in the area of firearm and toolmark  
22 identification?

1           A. Yes. I provided some training to a new-- a newly  
2 hired trainee, a Firearm and Toolmark Examiner at the Georgia  
3 Bureau of Investigation.

4           Q. Have you ever testified in court as to your findings  
5 and the examination of firearm and toolmark evidence?

6           A. Yes, I have.

7           Q. And how many times were you permitted to give expert  
8 testimony?

9           A. Approximately 50 times.

10          Q. All right. Were you ever excluded from giving such  
11 testimony?

12          A. No.

13          Q. All right.

14          ATC: Mrs. Sevigny, I'm handing you what has just been  
15 marked as Appellate Exhibit VII [sic].

16          Q. Do you recognize this document? Oh, excuse me. That's  
17 XIII.

18          Do you recognize this document?

19          CDC: Thirteen?

20          A. [Examined exhibit.] Yes, I do.

21          Q. And what is it?

22          A. That's a statement of my qualifications.

1           ATC: Your Honor, at this time, the government offers  
2 Appellate Exhibit XIII for identification. It's a statement of  
3 Mrs. Sevigny's qualifications.

4           CDC: May I see that again?

5           [The civilian defense counsel examined the exhibit.]

6           ATC: It's an appellate exhibit.

7           CDC: I'm sorry. Thank you.

8           MJ: Defense, any objection?

9           CDC: No, Your Honor.

10          MJ: Well, you don't have to offer it. It's an appellate  
11 exhibit. It's been marked. It's already before the court.

12          ATC: Well, Your Honor, at this time, the government  
13 proffers Mrs. Sevigny as an expert in Firearm and Toolmark  
14 Identification because it is clear that she is qualified to  
15 discuss the methodology within this field under Military Rule of  
16 Evidence 702.

17          MJ: Defense, any objection?

18          CDC: Not for the 39(a), Your Honor.

19          MJ: The witness is so qualified.

20          ATC: All right.

21          **[The assistant trial counsel continued examination of the**  
22 **witness as follows:]**

1 Q. Mrs. Sevigny, can you please explain what evidence you  
2 initially received in this case?

3 A. Yes. I received a firearm, two magazines, and a number  
4 of cartridges-- unfired cartridges.

5 Q. And, in any given case, when you receive a firearm for  
6 examination, how do you go about identifying it?

7 A. I identify the firearm by visually examining it. I  
8 look at the overall characteristics of the firearm to include  
9 the serial number as well as other markings in order to  
10 determine the caliber and potentially the manufacturer and  
11 model.

12 Q. Okay. Did you receive a firearm in this case?

13 A. Yes, I did.

14 Q. And how did that weapon come into your possession?

15 A. I received it from the Latent Print Branch-- an  
16 examiner in the Latent Print Branch of the U.S.-- the U.S. Army  
17 Crime Lab.

18 Q. And can you explain what you did when you received  
19 that?

20 A. Yes. I visually examined it and determined that it was  
21 a 7.62 by 39 millimeter caliber, AK-47, most likely a Russian  
22 manufacturer.

1 Q. Okay. Now did you later on receive any other--  
2 additional evidence in this case?

3 A. Yes, I did.

4 Q. And what did you receive?

5 A. I received a fired cartridge case.

6 Q. Okay. Now did you conduct a firearm and toolmark  
7 examination on the AK-47 and that cartridge case?

8 A. Yes, I did.

9 Q. Okay. At this time, I understand that you prepared  
10 some PowerPoint slides, but we've had some technical  
11 difficulties; so I'm just going to walk through and ask you the  
12 questions without the slides.

13 A. Okay.

14 Q. All right. Can you first explain briefly what firearm  
15 and toolmark identification is to the court?

16 A. Yes. Firearm and toolmark identification is the  
17 science that's primarily concerned with determining whether or  
18 not a particular bullet or-- a fired bullet or fired cartridge  
19 case was fired in a particular firearm.

20 Q. Okay. Can you explain what is a tool?

21 A. A tool is any object that when it comes into contact  
22 with a softer surface, leaves a mark; and the tool is the harder  
23 of the two surfaces. A firearm is just a specific type of tool.



1 Q. Okay. And what is a toolmark?

2 A. A toolmark is the mark that's left on the softer  
3 surface by the tool.

4 Q. Are there different types of toolmarks?

5 A. Yes, there are.

6 Q. Can you explain that to us?

7 A. There are two types of tool marks. Striated toolmarks  
8 are created when there is pressure on the surface combined with  
9 motion; so it creates a series of parallel lines or scratches.

10 Q. Okay.

11 A. And the other type is impressed toolmarks. And  
12 impressed toolmarks are caused when there's simply pressure on a  
13 surface and no motion.

14 Q. Okay. And can you explain what the difference-- You  
15 just did a bit. Can you explain what class characteristics are?

16 A. Class characteristics are sort of the first level of  
17 grouping types of tools together. It's-- They are created  
18 during manufacture. They're specified by the manufacturer. So  
19 caliber is a type of a class characteristic. They can be even  
20 smaller groups than this, including the rifling inside the  
21 barrel. So how many spiral grooves there are inside the barrel  
22 is designed specifically by the manufacturer, and it tends to  
23 group things into smaller groups.

1 Q. Are there any other types of characteristics?

2 A. Yes.

3 Q. What types?

4 A. The second level of grouping is called subclass  
5 characteristics. These characteristics lead to even a smaller  
6 grouping. They come from tools that are used in manufacture  
7 that can persist over time. So they can't be-- they're not  
8 unique to one tool in particular, and they come-- they're not  
9 designed by the manufacturer, but they come from the types of  
10 tools that are used in the manufacture; so tools that-- again,  
11 that have marks that persist over time [motioning with hands].

12 ATC: And let the record reflect that the witness made a  
13 jutting motion with her hand horizontally.

14 Q. Are there any other types of characteristics on top of  
15 class and subclass?

16 A. Yes. The third level of characteristics are individual  
17 characteristics. And these are unique, microscopic marks that  
18 are produced on a tool from a manufacturing process that cannot  
19 be reproduced. And these-- An example of this is an abrasive  
20 process [motioning with hands]. So when you have abrasive  
21 processes, these immediately change as soon as they touch a  
22 surface; so they can't be reproduced in other tools.

1           ATC: Let the record reflect that the witness rubbed her  
2 hand against her other hand.

3           Q. When you look at an object, can you determine what type  
4 of tool made the toolmark?

5           A. Yes.

6           Q. Okay. And how is that possible?

7           A. The formation of the marks are specific to the type of  
8 tool. So if something is made by a cutting tool that has two  
9 blades that come together, I can tell the difference between  
10 that and one blade, for instance.

11          Q. Okay. Can you explain the toolmark examination  
12 process? What kind of equipment do you use to conduct the  
13 examination?

14          A. Certainly. We use what we call a comparison  
15 microscope. A comparison microscope is essentially two compound  
16 microscopes that are connected optically so that an examiner can  
17 look into the microscope and see two different objects side by  
18 side and compare immediately adjacent to each other those  
19 microscopic marks.

20          Q. And when you conduct this examination and you make the  
21 comparison, what are the ranges of conclusions that an examiner  
22 can come to?

1           A. I can come to three conclusions. First, it is an  
2 identification; which means that that tool made that toolmark.  
3 I can reach a conclusion of an elimination, which means that  
4 tool did not make that toolmark. And I can also determine that  
5 it's inconclusive, which means either there's not enough of the  
6 individual microscopic marks for me to make a determination; or  
7 there aren't anything there for me to examine.

8           Q. Okay. Can you explain for the court what is a  
9 cartridge case? A cartridge?

10          A. A cartridge is a single unit of unfired ammunition.

11          Q. And can you explain how a bullet fires and the  
12 interaction with the cartridge?

13          A. Sure. The cartridge contains several different  
14 components. A bullet is the actual projectile that's fired down  
15 the barrel. The cartridge case holds everything together,  
16 including the powder inside it with the bullet and also the  
17 primer. And the primer is what has a pressure sensitive  
18 compound which produces a spark in order to ignite the powder  
19 and fire the cartridge. So in the cycle in the firearm, the  
20 firing pin or other mechanisms in the firearm will hit the  
21 primer and pinch [motioning with hands] that pressure sensitive  
22 compound, which then shoots [motioning with hands] a spark  
23 through a hole in the back of the cartridge case, ignites the

1 powder which burns very rapidly and produces volumes of gas  
2 which then pushes the bullet down the barrel.

3 ATC: And let the record reflect that the witness pointed  
4 her finger at her hand and then----

5 MJ: Made a pinching motion with her fingers.

6 ATC: Made a pinching motion with her fingers and then  
7 spread her fingers in an explosion motion.

8 Q. Can you also please describe the sequence of firing  
9 from a cartridge case from a weapon such as an AK-47?

10 A. Yes. With a semi-automatic or automatic weapon, the  
11 ammunition is fed from the magazine into the chamber and then  
12 it's fired through the sequence that I described earlier. After  
13 it's fired, those gases then are used to cycle the action of the  
14 firearm. So it then pushes the action back, which then pulls  
15 that cartridge-- that empty cartridge case out of the chamber.  
16 As the cartridge case is pulled out of the chamber, it hits  
17 another part of the firearm and then is propelled out of the  
18 firearm [motioning with hand].

19 ATC: And let the record reflect that the witness made a  
20 thumb motion backwards from her hand. Thank you for that  
21 explanation.

1 Q. Can you briefly explain then how a Firearms Examiner  
2 can identify a particular cartridge case to a particular  
3 firearm?

4 A. Yes. During manufacture, the tool process that I  
5 described earlier which leaves the unique marks inside on the--  
6 on several specific parts of the internal workings of the  
7 firearm; these unique microscopic marks are then transferred to  
8 the parts of the cartridge case such as the bullet-- parts of  
9 the cartridge such as the bullet and the cartridge case during  
10 firing. So, if I have a firearm, I can then test fire that  
11 firearm to obtain known samples; basically, components that I  
12 know came from a particular firearm. And then I compare those  
13 microscopically on the comparison microscope to the evidence on  
14 the cartridge case.

15 Q. Okay. Thank you. Given your background-- educational  
16 background, can you explain for the court what is science, a  
17 brief explanation?

18 A. Sure. A science in general is just an organized way of  
19 answering a question. It's not limited to academic  
20 institutions. It happens every day all around us. You may not  
21 even realize that you're using it. As an example, I use turning  
22 on a lamp. So if you turn the switch on a lamp and the lamp  
23 doesn't come on, that's an observation. That's the first step

1 in the scientific method. You-- According to this observation,  
2 you then create a hypothesis. Your hypothesis may be the lamp  
3 is not plugged in. So then you create a test or an experiment  
4 to test this hypothesis. So your test would be go and look at  
5 the plug to see if it's plugged in. So you do this test and you  
6 observe the results. So if you observe that the lamp is plugged  
7 in; that nullifies your original hypothesis. So then you have  
8 to create a new hypothesis. So your new hypothesis may be the  
9 light bulb is burned out. So you design another experiment,  
10 which would be to go get another new light bulb and replace it.  
11 So then you observe and then you test it again, which would be  
12 to turn the switch again. So if you turn the switch again and  
13 it lights, you've proven your hypothesis that the light bulb was  
14 burned out. Further-- Further testing of the hypothesis is  
15 required. So, every time you turn the switch on and the light  
16 bulb comes on, you revalidate your original hypothesis.

17 Q. And is firearm-- Can you explain how firearm and  
18 toolmark identification is based on scientific principles?

19 A. Sure. The same-- The exact same scientific method  
20 applies to how a firearm-- how the AFTE Theory of  
21 identification was formed. The original observations were that  
22 there were these marks on the fired ammunition components; or,  
23 in general, these marks were made on surfaces by tools. And the

1 hypothesis was that these tools are-- these toolmarks are  
2 unique and they are reproducible so that we can compare them to  
3 the original. Tests-- The experiences that have been done over  
4 the last 50 years in firearm and toolmark examination have  
5 proven that this hypothesis has been correct. The observations  
6 and results of all of the experiments have validated the  
7 hypothesis, and it continues to be validated each time an  
8 experiment is performed and proves the hypothesis to be correct.

9 Q. Okay. And you mentioned the AFTE Theory of  
10 identification. Can you explain that theory----

11 A. Yes.

12 Q. --- to the court?

13 A. The AFTE Theory of identification, which is the  
14 Association of Firearm and Toolmark Examiners, AFTE, allows an  
15 examiner-- a trained and qualified examiner to determine that  
16 two toolmarks were made by the same tool if the-- those  
17 patterns of unique peaks, ridges, furrows, and surface contours  
18 from those unique marks on the tool exhibit sufficient agreement  
19 in their height, width, depth, and spatial arrangement.  
20 Sufficient agreement occurs when it-- when the agreement  
21 exceeds what has been seen or expect to be seen in a-- in two  
22 tools that were known to have come from different tools, and is  
23 consistent with tools that came-- toolmarks that came from the



1 same tool. And if a determination of sufficient agreement is  
2 made, it allows the examiner to conclude that those two tools  
3 came-- that the possibility of a different tool making those is  
4 so remote as to be considered practically impossible.

5 MJ: Mrs. Sevigny, I'm going to interrupt because you lost  
6 me there.

7 WIT: Okay.

8 MJ: Can we back up again? What is "sufficient agreement"?

9 WIT: Sufficient agreement is determined when it-- the  
10 agreement of the height, width, depth, and spatial arrangement  
11 of those marks exceeds what has been seen by the examiner in  
12 training and experience as well as what would expect to be seen  
13 from research and other types of training in two tools known to  
14 have been made by different-- or two toolmarks known to have  
15 been made by different tools. It's what we call a known non-  
16 match, and it's consistent with what we would see in a known  
17 match or two toolmarks made by the same tool.

18 MJ: Okay. You can continue.

19 ATC: Okay.

20 **[The assistant trial counsel continued examination of the**  
21 **witness as follows:]**

22 Q. Can you tell me is firearm and toolmark

1 identification-- is there any subjective component to the  
2 process?

3 A. Certainly. As there is in any science, there's a  
4 subjective and an objective. The subjectivity comes in the  
5 analysis of the image that is seen. The-- There's an objective  
6 part, which is the fact that these toolmarks are there. They  
7 can be seen by anybody who looks at them into the comparison  
8 microscope. But as with any other science that has more  
9 instrumental capabilities, it takes the subjective examination  
10 of the scientists that are trained to analyze that  
11 instrumentation in order to determine what the outcome of the  
12 experiment is. It's exactly the same thing with firearm and  
13 toolmark examination. Our output is that image that comes from  
14 the comparison microscope, the magnified image. So we would--  
15 Using our cognitive ability that has been gained through  
16 training and experience, we can examine that image and make a  
17 determination.

18 Q. And, is the AFTE Theory of identification, is it valid?

19 A. Yes, it has been subjected to numerous peer-review  
20 research studies. It's been generally accepted in the  
21 firearms-- a relevant scientific community-- the principles  
22 behind it for over 50 years. It has a known error rate, and  
23 it's subject to quality assurance measures both through the

1 scientific laboratories as well as the Association of Firearm  
2 and Toolmark Examiners.

3 Q. Mrs. Sevigny, are you familiar with the article "A  
4 Comprehensive Validity Study for the Forensic Examination of  
5 Cartridge Cases" by Stephen Bunch and Douglas Murphy?

6 A. Yes, I am.

7 Q. And how are you familiar with this article?

8 A. I've read it and reviewed it.

9 Q. And how reliable would you say this article is?

10 A. It's been published in a peer-reviewed scientific  
11 journal, the Association of Firearm and Toolmark Examiners  
12 Journal.

13 Q. Okay. And does this article discuss the validity of  
14 the AFTE Theory of identification?

15 A. Yes, it does.

16 ATC: Your Honor, the government request that this article  
17 be marked as an exhibit.

18 MJ: Go ahead.

19 [The court reporter marked the document as Appellate  
20 Exhibit XIV.]

21 Q. Mrs. Sevigny, I'm showing you what has been marked as  
22 Appellate Exhibit XIV. Do you recognize this article?

23 A. [Examined AE XIV.] Yes, I do.

1 Q. Okay. And, again, does it contain information related  
2 to the validity of the AFTE Theory of identification?

3 A. Yes, it does.

4 ATC: Your Honor, at this time the government moves for the  
5 admission of the statements on page-- the "Results and  
6 Discussion" on page 3.

7 MJ: Again, once a document is an appellate exhibit, it is  
8 an appellate exhibit; so no need to move it. It's before the  
9 court.

10 ATC: Okay. All right.

11 Q. Well, then, Mrs. Sevigny, please read for the court the  
12 highlighted portion under the "Results and Discussion."

13 A. "The total number of comparisons conducted by the test  
14 examiners was 360, with 42 of these between cartridge cases  
15 fired in consecutively manufactured pistols. There were no mis-  
16 identification or mis-elimination errors committed in this study  
17 (false positives and false negatives, respectively)."

18 Q. Now can you explain what that means for the court?

19 A. It means that the examiners, using the AFTE Theory of  
20 identification, participating in this study, committed no false  
21 positives or false negative errors among 360 comparisons.

22 ATC: Thank you.

1 [The assistant trial counsel retrieved the exhibit from the  
2 witness.]

3 Q. And, Mrs. Sevigny, are you familiar with the "Cartridge  
4 Case and Bullet Comparison Validation Study with Firearms  
5 Submitted in Casework" by Erich Smith?

6 A. Yes, I am.

7 Q. And how are you familiar with this piece?

8 A. I've read it and reviewed it.

9 Q. And how reliable would you say this article is?

10 A. It's also been published in a peer-reviewed scientific  
11 journal, the AFTE Journal.

12 Q. All right. And does this article as well discuss the  
13 validity of the AFTE Theory of identification?

14 A. Yes, it does.

15 ATC: All right. Your Honor, at this time, the government  
16 request that this article be marked.

17 MJ: Go ahead.

18 [The court reporter marked the document as Appellate  
19 Exhibit XV.]

20 [The civilian defense counsel reviewed Appellate Exhibit  
21 XV.]

22 Q. Okay. Mrs. Sevigny, can you read the relevant portions  
23 of this article for the court?

1 [The assistant trial counsel handed the witness Appellate  
2 Exhibit XV.]

3 A. [Examined AE XV.] This is under "Conclusion."

4 "The results indicate that the participants' comparisons  
5 were precise, using pattern recognition to determine a common  
6 source. The absence of false positives or false negatives  
7 indicates that the theory of firearms identification, using  
8 pattern recognition, is an accurate and precise method for  
9 determining a common source for bullets and cartridge cases for  
10 firearms collected from casework."

11 Q. And can you explain what that means as well?

12 A. Again, it serves to validate that firearms examiners,  
13 using the AFTE Theory of identification and pattern recognition  
14 are able to distinguish between matches between firearms--  
15 between cartridge cases that were known to be fired in a  
16 particular firearm. So this study used known samples. It was  
17 essentially the-- The person who designed the study knows the  
18 answers to the identifications and eliminations that were  
19 performed by the examiners, and they made zero errors.

20 Q. Thank you. And then, finally, are you familiar with  
21 How Unique are Impressed Toolmarks?" by Rocky Stone?

22 A. Yes, I am.

23 Q. And, again, how are you familiar with this article?

1 A. I've read and reviewed it.

2 Q. And how reliable would you say it is?

3 A. It's-- It was also published in the peer-reviewed  
4 scientific journal of the Association of Firearm and Toolmark  
5 Examiners.

6 Q. And does this also discuss the validity of the AFTE  
7 Theory of identification?

8 A. Yes, it does.

9 ATC: Your Honor, at this time the government request that  
10 this article be marked as an appellate exhibit as well.

11 MJ: Go ahead.

12 [The court reporter marked the document as Appellate  
13 Exhibit XVI.]

14 [The civilian defense counsel reviewed Appellate Exhibit  
15 XVI.]

16 Q. And could you also read from the relevant pages of this  
17 article?

18 [The assistant trial counsel handed the witness Appellate  
19 Exhibit XVI.]

20 A. [Examined AE XVI.] "It's obvious that a complex,  
21 three-dimensional characteristic of any reasonable size and of  
22 any reasonable internal detail is, in all probability,  
23 'unique'." And that's followed by a statistical calculation

1 that provides a one out of 3 times 10 to the 21<sup>st</sup> power chance  
2 that they are unique.

3 Q. Can you explain what that means then?

4 A. Basically, the statistical calculations that are  
5 provided by this paper show that the likelihood of two toolmarks  
6 that have been determined to have sufficient characteristics,  
7 the likelihood that two different toolmarks made those are so  
8 remote as to be considered practically impossible.

9 [The assistant trial counsel retrieved the exhibit from the  
10 witness.]

11 Q. Okay. Thank you. Now, Mrs. Sevigny, can you explain  
12 for the court what is "error rate" as a general matter?

13 A. Error rate is the possibility of an erroneous  
14 conclusion in a science.

15 Q. Okay. And how is the error rate determined for firearm  
16 and toolmark examination?

17 A. It's determined through proficiency tests as well as  
18 the validity studies.

19 Q. And what is a "proficiency test"?

20 A. Proficiency test is a test designed by an outside  
21 agency or it could be internal as well. It's designed with a  
22 known answer; so that when given to a firearm examiner, it can  
23 be determined whether that examiner is performing firearm



1 identification based on sound principles in order to obtain the  
2 correct answer.

3 Q. And what are the published error rates for firearm and  
4 toolmark examinations?

5 A. They're split into two different exams because they  
6 make two different types of proficiency tests. Firearms, it's  
7 around 1 percent; and, for toolmarks, it's anywhere between 2  
8 and 4 percent.

9 Q. Okay. And are you familiar with "The Identification of  
10 Consecutively Manufactured Extractors," by Dennis Lyons?

11 A. Yes, I'm very familiar with that. Dennis Lyons was one  
12 of the students in my National Firearm Examinee-- Examiner  
13 Academy Class, and he performed his research at the same time as  
14 I was performing mine. So I-- He presented his research to the  
15 class at the end of the class as well as published it. And I've  
16 read the published paper.

17 Q. Okay. So-- Then how would you say-- how reliable is  
18 it?

19 A. It's very reliable. And, again, from peer-review and  
20 publication.

21 Q. And does this article discuss the error rate of the  
22 consecutively manufactured extractors?

23 A. Yes, it does.

1           ATC: Okay. At this time, Your Honor, the government  
2 request that this be marked as an appellate exhibit.

3           [The court reporter marked the document as Appellate  
4 Exhibit XVI.]

5           [The civilian defense counsel examined Appellate Exhibit  
6 XVI.]

7           Q. Mrs. Sevigny, can you read the portions that are  
8 related to error rates within this article?

9           A. Certainly. [Examined AE XVII.] "From these  
10 participants a total of 259 correct answers out of a possible  
11 262 were produced, which changes the error rate from original  
12 work from 1.7 percent to 1.2 percent." Basically, the author  
13 provided an error rate from his original data that was  
14 approximately 1.7 percent. After he published the paper they  
15 received more answers; so it decreased the error rate from 1.7  
16 to 1.2 percent for this particular validity study.

17          Q. And can you explain, what was the purpose of that  
18 particular validity study?

19          A. It was to determine whether or not examiners could  
20 distinguish between consecutively made extractors. So for-- An  
21 extractor is the part of the firearm that pulls the cartridge--  
22 the fired cartridge case out of the chamber. So it could leave  
23 marks on the cartridge where it's pulling-- pulling it out.

1 Q. So then is an extractor a type of tool?

2 A. Yes, it is.

3 Q. Okay. Thank you.

4 [The assistant trial counsel retrieved the exhibit from the  
5 witness.]

6 Now, Mrs. Sevigny, can you please tell me, what is your  
7 personal error rate for firearm and toolmark examination on your  
8 proficiency tests?

9 A. Zero.

10 Q. And how do you know this?

11 A. Because we receive the answers to the proficiency tests  
12 after they are concluded.

13 Q. And does the laboratory have any other sort of peer-  
14 review process?

15 A. Yes, it does. Every conclusion that's reached by an  
16 examiner in the firearms branch of the U.S. Army Crime Lab is  
17 then validated by a second examiner.

18 Q. And when you say "every conclusion," does that include  
19 the inclusive-- the range of conclusions you discussed earlier?

20 A. It includes identification of toolmarks, inclusive  
21 toolmarks, elimination of toolmarks; it also includes serial  
22 numbers as well as muzzle to target distance determination.

1 Q. Okay. So then I just want to take it back to the AFTE  
2 Theory of identification. You mentioned that it's subjective.  
3 If it's so subjective, then how can the error for this science  
4 be so low?

5 A. Basically, the training that's provided in accordance  
6 with the AFTE-- the Association of Firearm and Toolmark  
7 Examiners, provides a method by which the-- each examiner can  
8 develop this cognitive ability to determine whether or not  
9 sufficient marks exist in the same way so that examiners will  
10 make the same conclusions of identity or elimination.

11 Q. So are there any quantitative criteria that have been  
12 studied for the interpretation of toolmarks?

13 A. Yes. What's called the quantitative-- the-- I'm  
14 sorry. --- conservative criteria for identification. And this  
15 has been studied for approximately 50 years. It's not a novel  
16 concept. Biasotti made this proposal in the 1950's. It's not a  
17 different way to make a determination. It's-- Every examiner  
18 uses the AFTE Theory of identification. It's just another way  
19 to document what you saw. It makes it easier to describe as  
20 opposed to other examiners who use descriptive elements or  
21 photographs, which is what I use to document my examination.

22 Q. Mrs. Sevigny, are you familiar with an examination of--  
23 the "Examination of the Application of the Conservative Criteria

1 for Identification of Striated Toolmarks Using Bullets Fired  
2 from Ten Consecutively Rifled Barrels" by Jerry Miller?

3 A. Yes, I am.

4 Q. And how are you familiar with the article?

5 A. Well, Jerry Miller is the other examiner who works with  
6 me in the U.S. Army Crime Lab Firearm Section. And so I've read  
7 his article and reviewed it.

8 Q. And how reliable would you say this study is?

9 A. It's very reliable and it's been published in the peer-  
10 reviewed journal.

11 Q. And does this article contain information relevant to  
12 the conservative criteria you were discussing?

13 A. Yes, it does.

14 ATC: Okay. Your Honor, at this time the government  
15 request that this be marked as an appellate exhibit.

16 [The court reporter marked the document as Appellate  
17 Exhibit XVIII.]

18 [The civilian defense counsel examined Appellate Exhibit  
19 XVIII.]

20 CDC: Thank you.

21 Q. Mrs. Sevigny, can you read the relevant portions from  
22 this article?

23 A. Yes.

1 [The assistant trial counsel handed Appellate Exhibit XVIII  
2 to the witness.]

3 A. [Examined AE XVIII.] "Applying the conservative  
4 criteria for an identification of a striated toolmark as  
5 proposed by Murdock and Biasotti to the results of this study, a  
6 significant difference can be seen between a known match and a  
7 known non-match comparison. Considering the results of the data  
8 for two dimensional and three dimensional comparisons between  
9 known matches and known non-matches, no erroneous  
10 identifications would occur-- could occur, although some actual  
11 identifications would be excluded."

12 Q. So can you explain what that paragraph is-- What is  
13 the purpose of it-- What is that paragraph stating?

14 A. Certainly. It's basically stating that using the  
15 traditional pattern matching approach, what would be identified  
16 or what would be determined to be an identification using that  
17 method would then-- some of those would then be translated to  
18 inconclusive when you're using the conservative criteria. So it  
19 would tend to not exclude but be inconclusive on something that  
20 could be identified by the traditional method.

21 Q. And when you say "method," are you referring to the  
22 AFTE Theory of identification or the method of documenting the  
23 comparison?

1           A.   The AFTE Theory and the traditional pattern matching.  
2 That is what examiners use----

3           Q.   Okay.

4           A.   --- with the AFTE Theory of identification.

5           Q.   And so how does-- You mentioned before you use a  
6 photograph. Is that correct?

7           A.   That's correct.

8           Q.   So how does a verifier make the verification without--  
9 based off of the photograph?

10          A.   The verifier doesn't make a verification based off of a  
11 photograph. That's simply a documentation of what I used to  
12 make my identification. The verification process is done on a  
13 live examination that they actually take the physical evidence  
14 that I looked at and reexamine it to see if they-- what their  
15 conclusion would be.

16          Q.   Okay. Thank you. Now can you please explain whether  
17 or not this verification process-- is it-- do the verifier-- do  
18 they know what conclusions you make when they do their own  
19 examination?

20          A.   No, they don't. I simply say, "Could you verify this  
21 examination for me?" That could be-- It could be anything from  
22 an identification, an inclusive, or an elimination because we  
23 verify all of our conclusions.

1 Q. Okay. Thank you. Now, can you explain to me, how is  
2 the AFTE Theory of identification, how is it-- this examination  
3 received within the field of firearm and toolmark examinations?

4 A. The principles about the AFTE Theory have been  
5 generally accepted in the science community for over 50 years,  
6 almost 100 years.

7 Q. So then can you explain to me the-- why the National  
8 Academy of Science-- why they produced that study that  
9 criticized it?

10 A. I can't explain why. I can tell you that they didn't  
11 provide any reference that they invalidated during the study.  
12 We don't-- We have no way to know what they looked at; if they  
13 looked at any of our research because they-- they didn't  
14 provide specific references and invalidate those references or  
15 invalidate the studies.

16 Q. Did they base their study off of testimony from firearm  
17 examiners?

18 A. Certainly. They-- I don't-- Again, I don't know the  
19 specifics, but I know that a firearm examiner testified before  
20 the committee and provided some documentation. Again, I don't  
21 know how much and I don't think-- I know they have a  
22 bibliography, but I don't think within the paper they explain



1 how they invalidated any of the research if they examined any of  
2 the research.

3 Q. Based on your recollection, how many firearm examiners  
4 did they elicit testimony from?

5 A. One.

6 Q. Okay. Mrs. Sevigny, I'm now showing you what has  
7 been----

8 [The civilian defense counsel examined the document.]

9 MJ: And what are you showing the defense counsel?

10 CDC: A photograph.

11 ATC: A photograph.

12 Q. The cartridge case that you received; how did you  
13 document it?

14 A. When I received the cartridge case, as with every other  
15 piece of evidence I received, I took a photograph of it and then  
16 labeled the photograph with the case number, item number, and my  
17 initials, and the date.

18 Q. I'm showing you what is an appellate exhibit. Do you  
19 recognize this?

20 A. [Examined document.] Yes, I do.

21 Q. Is this the photograph that you took?

22 A. This is the photograph I took of Exhibit 13, the  
23 cartridge case in USACIL case number 2010-0051.

1           ATC: Okay. Your Honor, the government request that this  
2 be marked as an appellate exhibit.

3           MJ: You just said that it was already an appellate  
4 exhibit, counsel.

5           ATC: But it hasn't been given a number, Your Honor.

6           [The court reporter marked the document as Appellate  
7 Exhibit XIX]

8           Q. Can you please-- Okay. I'm handing you what has been  
9 marked as Appellate Exhibit XIX. Do you recognize that  
10 document?

11          A. [Examined AE XIX.] Yes, I do.

12          Q. Okay. And would you say that that is an accurate and  
13 true depiction of the cartridge case that you received in  
14 evidence?

15          A. Yes, it is.

16          Q. How did this cartridge case come into your possession?

17          A. I received it from an examiner in the Latent Print  
18 Section of the U.S. Army Crime Lab.

19          Q. And did you conduct an examination on that specific  
20 cartridge case?

21          A. Yes, I did.

22          Q. What was the purpose of your examination?

1           A. It was to determine whether or not it was-- that it  
2 came from the firearm-- the AK-47 that was submitted  
3 previously.

4           Q. Okay. And did you-- Can you please explain how you  
5 conducted the examination?

6           A. Yes. When I did my initial examination of the AK-47, I  
7 test fired it and collected the cartridge cases that were  
8 ejected from the firearm during the firing. I then compared  
9 these test fires that I know came from that particular firearm  
10 microscopically to the evidence and-- in order to determine  
11 whether or not that particular cartridge case came from that  
12 firearm.

13          Q. Did you document this with a photograph?

14          A. Yes, I did.

15          [The court reporter marked the document as Appellate  
16 Exhibit XX.]

17          Q. I'm handing you what has been marked as Appellate  
18 Exhibit XX. Do you recognize this?

19          A. [Examined AE XX.] Yes, this is the photograph of the  
20 image that I saw in the comparison microscope for a comparison  
21 of Exhibit 13 to the test fire from the rifle.

22          [The assistant trial counsel retrieved the exhibit from the  
23 witness.]

1 Q. Okay. Can you explain what is accreditation?

2 A. Sure. Accreditation is a process by which forensic  
3 labs can show outside organizations that it follows standard  
4 procedures and protocols and has quality assurance measures in  
5 place.

6 Q. And the laboratory that you work at at USACIL, is it  
7 accredited?

8 A. Yes, it is.

9 Q. And what kind of protocol does USACIL follow?

10 A. We follow the protocol-- In the Firearms Branch, we  
11 follow the protocol procedures produced by the Association of  
12 Firearm and Toolmark Examiners for firearm examination.

13 Q. And when you conducted this examination, did you follow  
14 those protocols?

15 A. Yes, I did.

16 Q. Based on your comparison of the cartridge case from--  
17 to the test fired cases, did you form an opinion as to whether  
18 the weapon that you received in evidence made the toolmarks you  
19 found on the cartridge case you received in evidence?

20 A. Yes, I did.

21 Q. And what is your opinion?

22 A. In my opinion, the AK-47 that was submitted made the  
23 marks on the cartridge case that was submitted.

1 Q. How certain are you that there is a match?

2 A. Again, following the AFTE Theory of identification, it  
3 is practically impossible for another tool to have made those  
4 marks.

5 Q. And are you familiar with "A Comprehensive Statistical  
6 Analysis of Striated Toolmark Examinations, Part 1: Comparing  
7 Known Matches and Known Non-Matches" by Michael Neel?

8 A. Yes, I am.

9 Q. And does this article discuss practical impossibility?

10 A. Yes, it does.

11 Q. And how are you familiar with this article?

12 A. I read it and reviewed it.

13 Q. And how reliable would you say it is?

14 A. It was, again, published in a peer-reviewed scientific  
15 journal for the Association of Firearm and Toolmark Examiners.

16 ATC: All right. Your Honor, the government request that  
17 this be marked as an appellate exhibit.

18 MJ: Go ahead.

19 [The court reporter marked the document as Appellate  
20 Exhibit XXI.]

21 [The civilian defense counsel reviewed the exhibit.]

22 CDC: Thank you.

1 [The assistant trial counsel handed Appellate Exhibit XXI  
2 to the witness.]

3 Q. And can you read the relevant portion?

4 A. [Examined AE XXI.] "A practical impossibility is an  
5 event that cannot or will not occur based upon facts,"--  
6 [turning pages] I'm sorry. --- practical application or  
7 experience. It is an event that-- which may have an  
8 infinitesimally small probability of occurring; but once  
9 empirical data and experience are taken into account, one can  
10 conclude that the event will not occur."

11 Q. And can you explain what that means?

12 A. Sure. In the context of firearm and toolmark  
13 examination, it means that the probabilities are so high that  
14 two different tools could not make two marks that have  
15 sufficient agreement; that it can be considered practically  
16 impossible for that to occur.

17 Q. And can you explain your opinion in the context of this  
18 article when you said----

19 A. Sure.

20 Q. --- "practically impossible"?

21 A. Again, the-- having examined the two toolmarks or the  
22 toolmarks-- compared the toolmark from the test fired cartridge  
23 cases that I knew came from the firearm that was submitted to

1 the evidence cartridge case and determined that these marks were  
2 the same, I concluded that it was practically impossible for a  
3 different firearm to have made those marks.

4 ATC: No further questions, Your Honor.

5 MJ: Let's take a recess before we begin cross-examination.  
6 We'll take a 15-minute recess. And while we're in recess,  
7 counsel, I'd like to see you in chambers.

8 Court's in recess.

9 [The Article 39(a) session recessed at 1128 hours, 25 May  
10 2010.]

11 [The Article 39(a) session was called to order at 1149  
12 hours, 25 May 2010.]

13 MJ: Court is called to order. All parties present before  
14 the court recessed are again present.

15 During the recess I held an 802 Session with the trial  
16 counsel, assistant trial counsel, and defense counsel. We  
17 discussed the Soldier who has been seated in the panel box. He  
18 is a paralegal for the government and is there to assist with  
19 the handling of voluminous documents. And the court has granted  
20 permission for him to sit there for the duration of the hearing.

21 Counsel, does that adequately address what we covered at  
22 the 802 Session?

23 TC: Yes, Your Honor.

1 CDC: Yes, Your Honor.

2 MJ: Is there anything we need to add?

3 TC: No, ma'am.

4 CDC: No, Your Honor.

5 MJ: Mr. Court, you may proceed with cross-examination.

6 CDC: Thank you, Your Honor.

7 **CROSS-EXAMINATION**

8 **Questions by the civilian defense counsel:**

9 Q. Mrs. Sevigny, how often did you say you've testified in  
10 military courts?

11 A. Approximately five times.

12 Q. And you've been with USACIL for about 2½ years now?

13 A. That's correct.

14 Q. Part of your training there is how to be an expert  
15 witness, isn't it?

16 A. Part of it there; yes.

17 Q. So you do get training to come into court and act as a  
18 witness, the questions you'd be asked, answers you can give,  
19 practice runs?

20 A. I've had that training; yes.

21 Q. Part of the training also includes preparing questions  
22 for the counsel that called you to ask you to make it easier for  
23 you to testify, true?



1           A. I prepare questions that are relevant to the firearms  
2 examination; yes.

3           Q. And you provided those to the government as well,  
4 correct?

5           A. Yes.

6           Q. Okay. Now you indicated you yourself had done research  
7 in the toolmark field; but, if I understood, that was limited to  
8 filed toolmarks, correct?

9           A. That's correct.

10          Q. Filed toolmarks are not either of the two types you  
11 described involved in firearm identification.

12          A. The files can be used in the manufacture of firearms.  
13 Yes.

14          Q. Are they then striated or stamped?

15          A. Files create striated toolmarks.

16          Q. But you have no-- done no research in the actual  
17 identification of cartridges being fired by particular weapons,  
18 have you?

19          A. No, I have not.

20          Q. And your literature review-- Well, first of all, there  
21 were a half dozen or so documents presented through your  
22 testimony by the government on various articles, correct?

23          A. That's correct.

1 Q. And you provided those to the government to assist your  
2 testimony?

3 A. I provided some and some of them were requested.  
4 That's correct.

5 Q. Okay. If my memory serves, all of those were published  
6 in the AFTE Journal, correct?

7 A. That's correct.

8 Q. Is that journal available publically? Can I go out on  
9 a bookstore somewhere and buy it?

10 A. I believe that it's available in some libraries.

11 Q. But that's a library version as opposed to I could just  
12 buy it, correct?

13 A. At the current time I'm not sure about the process of  
14 obtaining journals. I don't know whether individuals who are  
15 not members of the firearms community can buy journals.

16 Q. So, basically, it's published for members of the  
17 firearms community?

18 A. It's published by and for the relevant scientific  
19 community; yes.

20 Q. It's published by the firearms community, correct?

21 A. It's published by the firearms-- the Association of  
22 Firearm and Toolmark Examiners; yes.

1 Q. And it's available to members of that community only,  
2 as far as you know?

3 A. That's not entirely correct because articles are  
4 provided upon request by examiners to practically anybody who  
5 would request them.

6 Q. But that's the examiner who has it. I'm talking about  
7 obtaining, as a member of the general public, a copy of the AFTE  
8 Journal. I can't do that, can I?

9 A. I'm not sure.

10 Q. Basically, it's a journal by firearm and tool examiners  
11 for firearm and tool examiners?

12 A. That's-- Yes, that's correct.

13 Q. And that's what you understand peer-review to be?

14 A. Yes, that's correct.

15 Q. Okay. You said a few times that these-- that your  
16 discipline of identifying fire-- cartridges fired by firearms  
17 is at least 50 years old. And I think you talked about Biasotti  
18 as sort of the original person.

19 A. No, I-- The-- I think what you mean is when I said--  
20 when I was talking about consecutive matching striae and the  
21 conservative criteria being approximately 50 years old being  
22 researched first by Biasotti. The originator of firearms

1 examination was Colonel Goddard back in the 1920's at the  
2 University of Chicago.

3 Q. And what test did he perform that are publically  
4 available?

5 A. I'm sorry. Who was it that you're asking about?

6 Q. Goddard.

7 A. Colonel Goddard. I believe there's-- he does some  
8 research in Hatcher's Notebook and maybe there're publications,  
9 mostly books prior to the AFTE Journal which was begun in  
10 the-- about 45-- 40 years ago or so.

11 Q. So the AFTE Journal is about a 40-year old project?

12 A. That's correct.

13 Q. Are you aware of any studies involving AK-47s?

14 A. Yes. There's a study published that did a comparison  
15 between the marks of AK-47s and SKA rifles.

16 Q. Do you know how many AK-47s were involved in that  
17 study?

18 A. No, I don't.

19 Q. Do you remember when that study was conducted?

20 A. In the last 10 years, I believe.

21 Q. Do you know who conducted it?

22 A. I don't remember the author; no.

1 Q. Do you have any idea how many AK-47s have been  
2 manufactured in the world?

3 A. No.

4 Q. Can you make a quantity guess?

5 A. I would say thousands.

6 Q. How about-- Would you believe that it could be  
7 anywhere between 50 and 1 hundred million?

8 A. I could believe that. It's the most common automatic  
9 firearm in the world. Yes.

10 Q. Any idea how many different countries manufacture it  
11 legally or illegally?

12 A. I would say at least a half dozen or more.

13 Q. Did you verify that this was a Russian manufacturer?  
14 You said that you suspect that it was?

15 A. Just from the reference that I have that list the  
16 serial number characteristics and other markings on the firearm,  
17 just a visual comparison of the markings.

18 Q. Were you able to trace it back to the manufacturer or  
19 origin?

20 A. No, I didn't attempt to do that.

21 Q. You said that you test fired the weapon to create your  
22 comparison examples.

23 A. That's correct.

1 Q. How many test fires did you conduct?

2 A. Six.

3 Q. You conducted those test fires in February when you  
4 received the weapon initially, correct?

5 A. That's correct.

6 Q. And the cartridge that you were asked to compare was  
7 received by you, according to the picture, in March?

8 A. That's correct.

9 Q. In those-- In those weeks in-between, where were the  
10 six cartridges?

11 A. They were stored in the ammunition vault in a secure  
12 filing cabinet under sealed condition.

13 Q. Who had access to them?

14 A. Only the firearm examiners, myself, and the other  
15 firearm examiners in the Firearms Lab.

16 Q. And how many are there?

17 A. There are three: two firearms examiners, the Chief of  
18 the Firearms Branch, and then three trainee firearm examiners.

19 Q. Are they maintained under chain of custody document  
20 control?

21 A. They are listed in my notes for this particular case  
22 and they are maintained under seal according to our laboratory  
23 protocols.

1 Q. You've talked about what science is, in your opinion,  
2 and you talked about turning on a light as an example of that.  
3 You also testified that you have a degree in chemistry; so you  
4 have some scientific testing background, an experimental  
5 background in that field, correct?

6 A. That's correct.

7 Q. What's a double-blind?

8 A. A double-blind is a test that-- in which neither the  
9 person taking the test nor the person giving the test knows the  
10 answers to the test.

11 Q. How many double-blinds are you aware of involving  
12 firearm identification?

13 A. It's not a common practice to do double-blind testing.

14 Q. In other words, your tests are with either the person  
15 conducting the test or the person taking the test already  
16 knowing the answers?

17 A. Well, it's always the person conducting the test who  
18 knows the answer. The person taking it does not.

19 Q. He's not supposed to know the answers?

20 A. Correct.

21 Q. Okay. Is there any reason you could imagine where the  
22 firearms community wouldn't use a double-blind?

23 A. It-- No reason other-- that I can think of.

1 Q. Would that be a much more effective way of verifying  
2 your error rate?

3 A. Not necessarily, in my opinion.

4 Q. Now everything you talked about comes down to the AFTE  
5 Theory of identification, correct?

6 A. That's correct.

7 Q. And that was one of the major criticisms of the  
8 National Academy of Science survey, as far as you can tell,  
9 correct?

10 A. I believe so.

11 Q. Do you know what the National Academy of Science is?

12 A. I believe it's a body empanelled by the United States  
13 Government to analyze scientific principles.

14 Q. And do you know how long they worked on the project  
15 that you talked about with the government?

16 A. I believe it was several years, if I remember  
17 correctly.

18 Q. And their purpose was to look into how reliable are--  
19 "forensic" science is, correct?

20 A. That's correct.

21 Q. And you're aware that they did not give high marks to  
22 your community, correct?

23 A. Yes, that's correct.



1 Q. You disagree with that, don't you?

2 A. Yes, I do.

3 Q. You think that you guys do it the best way possible?

4 A. That's correct.

5 Q. If the courts, I don't mean particularly this one, but  
6 if the courts in general said you people are not doing what we  
7 need for court purposes, that could affect you and your  
8 livelihood, couldn't it?

9 A. Not that I know of.

10 Q. You would not be as needed in courts if your opinions  
11 were not permitted, correct?

12 A. I believe that some opinion is always going to be  
13 required. It may, in the future, if research necessitates,  
14 change the way I do my-- the way I do my examinations as is the  
15 case with every science; with new developments, methods change.  
16 But until the research shows that-- that invalidates our  
17 current theory, I don't believe it would change or should  
18 change.

19 Q. Well, let's talk about your current theory. Your  
20 theory is that if the patterns are in sufficient agreement,  
21 correct?

22 A. Correct.

1 Q. But "sufficient agreement" is the subjective nub of  
2 what you do, right?

3 A. Yes, that's the subjective part of firearm and toolmark  
4 identification.

5 Q. And your only way of verifying it is to have someone  
6 else who's trained in that exact same sufficient agreement  
7 theory say, I agree with you?

8 A. That's correct.

9 Q. You talked about the conservative criteria, okay.  
10 Could you explain that a little bit more?

11 A. Basically, it's a threshold that some examiners use  
12 that state specific numbers for-- when they would distinguish  
13 between an inconclusive and an identification.

14 Q. Do you use that?

15 A. No, I don't.

16 Q. Then why did we get all those articles talking about  
17 it?

18 A. It was just an explanation of the reason why it does  
19 not invalidate the AFTE Theory of identification.

20 Q. Okay. But what you're saying is the conservative  
21 method sort of counts up, to use laymen's terms, the number of  
22 similarities, and says you need "X" amount in order to be able  
23 to say this is a match, right?

1           A. It's an easier way to explain how they came to their  
2 conclusions as opposed to a photograph or an explanation.

3           Q. An easier way to explain their conclusions. But you  
4 don't agree with that?

5           A. It's not that I don't agree with it, it's just that I  
6 use photographs instead.

7           Q. Let's talk about this specific case for a moment. What  
8 you were asked to do was to analyze whether a particular  
9 cartridge case had been in a particular AK-47.

10          A. That's correct.

11          Q. And you talked about tool markings being the placing of  
12 marks from a harder object onto a softer object?

13          A. That's correct.

14          Q. And in this case your softer object would have been the  
15 cartridge case; the harder object would have been some part of  
16 the weapon?

17          A. That's correct.

18          Q. What parts of the weapon can impart a mark on a  
19 cartridge case?

20          A. There're numerous different parts inside of a firearm  
21 on the cartridge case; the firing pin, which hits the primer in  
22 order to ignite the spark; the breechface, which is what holds  
23 the cartridge in the case so that when that powder is burning

1 and produces really high pressures, it's pushed-- the cartridge  
2 case is pushed back against that breechface, and so those marks  
3 are sort of stamped into the breechface of that cartridge; also,  
4 extractor marks and injector marks and marks from the chamber.

5 Q. Are those the only ones?

6 A. Yes.

7 Q. So we have----

8 A. And the eject-- I'm sorry. And the injector port  
9 mark, which is what I used in this particular case.

10 Q. What about the chamber itself?

11 A. That's-- Yeah, the chamber-- The chamber marks.

12 Q. So the chamber, breechface, the firing pin?

13 A. That's correct.

14 Q. The ejector, ejector port, and extractor?

15 A. That's correct.

16 Q. So that makes, by my count, six possible places where a  
17 toolmark could be imparted on a cartridge.

18 A. That's correct.

19 Q. In this case you found a toolmark on one location that  
20 you said made it a match?

21 A. That's correct.

22 Q. And that was on the injector port?

23 A. That's correct.

1 Q. On the others, you didn't find enough markings or  
2 enough similarity to make use of that, correct?

3 A. That's correct.

4 Q. So your identification is relying on a single-- I'm  
5 going to call it "mark" because I don't know what else-- what  
6 other word to use, on a cartridge case?

7 A. That's correct.

8 Q. Do you have any idea of the age of the weapon that you  
9 looked at?

10 A. No, I do not.

11 Q. Because you indicated that wear and tear can cause  
12 changes in the impression creating marks on the tool itself,  
13 correct?

14 A. That's correct.

15 Q. So you're not talking only about manufacturing marks,  
16 you're talking about wear and tear?

17 A. Absolutely.

18 Q. But to describe the wear and tear, don't you have to  
19 know something about what the weapon's been through?

20 A. No, not necessarily, just a visual examination that I  
21 do of the marks and the gun and determine whether it has these  
22 individual characteristics.

1 Q. Well, that's begging the question of whether these  
2 individual characteristics are manufacturer created or wear and  
3 tear created, isn't it?

4 A. It essentially doesn't matter.

5 Q. It doesn't matter if it's manufacturer created or wear  
6 and tear created for an individual mark?

7 A. As long as I determine that it's individual. That's  
8 correct.

9 Q. Okay. And that, again, is your subjective  
10 determination of individuality?

11 A. Well, the objective part of that is the fact that  
12 they're there and they-- these marks are there to observe. And  
13 then using the training and experience that I've had examining  
14 toolmarks and knowing what toolmarks-- what different types of  
15 toolmarks look like on a surface and determine what type of tool  
16 they came from, I can determine whether or not they're  
17 individual.

18 Q. Okay. But let's draw a distinction now between your  
19 use of the word objective and subjective, okay?

20 A. Sure.

21 Q. The conclusion you draw is completely subjective.

22 A. The conclusion that the marks are individual is  
23 subjective. It is a subjective analysis of the imagines----

1 Q. That they exist is a different question, but it's your  
2 conclusion that they match and that they are unique?

3 A. That's correct.

4 Q. Unique. That means there can be no others in the  
5 world, and that's the way you testify?

6 A. The marks themselves are unique.

7 Q. What tests have ever shown that the marks of an AK-47  
8 ejector port are unique?

9 A. Specifically, the AK-47 has tools on it. So in  
10 firearms and toolmark examination, a tool is a tool is a tool.  
11 It doesn't matter what form it shows itself in. So I can talk  
12 about the hammer or a chisel or I could talk about the firing  
13 pin or the extractor on a firearm. They're all tools and it's  
14 all the same scientific principle.

15 Q. So because you believe that these marks are unique, it  
16 doesn't matter if you've ever looked at an AK-47 before?

17 A. I have looked at AK-47s before. However, that's  
18 correct because I have done the research and I've had the  
19 training provided by the Association of Firearm and Toolmark  
20 examiners in the AFTE Theory of toolmark identification. That  
21 applies to any type of tool.

22 Q. What evidence is there that tools make-- that all  
23 tools make unique marks?

1           A. All the research and validation studies that have been  
2 performed as well as the statistical-- theoretical,  
3 statistical, and empirical statistical calculations done most  
4 recently by Miller and Neel, Stone, and Collins.

5           Q. All done by the AFTE?

6           A. Certainly.

7           Q. Not done by any independent research organization that  
8 you're aware of?

9           A. Well, each individual agency is an independent research  
10 organization, it's just the Association of Toolmark Examiners  
11 provides the Journal for distribution of these particular  
12 articles.

13          Q. And that's the peer-review. We look at what we each do  
14 and say, "We're good"?

15          A. And I'm certain other individuals have examined these.  
16 Again, even the NAS Report examined some of them; so they are  
17 available to external scientists. I just don't know the process  
18 by which----

19          Q. What is available to external scientists? Are you  
20 saying the AFTE Journal?

21          A. The journals are available upon request as far as I  
22 know.



1 Q. In other words, you've got to ask AFTE for them?  
2 They're not generally available?

3 A. I know they're available in libraries because I know  
4 that there's a subscriber program through the-- for the AFTE  
5 Journals. So I know that libraries can get them.

6 Q. And when you say "libraries," you mean the Bureau of  
7 Investigation type libraries?

8 A. No, any library, academic libraries, any library can  
9 apply to be a subscriber for the AFTE Journal.

10 Q. Okay. You're aware that the "Strengthening Forensic  
11 Science in the United States: A Path Forward," the NASA-- the  
12 NAS Report we've been referring to says that there's a  
13 fundamental problem with tool and firearms analysis being a lack  
14 of a precisely defined process. Are you aware of that  
15 statement?

16 A. Yeah. Yes, I am.

17 Q. Do you agree with that? Is there a lack-- a lack of a  
18 precisely defined process?

19 A. I disagree with that.

20 Q. Okay. Is there a specific protocol that AFTE has  
21 adopted for a theory of identification?

22 A. They have a specific procedure manual that they've  
23 adopted.

1 Q. Is there a specific protocol, ma'am?

2 A. I don't understand the question. The protocols that we  
3 use are the procedures manual that detail how to go about doing  
4 your examination.

5 Q. The meaning of "exceeds the best agreement." Is that  
6 defined?

7 A. It's defined as the examiner's training and experience  
8 and ability-- and cognitive ability that they've developed in  
9 their training and experience.

10 Q. So the definition is subjective?

11 A. Yes. It says that in the AFTE Theory of  
12 identification.

13 Q. That "What we do is subjective"?

14 A. Certainly.

15 Q. Have you ever taken part in a double-blind validity  
16 test for firearms?

17 A. No, I have not.

18 Q. And, as you stated earlier, that's not common in your  
19 field at the moment?

20 A. That's correct.

21 Q. But you have no real rationale why it's uncommon?

22 A. The only rationale that I have is expedience, because  
23 the examiner who creates the test knows the answers. So I

1 don't-- you know, the-- And the examiners who are taking the  
2 test are often separated by a continent; so, I mean, the person  
3 making the test could be in Boston and a person taking the test  
4 could be in California or anywhere because they're sent out, and  
5 firearm examiners are scattered across the country. So  
6 expedience could definitely be one reason why it's not double-  
7 blind, and just for the logistics of the test itself.

8 Q. It makes it easier for us to say we don't have an  
9 error?

10 A. I certainly don't believe we don't have an error rate.

11 Q. Well, you have an error rate that's zero, effectively.

12 A. No, no. The error rate for firearms is approximately 1  
13 percent. And for firearms and toolmarks, it's approximately 2  
14 to 4 percent.

15 Q. Based on tests that the firearms and toolmark people  
16 give themselves?

17 A. No, that's based on proficiency tests given by the  
18 Collaborative Testing Services, which is an independent  
19 organization that creates proficiency tests.

20 Q. Using the AFTE protocol-- the AFTE guidelines? We  
21 discussed they don't have a protocol.

22 A. I'm not sure what CTS uses. I just-- They-- They  
23 have known answers. They make test fires. They test fire

1 cartridge cases and bullets and make toolmarks and provide  
2 those.

3 Q. Now you said you've got three possible answers: Is a  
4 match, isn't a match, and I don't know?

5 A. Correct.

6 Q. Isn't the "I don't know" also a statement that it is  
7 not a match, "I can't tell you it's a match"?

8 A. Certainly. That's what that inconclusive means. I  
9 can't tell you one way or the other whether or not it's a match.

10 Q. Well, if it's not a match then your testimony is  
11 unnecessary, correct?

12 A. I don't know if-- I don't know about that.

13 Q. I mean, think about it a second, ma'am. You're going  
14 to be called only if there is a match, correct?

15 A. Not necessarily. I could testify to anything, any of  
16 my conclusions. I've never been called to testify about an  
17 elimination, that I remember.

18 Q. Okay.

19 A. I'm not sure about the inconclusives, but I have been  
20 called to testify in cases where I don't have a firearm.

21 Q. Different question, ma'am. You're going to be called  
22 only if there's a match; because if there's not, that doesn't  
23 help anybody. You don't know, correct?

1 A. I don't know. Right.

2 Q. The same thing, you know, if it's inconclusive, you  
3 don't know. So those two are effectively the same.

4 A. No, they're-- An elimination is entirely different  
5 from an inconclusive result.

6 CDC: All right. One moment.

7 Q. Staying with this and the previous topic of error  
8 rates. When you talk about error rates, are inconclusives  
9 included in error rates?

10 A. No, they're not.

11 Q. Well, why not?

12 A. Because that is a non-conclusion. An identification is  
13 a definite conclusion that says this gun fired this particular  
14 piece of ammunition. An elimination is a definite-- a positive  
15 conclusion in that it makes a definite statement, this  
16 particular piece of ammunition did not-- was not fired in this  
17 particular firearm. An inconclusive is a non-conclusion. That  
18 means there's not enough information for me to make a  
19 determination.

20 Q. Well, what if the person who made the test said, "Oh,  
21 no, that's not true, there would have been enough information,"  
22 wouldn't that be an error?

1           A.    No, because I haven't provided either one answer or  
2 the other.  It's an inconclusive.  And it's--  There could be  
3 many reasons for inconclusives, reproducibility of a firearm,  
4 the----

5           Q.    Excuse me, ma'am.  What I'm saying--  You're talking  
6 about a test where someone gives you a validity test.  He knows  
7 the answers.

8           A.    Correct.

9           Q.    Or she knows the answers.  I don't mean to be sexist.  
10 And you're telling me that if there are 100 samples and the  
11 person making the test knows that it's exactly 50/50--  50 are  
12 identifiable and 50 are not; 50 are included and 50 are  
13 excluded.  And you're telling me that if the person taking the  
14 test says 10 of the 40--  10 of the 50 are and 10 of the 50  
15 aren't, and 80 I don't know, that's going to be scored as a zero  
16 error rate because the ones that are known aren't correctly  
17 answered?

18          A.    That's correct.

19          Q.    And that's your understanding of error rate?

20          A.    Of false--  Right.  False positives and false  
21 negatives.

1 Q. Now you know that on these validity tests, they are  
2 important to your career. I mean you obviously have to maintain  
3 your proficiency.

4 A. They-- My-- I'm sorry. I didn't understand the  
5 question.

6 Q. Fair enough. I may not have understood it when I asked  
7 it. Let's try it this way.

8 The validity testing we're talking about is important to  
9 you because it shows that you are proficient in what you do.

10 A. No, that's not correct.

11 Q. The validity-- It's not an important test?

12 A. It's a-- Sure. The validity studies are important to  
13 the science of firearm and toolmark examiners. The validity  
14 studies don't play a role in whether I'm proficient. That's the  
15 proficiency test.

16 Q. Maybe I was using the wrong terms, ma'am. I apologize.  
17 The proficiency testing, is that the one where you don't rate  
18 unknowns?

19 A. Again, I don't understand the question of rating.

20 Q. Okay. And I may be mixing up my language in your  
21 community. I apologize. You've got conclusion--  
22 identification, non-identification, and uncertain?

23 A. Correct.

1 Q. In your proficiency testing, do you also have those  
2 three options?

3 A. Yes, that's correct.

4 Q. And in your proficiency testing, if you answer unknown  
5 and it was a known, is that counted as an error?

6 A. No, it's not.

7 Q. In your proficiency testing, that's important for your  
8 career, for your accreditation?

9 A. Right. That is what's used as a validation of the  
10 examiner's use of the protocols.

11 Q. That's where I got the word "validation." I apologize.

12 A. Huh-huh.

13 Q. So that in an important test of your career, if you  
14 answer, I don't know, you're not going to get dinged for that,  
15 are you, even if you should have?

16 A. It's-- It doesn't-- It's not included in the error.  
17 The reason for that-- Well, the reason that we're allowed to  
18 do-- to have an inconclusive is that's what follows with our  
19 normal casework. They try to make the proficiency test as close  
20 as possible. I know it's not possible to exactly replicate  
21 casework in a test environment. But if we knew or if we were  
22 instructed that we're only allowed identifications or  
23 eliminations, then that negates that extra unknown. So----



1 Q. Ma'am, I understand all of that, but the point is if  
2 you say "I don't know," although you should have, based upon the  
3 tester providing the information, that doesn't harm you?

4 A. If you say inconclusive, it's a non-- it's a non-  
5 conclusion.

6 Q. Exactly.

7 A. Basically, it's I didn't make a conclusion.

8 Q. You're only going to get hurt if you say it is or isn't  
9 when it was the other.

10 A. That's the only time you would be a----

11 Q. A minus. A negative.

12 A. --- a failure. Right, a negative report from the CTS.

13 Q. Okay. So, wouldn't you agree that there is an  
14 incentive to say I don't know to avoid being dinged?

15 A. I don't believe that and I don't adhere to that  
16 philosophy.

17 Q. I'm not saying you personally do, ma'am.

18 A. Huh-huh.

19 Q. I'm not casting any aspersions on you. But as a  
20 principle in the field, can't you see that examiners could have  
21 an incentive on a proficiency test to say I don't know because  
22 they know that's not a wrong answer, it can't be wrong?

1           A.  If they--  If that's shown in the results.  I don't  
2 know.  Basically, CTS compiles all the results of proficiency  
3 tests so we can look and see if that's the case.  I don't know.

4           Q.  Ma'am, all I'm saying is do you agree that could be an  
5 incentive?

6           A.  For some examiners, I guess it could be.

7           CDC: Okay.  And these are the people--  All right.  The  
8 rest is argument, Your Honor.  One moment.

9           [The civilian defense counsel conferred with the  
10 consultant.]

11          Q.  I think, finally, ma'am, you indicated that your  
12 examination in this field--  in this particular case was  
13 examined by one of your co-workers?

14          A.  Yes, it was.

15          Q.  Did he make a report?

16          A.  No, he co-signed the notes that were produced for this  
17 report as per protocols for the Firearms Branch.

18          Q.  So he doesn't do a separate report, he just initials  
19 your report?

20          A.  My notes.  That's correct.

21          Q.  So he doesn't make his own separate notes?

22          A.  No, that's correct.

1 Q. Is that not what's required in the normal field as  
2 opposed to what your lab requires?

3 A. Not that I know of in any of the other labs that I've  
4 worked in; no.

5 Q. So he just signs your notes and says, "Good to go"?

6 A. After completing his examination of the actual  
7 evidence. That's correct.

8 Q. But we have no independent evidence that he did do a  
9 report. We don't have his notes of what he did because he made  
10 none.

11 A. He didn't do-- No, he didn't make any notes and he  
12 didn't make a report. The protocols that we follow is he  
13 electronically signs the cover page of the notes to say that he  
14 verified all conclusions that were reached.

15 Q. But we don't know how he did that because he didn't  
16 make any bench notes or anything else for us, correct?

17 A. No, he didn't make any notes.

18 Q. Did you watch him do the other report?

19 A. There is no other report.

20 Q. Did you watch him do his validation-- verification?

21 A. Yes.

22 Q. So you were with him when he did it?

23 A. Yeah, I was present; yes.

1 CDC: Thank you, Your Honor. I have no further questions.

2 MJ: Government, redirect?

3 ATC: Thank you, Your Honor.

4 **REDIRECT EXAMINATION**

5 **Questions by the assistant trial counsel:**

6 Q. Mrs. Sevigny, there was some discussion about  
7 incentives. Would you agree that when a firearms examiner is  
8 taking the proficiency test and they come to a conclusion that  
9 there's either an identification or an elimination; because  
10 those two conclusions will be graded, would you agree that  
11 there's an incentive for them to make a correct determination?

12 A. Yes.

13 Q. And the error rate that you quoted before, that applies  
14 to identifications and eliminations, is that correct?

15 A. Yes, it does.

16 Q. And in this case, what was your conclusion?

17 A. An identification of the cartridge case to the firearm.

18 Q. Okay. So the error rate that you quoted, that would  
19 apply to this sort of examination?

20 A. Yes, it would.

21 Q. You also testified about the difference between  
22 individual characteristics and subclass characteristics and how  
23 you can tell the difference between them.

1 A. Yes.

2 Q. Now that our----

3 CDC: Objection, Your Honor. That was not on cross.

4 MJ: Counsel?

5 **[The assistant trial counsel continued examination of the**  
6 **witness as follows:]**

7 Q. You explained what an individual characteristic is and  
8 what a subclass characteristic is. Is that correct?

9 MJ: Counsel, what's your response to the defense  
10 objection?

11 ATC: Oh, Your Honor, she did testify to this. She  
12 explained the difference between individual characteristics and  
13 subclass characteristics and how she could determine the  
14 difference between them.

15 MJ: And--

16 ATC: It was discussed early on in the cross-examination.  
17 She explained what an individual characteristic is and she  
18 discussed subclass characteristics.

19 MJ: There was a discussion about whether they were  
20 manufactured. I'm going to allow it. Objection overruled.

21 ATC: All right.

22 **[The assistant trial counsel continued examination of the**  
23 **witness as follows:]**

1 Q. Can you discuss subclass characteristics and how you  
2 can identify them, please?

3 A. Certainly. Based on the training that I've received by  
4 visiting firearm manufacturers and observing how firearms are  
5 made and the tools that make them, I can-- and, also, by the  
6 training of looking at tools and what the toolmarks that they  
7 make look like, I can then examine a surface and determine what  
8 type of tool could have made that mark. So knowing what types  
9 of tools make subclass characteristics, I can then determine if  
10 those types of tools that made that mark were sub-- could make  
11 subclass or if they were individual.

12 Q. And what is-- How would you describe an individual  
13 characteristic if you were looking at a toolmark?

14 A. In striated toolmarks, it's very random, fine,  
15 microscopic scratches, and as a-- for an individual  
16 characteristics.

17 Q. And for subclass characteristics, what would it be?

18 A. For subclass, they're uniform, very-- very uniform,  
19 and they have a totally different appearance.

20 Q. Okay. So you can distinguish between the two?

21 A. Yes, I can.

1 Q. Okay. And, also, you also discussed the conservative  
2 criteria and you explained that you document your comparisons  
3 based on the photographs. Is that correct?

4 A. That's correct.

5 Q. But are you familiar with the conservative criteria?

6 A. Yes, I am.

7 Q. And if you were to apply it to this specific  
8 examination, what would your findings be?

9 A. That it would exceed what would be needed to make an  
10 identification based on the conservative criteria.

11 Q. So you-- Could you explain that in simple terms,  
12 please?

13 A. Basically, that the striated toolmarks present exceeded  
14 their threshold.

15 Q. You also discussed your research on files, and that  
16 it's based on striated toolmarks. Is that correct?

17 A. That's correct.

18 Q. Now were there striated toolmarks present in this-- on  
19 this cartridge case?

20 A. Yes, there are.

21 Q. And then, finally, you also discussed the peer-review  
22 process with the AFTE publications, is that correct?

23 A. Yes.

1 Q. Can you discuss how rigorous the publication process  
2 is?

3 A. Sure. AFTE-- A publication in the AFTE Journal  
4 requires two reviewers prior to publication as well as it's--  
5 once it's-- once the application is made for publication, it  
6 goes through another-- at least one more peer-reviewer as well  
7 as editors.

8 ATC: Okay. And then-- No further questions, Your Honor.

9 MJ: Recross?

10 CDC: Thank you, Your Honor.

11 **RECROSS-EXAMINATION**

12 **Questions by the civilian defense counsel:**

13 Q. I'm taking the last one first. All of the people  
14 involved in the reviewing and the peer-reviewing and the  
15 editing, they're all tool examiner people, right?

16 A. Not necessarily. The first two who the examiner gets  
17 could be anybody who's knowledgeable in the science that is  
18 involved in the paper.

19 Q. Well----

20 A. So it could be other scientists.

21 Q. Who would be knowledgeable other than tool and firearm  
22 people?



1           A. It could be statisticians, metallurgists; it could be--  
2 it is allowed to be anybody who has specific knowledge about the  
3 subject of the paper.

4           Q. Okay. So if it's a talk about the comparison of the  
5 metal content of a barrel, for some reason, then a metallurgist  
6 could be involved in comparing?

7           A. A metallurgist also have knowledge of how metal  
8 surfaces interact with each other.

9           Q. Okay. Now you said you didn't do CMS in this case.

10          A. That's correct.

11          Q. But, even if you had, it would have confirmed what you  
12 said?

13          A. That's correct.

14          Q. Obviously, if it hadn't confirmed it, you wouldn't have  
15 mentioned that, would you?

16          A. I don't-- I don't know. I guess not.

17          Q. Okay. Can you show us on your picture of the cartridge  
18 how this-- how you're going to be able to score these--  
19 "Score," a bad word. --- how you're going to rate and number  
20 these?

21          A. I don't make my identifications from a photograph. My  
22 identification was made live, looking at the image under the

1 microscope. So I don't-- I wouldn't use the photograph to  
2 validate my identification.

3 Q. So you can't tell us then how you would have done that?  
4 You don't have that here for us to do?

5 A. No, because it's an examination that's done real-time.

6 Q. Okay. Do you-- If you had done-- Because we're still  
7 on the hypothetical. If you had done a CMS in this case, you're  
8 going to do it as you visualize it, correct?

9 A. Correct.

10 Q. Are you going to annotate that in some way? Are you  
11 going to write it down so someone can double-check you?

12 A. I don't use CMS. So--

13 Q. Okay. So your hypothetical answer is also  
14 hypothetical?

15 A. Correct.

16 Q. It doesn't really play a role here?

17 A. It's hypothetical.

18 Q. But it would be, if done, a way of allowing someone  
19 else to see what you see and judge what you judge using  
20 objective standards, correct?

21 A. The CMS is not necessarily more objective than the  
22 pattern matching.

1 Q. I didn't ask you that question, ma'am. I said, if you  
2 did do that, it would allow someone else to see what you saw,  
3 note what you noted, and decide objectively if you're correct,  
4 true?

5 A. I don't agree with that.

6 CDC: Okay. Thank you, Your Honor.

7 MJ: Government, do you have anything else?

8 ATC: One question, Your Honor.

9 MJ: Go ahead.

10 **REDIRECT EXAMINATION**

11 **Questions by the assistant trial counsel:**

12 Q. Mrs. Sevigny, could another examiner look at the  
13 photograph that you took and make an objective analysis based on  
14 the photograph?

15 A. They could determine where and what type of marks I  
16 used to make my conclusions. But, no, another firearm examiner  
17 would not look at a photo and make an identification. All the  
18 determinations are made real-time, looking at physical evidence.

19 Q. Isn't that also true with the CMS?

20 A. Yes, that's true.

21 ATC: All right. No further questions.

22 MJ: Defense?

23 CDC: Just on that last point.

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**RECROSS-EXAMINATION**

**Questions by the civilian defense counsel:**

Q. Aren't you aware that the CMS discussion requires that another examiner be able to look at what you looked at and see notes and make a comparison from that?

A. Well, first let me clarify, you're talking about CMS, which is consecutive matching striations. That is a concept that is used by all firearm examiners. I think you're referring to the criteria-- the conservative criteria, which is what some examiners use to document their identifications. And, no, I'm not current because I don't use the technique. I'm not aware of how their documentation is supposed to be done.

CDC: Okay. Thank you, Your Honor.

ATC: Your Honor, I only have one question.

MJ: Okay.

**REDIRECT EXAMINATION**

**Questions by the assistant trial counsel:**

Q. We've been talking about CMS. Can you confirm for me, does that apply to impressed toolmarks?

A. No, it does not. It only applies to striated toolmarks.

Q. And on the cartridge casing in this case, are there impressed toolmarks present?

1 A. Yes, there are.

2 ATC: Okay. No further questions.

3 CDC: No re-re, Your Honor.

4 MJ: And what was that, Mr. Court?

5 CDC: No re-re, Your Honor.

6 **EXAMINATION BY THE COURT-MARTIAL**

7 **Questions by the military judge:**

8 Q. Mrs. Sevigny, I think I misunderstood your prior  
9 testimony. I thought that on redirect you testified that there  
10 were striated toolmarks on this cartridge.

11 A. There are both.

12 Q. And the mark that you used for identification, was that  
13 striated or impressed?

14 A. It was both.

15 MJ: Counsel, are there any questions based on mine?

16 CDC: You. [Referring to the assistant trial counsel.]

17 **REDIRECT EXAMINATION**

18 **Questions by the assistant trial counsel:**

19 Q. Because there were both impressed and striated  
20 toolmarks present, the CMS-- would you be able to apply that  
21 portion to the impressed toolmarks?

22 A. No.

1 Q. But the photograph and the methodology that you used,  
2 you were able to apply to both the toolmarks that are present,  
3 both types?

4 A. That's correct.

5 ATC: No further questions, Your Honor.

6 **RECROSS-EXAMINATION**

7 **Questions by the civilian defense counsel:**

8 Q. But you could have applied it to the striated marks and  
9 did not?

10 A. That's correct.

11 MJ: Anymore questions?

12 ATC: No further questions, Your Honor.

13 MJ: All right. Apparently not. May Mrs. Sevigny be  
14 excused temporarily or permanently?

15 ATC: The government request that she be temporarily  
16 excused.

17 [The witness was duly warned and temporarily excused.]

18 ATC: Your Honor.

19 MJ: Yes.

20 ATC: The government request that she be allowed to sit at  
21 the table as discussed during the 802 Conference.

22 MJ: That will be fine.

23 ATC: Thank you, Your Honor.

1 MJ: You may step down and sit at counsel's table.

2 WIT: Thank you, Your Honor.

3 [The witness did as directed.]

4 MJ: Government, do you have any further witnesses?

5 ATC: No, Your Honor, not in support of this motion.

6 MJ: And any other further evidence in support of this  
7 motion?

8 ATC: No, Your Honor.

9 MJ: Mr. Court, how long do you anticipate the testimony of  
10 your witness will be?

11 CDC: With direct and cross, it will be a considerable time  
12 period, Your Honor.

13 MJ: Let's take a break for lunch at this point. We'll  
14 take almost 45 minutes. We'll reconvene at 1215.

15 CDC: 13?

16 MJ: Oh, right. Thank you, Mr. Court. Obviously, I can't  
17 tell time. We will reconvene at 1315.

18 Court's in recess.

19 [The Article 39(a) session recessed at 1235 hours, 25 May  
20 2010.]

21 [END OF PAGE]

22

1 [The Article 39(a) session was called to order at 1328  
2 hours, 25 May 2010.]

3 MJ: The court is called to order.

4 All parties present before the court recessed are again  
5 present.

6 During the recess I had an 802 Session with the trial  
7 counsel and the defense counsel, which we discussed the  
8 discovery order in this case with medical records that have  
9 previously been mentioned. The trial counsel was seeking advice  
10 on the order, and I provided him with a sample order from a  
11 different case to modify as appropriate for this case.

12 Counsel, does that adequately reflect what we covered in  
13 the 802 Session?

14 TC: Yes, ma'am.

15 CDC: Yes, Your Honor.

16 MJ: Is there anything that needs to be added?

17 TC: No, ma'am.

18 CDC: No, Your Honor.

19 MJ: Mr. Court, you may continue by calling your witness.

20 CDC: Thank you, Your Honor. The defense calls Professor  
21 Adina Schwartz.

22 [END OF PAGE]

23